

**SATURDAY 29 AUGUST**

## Record number of late-breaking studies

# Ready for the best in scientific discovery and clinical practice

ESC CONGRESS 2015 promises to be more interactive and inclusive than ever before with a record number of late-breaking science presentations. The list includes 28 clinical Hot Lines, 18 Clinical Trial Updates, 20 registry studies, 12 basic and translational science Hot Line studies and 4533 abstract studies.

'Here you will experience the best in scientific discovery, innovation, technology, education and clinical practice,' says Geneviève Derumeaux, Chair of the Congress Programme Committee, 'an unrivalled opportunity to get connected with an international community of over 27,000 professionals from 140 countries together under one roof.'

Audience participation is a feature of 2015, with 62 interactive sessions with the ESC Mobile App for questions. 'We want you to get actively involved,' says Derumeaux. The ESC is also extending greater interactions with delegates from outside Europe, allied health professionals, the young community and women. Indeed, as the first ever female ESC Congress Programme Committee chair, Derumeaux is delighted that nearly one quarter of speakers and session chairs this year are female.

Opportunities for cross fertilisation between disciplines are reflected in the attendance of Nobel Prize Laureate Elizabeth Blackburn, who will speak at a number of sessions, including today's Inaugural Session.

New this year are the 'My NCS@ESC' sessions in which seven national cardiac societies (UK, Russia, Israel, Germany, Turkey, Serbia and Norway) will explore how guidelines are interpreted in their countries using case studies and registries. 'European countries are very heterogeneous,' says Derumeaux. 'It's really important for all stakeholders to identify any gaps.'

'Science@Breakfast' sessions, another innovation this year, are intended as a wake-up call with breakfast and discussion. Scheduled for Sunday, Monday and Tuesday at 07:30, the sessions will address specific hot topics, including cell therapy, gene therapy and smartphone applications for cardiology practice.

This year the Hot Line programme has been limited in each session to four or five presentations, so allowing more time for questions. The format of the abstract sessions has also changed, with the 'Advances in Science' sessions having a keynote lecture

followed by three abstracts presented by young investigators. 'This places the studies in context,' says Derumeaux.

Inclusivity is being further promoted by the ESC TV programme, which throughout the meeting will broadcast live selected sessions and interview abstract authors, giving people from all over the world access to the meeting. In recognition that cardiology is an international community, Joint Sessions have been planned with 37 other organisations.

In addition to the ESC Congress Highlights session, the programme has been expanded to include two separate Highlight sessions on basic science and clinical practice guidelines. In all three Highlight sessions, which will be held on Wednesday, international experts provide an overview of the most important take-home messages. Finally, on Thursday 4 September everyone can log on to the 'Best of ESC Congress 2015' which will be broadcast at 20:00 CET.



Geneviève Derumeaux, Chair of this year's Congress Programme Committee, promises a congress more interactive and inclusive than ever before.

Download the 'ESC 2015' Mobile App



**TOTAL ATTENDANCE**

BARCELONA 2014	28 923
LONDON 2015	31 269

**Don't Miss**

- 09:00 - 15:00 **Hyde Park (The Hub)**  
General Cardiology for Physicians, Technicians and General Practitioners
- 09:00 - 15:00 **Victoria Park (The Hub)**  
General Cardiology for Nurses and Allied Professionals
- 11:00 - 12:30 & 13:30 - 15:00 **Agora**  
Meet in the Agora for Rapid-Fire Sessions
- 12:30 - 13:30 **Poster Area**  
Visit the Poster Area to discover new initiatives!
- 11:00 - 12:30 & 13:30 - 15:00 **Each Village**  
Discover the new sessions Advances in Science, combining state of the art lectures, best original research - held in each village.
- 17:00 - 18:30 **London - Main Auditorium**  
Inaugural Session

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Hot news and analysis live from the Congress

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[www.escardio.org/365](http://www.escardio.org/365)

ESC Congress 365



FREE ACCESS

## 'Environment and the heart' is the spotlight of ESC Congress 2015

This year's Spotlight of the Congress, 'Environment and the Heart', highlights links between air pollution and CVD. In 2012 the WHO estimated that one in eight global deaths could be attributed to air pollution, and the OECD estimates that by 2050 urban air pollution will be the top environmental cause of mortality worldwide. 'This is an area many cardiologists have to yet to fully appreciate,' says Geneviève Derumeaux.

The 26 spotlight sessions and 108 abstracts will feature a range

of topics, including environmental triggers of MI, everyday effects on patients with pacemakers and ICDs, cardiotoxicity of cancer drugs and genetic interactions with the environment.

Historically, the CVD effects of air pollution were first observed in 1952 following the notorious London smog. 'The image of London in the smoke has been replaced by the image of London as an Olympic city - which gives out a positive message of hope,' says Derumeaux.

# Welcome to London

By Susanna Price  
Royal Brompton Hospital  
London

A VERY WARM WELCOME to ESC Congress 2015 and to London, where the world's largest and most influential cardiovascular event will be held. This thriving metropolis, defined by its iconic landmarks and centuries of history, culture and heritage, is today a vibrant international centre of fashion, commerce and entertainment. Whether you're a seasoned visitor or it's your first trip, you will always find something new and exciting to do in London.

## Historic London

London is busy, modern and fast-paced but that doesn't detract from its history, a heritage that is evident in its buildings and reflected in its UNESCO World heritage sites - the Tower of London, Maritime Greenwich, the Palace of Westminster (Houses of Parliament, Big Ben, Westminster Abbey) and the Royal Botanic Gardens at Kew. Amazingly, many of London's top museums are free, including the British Museum for world culture, the Natural History Museum (your last chance to see the iconic giant Diplodocus dinosaur), the Museum of London, and the National Gallery (containing masterpieces from virtually every European school of art), to name but a few. If you have enthusiasm for Royalty, you'll be pleased that Buckingham Palace opens its State Rooms during the summer months, providing a fascinating view of how the monarchy lives in one of the most stunning working palaces in the world. If you are there at the right time, the Changing of the Guard is also free.

## Culture and entertainment

London offers an exciting and eclectic mix of culture and entertainment, reflecting the diversity of this evolving city. The well known Samuel Johnson quotation - 'When a man is tired of London, he is tired of life; for there is in London all that life can afford' - has never been truer. Between its 250 art galleries, 300 museums, 3800 pubs, 200 nightclubs and 150 theatres there is sure to be something here to please everyone.

A useful resource is the official visitor guide to London (<http://www.visitlondon.com>), and, because so much of what this capital city has to offer is free and because many of the main attractions are relatively close to each other, you will do well with a good



guidebook, a set of sturdy shoes and your Oyster card - and don't forget to travel by riverboat if time allows.

## Restaurants

When it comes to gastronomy, the reputation of London has deservedly changed; there are over 6000 restaurants representing 70 different world cuisines, and more than 60 Michelin starred restaurants to choose from. To sample some authentic exotic cuisine, head to Brick Lane in Shoreditch for excellent Indian food, or to Chinatown off Shaftesbury Avenue for Chinese food and markets. The famous Notting Hill Carnival comes to town during your stay (30-31 August) and, as London's biggest street party, always delivers great music, fantastic food and a fun vibe.

## Retail therapy

If shopping is your thing, whatever your style, you'll find it in London. From the high street stores of Oxford Street to the top-end brands of Bond Street and Knightsbridge, there's something for everyone. Consider a walk down one of the capital's famous markets for something a little different. Check out Borough market for street food and condiments, Covent Garden for boutiques, bars, restaurants and street theatre, as well as Old Spitalfields and Portobello Road markets simply for the experience.

But whatever you decide to do with your free time in London, please enjoy this fantastic city, and have a great Congress.

## London congress is opportunity for local cardiac society



By Dr Sarah Clarke  
President  
British Cardiovascular Society

“THIS IS THE FIRST TIME in 63 years that an ESC Congress has been to Britain, and it is a great honour for the British Cardiovascular Society to host ESC Congress 2015 in London. The Congress gives us the opportunity to increase public awareness of CVD and what can be done to prevent it.

The BCS will be staging several events for congress participants and the public, including a unique and exclusive cycling experience at the Lee Valley VeloPark, not far from the congress centre and where the Olympic track cycling events were

held in 2012. Lee Valley is an iconic location to test your cycling mettle or just experience what it's like to cycle in a velodrome! The package, which includes 60 minutes of 1:1 training on the track with a coach, individual fastest lap challenge and a customised jersey as a memento, is only available during the congress; places are limited and can be booked on the BCS website at [www.bcs.com/velodrome](http://www.bcs.com/velodrome).

Further exercise, and perhaps more sedate, can be taken along the Heart trail, a one hour walk along the Southbank, from the London Eye to City Hall. Participants will complete

interactive challenges, solve clues, learning about heart health with the opportunity to win prizes along the way.

The BCS is also hoping to improve the outcomes of out-of-hospital cardiac arrest through promotion of the GoodSAM App, a not-for-profit app which enables a community of responders to provide emergency life-saving care in trauma and cardiac arrests. The App notifies closest potential responders and nearest AEDs to the incident.

Overall, there are an estimated 7 million people living with CVD in the UK. The BCS as part of the ESC

endeavours to reduce this burden of disease through communication and education of the population and through training of cardiology professionals.

This ESC Congress gives us a unique platform to reinforce the importance of CVD prevention, through interactions with politicians, primary care, the general public and the media. With our various events for delegates and the public and promotion of the JBS3 (Joint Board of Specialties) risk calculator at the BCS Stand we would hope to have a springboard for further prevention campaigns.”

# Five new practice guidelines for 2015



By Pepe Zamorano,  
University Hospital Ramon y Cajal  
Madrid

ESC CONGRESS 2015 will see the launch of five new ESC Guidelines: on pulmonary hypertension (developed jointly with the European Respiratory

Society), ventricular arrhythmias and sudden cardiac death, acute coronary syndromes NSTEMI, pericardial diseases, and infective endocarditis.

The guidelines were developed by expert task forces under the governance of the ESC's Committee for Practice Guidelines (CPG) as well as a large pool of peer reviewers with more than 100 experts contributing to the development of each document. Since 2014 the CPG has also involved all its member national cardiac societies in the review processes, which has added high quality expertise from the four corners of Europe. These national experts are listed alongside the names of the CPG members in the guidelines' appendix.

- This year's **ESC/ERS Guidelines on Pulmonary Hypertension** chaired by Nazzareno Galié (ESC) and Marc Humbert (ERS) cover the main clinical characteristics and relevant issues in the diagnosis of PH as well as the latest treatment strategies and advice in decision-making.

- The **Ventricular Arrhythmias and Sudden Cardiac Death** Task Force led by Silvia Priori and Carina Blomström-Lundqvist will spark considerable interest with advice on populations at risk and the use of the different devices to prevent CV events.

- Marco Roffi and Carlo Patrono's team have written a 2015 version of the **Acute Coronary Syndromes-NSTEMI Guidelines** showing the new diagnostic algorithms for decision-making in

this field. These Guidelines will be followed in 2017 by a new version of the STEMI Guidelines, as well as an update on the universal definition of MI.

- The task force responsible for the **2015 Pericardial Diseases Guidelines**, long due for a new version, was led by Yehuda Adler and Philippe Charron. Their team concentrated on diagnostic and treatment strategies for patients with this condition.

- Our new **Guidelines on Infective Endocarditis**, chaired by Gilbert Habib and Patrizio Lancellotti, have based some of their 2015 recommendations on prophylaxis. They also review recent publications on the use of new antibiotics.

As ever, the latest ESC guidelines summarise all available information and will provide an invaluable resource for the practising healthcare professional. Among their derivative products are the free ESC Pocket Guidelines App, which provides more than 100 interactive tools to help apply the guidelines in daily practice, and Essential Messages and Summary Cards, which summarise the main points and make them available to students, teachers and non-cardiologists. This year's guidelines will also enhance what to do and not do in the clinical setting of their specific pathology. Look for this table in the last section of



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each guidelines document.

You can find out more about ESC Guidelines activities at the ESC Plaza, where, if you have not yet downloaded the ESC Pocket Guidelines App, you can be shown how. You can also pick up this year's newly printed Pocket Guidelines - free for ESC members while stocks last. We will answer any questions you may have on our world renowned ESC Clinical Practice Guidelines.

**Do not miss the overview** session of all 2015 Guidelines tomorrow morning at 8:30 (London). There will also be sessions dedicated to each of the new guidelines:

- Sunday 14:00 (London) for NSTEMI-ACS,
- Monday 8:30 (London) for VA & SCD,
- Monday 14:00 (London) for PH,
- Tuesday 8:30 (London) for IE,
- Tuesday 14:00 (London) for Pericardial Disease.

Your chance to meet the Task Forces and ask them the questions you may never otherwise have a chance to ask is on Sunday at 15:40, Monday at 15:40 and Tuesday at 15:40, all in Hyde Park.

New this year on Wednesday 2 Sept at 09:00 (London) is the ESC Clinical Practice Guidelines 2015 Highlights.

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

Non-vitamin K antagonist oral  
anticoagulants in atrial fibrillation  
– How to apply evidence from randomized clinical  
trials in daily practice

## Satellite Symposium – Experts on the Spot

Monday, 31<sup>st</sup> August 2015  
10:15-10:45  
Room: Regents Park - The Hub

- 10:15 **WELCOME AND INTRODUCTION**  
Professor Raffaele De Caterina, Italy
- 10:20 **WHICH PATIENT SUBGROUPS BENEFIT MOST FROM TREATMENT WITH NON-VITAMIN K ANTAGONIST ORAL ANTICOAGULANTS?**  
Professor Raffaele De Caterina, Italy
- 10:25 **WHAT DO WE NEED TO TAKE INTO ACCOUNT WHEN SELECTING AMONG THE VARIOUS NON-VITAMIN K ANTAGONIST ORAL ANTICOAGULANTS?**  
Professor Andreas Goette, Germany
- 10:30 **FITTING THE NON-VITAMIN K ANTAGONIST ORAL ANTICOAGULANT TO THE PATIENT**  
Dr Christian Ruff, USA
- 10:35 **PANEL DISCUSSION**  
All
- 10:40 **CLOSING REMARKS**  
Professor Raffaele De Caterina, Italy

Upcoming events at  
**ESC CONGRESS 2015**

Non-promotional medical education symposia organised and funded by Daiichi Sankyo



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# The 'complicated' story of dietary fats

## In tomorrow's Geoffrey Rose lecture on population science

FEW EPIDEMIOLOGISTS could be better suited to deliver tomorrow's Geoffrey Rose Lecture on Population Sciences than Kay-Tee Khaw, Professor of Clinical Gerontology at the University of Cambridge. Khaw was a medical student of Geoffrey Rose back in the 1980s at St Mary's Hospital in London, and it was here, she says, that her defining principles in preventive cardiology were established. 'In fact,' she admits, 'it was because of Geoffrey that I went in to epidemiology in the first place. He was the basis of my career.'

As a prelude to today's eponymous lecture on 'old and new challenges' in preventive cardiology, Khaw cites Rose's much repeated claim that the real challenges in cardiovascular medicine today lie not with the treatment of acute conditions but with the wider environments which encourage their development.

'But don't forget,' Khaw reminds us, 'that Rose's population philosophies began with clinical medicine, asking first, how do I treat this patient, and then, how can we prevent this happening.' It was from an answer to the second question that Rose developed his view that, while high risk individuals must be treated, the real gains in CVD prevention would be derived from changes in whole populations. The prevalence of those at high risk would thus depend on where the whole population distribution of risk lies.

Even today, says Khaw, in the age of genomics, exactly the same philosophy applies. The challenge is still to identify what people can do collectively to change their risk profiles, explaining that 'a very small change can have a massive effect on prevalence in populations'. Today, for example, 93 susceptibility genes and gene variants have been identified for coronary heart disease. But even if genomic analysis can identify those people at very high genetic risk of CHD, their absolute numbers are so small that individual treatment will have little impact on overall population risk, such is the distribution of genetic risk throughout populations. Indeed, she adds, the distribution of genetic risk is no different from that of hypertension or high cholesterol.

It's for these reasons, she explains, that lifestyle changes rather than individual high-risk strategies have guided



Professor Kay-Tee Khaw, a former student of Geoffrey Rose, will present tomorrow's eponymous lecture, which will follow the Rose theme that real gains in CVD prevention are derived from changes in whole populations.

prevention policies over the past two decades. Such an approach is exemplified in patterns of stroke for which incidence and mortality rates were already declining well before the widespread introduction of antihypertensive medications.

Professor Khaw's research in population science has been largely concentrated on a prospective study of more than 25,000 men and women in Norfolk - a region of eastern England - a part of the European Prospective Investigation into Cancer (EPIC). Participants originally completed a health and lifestyle questionnaire with information on smoking, alcohol, physical activity, social class, and education. BMI and blood pressure were measured and blood samples were assayed for vitamin C and lipids (and other biological markers). Data from the latter prompted one of Khaw's most widely cited reports (from 2012), which showed that plasma concentrations of saturated fatty acids were positively associated with CHD and omega-6 polyunsaturated fats inversely related. 'These findings,' she says, 'were consistent with evidence of a protective role of omega-6

fats substituting for saturated fats for CHD prevention.'

However, in terms of lifestyle change, she still describes the dietary fat story as 'complicated', noting conflicting study results from both observational and randomised studies. For example, the \$260 million Women's Health Initiative trial (in postmenopausal women) found no evidence that those allocated to a low fat diet had no lesser risk of CHD than controls. However, while such studies might suggest no beneficial cardiovascular effect from lowering total fat intake, Khaw's EPIC-Norfolk study suggested that the balance between high saturated and low polyunsaturated fat is important. 'When you reduce saturated fat, it's critical what you replace it with,' she says, suggesting that a profile of high saturated and low polyunsaturated fat would indeed increase CHD risk. Such an explanation, she adds, might also explain the long seen observations (and apparent paradoxes) of the Mediterranean diet - that, while consumption of unsaturated fats is high, this is also a high fat diet. So different types of fat have differing biological and metabolic effects.

The study thus proposed that dietary recommendations should focus on patterns of food intake rather than individual nutrients, and the balance between different nutrients in foods. 'Early guidelines to prevent CHD recommended reductions in saturated fat but little consistency as to what might be substituted: other fats, protein, or carbohydrate,' the study concluded. 'Our results add to the accumulating evidence that substitution of saturated fat by polyunsaturated fat may have more CHD benefits.'

Such 'controversial' conclusions on dietary guidance as public health policy bring us back to Geoffrey Rose, Professor Khaw's mentor, and the population strategy of CVD prevention by the control of incidence rates. 'The prior concern,' said Rose, when comparing the high risk and population strategies, 'should always be to discover and control the causes of incidence.'

Optimising cardiovascular health: old and new challenges,  
30 Aug 17:20-18:00 Regents Park - The Hub

## By young cardiologists for young cardiologists

THIS YEAR'S ESC Cardiologists of Tomorrow (CoT) track promises to be bigger and more engaging than ever before with a packed programme offering more sessions, clinical cases and opportunities for interaction.

Now in its fifth year, the CoT track has expanded to 18 sessions over four days, with more than 4000 expected. The programme, devised by young cardiologists for young cardiologists, provides up-to-date information on key areas of CVD. 'Our idea is to give young cardiologists the opportunities to get involved and become active participants,' explains Ricardo Fontes-Carvalho from the Gaia Hospital Centre, Portugal, and member of the CoT nucleus which developed the programme.

The track, he stresses, is not exclusively intended for young cardiologists, with everyone welcome to attend. 'Cardiology is team work, and it's important for young people to work together with senior clinicians. It's only through these joint efforts that we'll improve patient care,' he says.

Highlights of the track include the ever popular Clinical Case Learning sessions where cases are presented by young cardiologists in a highly interactive forum. This year, from nearly 400 submitted cases, 39 have been selected for presentation, with topics on catheter ablation (29 Aug 11:00-12:30), PCI procedural complications (30 Aug 08:30-

10:00), acute cardiac care (31 Aug 16:30-18:00), invasive electrophysiological studies (1 Sep 11:00-12:30), PCI/stents, devices and technique (1 Sep 14:00-15:30), and valvular imaging (1 Sep 16:30-18:00).

In a special session four finalists from those selected will present the most challenging clinical cases (31 Aug 14:00-15:30) with the overall winner announced at the Awards Ceremony (31 Aug at 18:00, The Hub).

The Young Investigator Awards (with sessions on coronary pathophysiology and microcirculation, thrombosis, population science, ageing and senescence, basic science and clinical science) offer additional opportunities for young scientists to win prizes. A highlight here is that Nobel prize winner Elizabeth Blackburn will chair the session on Ageing and Senescence (30 Aug 12:40-13:50, Regents Park - The Hub).

Exploring the future of cardiology represents an important focus for the CoT track, with sessions including the most game-changing innovations of the year (29 Aug 09:00-10:30), and smartphone apps to improve clinical practice (31 Aug 07:30-08:15). There are also plenty of sessions providing practical tips and tricks, including 'How to wake up your professional skills' (30 Aug 07:30-08:15); 'Finding a job' (31 Aug 15:35-16:20), and the interpretation of trials and statistics (1 Sep 08:30-10:00).



Young cardiologists from the CoT nucleus taking part in this year's CoT track.

The CoT track is just one of the activities of the ESC Cardiologists of Tomorrow initiative which was launched in 2010 to support cardiologists and trainees under 36 years of age. It is now supported by a network of 32 national societies representing more than 5000 members, and provides 'young blood' for the ESC. CoT has good links to ESC committees and to specific subspecialty young groups, including the European Association of Cardiovascular Imaging Club 35, the Young Electrophysiologists, Young Interventionalists, Young Acute Cardiovascular Care Association, Heart Failure Specialists of Tomorrow and Scientists of Tomorrow.

CoT members have participated in

discussions leading to the new ESC Core Curriculum for General Cardiology which defines the knowledge and skills necessary for training in cardiology. They are also actively involved in the development of the ESC eLearning Platform.

Running in parallel is the Scientists of Tomorrow track, now in its second year, with nine sessions over four days. Highlights include cell therapy in cardiac disease (30 Aug 07:30-8:15), mechanisms of action of emerging therapeutics (30 Aug 14:00-15:30), and gut microbiota as new players in CV medicine (1 Sep 16:30-18:00). All sessions are held in Regents Park - The Hub.

# Low-density lipoprotein cholesterol: How low do we go, and how do we do it?



By Heinz Drexel  
Academic Teaching  
Hospital Feldkirch  
Austria

THE LDL HYPOTHESIS refers to the concept that excess low density lipoprotein (LDL) cholesterol causes arteriosclerotic cardiovascular disease. This hypothesis is based on animal and epidemiological data, and is also supported by monogenic disorders like familial hypercholesterolemia. As with every causal factor, the last step to prove causality is the reversal of disease incidence progression by the reversal of the risk factor.

There is strong evidence that, with progressive LDL-cholesterol lowering, a progressive reduction in atherosclerotic cardiovascular events can be achieved. Seminal knowledge has been provided by the Cholesterol Treatment Trialists Collaborators (CTTC) who first reported in 2005 that a reduction by 1 mmol/l of LDL-cholesterol exerts a consistent 23% reduction in risk for major coronary events over five years. This first meta-analysis was followed by one on diabetes, one on intensive statin treatment and one on primary prevention and women, which all corroborated the LDL hypothesis.

Because all the studies included in the CTTC meta-analysis were statin trials, an alternative hypothesis, the 'statin hypothesis', was promoted, in which a speculation of non-LDL-effects, the so called pleiotropic effects as a cause for endpoint reduction, was raised. Based on the uncertainty of the cause-effect relationship, the joint AHA/ACC guidelines recommended use of statins and not to try to achieve target levels. This appeared

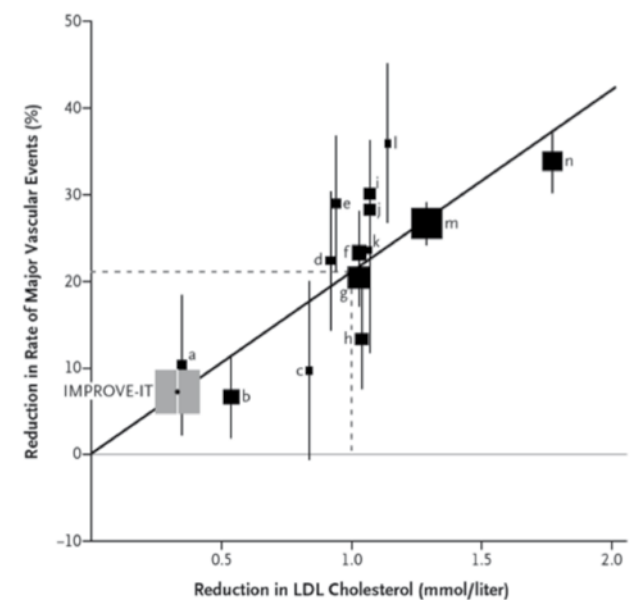
appropriate because no other trial evidence existed for non-statin lipid lowering drugs being effective to lower the incidence of endpoints.

Earlier this year important new evidence in favour of the LDL-hypothesis was obtained, which will be described at an Advances in Science symposium later this morning. In the IMPROVE-IT trial the non-statin substance ezetimibe, given in addition to simvastatin and with simvastatin plus placebo as the comparator, showed improved benefit when lowering the LDL-cholesterol to 1.4 mmol/l versus 1.8 mmol/l in the comparator group. Importantly, the amount of event rate reduction with the additional ezetimibe was exactly the same as predicted in the CTTC statin meta-analysis (see Figure).

Hence, this study became a strong argument in favour of the LDL-hypothesis: i) even lower is even better and ii) a non-statin drug exerts the same magnitude of effect as could be expected from an equally effective statin. This further lowering of LDL-cholesterol was without additional adverse events. All these data point to the fact that the scientific community has probably not overstated the LDL hypothesis - that 'the lower, the better'.

This is an important basis for newer additional ways of reducing LDL-cholesterol by the monoclonal antibodies against PCSK9. These molecules can reduce LDL-cholesterol to even lower levels than those achieved by simvastatin plus ezetimibe.

Today's session on 'Low-density lipoprotein cholesterol: how low and how to lower?' will focus on the target and on the tools to reach the target. In this context it should not be forgotten that many studies worldwide, like the European/Canadian DYSIS-study, have shown that adherence to statins is much lower than desired. About 7% of patients discontinue statins per year, giving many clinicians the opinion that, besides asking 'how low and



IMPROVE-IT trial data – Change in LDL-cholesterol versus clinical benefit (from Cannon CP et al. NEJM 2015; 372: 2387-2397).

how to lower', the main question remains 'how to lower the discontinuation rate'.

This is encouraging for the ESC and its guidelines on lipid lowering, which include targets for LDL-cholesterol – in contrast to American guidelines, which target the tool but not the level achieved. Probably the 'ESC way' to treatment targets is the best of the possible approaches.

Low-density lipoprotein cholesterol: how low and how to lower? 29 Aug 11:00-12:30 San Marino - Village 2

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UK/DBG-151107d Date of preparation: July 2015

# Is obesity always bad for chronic disease?

## Today's debate on the 'unexpected' paradox of obesity

**No,** says Wolfram Doenher  
Charité - Universitätsmedizin, Berlin, Germany



Obesity, clearly, is an ever growing health burden to our society. The world report on burdens of disease ranks obesity among the top ten in a list of 67 risk factors - even moving

from 10th to 6th between 1990 and 2010. Consequently, weight reduction is unanimously advocated by healthcare providers. In fact, there can rarely be a piece of healthcare advice that has not been more rigorously implanted in the public consciousness than weight loss as a benefit for all.

However, it needs to be made clear that such unqualified recommendation (which often enough is pursued as plain starvation) may not always be in the best interest. For example, no-one would recommend a cancer patient to go on a weight-reducing diet. More unexpectedly, and even in many cardiovascular conditions, a significant survival advantage can be seen with overweight - and, in turn, weight loss predicts an increased mortality risk, regardless of whether this happens intentionally or not.

In fact, the association between body weight and survival follows a U-shaped curve, with an optimum body weight for healthy and middle-aged populations somewhere around a BMI of 25 kg/m<sup>2</sup>, with the risk steadily increasing with both higher and lower body weights. While this point already marks the boundary between normal weight and overweight according to the WHO categories, a significant increase in mortality is observed with lower body weight throughout the 'normal BMI' range (18.5-25 kg/m<sup>2</sup>).

It thus may easily be understood that the nadir of this body weight-mortality association and the slope of the U-shaped curve may be different in different health conditions. Two specific conditions are highly important here, as we see them regularly in our clinics and hospitals: patients with established cardiovascular diseases and subjects who are old. In such cases, the optimum body weight with regard to mortality is shifted significantly

towards the overweight and even mildly obese range.

This is, of course, counterintuitive to the wisdom of obesity as risk factor in healthy subjects (ie, in primary prevention). Accordingly, an 'obesity paradox' has been termed to reflect a finding which was a) unexpected and b) difficult to explain. Over the last 15 years, however, substantial evidence has accumulated to confirm a survival advantage with higher body weight in several CV diseases. In fact, in almost every cardiovascular disease or condition which was examined for this association, a higher body weight was found to predict better outcome. Indeed, in patients with heart

failure, the survival benefit of higher body weight was even implemented in validated risk score calculators.

So the question we need to ask ourselves should be: If the inverse association of higher body weight with improved survival has been confirmed in a wide range of CV diseases, and in numerous cohorts with various disease severities and co-morbidities, and assessed by different methods, why would this still be considered an unexpected and contradictory - indeed a paradoxical - finding?

It should be the time to consider moving from a cardiovascular obesity 'paradox' to an obesity 'paradigm' to appreciate this clinical observation. The available evidence strongly

suggests that overweight and obesity are not always bad, and may in fact carry some protective signal in many cardiovascular conditions. It will be the challenge for us to convince both professional and public opinion to adopt weight management recommendations that clearly distinguish between healthy subjects (to avoid overweight and obesity) and patients with established disease (where being overweight may carry some benefit and weight loss indicates disease progression and worse prognosis).

In any case, as a physician and scientist making decisions based on evidence and reasoning, one needs to appreciate that 'obesity is not always bad'.

**YES,** says Dan Gaita  
Institutul de Boli Cardiovasculare, Timisoara, Romania



We are in the midst of an obesity epidemic which has an impact on hundreds of millions of people around the world. Obesity has mental, physical and social implications because of its link to a vast multitude of

pathological consequences. And importantly, obesity bears a significant cost for individuals, employers, healthcare systems and nationally economies.

Obesity and overweight are chronic conditions resulting from positive energy balance over time - with causes related to a combination of factors which vary from one person to another, including individual behaviours, environmental factors and genetics, which all contribute to the complexity of this disorder.

However, from an evolutionary point of view, maintaining modest excess body weight has served as an adaptive mechanism, protecting individuals by storing excess energy into fat cells during periods of food abundance.

Importantly, the negative effects of excess weight on mortality and morbidity have been recognised for more than 2000 years, although not with the name of 'atherosclerosis'. Indeed, it was Hippocrates who noted that

'sudden death is more common in those who are naturally fat than lean'!

There remains debate whether increased BMI, an estimative indicator calculated using the weight and height of an individual, is a reliable indicator of increased vascular risk. Thus, while trying to define 'normal' weight, we should also consider factors such as the dichotomy of young versus old and healthy versus ill when examining obesity as a risk factor for cardiovascular disease (eg, metabolism is slowing down about 2-5% per decade after age 40).

One could reasonably argue about the most predictive metabolic markers of increasing cardiovascular risk in the obese and overweight. There are data related to traditional risk factors such as waist circumference, percentage body fat, cholesterol and triglyceride levels, elevated blood pressure, insulin resistance, or others

***'The lowest level of risk is seen in those with normal bodyweight associated with a high level of fitness'***

such as inflammatory markers. Ongoing investigation is focused on identifying predictive measures in order to better recognise risk related to obesity.

One much debated question is who is better off from a risk point of view - one who is fit and fat or a lean couch potato? There is evidence that unfit men in the BMI range of less than 25 kg/m<sup>2</sup> have a significantly higher risk than men with a high level of cardiovascular fitness - while on the other hand, overweight men with a high level of fitness have a risk of death which is not very different from that of fit men with normal body fat. It is critical to recognise, however, that the lowest cardiovascular risk is seen in those with normal bodyweight associated with a high level of fitness.

There is some evidence to suggest that individuals with normal blood levels of inflammatory markers are more likely to have favourable 'metabolic health' whether they are lean or obese - which means that up to 35% of obese individuals may be metabolically healthy despite their size, although the true prevalence of 'healthy obesity' is difficult to assess due to a lack of clarity in defining metabolic health.

Lastly, there is a central question to be raised. Are there truly healthy obese individuals or are 'metabolically healthy obese' persons on a temporary 'normal' stage or on an imminent path towards disease, including the major threats to modern humanity, diabetes and atherosclerosis.

As a physician one must continue to support the position that 'obesity is always bad'.

Is obesity always bad? 29 Aug 13.30-15.00 Moscow - Village 2

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# Beware those environmental waves

## Cell phones, electronic security systems, music players may affect cardiac devices

The role of environmental electromagnetic interference on pacemakers, ICDs and CRT devices will be under the environmental spotlight at a Symposium this afternoon when a session jointly organised with the Asian Pacific Society of Cardiology will consider the impact of mobile phones, security devices, portable headphones and other household devices.

'The reality of modern living is that we're surrounded by multiple devices which communicate with each other wirelessly,' explains Mohammad Amin, from the Cardiac Centre, Bahrain. 'Problems can arise when this technology coexists in the same environment as heart devices. Complete avoidance is impractical, so it's important for patients to get advice before having devices implanted. We reassure them that the environment is safe so long as they stick to a few simple rules and remain vigilant for risks.'

Use of pacemakers and ICDs in Europe is still rising. Data from EUCOMED, the organisation representing the European medical device industry, show the number of pacemakers per million inhabitants in Europe rising from 738 in 2005 to 923 in 2012, while the number of defibrillators rose from 70 per million in 2005 to 167 in 2012. Such increases have coincided with similar advances in wireless technologies and sharp rises in background levels of electromagnetic fields.

Because cardiac electronic devices are able to sense electrical activity and use electromagnetic waves for communication, they are susceptible to electromagnetic interference (EMI) from surrounding radiation. While modern cardiac devices have built-in features to protect them from interference, including



hermetic shielding and filters designed to reject EMI, interference can still take place.

If devices do detect EMIs, explains Haran Burri, from University Hospital, Geneva, this can result in either inhibition of pacing (ie, no pacing, even in a patient without his own rhythm, which is life threatening), asynchronous pacing (which does not take into account the patient's intrinsic beats) or inappropriate ICD therapy (shocks because the device believes there is an arrhythmia).

Device manufacturers and regulatory authorities currently recommend safety distances of 15 cm between pacemakers or ICDs and mobile phones. Such recommendations are based on studies from over a decade ago, which described EMI between cell phones and pacemakers before the advent of effective filters. 'The device companies continue to issue these recommendations in order to stay conservative, despite voluntary testing of pacemakers and ICDs to ensure compatibility with cell phones without any restrictions of distance,' says Burri.

In a study presented earlier this year 308 ICD patients were exposed to electromagnetic fields induced by three common smartphones placed directly above the device. Results showed that one patient was affected by EMI when the patient's MRI-compatible ICD mis-detected electromagnetic waves from two of the smartphones.

'The study needs further investigation and should not lead to hasty conclusions,' says Burri. 'The overwhelming evidence does not show any interference whatsoever between modern pacemakers, ICDs and cell phones.' Burri found no evidence

of cell phone interference in his own study in 63 ICD patients, and says: 'Recommendations regarding cell phone use should be evidence based, pragmatic, and allow device patients to live as normally as possible without unnecessary stress.'

While inappropriate ICD shocks and pacemaker inhibition have been associated with prolonged (several minutes) exposure to electromagnetic security systems (such as antishoplifting gates and metal detectors), such problems are rarely seen in exposures lasting 10 to 15 seconds 'The general advice is for patients to walk briskly across electronic surveillance devices,' says Chi-KeongChing, from National Heart Centre, Singapore. If scanning with a hand-held metal detector is necessary, he adds, patients should warn security staff and ask them not to hold the metal detector near the device any longer than necessary, or ask for an alternative form of personal search.

While portable digital music devices (such as iPods) and headsets (which contain magnets) can interfere with cardiac devices, risks are low. 'There aren't any actual case reports showing adverse events,' says Amin. The general recommendations, he adds, are to keep media players and headsets at least 15 cm from the device and to avoid draping headphones around their neck over the device.

Portable media players also must be turned off when patients go to the clinic for regular device follow-up appointments. 'The issue here is that portable media players emit electromagnetic waves in the same range as used for device interrogation. While this doesn't affect pacemaker function, it can affect interrogation readings,' cautions Amin.

Environmental effects on patients with pacemakers and ICD, 29 Aug 13:30—15:00 Algiers - Village 4



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Organised by the Sahlgrenska Academy, University of Gothenburg, Sweden

Course Director: Prof. Karl Swedberg



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

Saturday 29<sup>th</sup> August | 15.30–17.00 | Ankara – Village 7

### CHAIRPERSONS

Héctor Bueno | Spain  
P. Gabriel Steg | France

### FACULTY

Robert F. Storey | United Kingdom  
Stefan James | Sweden  
Laura Mauri | US

### OBJECTIVES

To highlight pharmacological differences between P2Y<sub>12</sub> inhibitors, and consider how these may relate to differences in clinical benefit.

To review the evidence for the optimal time of initiation of oral anti-platelet therapy after acute coronary syndromes.

To consider the implications for clinical practice of recent evidence on the optimal duration of oral anti-platelet therapy after acute coronary syndromes.

To discuss the future of oral anti-platelet therapy.

Join Prof Bueno and Dr Mauri for further discussion and debate at Regents Park Hub

EBAC ACCREDITED EDUCATIONAL PROGRAMME – EXPERTS ON THE SPOT

Sunday 30<sup>th</sup> August 15.45–16.15

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Supported by an unrestricted educational grant from AstraZeneca

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# How important is the environment in CVD?



Akvile Smigelskaite, Cardiology Resident from Vilnius, Lithuania

Society needs to promote the infrastructure for better environments to help the entire population incorporate exercise into their everyday lives. One way would be to provide free bikes to encourage people not to use their cars and to introduce safe cycle lanes and walkways in cities that allow people to get from A to B on foot. Such strategies would have the double benefit of reducing pollution and increasing the amount of exercise people take. Local authorities should ensure that parks are secure places where people feel comfortable to exercise. It is also important to provide peaceful environments that help people to unwind from the stress of modern life, since this is also a major cause of cardiovascular disease.



Austine Obasohan, Clinical Cardiologist from Benin City, Nigeria

The emphasis isn't so much on atmospheric pollution. It's on others areas of the environment which affect health and socio-economic factors. These include poor diet and hygiene as well as infections with an impact on the heart such as rheumatic fever, a problem that leads to valve disease. Poverty leads to poor diet although it is also a disease of affluence. Even in the developed world ischaemic disease is common and there's a general tendency to copy diet in the western world. I mean such as food high in fat as well as salt which leads to hypertension.

## faces in the crowd



Edward Vogl, Clinical Cardiologist from Sidney, Australia

Although the environment is emerging as an important issue in the development of cardiovascular disease, it still isn't something that a lot of people know much about. The problem is that you can't easily set up an interventional study and expect results two years later, making it hard to keep the issue in the limelight. Another difficulty is that the environment isn't under the control of individual patients, and short of moving to a different area there isn't much they can do to influence it. It is a societal issue that needs to be addressed by politicians, multinational companies and big business rather than members of the public, although they can play an important role in lobbying for change.



Mark Westwood, Interventional cardiologist and cardiac imaging director from London

Here in East London we have some of the highest social deprivation in the country. So environment is a significant factor in cardiovascular disease in boroughs such as Newham and Hackney. It's about the impact of socio-economic factors such as diet and lifestyle. The smoking rates in this part of the city are much higher than in other parts of the UK. I work at Barts Health and we work hard with local communities to educate them about smoking cessation. Our goal is to address the whole picture - prevention and accessing healthcare services in a timely manner.

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

Room Algiers  
Village 4

Saturday, August 29, 2015  
(15.30-16.30)

## Restoring hope to heart failure patients

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