

**SUNDAY 30 AUGUST**

# A growing need for more research funding in CVD

THE ESC HAS a major role to play in the call for more research funding in CVD to meet the growing challenge of demographics and cardiometabolic trends, ESC President Professor Fausto Pinto said at yesterday's Inaugural Session.

Despite recent improvements in mortality and morbidity, CVD still claims more than 4 million deaths per year in Europe, with an annual cost to the European economy of some €200 billion.

Research reported recently in the *EHJ* suggests that by 2030 40% of people in Europe will suffer from some form of CVD. 'So we have a real paradox,' said Professor Pinto. 'On the one hand we're achieving better treatment results in reducing mortality and morbidity. But on the other, prevalence is increasing because of greater elderly populations and lifestyle factors.'

Advances such as ICDs or primary PCI have played a fundamental role in increasing life expectancy for CVD patients, he said, 'but such progress is under threat from declining investment in CVD research'.

Although CVD is the most common cause of death in the EU, it received less than €1 billion for research over three years compared to €2.5 billion for cancer. 'There is a need for more balanced distribution of research money,' said Professor Pinto. 'Through our national societies we are stressing the need to support research in CVD.' He also called for a shorter time needed for new drugs and devices to reach the market, which currently varies widely throughout European countries.

Outlining ESC activities, Professor Pinto highlighted the ESC's new Atlas of Cardiology, produced by the European Heart Agency with help from national cardiac societies, to provide information on the way cardiology is practised across 40 different



ESC President Fausto Pinto at yesterday's Inaugural Session.

countries in Europe. 'The idea is to provide reliable and robust information that allows us to make informed decisions and identify some of the gaps,' explained Professor Pinto. The Atlas will be introduced here in London to ESC national cardiac societies and other ESC constituent bodies.

The ESC has been working on a strategic plan previewing the next five years of the organisation, which has redefined the membership concept. 'Members of national cardiac societies don't always appreciate that they are automatically members of the ESC,' said Professor Pinto. 'We want to increase their sense of membership by introducing a new category of professional membership, which provides many of the

perks of fellowship at a reduced fee.'

Professor Pinto paid tribute to this year's ESC Gold Medallists, Keith Fox, Richard Popp and Michel Haissaguerre. 'We are honouring three outstanding cardiologists who have made significant contributions in ischemic heart disease, cardiac imaging, and atrial fibrillation ablation,' he said.

Speaking of this year's ESC Congress, Professor Geneviève Derumeaux, Chairperson of the Congress Programme Committee, outlined several innovations in the programme. These include an emphasis on the 'Heart Team' approach to patient management, and several 'Advances in Science' sessions which include an overview lecture to place research in context.

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## TOTAL ATTENDANCE

	BARCELONA 2014	29 662
	LONDON 2015	32 035

## Don't Miss

- **07:30 - 08:15** **Regents Park (The Hub)**  
Focus on Japan - Prospects for cell therapy in cardiac diseases
- **08:30 - 10:00** **London (Main Auditorium)**  
ESC Guidelines - Overview
- **10:10 - 10:50** **Hyde Park (The Hub)**  
The EHJ's year in cardiology: from prevention to intervention
- **11:00 - 12:30 & 16:30 - 18:00** **London (Main Auditorium)**  
Hot Line Sessions
- **11:00 - 12:30** **St James Park (The Hub)**  
Focus on Brazil - Cardiac imaging and multimodality approach in different clinical scenarios
- **11:00 - 12:30** **Regents Park (The Hub)**  
Ageing and cardiovascular disease: role of cellular senescence
- **12h40 - 13h50** **The Hub, Village 1 and Village 6**  
Come and support Young Investigators presenting the best original research in competition for ESC Award
- **14:00 - 15h30** **Chisinau (Village 6)**  
Focus on Japan - Impact of optical coherence tomography and computed tomographic angiography on the management of acute coronary syndrome
- **11:00 - 12:30 & 16:30 - 18:00** **London (Main Auditorium)**  
Hot Line Sessions
- **16h30 - 18h00**  
ESC Associations Track - held in the topic related village



**Come to the ESC Stand and DISCOVER WHAT THE ESC CAN DO FOR YOU**

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## Le Tour de Coeur: Swiss cardiologists once again on the road, and still on time...



Once again, a peleton of 25 hardy Swiss cardiologists has braved the elements and 8000 metres of elevation to cycle to an ESC Congress. They all arrived punctually yesterday afternoon after completing a 700 kilometre tour from Basel, which had taken seven days to complete and climbed over the Ballon d'Alsace of the Vosges mountains. 'It rained a lot,' said Basel cardiologist Andreas Hoffman, 'so we are glad to be here. But it has been fun, and we're raising money for the Swiss Society of Cardiology. It's also good to practise what we preach. I'm a specialist in rehabilitation so I know the value of exercise.'

Review videos, slides, abstracts and reports of your sessions of interest  
[www.escardio.org/365](http://www.escardio.org/365)




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# Three ESC gold medallists for 2015

## Keith Fox, Richard L Popp and Michel Haissaguerre receive ESC honours

THREE ESC GOLD MEDALS were awarded at yesterday's Inaugural Session. The beneficiaries were Keith Fox, British Heart Foundation Duke of Edinburgh Professor of Cardiology at the University of Edinburgh, Richard L Popp, Emeritus Professor of Cardiovascular Medicine at Stanford School of Medicine, California, and Michel Haissaguerre, Professor of Cardiology at the Centre Hospitalier Universitaire of Bordeaux, France. *ESC Congress News* talked to all three about their careers and research interests.

### Professor Keith Fox

**ESC: Professor Fox, you have a long association with the ESC. How did it all start?**

**KF:** I was one of the founding Fellows of the ESC back in the 1990s and since then have been responsible for several studies in acute coronary syndromes and thrombosis, with key results incorporated into European guidelines. Some of our results from the GRACE study, for example, have provided strong evidence on risk assessment and its timing in acute coronary syndromes. At a more formal level I was a board member of the ESC from 2008 to 2010 and from 2012 to 2014, and also Chair of the Scientific & Clinical Programme Committee for the ESC. Last year there were more than 30,000 taking part and a record number of abstracts submitted. That's plenty of work for the Programme Committee!

**And your principal scientific and clinical interests?**

Acute coronary diseases and atherothrombosis - in fact, the whole pathway from plaque formation to clinical manifestations. So this has involved me in studies of disease mechanisms in ACS to the assessment of antiplatelet and anticoagulant therapies. Presently, we are looking at the influence of genes and inflammation on plaque rupture events.

**Which of these studies are you most proud of?**

Well it's difficult to say. They seem to have happened in a series of chapters, starting with our first studies on tPA in St Louis. But I guess I must be most proud of those whose outcomes have been implemented into guidelines and everyday practice in ACS. So to that extent I'd note our studies from the GRACE registry programme, and the RITA, ROCKET-AF and OASIS programmes. The RITA-3 trial in 2005, for



This year's three ESC Gold Medallists pictured after their awards at yesterday's Inaugural Session. From left to right, Keith Fox, Richard Popp, and Michel Haissaguerre.

example, compared a strategy of routine angiography and revascularisation in non-STE ACS patients with a non-intervention strategy of watchful management. There was uncertainty about this at the time, but our results over five years clearly showed the benefit of routine intervention. So now, for higher risk patients we adopt a routine strategy of early angiography and intervention. More recently we've updated the algorithms derived from the GRACE registry data into a simple web-based and app risk calculator. The original risk prediction model was based on outcomes from more than 100,000 ACS patients, and now the risk scores we calculated have been validated externally and prospectively.

**What does an ESC gold medal mean to you?**

Of course, I feel very honoured, but also a little embarrassed to be in such company. My contributions to cardiology and the ESC seem somewhat modest alongside those of other gold medallists, but it's a great honour and one that I feel very proud of and very grateful for.

### Professor Michel Haissaguerre

**ESC: How did you first become interested in cardiology?**

**MH:** Initially, I decided to study medicine because I was interested in psychology. But during my second year internship with Professor Jean Francois Warin in Bordeaux I became fascinated by the way 12-lead ECG traces could describe an invisible electrical mechanism operating within the heart.

**What have been your main research interests?**

Once simple arrhythmias became, in the words of Douglas Zipes, 'an endangered species', the last big hurdle to overcome was cardiac fibrillation. My research team's contribution has been to demonstrate that these chaotic wavelets have discrete origins, with the igniting sparks located mostly in the pulmonary veins in the atria or Purkinje cells in the ventricles.

**How did radio ablation for atrial fibrillation come about?**

With Pierre Jais, Méléze Hocini, Dipen Shah and others I began mapping the first premature beat that initiates fibrillation. We found the sources of AF were not in the atria, but fired from cells in the pulmonary veins located in the vascular wall. It took about four years to be sure of our results - 99% perspiration for 1% inspiration. Now over 300,000 patients have been treated by targeting the pulmonary veins.

**Have you done the same for VF?**

The same mapping concept was performed for patients with repetitive VF, but proved challenging because of the rapid syncopal nature of VF and isolated runs of ventricular ectopies. We found Purkinje sources initiating VF in both normal hearts and nearly all types of cardiac disease, with confirmation by discrete successful ablation. Such findings could have large therapeutic implications.

**What does your new institute hope to achieve?**

In 2012 we established the LIRYC Electrophysiology and Heart Modelling Institute in Bordeaux to develop a multidisciplinary programme dedicated to cardiac electrical dysfunctions such as AF, ventricular tachyarrhythmias and electrical ventricular dyssynchrony leading to heart failure using high-resolution mapping, cardiac imaging, signal processing and computer modelling. The institute brings together over 150 practitioners with multiple specialties in electrophysiology - from ion channels to whole heart and patient care.

**What are your future research goals?**

While we've made progress in understanding arrhythmia mechanisms, the identification of risk factors, genetic abnormalities and tissue biomarkers needs to be improved. We need to be able to recognise those individuals who are susceptible to VF and sudden death. Advances will hopefully help optimise screening and therapeutic protocols and reduce the burden of arrhythmic morbidity and mortality.

### Professor Richard L Popp

**ESC: What first attracted you to cardiology?**

**RLP:** The cardiac physical exam was the most fascinating thing I could imagine - I had always wanted to understand how the heart worked both normally and under the influence of disease.

**Who have been your most influential mentors and how did they help your career development?**

J. Michael Criley from Johns Hopkins got me involved in angiography and Harvey Feigenbaum from Indiana University was one of the first in the US to use ultrasound for cardiac imaging. I'd also like to acknowledge over 150 dedicated cardiology fellows who taught me an enormous amount and pushed me to answer their challenging questions.

**What do you regard as your greatest clinical and or scientific achievement?**

I was privileged to be part of the development of virtually all aspects of ultrasound cardiac diagnosis. My work was developing non-invasive ways to measure left ventricular volume, stroke volume and ejection fraction - and establishing standards for examination and measurement methods in echocardiography. With Liv Hatle I helped develop Doppler methods to measure gradients across heart valves and methods to recognise diastolic ventricular dysfunction. But one of my greatest achievements has been my involvement in the careers of a large number of leading

academic cardiologists including Fausto Pinto and Jos Roelandt.

**What do you regard as the most significant development in your field of cardiology over the last 20 years?**

The fact that non-invasive methods have replaced invasive cardiac catheterisation for assessing structural heart disease is a major advance for patients allowing serial monitoring of the natural course of valve disease and heart failure.

**Looking into a crystal ball how do you see your field developing?**

Use of personal hand-held inexpensive ultrasound imaging devices will have a big role to play in augmenting physical exams. I believe that hand-held ultrasound units, the size of a cell phone, will ultimately replace the stethoscope.

**What advice would you give to young cardiologists?**

Providing 'patient centered care' with a team of healthcare providers should be your focus. Training to do everything the team can provide will not serve either you or the patient well.

**How have you achieved a work life balance?**

I have been incredibly lucky to have a wonderful wife Janis, two sons and five grandchildren. While you can always get someone to cover your patients, no one else can cover your role as a spouse or parent.

# New ESC guidelines for non-ST elevation ACS



By Helmut Baumgartner  
University Hospital Muenster  
Muenster, Germany



and Oliver Gaemperli  
University Heart Center  
Zurich, Switzerland

The ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation represent an update of the 2011 version with several renewed recommendations based on evidence published over the past four years.

ACS remains a worldwide concern with an annual incidence of approximately three per 1000 inhabitants. While the incidence of STEMI has decreased appreciably over a decade, the rate of non-STEMI and unstable angina has only slightly increased.

NSTE-ACS is a heterogenous disease with a wide spectrum of symptoms, patient characteristics, disease severity, and short- and long-term outcomes. This heterogeneity poses significant challenges on diagnostic pathways, and allows for a large variety of approaches ranging from conservative medical treatment to interventional or surgical procedures.

Rapid diagnosis and risk stratification are crucial in NSTEMI-ACS for life-saving treatment or to tailor treatment to individual risk. In this context, high-sensitive cardiac troponin (hsTrop) assays have received particular attention in this latest guideline. Compared to conventional troponin kits, these assays allow

reliable detection of lower ranges of circulating troponin levels, have a higher negative predictive value, and reduce the 'troponin-blind' interval leading to earlier detection of ACS. Thus, hsTrop assays are currently recommended over conventional ones (class of recommendation (COR) I, level of evidence (LOE) A).

The largest part of the guideline is devoted to the two most important pillars of NSTEMI-ACS treatment, pharmacological antithrombotic therapy and revascularisation. Dual antiplatelet treatment (DAPT) consisting of aspirin in combination with a P2Y12 inhibitor is recommended in all patients presenting with ACS. Newer P2Y12 inhibitors (ticagrelor, prasugrel) are preferred over clopidogrel because of improved ischaemic outcomes (COR I, LOE B). However, preloading with prasugrel (prior to coronary angiography) in NSTEMI-ACS is not recommended based on excess bleeding risks documented in the ACCOAST trial (COR III, LOE B). Cangrelor and vorapaxar have recently received marketing authorisation by the EMA, but the guideline task force thought it premature to make any recommendation based on limited and somewhat controversial published data.

The optimal duration of DAPT remains a matter of debate and should be based on individual estimates for ischaemic versus bleeding risks. Extending DAPT over the traditional one-year period may be beneficial and may therefore be considered in patients with high ischaemic risk and low bleeding risk up to 30 months (with prasugrel or clopidogrel) or up to 48 months (with ticagrelor, preferably after the first year at a reduced dose of 60 mg bid) based on the results of the recently published DAPT and PEGASUS trials (COR IIb, LOE A). Conversely, shorter duration may be considered in patients at high bleeding risk (COR IIb, LOE A).

The guideline highlights the importance of invasive coronary angiography with intention to revascularisation as the routine approach in NSTEMI-ACS, particularly among intermediate - and high-risk patients. The timing depends on the severity and risk of the NSTEMI-ACS. An immediate invasive strategy within two hours of presentation is recommended in patients with very high-risk criteria (shock, cardiac arrest, life-threatening arrhythmias, etc.) (COR I, LOE C). An early invasive strategy (within 24 hours of presentation) is recommended in the absence of the above but with any of the following high-risk criteria: rise or fall in troponin, dynamic ST- or T-wave changes, and/or a GRACE score >140 (COR I, LOE A). Radial access resulted in lower bleeding rate and significant reductions in total mortality compared to femoral access in the RIVAL and MATRIX studies - and is preferred in NSTEMI-ACS patients providing that the intervention is performed by an operator sufficiently experienced with the radial access (COR I, LOE A).

The preferred mode of revascularisation (ie, PCI versus surgical) depends on the clinical condition of the patient, comorbidities, and disease severity. However, no randomised trials have ever compared PCI with CABG in the NSTEMI-ACS setting. In multivessel disease, the revascularisation strategy (ad hoc culprit-lesion PCI, staged CABG, multivessel PCI, or multivessel CABG) should be discussed according to the local heart-team protocol (COR I, LOE C).

Finally, the guidelines emphasise the important role of secondary prevention to improve longevity and prevent long-term cardiovascular events after NSTEMI-ACS. These include lifestyle changes, exercise, smoking cessation, and pharmacological agents known to improve prognosis. Among the latter, high-intensity statin therapy is of paramount importance. If LDL goals are not reached with statins alone, ezetimibe should be added, based on the recent IMPROVE-IT study (COR I, LOE B).



## TODAY

Interactive discussions with renowned experts  
Join us at the Boehringer Ingelheim Booth  
(G100) in the Exhibition Area

10:00

**Emergency management  
of NOAC-treated patients:  
what are our options?**  
Jeffrey Weitz

12:45

**Anticoagulation in  
patients undergoing AF  
ablation: new insights**  
Hugh Calkins

15:30

**Individualizing OAC for  
stroke prevention in AF:  
what factors are  
really important?**  
Gregory Lip



UK/DBG-151107e  
Date of preparation: July 2015  
These events are organised and funded by Boehringer Ingelheim



**Congress participants cast their vote yesterday on the most game-changing innovations or clinical trial results of the year. From 3D printing to ear stimulation, the list of contenders covered a wide range. Six specialists first provided an overview of those shortlisted. Each gave a ten minute presentation to the audience in which they built the case for their nominated 'game-changer' and outlined why it should win. The audience was then asked to vote. The winner was PARADIGM-HF, the largest ever study of a heart failure treatment. The trial was a breakthrough after identifying a new therapy which made a genuine difference to survival in heart failure.**

## Paradigm-HF trial in heart failure



Cecilia Linde from the Karolinska Institute in Sweden proposed that the Paradigm-HF study makes a strong case that the angiotensin receptor inhibitor/neprilysin inhibitor LCZ696 (valsartan/sacubitril) should be used as first line treatment in patients with heart failure and reduced ejection fraction. 'This is the first new drug to show an impact on HF mortality and morbidity for years,' said Linde.

The experimental drug, she added, was now a reality which should become widely available to patients in the near future.

The Paradigm study showed at a median follow-up of 27 months in comparison to enalapril, LCZ696 reduced the risk of death by 16%, cardiovascular death by 20%, and hospitalisation by 21% (N Engl J Med 2014, 371: 993-1004). The treatment group had higher proportions of patients with hypotension and non-serious angioedema, but lower proportions with renal impairment, hyperkalemia and cough.

The reason neprilysin inhibition is valuable, Linde explained, is that neprilysin degrades vasoactive peptides that are beneficial in HF.

## Troponin assay in acute cardiac care



A novel algorithm using high-sensitivity cardiac troponin T measurement can accelerate the management of suspected acute MI. Maddalena Lettino, director of the clinical cardiology unit at Humanitas Research Hospital in Milan, Italy, said this new grading

system can save hospitals money, reduce pressure on emergency departments and save patients the anxiety of a delayed diagnosis. The concept allows safe rule-out as well as accurate rule-in of acute MI in the majority of patients within one hour. This innovative approach to acute MI diagnosis has already been validated by the TRAPID-AMI trial. Results showed that the assay allowed rule-in or rule-out of MI within this time frame in about three-quarters of patients.

It should now be incorporated into European guidelines, urged Lettino, and be made generally available. She said this would help ensure that 'not too many people are using emergency departments' - because doctors could confidently discharge patients with non-life threatening disease.

## HCM score in cardiovascular risk prevention



An innovative scoring system could reduce the high rate of false positives for hypertrophic cardiomyopathy (HCM) among athletes. This approach refines current screening parameters and could increase the accuracy of ECG interpretation, said Professor Josep Perk from Linnaeus University in Sweden.

HCM is the leading cause of sudden cardiac death in young sportsmen and women. Screening guidelines were published after the death in 2003 of footballer Marc-Vivien Foe. However, overlap exists between physiological and pathological ECG

patterns, resulting in high rates of false positives. ECG abnormalities occur in one in five white athletes and one in two black athletes.

These errors can result in elite players - including footballers - being disqualified from competing, said Perk, adding that 'this does a lot of psychological harm' because athletes fear something is wrong with their heart.

The new scoring system was devised following an analysis of more than 5000 ECG results and combines nine ESC parameters with two from the Seattle heart failure risk calculator.

# Those game-changing innovations of the year: Congress casts its vote

## Ear stimulation in electrophysiology



Sabine Ernst, an electro physiologist from the National Heart and Lung Institute, London, made a strong case for neuromodulation of the vagus nerve as a novel therapy for atrial fibrillation. While AF is traditionally treated by invasive ablation strategies, such as isolation of

the pulmonary veins, the autonomic nervous system is known to play a major role in its aetiology. 'But the anatomy of the sympathetic nervous system is very complex with multiple fibres that are hard to identify,' said Ernst.

A recent study suggests that the tragus nerve, located at the front of the ear canal, can be used to access the vagus nerve non-invasively (JACC 2015, 65: 867-75). The study, which randomised 40 patients with paroxysmal AF to low level electrical stimulation of metal clips attached to the tragus nerve externally or a sham treatment, found both AF and inflammatory cytokines were suppressed in the active group. 'You can start to dream that one day we will be able to add non-invasive treatments for AF to hearing aids or smart phone head sets,' said Ernst. 'We are moving away from destroying the myocardium in patients in arrhythmias.'

## 3D printing in cardiovascular imaging

Three dimensional printing, said Luigi Badano, is a game changing innovation in cardiovascular imaging with the potential to allow the bio-printing of tissues - and ultimately entire organs. In 3D printing objects are being created by laying down one thin layer of material which bonds to another thin layer derived from such imaging modalities as computerised tomography, cardiac magnetic resonance and 3D echocardiography. 'We can use 3D printers to understand complex anatomy . . . to hold the physical structure of the heart in our hands,' said Badano, from Padua, Italy. 'We can use it to teach anatomy to medical students, plan surgical interventions and communicate with patients, showing them exact structures revolutionising the concept of informed consent.' One recent study comparing identical cardiac surgical procedures performed with and without 3D printing showed that 3D printing

shaved 30 minutes off the time taken.

Using bio-ink and bio-paper, which acts as a temporary scaffold, bioprinting takes 3D printing one step further, allowing live endothelial cells to be formed into structures. 'This provides an opportunity to design valves that will fit the exact body size of your patient,' said Badano.

Recently the Wake Forest Baptist Medical Center Institute in the US modified adult human skin cells into functional heart cells with the ability to generate a beat. Such cells, Badano said, might eventually be used by 3D printers to create functional hearts.



## More DAPT data in coronary intervention



How long to treat patients with dual anti-platelet therapy (DAPT) after stenting is a hot topic right now, with experts divided over whether shorter or longer duration times are best.

A new study, scheduled for publication next month, is expected to advance knowledge in this debate, said Philippe Garot from the Institut Cardiovasculaire Paris Sud, France.

The LEADERS FREE trial is the world's first prospective, randomised double-blind clinical trial using a one-month course of DAPT after implantation of an active stent.

Garot said that the trial is focused on patients at high risk of bleeding who have until now not been considered suitable for DAPT. The study has been designed to examine safety and efficacy outcomes in patients receiving treatment with the BioFreedom stent, a new generation of drug coated stent. The study, said Garot, has compared the BioFreedom stent with an early generation bare metal stent (BMS) in patients who cannot be treated for more than a month with DAPT. The hope is, he added, that this study will address the current 'unmet need' for improved care among this patient group.

'There are still unmet needs in interventional cardiology, especially in high risk patients,' he said, and we need further data on this population.'



# Risk prediction in the hands of biobanks

IT SEEMS LIKELY that risk prediction scores of the future will be modeled as much on the data emerging from huge biobanks as from the classical findings of randomised trials and meta-analysis. With the genetic, biomarker and lifestyle information of many hundreds of thousands of people stored and analysed for their patterns in disease and health, biobanks are rapidly becoming the repository of what we need to know about the aetiology of disease.

The numbers are huge. Two of the biobanks discussed at a Symposium this morning - EPIC-Heart and the UK Biobank - have data on more than 500,000 participants, and a third, the German National Cohort, has plans for health, lifestyle and genetic information on 200,000. The latter, says Heidelberg radiologist Christopher Schlett, also has plans for banking 30,000 whole-body MR images which include standard and novel cardiac MR sequences (such as unenhanced and MR angiography) and will eventually enable the identification of novel imaging biomarkers of risk. 'We'll have images at baseline and aim for a later stage,' says Schlett, 'so we can observe how cardiovascular disease changes over time.' The MRI study will thus allow a cross-sectional assessment of the prevalence of subclinical disease states in the general population.

There is also a multimodal imaging project in the UK Biobank study, which has now collected (and continues to collect) substantial phenotypic and genotypic information on more than 500,000 subjects through interviews, questionnaires, physical measures and sample collection.

UK Biobank, like the other projects outlined in today's Symposium, aims to improve the prevention, diagnosis and treatment of a wide range of serious illnesses, including cardiovascular disease. 'Over the next 20 years,' says its Principal Investigator Professor Sir Rory Collins from the University of Oxford, 'we expect some 45-50,000 incident cases of myocardial infarction and coronary deaths to accrue within



Professor Sir Rory Collins, left, Principal Investigator of the UK Biobank, and radiologist Christopher Schlett from the German National Cohort whole body imaging project,

the resource. Enhancements to the study pertinent to cardiology researchers include the biochemical assays and genotyping of all 500,000 participants and the planned multimodal scanning of 100,000 participants.'

The imaging project, for example, would allow assessment of the relevance of fat distribution in the body to cardiovascular risk and work is now under way to streamline the automated analysis of these images. 'This would enable us to provide precise measurements of visceral and subcutaneous fat to researchers on a large number of individuals,' explains Collins.

A feasibility study has also started to assess the prevalence and predictors of atrial fibrillation in the UK Biobank cohort. 'As atrial fibrillation may be missed by a single ECG because of its intermittent nature, we are piloting the use of a non-invasive ECG "patch" continuous monitor that can be worn for about two weeks,' Collins explains.

The imaging project is just one of several large-scale 'enhancements' in the UK Biobank, which will also analyse

genetic and biochemical data on the full cohort and record physical activity over the course of a week for 100,000 participants. So far, over 70,000 individuals have worn the Biobank's activity monitor. Genetic analysis has involved measuring over 800,000 markers throughout the genome, and about 70 million markers have been imputed for each participant. The first round of genetic data from 150,000 participants has now been made available to researchers, with data on the full 500,000 to be released in 2016.

There is also a pan-European biobank project under way, which too will be featured in tomorrow's Symposium. The EPIC-Heart project, an initiative of the European Prospective Investigation into Cancer and Nutrition (EPIC), is also studying the interplay of genetic, biochemical and lifestyle factors on the risk of coronary heart disease. Since the project began in the 1990s, more than 15,000 of the 520,000 subjects have developed heart disease, which, says scientific co-ordinator Adam Butterworth from the University of Cambridge, provides a suitably large enough group of cases to allow reliable investigation of the joint effects of genes, biomarkers and lifestyles on risk. The EPIC-Heart project involves 23 EPIC centres in ten European countries and has banked blood samples from most subjects at baseline.

Butterworth noted that the EPIC project data - like that of other large biobanks - is open to collaboration from outside groups, 'at your doorstep' as the Symposium title suggests. And speaking to *Congress News*, he agreed with his fellow-presenters that the detailed multi-domain data now available to these researchers will indeed allow a better understanding of cardiovascular disease and its risk factors, and as a result the basis for better treatments for future generations.

European biobanks: large-scale epidemiological research at your doorstep, 30 Aug 08:30-10:00 St James Park - The Hub

## Non-vitamin K antagonist oral anticoagulants in atrial fibrillation – Translating trial data into clinical practice

### Satellite Symposium

Sunday, 30<sup>th</sup> August 2015  
12:45-13:45  
Room: Ankara – Village 7

- 12:45 WELCOME AND INTRODUCTION**  
Dr Jeffrey I. Weitz, Canada
- 12:50 PRACTICAL CONSIDERATIONS FOR TREATMENT OF ATRIAL FIBRILLATION PATIENTS WITH NON-VITAMIN K ANTAGONIST ORAL ANTICOAGULANTS**  
Professor Hein Heidbuchel, Belgium
- 13:05 ENGAGE-AF: TRANSLATING TRIAL RESULTS INTO CLINICAL PRACTICE**  
Dr Robert P. Giugliano, USA
- 13:20 FUTURE PERSPECTIVES ON STROKE PREVENTION IN ATRIAL FIBRILLATION**  
Professor Paulus Kirchhof, UK
- 13:35 PANEL DISCUSSION**  
All
- 13:40 CLOSING REMARKS**  
Professor A. John Camm, UK



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# Three 'named lectures' in today's programme

## PCI in the footsteps of Grüntzig

BERNHARD MEIER, who delivers the Andreas Grüntzig lecture today, has the distinction of being one of the few people present in the room when Grüntzig himself performed the first ever percutaneous transluminal coronary angioplasty in September 1977.

'I wouldn't have ever considered becoming an invasive cardiologist without the influence of Andreas, which makes giving this lecture quite an emotional experience,' says Meier, now head of Cardiology at University Hospital Bern. Indeed, Meier, then a resident at University Hospital Zurich, played the vital role of sourcing the patient for Grüntzig's historic coronary angioplasty procedure.

Recalling the ringside seat he had watching Grüntzig's technical progress, Meier remembers how his mentor got ahead of the game by recruiting a plastics expert to develop form-constant PVC balloons allowing correspondence between balloon size and pressure. 'Andreas had a contagious energy, but behind his charm was a steely determination that got things done,' recalls Meier, who in 1981 followed his mentor to work at Emory University in Atlanta.

Returning to Switzerland in 1983, Meier's noteworthy achievements include launching the renowned Geneva course that trained thousands of European interventional cardiologists in PCI, performing the first balloon valvuloplasty in a human with the Trefoil technique (that does not block blood flow), and being the first to use the Amplatz device to close the patent foramen ovale (PFO) and left atrial appendage.

Working with Grüntzig, who died in a plane crash in 1985, undoubtedly influenced Meier's 'frugal' approach to PCI. 'The thing I learnt from Andreas was to do things as simply as possible,' he says. 'Inflating a balloon inside the coronary artery is far simpler than performing CABG. What I've made my specialty is to strip procedures back to basics. Here you walk a delicate tight-rope because, if you cut corners, you can cause complications just as much as doing too much additional stuff.'

In today's lecture, 'Interventional cardiology where real life and science do not necessarily meet', Meier will outline his frugal philosophy



Bernhard Meier: 'The thing I learned from Andreas was to do things as simply as possible.'

and argue that current insistence on randomised controlled trials can sometimes represents a step too far. 'Often there's already enough science,' he says, 'and people need to be able to use common sense to extrapolate. In reality you cannot do a randomised trial for every single extension of a procedure.'

Meier cites the case of TAVI, now routinely performed for inoperable elderly patients, which fundamentalists still believe requires a randomised trial before use in younger healthier subjects. 'To my mind it's analogous to using a pair of hiking boots to climb Everest and then insisting you perform a trial before you walk up a hill in them,' he explains.

Another example, he says, is PFO closure in patients who have suffered strokes. 'In secondary prevention, randomised trials have failed to show a statistical benefit for PFO closure over anticoagulation, since secondary strokes take 10 to 20 years to occur. To me it's a complete no brainer that you'd choose a simple day case procedure with practically no complications over taking anticoagulants with a major risk of bleed for the rest of your life.'

Andreas Grüntzig Lecture on Interventional Cardiology 30 Aug 8:30-9:10  
Regents Park - The Hub

## The science of microvascular disease

IN THIS MORNING'S William Harvey lecture Axel Pries will challenge basic scientists to explore the 'black box' of the microcirculation.

'To my mind, the coronary microcirculation, the business end of the circulation where oxygen diffuses into cells, represents one of the contemporary frontiers in cardiology research,' says Pries, from the Charité University of Medicine, Berlin. 'We still know extraordinarily little about what's going on here.'

Recent studies show that a substantial number of patients with suspected coronary artery disease examined by coronary angiography have apparently normal arteries, suggesting they suffer from microvascular disease. Such pathologies can be attributed to spasm, coagulation, micro-obstruction by leucocytes, adverse microvascular remodelling, and endothelial dysfunction among other potential mechanisms.

Although there has been an increase in clinical papers addressing the coronary microcirculation, says Pries, the amount of basic science research has declined over the past few decades. 'What's needed,' he adds, 'is a greater understanding before we can move on to develop treatments.'

Since the microcirculation lies beyond the domain of catheter investigation and intravascular imaging, much of Pries's work has involved mathematical modelling collaborations with the mathematician Timothy Secomb from the University of Tucson. Adequate function of terminal vascular beds, they suggest, depends on exact adjustment of vessel diameters by adaptive processes. Here they believe a 'feedback' system operates through the conduction of electrical signals upstream along arterioles within vascular network, preventing generation of functional arterio-venous shunts. This conduction relies on the adequate function of connexins forming gap junctions between cells in the vessel wall. 'The system provides the arteriole with information about the capillaries it is serving,' explains Pries.

Another focus has been the 'endothelial surface layer' or 'glycocalyx', a gel like layer around 0.5 µm thick influencing flow resistance, inflammation and permeability. Conditions such as inflammation, diabetes mellitus and



Axel Pries will deliver today's William Harvey lecture on basic science, describing microcirculatory networks as 'the business end of the circulation'.

hypertension, they believe, have a negative effect on this layer.

Since graduating from the University of Cologne in 1980 Pries has exclusively focused on basic science. While he does not deny there are frustrations, the rewards of the scientific life are worthwhile. 'Scientists need to be really determined with a thick skin because it can take years to achieve breakthroughs,' he says. 'But each morning you're like a pioneer exploring new territory and don't know where your journey will take you.'

His advice to young colleagues is to 'cherish' the time before administration catches up. For Pries such freedom is now gone. In December 2014 he was appointed Dean of the Charité with shared responsibility for an overall budget of €1.5 billion and 13,000 staff.

To relax he spends time with his wife and two daughters and enjoys wood turning bowls. 'In a matter of hours you create from scratch something that is beautiful and useful. It's a refreshing antidote to the irritants of the scientific and administrative processes,' he says.

ESC William Harvey Lecture  
on Basic Science 30 Aug 9:20-10:00  
Regents Park - The Hub

## A 'new paradigm' for sudden cardiac death proposed in Rene Laennec lecture

As an Edinburgh medical student in the 1970s, George Sutherland was puzzled by the observation that sudden cardiac death occurred most commonly in the morning and was seasonally related, being more frequent during colder weather. SCD in the young has also been related to conditions such as hypertrophic cardiomyopathy and other genetic abnormalities of the heart, but these do not account for the majority of cases, which remain unexplained, even in autopsy series.

'Before retiring I wanted to investigate whether acute blood pressure changes alone, or in combination with a substrate, could act as a trigger for sudden death,' says Sutherland, who in today's Rene Laennec Clinical Cardiology lecture will propose a possible new paradigm for SCD linking everyday changes in blood pressure to electromechanical changes within the heart which are pro-arrhythmic.

Sutherland has had a distinguished career as a cardiologist whose main interest was the development of cardiac imaging, and has held chairs in cardiology/cardiac imaging in the UK, Sweden, Holland and Belgium. Over the last 40 years, his research achievements have included the use of 2D echocardiography to describe congenital heart defects for the first time, the development of aspects of adult and paediatric transoesophageal echocardiography and the introduction of strain and strain-rate imaging into echocardiography. During his



George Sutherland, today's Rene Laennec lecturer, will propose a mechanism for SCD based on changes in blood pressure.

career his distinguished mentors have included Jane Somerville, JRTC Roelandt, Liv Hatle, Bengt Wranne and Bart Bijnens.

On the subject of his lecture today, Sutherland and his colleagues, Piet Claus and Peter Hamers, in a series of studies at the University of Leuven, Belgium, simulated every day short-

lived physiologic blood pressure using short-lived descending aortic balloon inflations in a pig model.

They found that a balloon inflation for 5/10 beats inducing a 30 mmHg pressure change in the aorta led to marked shape changes in the left ventricle and caused a striking dissociation of mechanical and electrical events within the left ventricle. This challenge opened a 'window' of electrical instability which frequently resulted in the production of premature ventricular beats. 'Interestingly, it was acute pressure fall which was related per beat to the induction of the arrhythmia and not pressure rise,' says Sutherland.

The potential mechanisms underlying this phenomenon will be discussed during the lecture and Sutherland will postulate that the acute induced ventricular premature beats, which are a result of the release of stretch within the left ventricular myocardium, act as a 'trigger' which interacts with a subclinical/clinical substrate within either right or left ventricle to produce a fatal ventricular arrhythmia. Such a mechanism, he will suggest, could underlie the relatively large cohort of SCD which is currently unexplained.

Rene Laennec Lecture on Clinical Cardiology  
30 Aug 16:30-17:10 Regents Park - The Hub

# ‘We need to invest in prevention’

## Latest EUROASPIRE data on managing cardiovascular risk in primary care

THE EUROASPIRE surveys, which began their first collections of data in 1995-96, are now part of the ESC's EURObservational Research Programme, or EORP. The programme has grown from just two pilot surveys (both in heart failure) to a broad-ranging and far-reaching programme of 12 registries arranged within the categories of 'General', 'Sentinel', 'Special' and 'Prevention', the last of which now includes both arms, hospital and primary care, of the EUROASPIRE data collection.

The latest results from the secondary prevention hospital arm of EUROASPIRE IV were published in February and showed yet again that the large majority of coronary patients in Europe are failing to achieve their lifestyle, risk factor and therapeutic targets as set out in the latest prevention guidelines. This, from the very start of the EORP programme, was one of its fundamental aims - to monitor adherence to guidelines.

And later today EUROASPIRE investigators will present their latest findings on how we are managing cardiovascular risk factors in primary care. 'Adherence to guidelines is still poor,' says Chair of the EUROASPIRE Steering Committee Kornelia Kotseva from the National Heart and Lung Institute at Imperial College London. 'We clearly need to find better ways to manage and control risk factors.'

EUROASPIRE III, published in 2010, interviewed more than 4300 individuals considered at high risk of CVD but without any obvious coronary or atherosclerotic disease. The interviews, performed in 66 general practices in 12 countries, indicated that 16.9% smoked cigarettes, 43.5% had a BMI  $\geq 30$  kg/m<sup>2</sup>, 70.8% had blood pressure  $\geq 140/90$  mmHg ( $\geq 130/80$  in people with diabetes mellitus), 66.4% had total cholesterol  $\geq 5.0$  mmol/l ( $\geq 4.5$  mmol/l in people with diabetes) and 30.2% reported a history of diabetes. Risk factor control was



Kornelia Kotseva, Chair of the EUROASPIRE Steering Committee, described as 'disappointing' the implementation of prevention guidelines into everyday clinical practice.

described as 'very poor', and the lifestyle of those interviewed - representing a broad population of high risk individuals - as 'a major cause of concern with persistent smoking and high prevalence of both obesity and central obesity'.

It is the management of these lifestyle factors which the investigators now define as the 'new challenges' of this morning's Symposium. 'We need a more comprehensive and integrated approach to lifestyle management,' says Kotseva, 'because what we're doing now is clearly not working.'

The primary care arm of the latest EUROASPIRE survey was carried out in 2014-2015 in 14 countries (Bosnia & Herzegovina, Bulgaria, Croatia, Kazakhstan, Lithuania, Poland, Portugal, Romania, Russian Federation, Serbia, Spain, Sweden, Ukraine, UK), which included six countries from EUROASPIRE III. Again, the aim was to determine adherence to European guidelines and if preventive cardiology practice in

high-risk patients has improved over time.

In each participating general practice, consecutive patients under 80 years without a history of coronary or other atherosclerotic disease were identified by anti-hypertensive and/or lipid lowering and/or anti-diabetes treatments and invited for interview and examination. Primary outcomes are the proportions of patients achieving the lifestyle, blood pressure, lipid and diabetes targets as defined in the 2012 guidelines for CVD prevention. Results will be presented for the first time in this morning's Symposium, while the time trends (from EUROASPIRE III and IV), will be presented on Tuesday in the 'Registry III - Prevention' session.

Following their EUROASPIRE IV report in February on coronary patients in Europe the investigators called for 'a new approach to cardiovascular prevention...which integrates cardiac rehabilitation and secondary prevention into modern preventive cardiology programmes'. Such recommendations, it now seems, will be just as relevant in primary care as in cardiac rehabilitation. 'Despite the existence of clear, evidence-based guidelines,' says Kotseva, 'their implementation into everyday practice is still disappointing. We need to invest in prevention.'

How are we managing cardiovascular risk in the primary care environment? EUROASPIRE IV survey, 30 Aug 11:00-12.30 Bratislava - Village 2  
Clinical reality of primary prevention in people at high cardiovascular risk in Europe: a comparison of EUROASPIRE III and IV surveys in general practice, 1 Sep 11.15-11.30 Hyde Park - The Hub



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Course Director: Prof. Wouter Jukema



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Organised by the Sahlgrenska Academy, University of Gothenburg, Sweden  
Course Director: Prof. Karl Swedberg



EBAC ACCREDITED EDUCATIONAL PROGRAMME HELD DURING ESC CONGRESS 2015

## Targeting the High-Risk Patient:

Evolving Concepts on Optimally Modifying Risk by Lipid-Modulating Therapies

Chaired by **Christie Ballantyne | US**

Speakers: Alberico Catapano | Italy  
Børge Nordestgaard | Denmark  
Wouter Jukema | The Netherlands

Sunday 30<sup>th</sup> August  
12:45 – 13:45

Village: 2  
Room: Bratislava

Springer Healthcare

IME

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EBAC ACCREDITED EDUCATIONAL PROGRAMME HELD DURING ESC CONGRESS 2015

This "EBAC Accredited Educational Programme – Experts on the Spot" session follows on from the EBAC Accredited Educational Programme which took place on Saturday 29<sup>th</sup> August 2015, 15.30–17.00 and was granted 1 hour of external CME credit.

Participants attending both sessions will be entitled to receive 2 CME credits.

## Dual anti-platelet therapy in 2015 – reviewing the evidence

### EBAC ACCREDITED EDUCATIONAL PROGRAMME – EXPERTS ON THE SPOT

Sunday 30<sup>th</sup> August | 15.45–16.15 | Regents Park Hub

## EXPERTS

Héctor Bueno | Spain  
Laura Mauri | US

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# What advice would you give to young cardiologists?



Marius Ibe  
General cardiologist from Lagos,  
Nigeria

Be focused and identify what your specialty is, what you have a flair for. Because it's important that you enjoy what you do. Also remember that it's not just about treating people. You have to learn to be an educator and communicator and to know what is good for your society. Then you can help patients take responsibility for their health, help them follow healthy lifestyles. Here in London people walk a lot but back home people want to take transport all the time. So my job is to show them how they can change their lifestyle and improve their cardiovascular health.



Gebhard Lings, Internal medicine  
from Bregenz, Austria

What's really important is to find a good mentor and role model who can help you navigate the early stage of your career. While this often happens by chance, it will pay to do your research and talk to other people who have gone ahead of you to get a feel for the type of support offered by the department. You would need to take a long hard look at yourself and analyse your own strengths and weaknesses, and ensure that you have good empathy for patients. I also think that it's really important that people practice internal medicine first and specialise in cardiology afterwards, to ensure they have a good basic grounding.

## faces in the crowd



Ian Jeffrey  
General cardiologist from Canberra,  
Australia

The advice I'd give to a young cardiologist is try and balance your practice. What I mean is that they should attempt to achieve a balance of service provision to their patients with an academic association with a university. To make sure they have that involvement in research. Otherwise work becomes a bit hum-drum after 30 years or so. You will find you need this additional stimulation. It's pretty easy to have an academic association even if you are not in a university hospital. We're training so many medical students these days so most hospitals have links to a university.



Kathleen McGarry, General  
physician/cardiologist from Dublin,  
Ireland

I'd tell them that cardiology is a very satisfying career that offers infinite variety. There are very few other fields that provide such a range of options. You could specialise in invasive cardiology, echocardiography, preventive cardiology or even, for those who like research, go down the academic route. As you go through the training programme you're likely to find that one element stands out that interests you above all others. Young people also need to be assertive in lobbying training bodies to make training schemes more family friendly by offering more flexible part-time training and job sharing. This is particularly important bearing in mind that over 50% of the medical work force now are women.

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### EBAC ACCREDITED EDUCATIONAL PROGRAMME HELD DURING THE ESC CONGRESS 2015

Room Algiers  
Village 4

Sunday, August 30, 2015  
(18.30-20.00)

## Appraisal of therapies in angina management

### Chairpersons

**Kim M. Fox**  
**Thomas F. Lüscher**

### Faculty

**Paolo G. Camici**  
**P. Gabriel Steg**



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