

# Congress News

Tuesday 28 August 2018

## Top picks

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COMMANDER HF results unveiled



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## Tafamidis improves outcome in transthyretin amyloid cardiomyopathy



**Prof. Claudio Rapezzi**

**In a Hot Line presentation yesterday, Professor Claudio Rapezzi (University of Bologna, Bologna, Italy) reported exciting data from the phase III ATTR-ACT trial in 441 patients with transthyretin amyloid cardiomyopathy (ATTR-CM), demonstrating that tafamidis, a selective transthyretin stabiliser, is able to improve survival and quality of life in this patient population.<sup>1</sup>**

Prof. Rapezzi notes that, "ATTR-CM can be inherited as an autosomal dominant trait caused by mutation in the *TTR* gene (ATTRm), or by deposition of wild-type transthyretin protein (ATTRwt), previously called senile systemic amyloidosis. Awareness of the disease among cardiologists is low, and ATTR-CM is therefore underdiagnosed." Although prevalence is uncertain, studies using a

non-biopsy approach to diagnosis (total body scintigraphy with bone tracers)<sup>2</sup> demonstrate a prevalence of at least 13% in hospitalised heart failure patients with preserved ejection fraction,<sup>3</sup> 16% in patients undergoing transcatheter aortic valve replacement for severe aortic stenosis<sup>4</sup> and 5% in patients with presumed hypertrophic cardiomyopathy.<sup>5</sup> According to Prof. Rapezzi, "Treatments have been limited to supportive care, with no guideline-based recommended treatment, and the median survival of untreated patients is only around 3.5 years after diagnosis.<sup>6,7"</sup>

**Current treatment options for ATTR-CM are extremely limited; none are able to prolong survival or improve quality of life.**

Tafamidis, a novel non-NSAID benzoxazole derivative, binds to the transthyretin thyroxine binding sites with high affinity and selectivity inhibits dissociation of tetramers into monomers, the rate-limiting step in the formation of TTR amyloid. "Although tafamidis was the first pharmacotherapy approved to slow the progression of peripheral neurologic impairment in

transthyretin amyloid polyneuropathy," explains Prof. Rapezzi, "its role in ATTR-CM has not yet been explored in any randomised clinical trial and ATTR-CM remains a treatment orphan disease."

The ATTR-ACT trial investigated the efficacy and safety of tafamidis (80 mg or 20mg once daily for 30 months; n=264) vs placebo (n=177) in patients with hereditary and wild-type ATTR-CM who had a typical echocardiogram, transthyretin amyloid in any biopsy tissue, a plasma NT-proBNP  $\geq 600$  pg/mL and a 6-minute walk test of  $>100$  m. The primary efficacy endpoint was a hierarchical combination of all-cause

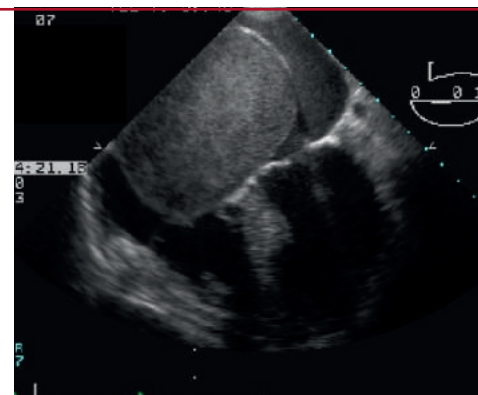
Continued on page 2...

### What's Your Diagnosis?

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

Transesophageal echocardiography, 4 chamber view in a 80-year old man with heart failure and first degree atrioventricular block.

Bogdan A. Popescu, Carmen Gînghină, University of Medicine and Pharmacy "Carol Davila" - Eurocolab, Institute of Cardiovascular Diseases "Prof. Dr. C. C. Iliescu", Bucharest, Romania.



Answer on page 2.

...continued from page 1

mortality and frequency of cardiovascular-related hospitalisations. Secondary endpoints included change from baseline to month 30 in the 6-minute walk test and the Kansas City Cardiomyopathy Questionnaire overall score.

**“Tafamidis is the first treatment demonstrated to improve survival and quality of life in patients with ATTR-CM.”**

“Compared with placebo, tafamidis demonstrated a significant reduction in all-cause mortality (29.5% vs 42.9%; hazard ratio [HR] 0.70; 95% confidence intervals [CI] 0.51-0.96; p=0.0259) and cardiovascular-related hospitalisations (0.48 vs 0.70; relative risk reduction 0.68; 95% CI 0.56-0.81; p<0.0001), as well as an improvement in quality of life,” says Prof. Rapezzi. “Tafamidis also significantly reduced the decline in 6-minute walk test distance compared with placebo and had a good safety profile. The

extent of the tafamidis benefit was independent of aetiology (wild-type vs hereditary) and drug dose (80 vs 20 mg),” he continues. Patients in New York Heart Association Class III experienced a higher hospitalisation rate despite therapy. “This observation,” says Prof. Rapezzi, “together with the fact that the mortality benefit was seen after 18 months of treatment, highlights the importance of treating patients as soon as possible!”

Prof. Rapezzi stresses, “It is important to note that the overall benefit observed with tafamidis was not only statistically, but also clinically, meaningful. This treatment could make a real difference to the lives of individuals diagnosed with hereditary or wild-type ATTR-CM.”

1. Maurer MS, et al. N Engl J Med 2018;August 27;doi:10.1056/NEJMoa1805689.
2. Castano A, et al. JAMA Cardiol 2016;1:880-889.
3. Gonzalez-Lopez E, et al. Eur Heart J 2015;36:2585-2594.
4. Castano A, et al. Eur Heart J 2017;38:2879-2887.
5. Damy T, et al. Eur Heart J 2016;37:1826-1834.
6. Grogan M, et al. J Am Coll Cardiol 2016;68:1014-1020.
7. Gillmore JD, et al. Eur Heart J 2018;39:2799-2806.

## Getting closer to the community: ESC Professional Membership

**Past-President of the ESC, Professor Fausto Pinto (University of Lisbon, Lisbon, Portugal), was instrumental in the launch of the ESC Professional Membership scheme at ESC Congress 2016 as part of a 5-year strategic plan devised to ensure that the ESC continues to meet the challenges of improving cardiovascular health.**

“We created the membership scheme to expand the possibility of members to engage with the ESC and its different activities,” explains Prof. Pinto. “Membership at the level of the Associations was already in place and we wanted to combine these with a more global membership for ESC as well as supporting membership of the 56 National Cardiac Societies,” he says. Prof. Pinto also explains, “It was important to expand the reach of ESC, particularly to include all cardiovascular health care professionals from different subspecialties and engage new international members from

across the world. Additionally, we wanted to provide improved access to the many resources that the Society offers.” ESC membership comes with an array of resources and educational tools including free online access to the ESC textbook and the European Heart Journal or Cardiovascular Research, ESC Pocket Guidelines and e-learning activities. Another important aim of the Professional Membership scheme was to expand connections. “We wanted to stimulate networking and create more opportunities to advance knowledge and help colleagues around the world interact with the different communities, to work together on new initiatives and to become involved in more of the activities of the ESC.”

**“Since its implementation in Rome in 2016, the ESC Professional Membership scheme has been very successful in engaging many members from around the world.”**

## Hugo A. Katus: Pioneer of the cardiac-specific troponin T immunoassay



**Prof. Hugo A. Katus**

**The cardiac-specific troponin T (c-TnT) immunoassay revolutionised the diagnosis and management of myocardial injury. Professor Hugo Katus (Heidelberg University Hospital, Heidelberg, Germany), President of the German Cardiac Society and the man behind decades of work that led to the development and commercialisation of the c-TnT assay, explains why it has been so successful and what is important for the future.**

Prof. Katus’ 40-year career began with a research fellowship in the laboratory of Edgar Haber at Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts, USA, where he started to develop highly specific immunoassays to measure myofibrillar proteins in blood as a diagnostic tool for myocardial cellular necrosis. The initial development of a myosin light chain assay was eventually abandoned due to the insufficient cardiac specificity of these proteins, which are also expressed in slow skeletal muscle. However, in the 1980s he discovered that c-TnT could be distinguished from skeletal troponin T isoforms by monoclonal antibodies, which led to the development of a truly cardiac-specific assay.

What are the key factors that made development of the c-TnT assay possible? “Most importantly, we knew that troponin was an ideal marker,” says Prof. Katus. “What was needed was translation of our laboratory-based ideas and work into clinical practice, and for that to happen we realised

that industrial support was critical.” Pharmaceutical company collaboration resulted in the joint protection of his original work by European and international patents and the necessary investment for the development of a highly sensitive c-TnT assay.

It took over ten years of further work before c-TnT was established as a cardiac marker in the clinical setting, and Prof. Katus acknowledges that the translation of a novel idea to a clinical application is not without frustrations. “Initially, there was some scepticism as to the value of the novel c-TnT assay,” he says. “People are not always willing to accept new ideas and I remember when we were trying to publish our novel results, one reviewer commenting that it is already known how to diagnose myocardial injury, and that our work would just confuse the clinical community.” Persistence in demonstrating that the c-TnT assay was better than the existing enzyme assays was important, as was ensuring independent evaluation of his team’s research through multicentre trials to confirm their laboratory findings. What finally convinced the clinical community was the finding that a positive test result had therapeutic consequences, because troponin-positive (but creatinine kinase-MB-negative) patients gained benefit from targeted and more aggressive treatment. Also significant was that in early 2000 a working group of the ESC/ACC/AHA redefined acute myocardial infarction, endorsing the diagnostic use of cardiac troponins instead of cardiac enzymes or creatinine kinase-MB mass.<sup>1</sup>

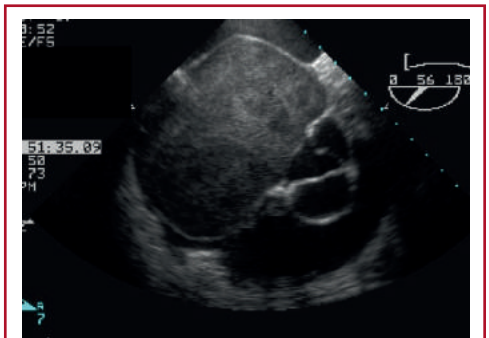
**“Troponin transformed the way we think about biomarkers. Its clinical significance is huge; it is at least as important in the diagnostic work-up as ECG.”**

When asked why he thinks cardiac troponin is such a successful biomarker, Prof. Katus is clear, “It’s successful because of its unique characteristics. As well as it being cardiac-specific, we knew from our work on myosin light chain that the intracellular concentration of troponin was high and so the protein pool was large. Furthermore, many troponin T epitopes are well preserved in their protein structure once released into the circulation—it is a good, stable analyte.”

In its early clinical use to test for myocardial injury, the c-TnT assay led to nearly twice as many cases being detected. Soon afterwards, it was realised that any insult to the heart, e.g. myocardial infarction or toxicity after chemotherapy, resulted in elevated troponin levels and clinicians were able to detect damage due to ongoing disease and also predict poor outcome. The next diagnostic level is that high-sensitivity assays can detect even less injury, and troponin levels can now be measured in apparently healthy people, potentially indicating earlier-stage disease.

Is this the future direction for the troponin assay? Prof. Katus thinks so. “The future is even greater sensitivity and faster assays. Work in this area is ongoing to gain more understanding with high-sensitivity tests and the detection of very early stages of cardiovascular diseases associated with troponin levels in the blood.” So, a lifetime of experience has brought about great changes in diagnostic capabilities. Prof. Katus emphasises, “This assay is the result of decades of work; the process of development generates data that are not always acceptable by high-impact journals but which, for the troponin assay, ultimately demonstrated its reproducibility and confirmed its clinical impact in furthering progress in medicine—and that is what is most important.”

1. Katus HA. Clin Chem 2008;54:1576-1577.



**Solution: Giant aneurysm of the non-coronary sinus of Valsalva**

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

Transesophageal echocardiography, short axis view at the aortic valve level (systolic frame). A giant aneurysm of the non-coronary sinus of Valsalva can be seen, the other two sinuses being normal sized.



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**ALEXANDRU MISCHIE**  
 @ALEX\_MISCHIE

According to the new revascularization guidelines, what should you treat in cardiogenic shock?  
 @escardio @SilCastelletti @DrPascalMeier @susannaprice @mmamas1973 #ESCCongress #ESCACCA

Only culprit lesion  
 All significant lesions

253 votes · 14 hours 53 minutes left

# Reducing stroke burden through cardiologist-neurologist collaboration

**Acute ischaemic stroke is a catastrophic cerebrovascular event that may be life changing/limiting. Many patients experiencing a stroke have an underlying cardiovascular comorbidity that may or may not have been previously diagnosed at the time of the stroke. Indeed, evidence suggests that around half of ischaemic strokes may be caused by heart disease.<sup>1</sup>**

As such, optimal stroke prevention and treatment (including primary and secondary prevention, acute diagnostics and acute intervention) requires a multidisciplinary approach involving both cardiologists and neurologists. In recognition of this, the ESC Council on Stroke was created in 2016 with aims to promote interdisciplinary cooperation, education and research on stroke and ultimately reduce the burden of cardiovascular disease in Europe.<sup>2</sup> In the council's first educational workshop in Prague earlier this year, cardiologists, neurologists, radiologists, surgeons and other specialists gained the opportunity to form close interdisciplinary contacts while learning about stroke pathophysiology, the role of multidisciplinary stroke teams and the latest research on stroke prevention and management. "This meeting was a unique opportunity for an intense interdisciplinary dialogue to learn and discuss latest evidence, clinical concepts and new insights in stroke from multiple specialist perspectives. The need and the growing interest in such close collaboration was underscored by the wide range of topics and the excellent and vivid discussion in all sessions of our meeting," says Professor

Wolfram Doehner (Center for Stroke Research, Charite, Universitätsmedizin Berlin, Berlin, Germany), Vice-Chairperson of the ESC Council on Stroke. He continues, "There are heart-brain interactions in almost any cardiovascular pathology that need to be addressed with special emphasis, such as in the field of heart failure.<sup>3</sup> Interdisciplinary meetings are essential to advance highly specialised treatment concepts towards modern and truly comprehensive health care strategies. The overwhelming success of the workshop has led the Council on Stroke to promote a further enhanced and interactive, international conference 'ESC Heart & Stroke' being planned for January 2019 in Berlin, Germany.<sup>4</sup>"

**If you want the latest insights on stroke and to discuss them with cardiologist and neurologist experts, attend the Council on Stroke meeting 'ESC Heart & Stroke 2019', on 25 - 26 January in Berlin, Germany.**

At ESC Congress 2018, several cardio-stroke sessions and activities are taking place with active contribution of the ESC Council on Stroke. Today, the Council and the European Stroke Organisation (ESO) will present a joint session 'Stroke and the heart', co-chaired by Professor Martin Koehrmann (deputy director of the Clinic of Neurology University of Essen, Essen, Germany), board member of ESO, and Professor Alison Halliday (a vascular surgeon from the University of Oxford, Oxford, UK), board member for the ESC Council on Stroke. This

important and enlightening session will include presentations on 'The relationship between stroke and atrial fibrillation', 'Anticoagulation after stroke - when to restart and how?', 'Patients with high cerebral bleeding risks: Who, when and how should we treat with anticoagulants?' and 'Thrombectomy with or without thrombolysis - what is the optimum strategy for stroke?'.<sup>5</sup>

**Don't miss the joint ESC and ESO session 'Stroke and the heart' today, 11:00 - 12:30, Damascus, Spotlight Village.**

A current hot topic in stroke management is mechanical thrombectomy. While intravenous thrombolysis remains the standard medical therapy for most acute ischaemic stroke patients, recent evidence has consolidated a role for mechanical thrombectomy in selected patients, including those for whom thrombolysis is contraindicated.<sup>5,6</sup> However, there is an acute shortage of interventional neurologists in Europe to provide this procedure within the optimum timeframe. Encouragingly, recent data from the prospective registry PRAGUE-16 have indicated that acute stroke interventions performed in close collaboration between cardiologists, neurologists and radiologists are both feasible and safe.<sup>6</sup> "We have evidence showing that interventional cardiologists who have received a short period of training on the mechanical thrombectomy procedure to treat acute ischaemic stroke can achieve the same results as interventional neuroradiologists," says Professor Petr Widimsky (Charles University, Prague,

Czech Republic), Chair of the ESC Council on Stroke. "Given that most interventional cardiology units already contain the medical equipment for mechanical thrombectomy and that many interventional cardiologists routinely perform carotid artery stenting, to train them to perform intracranial mechanical thrombectomy can be much faster (i.e. less than three months) compared with the longer training needed in case of no previous interventional catheter experience," continues Prof. Widimsky. The ESC Council on Stroke is currently putting forward a proposal asking national health authorities to give permission to provide this shortened training to interventional cardiologists.<sup>7</sup>

**"Forming a close collaborative network among interventional cardiologists and neurologists will make a huge difference to managing patients with acute ischaemic stroke," says Prof. Widimsky.**

1. Widimsky P, et al. Eur Heart J 2018;39:1567-1573.
2. [www.escardio.org/Councils/Council-on-Stroke/About](http://www.escardio.org/Councils/Council-on-Stroke/About)
3. Doehner W, et al. Eur J Heart Fail 2018;20:199-215.
4. [www.escardio.org/Councils/Council-on-Stroke/esc-heart-stroke-2019](http://www.escardio.org/Councils/Council-on-Stroke/esc-heart-stroke-2019).
5. Widimsky P. E-Journal of ESC Council for Cardiology Practice 2015;13: [www.escardio.org/Journals/E-Journal-of-Cardiology-Practice/Volume-13/catheter-based-thrombectomy-for-acute-ischemic-stroke](http://www.escardio.org/Journals/E-Journal-of-Cardiology-Practice/Volume-13/catheter-based-thrombectomy-for-acute-ischemic-stroke).
6. Widimsky P, et al. EuroIntervention 2017;13:131-136.
7. [www.escardio.org/The-ESC/Press-Office/Press-releases/Heart-doctors-call-for-permission-to-provide-therapy-to-stroke-patients](http://www.escardio.org/The-ESC/Press-Office/Press-releases/Heart-doctors-call-for-permission-to-provide-therapy-to-stroke-patients).

## GLOBAL LEADERS trial: Long-term ticagrelor monotherapy after stenting does not improve outcomes vs standard dual antiplatelet therapy



**Prof. Patrick Serruys**

**In a Hot Line session yesterday, Professor Patrick Serruys (Erasmus University, Rotterdam, The Netherlands) shared late-breaking data from a large superiority study of a new long-term antithrombotic strategy after coronary stenting, which were simultaneously published in *The Lancet*.<sup>1</sup>**

The investigator-initiated, randomised, open-label GLOBAL LEADERS trial included almost 16,000 patients scheduled to undergo percutaneous coronary intervention for stable coronary artery disease (SCAD) or acute coronary syndromes (ACS). Patients, implanted with biolimus-eluting stents and given the thrombin inhibitor bivalirudin, were randomised to receive aspirin and the P2Y12 inhibitor

ticagrelor for 1 month, followed by ticagrelor monotherapy for 23 months (n=7,980)—the experimental group—or 12 months of standard treatment with dual antiplatelet therapy (clopidogrel in patients with SCAD or ticagrelor in those with ACS), followed by aspirin monotherapy for a further 12 months (n=7,988).

The composite primary endpoint was the cumulative incidence of all-cause death or new Q-wave myocardial infarction (MI) within 2 years and the secondary endpoint was the rate of moderate or severe bleeding (class 3 or 5 on the Bleeding Academic Research Consortium scale) over the 2-year period.

At 12 months, all-cause mortality or new Q-wave MI was significantly lower in the experimental group than in the standard dual antiplatelet therapy group (1.95% vs 2.47%, respectively, risk ratio 0.79; p=0.028). The rate of moderate/severe bleeding was numerically, though not statistically significantly, lower in the experimental group (1.47% vs 1.70% in the reference group, risk ratio 0.86 p=NS).

At 24 months, the difference in all-cause mortality or new Q-wave MI in favour of the experimental group persisted (3.81% vs 4.37%) but was no longer statistically significant (risk ratio 0.87; p=0.073), and moderate/severe bleeding was similar in each group (risk ratio 0.97).

**"A landmark analysis starting at one year suggested no additional benefit of monotherapy with ticagrelor in the second year."**

"If the trial had been completed and terminated at one year, it may have demonstrated superiority of the experimental arm," explains Prof. Serruys. "The lack of treatment adherence in the ticagrelor arm, mainly during the second year, may have compromised the demonstration of superiority. A careful per-protocol/per-treatment analysis will try to elucidate this point," he adds.



The trial was not designed to assess non-inferiority; further studies are needed to confirm that monotherapy is no less effective than extended dual antiplatelet therapy. "The risk of monotherapy compared to extended dual therapy was 0.75-1.01, suggesting that monotherapy is relatively safe," says Prof. Serruys.

1. Vranckx P, et al. Lancet 2018;August 27:10.1016/S0140-6736(18)31858-0

## ESC Gold Medal Award winner

# From bench to bedside: Linking research with clinical cardiology



**Prof. Evgeny Shlyakhto**

**Professor Evgeny Shlyakhto, Director General of the Almazov National Medical Research Centre, St. Petersburg, Russia and President of the Russian Society of Cardiology, knew he wanted a career in medicine from a young age.**

"The death of my grandfather, a military doctor, during WWII in 1942 was talked about a lot when I was growing up and this instilled in me the desire to be a physician—I could not have imagined myself in any other profession," he recalls. With this ambition, he graduated with a degree in medicine in 1977 from the Pavlov Medical University in St. Petersburg, where, as a student, he was lucky enough to join the clinical team led by the prominent Russian cardiologist, Vladimir Almazov. "It was the tradition that students worked very much as part of the clinical team; this made a great impression on me and encouraged my decision to become a cardiologist," remembers Prof. Shlyakhto.

**"I think the combination of epigenetics and genetics is very exciting in the development of new therapies for cardiovascular diseases."**

Early in his career, Prof. Shlyakhto's research interests focussed on autonomous regulation of the blood circulation. "Arterial hypertension was also a particular area of interest because it was very relevant and, at the time, there were newer treatments being developed rapidly," he says. Epidemiology of hypertension, obesity and metabolic syndrome, and molecular and cellular mechanisms of heart failure development are other areas in which he has directed his interest. With the rapid development of cardiac surgery, he switched his focus to cytoprotective approaches in open-heart surgery using pre- and post-conditioning for prevention of myocardial ischaemia-reperfusion injury, and later ischaemic and pharmacological post-conditioning during percutaneous coronary interventions. More recently, with the emerging era of precision medicine, Prof. Shlyakhto has turned his attention to cyto-genetics and the

cultivation of stem cells, endothelial precursor cells and foetal cells as well as development of cell therapy methods for the treatment of cardiovascular diseases. "Genomic editing is, in my opinion, very important in the treatment of heart failure and other cardiovascular diseases; I think this will lead to a dramatic breakthrough in cardiology and it's an area in which Russian cardiologists have a lot of experience," he says.

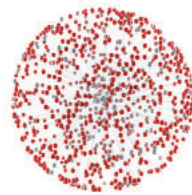
In addition to citing Vladimir Almazov as a positive influence early on in his career, Prof. Shlyakhto credits some of the founding fathers of Russian medicine as a source of inspiration. "Working in St. Petersburg, I am constantly inspired by our great history," he says, "by physicians such as the Nobel Prize winner Ivan Pavlov, Nikolai Korotkov—inventor of the auscultative method of blood pressure measurement, one of the most famous discoveries in the field of hypertension—and Vasilii Kolesov, who carried out the first coronary bypass surgical operation in 1964." As for lessons he has learned during his career, Prof. Shlyakhto thinks that the importance of continuing medical education is among the most significant. "Cardiologists of tomorrow need a lot of knowledge. They must not stop learning and, as such, it is vital to have communication between specialists in

medicine, physiology, chemistry and biology—a multidisciplinary approach is so important," he advises. Indeed, such an approach has been integral to the success of the scientific school he founded, which is known for its continuity of tradition and interdisciplinary approach.

Throughout his career, Prof. Shlyakhto has been a big proponent of translational therapy. "I am pleased that I have been able to provide a bridge between molecular biology and clinical cardiology," he says. This is evident in his leadership of the Almazov National Medical Research Centre, which is an impressive example of a translational approach to cardiovascular medicine. He is also heavily involved in social, scientific and organisational work aimed at integrating Russian medical science into the global scientific community. Indeed, one of his proudest achievements is the way in which the Russian Society of Cardiology participates in ESC activities, "I am very proud that the Russian Society is part of the European family—the way we are working together to address the same problems, the same challenges." And what advice would he give to young cardiologists today? Prof. Shlyakhto doesn't hesitate. "Never stop learning, do not limit yourself, be compassionate and, most importantly, think of your patients."

## Today

in the ESC Professional Members' Lounge



- 10:30 - 11:00** Upgrade your Social Media & Hands-On
- 11:00 - 11:15** Hands-on the new ESC 365
- 11:30 - 11:45** How can Enago help you in your publication goals?
- 12:30 - 13:00** ESC Grants - Women Transforming Leadership Programme
- 13:30 - 14:00** Meet the European Heart Academy Team
- 15:00 - 15:30** Discover The ESC eLearning Platform
- 15:30 - 16:00** Upgrade your Social Media & Hands-On
- 15:30 - 16:30** Professional Horizons For registered participants. Seek career advice from experts in cardiology.
- 16:00 - 16:15** Hands-on the new ESC 365

## Pioneering medical devices - the Palmaz-Schatz stent



**Dr. Richard Schatz**

**The development of stents has revolutionised coronary angioplasty, improving and saving the lives of millions of patients. These days, many stent designs exist—both bare metal and drug-eluting stents—all of which are derivatives of the original Palmaz-Schatz stent.**

With constantly evolving and improving designs, stents have become accepted worldwide as the cornerstone of interventional therapy for coronary artery disease. However, the history of stent development began back in the late 1970s.<sup>1</sup> According to Doctor Richard Schatz (Scripps Clinic, La Jolla, California, USA), co-inventor of the Palmaz-Schatz stent, the first coronary stent to be approved by the FDA, in 1994, "I began collaborating with Doctor Julio Palmaz, formerly at the University of Texas, USA, on stent development in 1985. I was at the Brooke Army Medical Center (San Antonio, Texas, USA) at the time. Dr. Palmaz had conceived the idea of a balloon-expandable 'scaffold' to hold the artery open after seeing groundbreaking research on balloon angioplasty presented by Doctor Andreas Grüntzig in 1977." While dramatically successful at opening blocked arteries, balloon angioplasty was often limited by abrupt artery closure and

restenosis. "Early exploratory stent devices included self-expanding springs; however, these were hampered by delivery issues and high complication rates. Dr. Palmaz designed a balloon-expandable stainless-steel slotted metal tube, instead of a spring or coil. By trying different designs and types of metal, we ultimately developed the Palmaz-Schatz stent. We placed our first stents in dog coronaries in 1985 and, with funding support from Johnson & Johnson, in the first humans in 1987," continues Dr. Schatz.

**"The impact stents have had on relieving mortality and morbidity, improving patients' lives and on reducing health care costs has been immeasurable and thirty years later nothing has replaced them as the frontline treatment for atherosclerosis," says Dr. Schatz.**

Following its success—the Palmaz-Schatz stent has been identified as one of the top 10 medical device patents of the last 50 years, and the basic balloon-expandable slotted tube metal platform design has stood the test of time—Dr. Schatz has continued his seminal work and currently holds the patent to a variety of coronary stents. "Newer stent designs have drug coatings with anti-proliferative agents to reduce the rates of in-stent restenosis. The challenge now is to develop the right mix of drugs and coatings to eliminate the risk of thrombosis and restenosis entirely."

1. Tan C and Schatz RA. *Intervent Cardiol Clin* 2016;5:271-280.

## 2018 ESC Clinical Practice Guidelines in the spotlight

# Myocardial Revascularization



**Dr.  
David Glineur**

**The 2018 ESC/EACTS Guidelines on Myocardial Revascularization<sup>1</sup> feature some very interesting updates on knowledge that will impact clinical practice, thinks Doctor David Glineur (The Ottawa Heart Institute, Ottawa, Ontario, Canada), Review Coordinator for these guidelines along with Professor William Wijns.**

One of the most notable changes in this latest update, the one that really stands out for Dr. Glineur, concerns diabetic patients. "Previously, a doctor's decision about whether to use a coronary artery bypass graft (CABG) or percutaneous coronary intervention (PCI) was made almost exclusively on an individual patient basis. However, sufficient data have now accumulated to confirm that patients with diabetes form a distinct group and that coronary surgery is the best approach

to ensure a good long-term outcome for these individuals, even in those with a low SYNTAX score."

**"The finding that revascularisation technique can be guided by diabetic status is completely new and provides clinicians with a rapid way of selecting the optimum method for certain patient groups."**

The use of multiple-artery CABG is another of Dr. Glineur's highlights. "The bulk of the latest scientific evidence favours the use of multiple-artery grafting, commonly using the radial artery and left internal mammary artery, over single-artery approaches, and the endorsement of this approach is approaching a grade IB recommendation," he explains. Dr. Glineur is also happy to

report that the role of a multidisciplinary heart team in management is high on the list of recommendations. "This was first proposed in 2014," he says, "but features much more prominently in the latest guidelines. I think it is really important that we continue to recognise this as being fundamental to optimising patient care. As an example, in elective revascularisation procedures, the use of *ad hoc* PCI is increasingly being regarded as unjustifiable in the setting of stable coronary disease with intermediate or high SYNTAX score, and treatment decisions, based on the best evidence set out in treatment guidelines, should consider input from all team members." What are the other major or significant changes? "In terms of preprocedural examinations, the 2018 guidelines give more weight to the use of instantaneous wave-free ratio (iFR) and fractional flow reserve (FFR) as new tools to help in the assessment of coronary artery stenosis severity," says Dr. Glineur, "although the visual inspection of coronary stenosis remains a standard approach." Regarding devices, he comments, "We have seen a real decline in evidence to support the implantation of resorbable drug-eluting stents. A move to reduce their use was

proposed in the previous guidelines and this advice is strengthened in the latest version, to the extent that, wherever possible, the use of these types of stent should be avoided."

Dr. Glineur is proud of the latest myocardial revascularisation guidelines and wants to express his thanks to the large team of committed individuals involved in putting them together. "This is a gruelling task! Until I became involved in the guidelines, I had no idea about the time and intellectual demands required to produce them," he confesses. However, the result is a series of guidelines that are based on the very latest scientific evidence and that are subject to rigorous expert review. "The ESC/EACTS Guidelines are probably the most frequently used of those available. Part of this is, of course, due to the high quality of the content. However, it is the fact that they are clear and easy to use that really sets them apart from other guidelines and makes them the guidelines of choice in clinical practice settings around the world."

1. 2018 ESC/EACTS Guidelines on Myocardial Revascularization. Eur Heart J 2018. doi: 10.1093/eurheartj/ehy394.

## 2018 ESC Clinical Practice Guidelines in the spotlight

# Cardiovascular Diseases during Pregnancy



**Prof.  
Christi Deaton**

**The 2018 ESC Guidelines on the Management of Cardiovascular Diseases during Pregnancy<sup>1</sup> include some important updates that will help facilitate decision making in the management and referral of pregnant women with cardiovascular diseases.**

Professor Christi Deaton (University of Cambridge School of Clinical Medicine, Cambridge, UK) and Dr Iain A. Simpson (University Hospital Southampton, Southampton, UK), who as Review Coordinators moderated the review process for the updated guidelines, explain why the guidelines are so important and summarise the main changes since release of the previous version seven years ago.

**"Many cardiologists have limited experience of treating pregnant patients; these guidelines are helpful both in terms of management and referral to specialist care." – Dr. Simpson.**



**Dr.  
Iain A. Simpson**

"Guidelines for cardiovascular diseases in pregnancy are particularly important as it is more challenging to build an evidence base through research," explains Dr. Simpson. "Many recommendations must be based on professional expertise rather than randomised controlled trials." In the Western world, there is an increase in the age at which women are becoming pregnant and it is vital that we recognise this, thinks Dr. Simpson. "More and more women are becoming pregnant over the age of 40; this changes the dynamic in the type of cardiovascular disease that we are dealing with," he says. "For example, we are now seeing more pregnant women with coronary artery disease. Indeed, in the UK experience, more than 20% of women who die in pregnancy die as a result of this condition, so it becomes important to understand how we can manage these patients."

One of the main changes to the guidelines relates to the importance of using multidisciplinary pregnancy heart teams in clinical decision-making, which is mentioned specifically in the 2018 update for the first time. "The cardiovascular heart team, comprising a range of clinical specialists, is now a fundamental part of the care of patients with cardiovascular conditions,

and so the pregnancy heart team has a key role in the care of pregnant women with cardiovascular conditions," explains Prof. Deaton. There is also an emphasis on pre-pregnancy counselling in patients with heart disease, with a steer to the World Health Organization classification of risk assessment. "This means that we cover the cardiac conditions that we know of, and risk classify them into how they should be managed," clarifies Dr. Simpson. "For example, a patient with a simple hole in the heart is low risk and, as such, there will be little difference in their management, whereas for other higher-risk cases pregnancy is not advised at all so there is a need for counselling against pregnancy for these patients."

New information that has become available on certain drugs, and how best to use these in pregnant patients has been incorporated into the new guidelines, including which agents can and cannot be used in pregnancy. Dr. Simpson explains, "There is greater detail regarding the use of anticoagulant medications, particularly in patients with mechanical artificial heart valves. The guidelines emphasise that many decisions should be made in highly specialised centres and give details as to the options for treatment and the associated risks." Prof. Deaton adds, "There is an extremely useful pharmacology table, incorporating pharmacokinetic and safety data on cardiovascular drugs during pregnancy and post-partum, which will be a beneficial aid for decision making." Indeed, in common

with others across the whole guideline portfolio, these updates are much more user friendly than previous versions, containing more visual elements and with greater use of graphics and illustrations.

**"I think the authors have done a great job of updating the guidelines and incorporating new evidence on diagnostic techniques, risk assessment and pharmacotherapy." – Prof. Deaton.**

It is hoped that these updates will significantly impact clinical practice to ensure that mothers and babies are getting the right treatment, at the right time, by the right people. As Dr Simpson emphasises, "It's very important that we do what we can to give the most appropriate treatment for the best outcome for both mother and baby. It must not be forgotten, however, that our main priority is to manage the mother and make sure that she is safe during her pregnancy and beyond."

1. 2018 ESC Guidelines for the Management of Cardiovascular Diseases during Pregnancy. Eur Heart J 2018. doi: 10.1093/Eurheartj/ehy340.

# Sessions of the day

<b>7:30</b>	<b>Bach</b> Caloric restriction prolongs life time - Should we skip a meal today?	<b>Bach</b> Setting the COMPASS into new directions - Reducing risk in coronary artery disease and peripheral artery disease - Experts on the Spot organised by Bayer AG	<b>12:45</b>	<b>Digital Health Stage</b> Technology showcase
	<b>Beethoven</b> Pregnancy and cardiovascular disease	<b>Beethoven</b> Anticoagulation and cancer: will recent evidence change clinical practice? - Experts on the Spot organised by Daiichi Sankyo Europe GmbH	<b>13:00</b>	
	<b>Haendel</b> Myocarditis: do we need endomyocardial biopsy?	<b>Brahms</b> Practical tips to improve anticoagulation management in atrial fibrillation - Experts on the Spot organised by Pfizer	<b>Haendel</b> Outcomes of GLP-1 RA in diabetes and cardiovascular disease - Discussing the key opportunities for cardiology practice - Experts on the Spot organised by PACE-CME - Physicians' Academy for Cardiovascular Education	
	<b>Schumann</b> Tips and Tricks of CRT Implantation	<b>Haendel</b> The future of SGLT2 Inhibitor Cardiovascular Outcomes trials: what are we hoping to learn? - Experts on the Spot organised by MSD	<b>Centre Stage</b> Baroreflex activation therapy for resistant hypertension and heart failure: the new piece in the puzzle - Satellite Symposium organised by Charité	
<b>8:00</b>		<b>Schumann</b> From ODYSSEY OUTCOMES results to clinical practice - Identifying patients who may benefit most from PCSK9 inhibition - Experts on the Spot organised by Sanofi	<b>Beethoven</b> Roundtable discussion with the American Heart Association Editors for Circulation - Arrhythmia and Electrophysiology and Circulation: Cardiovascular Quality and Outcomes - Satellite Symposium organised by Wolters Kluwer	
<b>ESC TV Stage</b> Tuesday 28 August - Breakfast Buzz			<b>Beethoven</b> LDL-cholesterol and secondary prevention of atherosclerotic disease - When less is definitely more! - Satellite Symposium organised by Amgen Europe GmbH	
<b>8:30</b>		<b>11:00</b>	<b>Ankara</b> 1 out of 3 hypertension patients remain uncontrolled. Time to find another way down? - Satellite Symposium organised by Medtronic	
<b>Munich</b> 2018 ESC Guidelines on Syncope		<b>Munich</b> Hot Line Session 4	<b>Cairo</b> Guidelines, clinical evidence and real-life practice - How to find your way in managing hypercholesterolaemia - Satellite Symposium organised by MYLAN	
<b>Centre Stage</b> Live in the Box: PCI guided by intracoronary imaging and FFR		<b>Centre Stage</b> Live in the Box: left main intervention	<b>Bratislava</b> Amyloidosis beyond heart failure: paving the way for an early diagnosis - Satellite Symposium organised by Medscape	
<b>Bach</b> A beginner's guide to electrophysiology studies and ablation		<b>Bach</b> What the busy cardiologist needs to know about recent advances in cardiology	<b>Copenhagen</b> Transcatheter mitral valve repair in functional mitral regurgitation: time for evidence! - Satellite Symposium organised by Abbott	
<b>Beethoven</b> The New Circulation		<b>Beethoven</b> Journal of the American College of Cardiology's Year in Cardiology: from Intervention to Prevention	<b>Vienna</b> New concepts and models in cardiovascular risk management - Satellite Symposium organised by PACE	
<b>Brahms</b> Controversies in interventional cardiology - Multivessel STEMI and asymptomatic aortic stenosis		<b>Brahms</b> Prevention guidelines and their gaps in daily practice	<b>Brussels</b> New directions in the management of thrombotic risks in patients with heart failure - Satellite Symposium organised by Bayer AG	
<b>Digital Health Stage</b> Virtual valve replacement: the next revolution		<b>Haendel</b> Implementation of cardiovascular disease prevention in daily practice - Insights from EUROASPIRE V	<b>Baku</b> Transforming patient care in venous thromboembolism - The role of non-vitamin K antagonist oral anticoagulants - Satellite Symposium organised by Pfizer	
<b>Ankara</b> Late Breaking Science in Interventional Cardiology 2		<b>Schumann</b> Moving TAVI further - Cutting edge developments and their clinical value	<b>Moscow</b> Navigating the continuum of care in cardiac arrhythmia management - Satellite Symposium organised by Medscape Education, supported by an unrestricted grant provided by Biosense Webster	
<b>Minsk</b> Myocardial injury versus myocardial infarction - Implications for clinical practice		<b>Minsk</b> Acute coronary syndrome - The "Big Picture"	<b>Madrid</b> Meet the trialist - PURE	
<b>Belgrade</b> Cardiomyopathy and myocardial disease: review, update, and State of the Art in 2018		<b>Belgrade</b> Which imaging technique is best for my patient with valvular heart disease?		
<b>Yerevan</b> Therapy of rheumatic heart disease		<b>Yerevan</b> Adult congenital heart disease, pulmonary hypertension and pulmonary embolism: review, update, and State of the Art in 2018	<b>14:00</b>	
<b>Cairo</b> Therapy of myocardial infarction without obstructive CAD (MINOCA)		<b>Cairo</b> Adherence to medication and CV outcomes	<b>ESC TV Stage</b> Meet the trialist - PURE	
<b>Damascus</b> Meet the Experts - Big aorta, big problem?		<b>Damascus</b> Stroke and the Heart		
<b>Bern</b> The global fight against premature CVD mortality in a world of migration		<b>Bern</b> Dietary supplements and food substitutes in preventive cardiology: do they work?	<b>14:30</b>	
<b>Bratislava</b> Challenges and considerations in hypertension therapy		<b>Stockholm</b> Difficult scenarios in the cardiovascular management of athletes	<b>Digital Health Stage</b> Big Data	
<b>Algiers</b> The role of imaging in ischemic and non ischemic cardiomyopathy		<b>Bratislava</b> Expert Advice: how to manage hypertension urgencies and emergencies	<b>Munich</b> Hot Line Session 5	
<b>Brussels</b> Extracellular vesicles: newly recognised modulators of cardiovascular inflammation and remodelling		<b>Algiers</b> Multimodality imaging in coronary artery disease	<b>Centre Stage</b> Late Breaking Registry Results 2	
<b>Ljubljana</b> Role of autophagy in cardiac disease		<b>Vienna</b> Clinical application of Cardiac MRI - What the clinician should know about the most important guideline-based indications	<b>Beethoven</b> Evidence to inform practice: promising avenues and dead ends	
<b>Baku</b> Misfortune seldom comes alone - Comorbidities in heart failure and their clinical management		<b>Brussels</b> Fibro-adiposis in the diseased heart	<b>Brahms</b> Treatment options in secondary mitral regurgitation	
<b>Kiev</b> "Lone Atrial Fibrillation": should the concept be abandoned?		<b>Ljubljana</b> Late Breaking Basic and Translational Science - Cardiac Biology	<b>Haendel</b> Optimizing layperson resuscitation for cardiac arrest	
<b>Madrid</b> Atrial fibrillation: from Guidelines to clinical practice		<b>Baku</b> First-line therapies in heart failure with reduced ejection fraction (HFREF) - ACE inhibitors or sacubitril/valsartan?	<b>Schumann</b> What has changed in valvular heart disease between 2001 and 2017? What every cardiologist should know.	
<b>Science Box 2</b> Cardiovascular drug therapy in special populations		<b>Tunis - Library Room</b> Atrial fibrillation in the context of acute coronary syndromes and coronary intervention: what should we do?	<b>Minsk</b> The advantages and caveats of fast diagnostic algorithms for suspected NSTEMI-ACS	
<b>Haendel</b> "Indiana Jones" in the cath lab: getting yourself out of trouble		<b>Madrid</b> Secrets around PVCs and idiopathic ventricular tachycardia	<b>Belgrade</b> Beyond the aortic valve: multivalvular disease and aortic stenosis plus coronary artery disease	
<b>Schumann</b> Prognostic impact of deformation imaging		<b>Agora 1</b> The basic science of diabetes and the metabolic syndrome	<b>Yerevan</b> Knowledge gaps in left ventricular outflow tract obstruction	
<b>Agora 1</b> Novel molecular mechanisms in heart failure		<b>Agora 2</b> Metabolic mechanisms and targets in heart failure	<b>Cairo</b> Prevention and treatment of bioprosthetic valve failure	
<b>Agora 2</b> "Biomarkers reloaded": Diagnosis and prognosis of acute heart failure		<b>Science Box 1</b> Tricuspid: The underestimated valve	<b>Tirana</b> Guidelines in Daily Practice - Valvular heart disease	
<b>Science Box 1</b> Platelets, haemostasis and coagulation		<b>Science Box 2</b> Cardiac disease modelling	<b>Damascus</b> Primary PCI in STEMI: doing things right when the pressure is on	
<b>Tirana</b> Risk stratification of asymptomatic carotid stenosis		<b>Tirana</b> Aortic valve imaging pre and post intervention	<b>Bern</b> Expert Advice - Cholesterol-lowering treatment made easy	
<b>San Marino</b> The moving target of strategy selection in severe aortic stenosis		<b>San Marino</b> Management of coronary disease: temporal trends and residual risk	<b>Stockholm</b> Antithrombotics and cancer: challenges in clinical practice	
<b>Stockholm</b> PCSK9 inhibitors - for the many or the few?		<b>Moscow</b> ICD and CRT therapy in heart failure	<b>Bratislava</b> Where are we with new treatments for hypertension?	
<b>Vienna</b> Clinical impact of strain imaging		<b>Kiev</b> Advances in device therapy: focus on safety	<b>Algiers</b> Cardiac imaging essentials: review, update, and State of the Art in 2018	
<b>Moscow</b> The right ventricle - Dark side of the moon in heart failure				
<b>Tunis - Library Room</b> Cardiac arrhythmias - Clinical aspects				
<b>10:00</b>		<b>11:15</b>		
<b>Copenhagen</b> ESC General Assembly		<b>Digital Health Stage</b> Expert Advice - Mobile health in adults with congenital heart disease		
<b>10:05</b>		<b>12:35</b>		
<b>Munich</b> Meet the Task Force of the 2018 ESC Guidelines on Syncope		<b>ESC TV Stage</b> Meet the trialist - BASKET-SMALL 2 - Drug-Coated Balloons vs. Drug-Eluting Stents in Small Vessel Interventions		
<b>Centre Stage</b> Meet the Task Force of the 2018 Fourth ESC/ACC/AHA/WHF Universal Definition of Myocardial Infarction				
<b>Digital Health Stage</b> Technology showcase				

<b>Vienna</b>	CT in patients with suspected acute coronary syndrome
<b>Brussels</b>	Immune mechanisms in atherosclerosis
<b>Moscow</b>	The future of heart failure therapy - When failure is not an option
<b>Kiev</b>	Primary prevention of sudden cardiac death with the ICD: still "on" after DANISH?
<b>Tunis - Library Room</b>	Difficult anticoagulation management in atrial fibrillation: a case-based approach
<b>Madrid</b>	Is atrial fibrillation ablation a mature treatment to reduce morbi-mortality?
<b>Bach</b>	Tips for getting out of trouble in the EP and device labs
<b>Agora 1</b>	The role of platelet function in acute coronary syndromes
<b>Agora 2</b>	Arrhythmias - New insights
<b>Science Box 1</b>	Drug therapy in congenital heart disease - What are the options and the needs?
<b>Science Box 2</b>	Novel arrhythmogenic mechanisms
<b>San Marino</b>	Arrhythmogenic cardiomyopathy: From pathology to prognosis
<b>Copenhagen</b>	Hyperaldosteronism and hypertension: look harder!
<b>Ljubljana</b>	Exosomes: new players in cardiovascular disease
<b>Baku</b>	Advanced heart failure
<b>15:45</b>	
<b>Digital Health Stage</b>	Computer Decision Support

<b>15:50</b>	
<b>Centre Stage</b>	From submission to sharing: How to publish your best articles in the European Heart Journal and the New England Journal of Medicine
<b>15:55</b>	
<b>ESC TV Stage</b>	Meet the trialist - High-STEACS - High-Sensitivity Troponin in Patients with Acute Coronary Syndrome
<b>16:00</b>	
<b>Bach</b>	New directions in antithrombotic management of high risk patients - Experts on the Spot organised by Bayer AG
<b>Beethoven</b>	From guidelines to real life practices in lipid management: how to empower patients for better treatment adherence - Experts on the Spot organised by Sanofi and Regeneron
<b>Brahms</b>	LDL-cholesterol and secondary prevention of atherosclerotic disease - When less is definitely more! - Experts on the Spot organised by Amgen Europe GmbH
<b>Haendel</b>	New dimensions in the management of cardiovascular disease in type 2 diabetes - Experts on the Spot organised by Novo Nordisk A/S
<b>Schumann</b>	Preventing PE & DVT in heart failure and other medically ill patients: an innovative action plan Experts on the Spot organised by Medscape
<b>16:45</b>	
<b>Munich</b>	Late Breaking TAVI Registries
<b>Beethoven</b>	Rhythm control therapy in atrial fibrillation - Influence of CASTLE-AF and CABANA on clinical practice in 2018

<b>Brahms</b>	2018 Joint European Consensus Document on the management of antithrombotic therapy in atrial fibrillation patients presenting with acute coronary syndrome and/or undergoing percutaneous cardiovascular interventions
<b>Minsk</b>	Cardiac intensive care essentials: review, update, and State of the Art in 2018
<b>Belgrade</b>	Contemporary management of pericardial diseases: what you need to know
<b>Yerevan</b>	Treatment of pulmonary hypertension: What is on the horizon?
<b>Cairo</b>	An update on indications and results of left atrial interventions
<b>Damascus</b>	Starting is easy, stopping may not be: how long should we give cardiovascular drugs?
<b>Stockholm</b>	Cardiovascular prevention in diabetes
<b>Brussels</b>	T cells, autoimmunity and myocardial disease
<b>Bach</b>	Challenging scenarios in daily practice: you have to decide
<b>Agora 1</b>	Oral P2Y12 inhibitors in acute coronary syndromes: are they all equal?
<b>Agora 2</b>	Cardiovascular events in malignancies: from prediction to prevention
<b>Science Box 2</b>	Cardiac - CTA for non-atherosclerotic clinical scenarios
<b>Tirana</b>	Stroke - From risk prediction to therapy
<b>San Marino</b>	Novel perspectives in mitral regurgitation
<b>Copenhagen</b>	Hypertension and Atrial fibrillation
<b>Algiers</b>	Echocardiographic predictors of mortality and morbidity in the general population
<b>Vienna</b>	How vulnerable are my coronary vessels?

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# Phase III MITRA.fr study: Percutaneous mitral valve repair improves mitral regurgitation but not outcome



**Prof. Jean-François Obadia**

**First data from the recently completed MITRA.fr trial were presented yesterday by Professor Jean-François Obadia (Hôpital Louis Pradel, Lyon, France) in a Hot Line session.<sup>1</sup> “For the first time, we have high-level evidence relating to the safety and efficacy of a Mitraclip device in patients with severe secondary mitral regurgitation (SMR) and chronic heart failure,” he notes.**

Prof. Obadia explains that, “SMR is a major prognostic factor in patients with chronic heart failure. While the condition can be corrected, we don’t currently know whether this offers significant clinical benefit and this is what the trial set out to investigate.”

Over a 3-year period, patients were recruited to the study from 37 French centres; after centralised echographic Core Lab assessment, 307 patients were randomised in a 1:1 ratio to percutaneous mitral valve repair (pMVR) with the MitraClip system in addition to optimal medical treatment (OMT; intervention group; n=152),

or to OMT alone (control group; n=152). The primary efficacy endpoint was a composite of all-cause death and unscheduled hospitalisation for heart failure at 12 months.

At baseline, patients (mean age 70 years; 74% males) were severely symptomatic despite OMT, with 67% being in New York Heart Association (NYHA) class  $\geq$ III. The mean left ventricular ejection fraction was 33% and the functional mitral regurgitation (MR) was severe, with a mean regurgitant orifice area of 31 mm<sup>2</sup>. Patients were considered by a heart team to be ineligible for surgery.

“The safety of the MitraClip system was high,” says Prof. Obadia, “with no conversion to surgery and no procedural mortality. In addition, the rates of vascular complication (3.4%), tamponade (1.3%) and cardiac embolism/stroke (1.3%) were all acceptable.” The efficacy results also looked promising, he says. “The technical success of the procedure, according to Mitral Valve Academic Research Consortium criteria, was 96%. After 12 months, the MR was significantly reduced in the MitraClip group, with 83% of MR  $\leq$  grade 2 versus 0 at baseline.”

However, despite the apparent safety and efficacy of the MitraClip, the results did not translate into improved outcomes when compared to a control group, reports Prof. Obadia.



**“There was absolutely no benefit of the MitraClip in terms of survival rate or risk of rehospitalisation for heart failure at 12 months and the primary endpoint was negative.”**

Prof. Obadia continues, “Based on the confirmation of our statistical hypotheses and a follow-up of at least 99%, we can be confident that this conclusion is very robust. Moreover, the negative results seen in the primary analysis were observed also in the per-protocol analysis and all sub-group analyses.” He goes on to say that, “The medical treatment in the two groups was very good and in accordance

with recommendations. A similarly improved clinical status was seen in both groups.”

“To sum up,” says Prof. Obadia, “we can say that MitraClip was safe and effective at reducing the MR but that the primary composite endpoint, including all-cause death and unplanned hospitalisations for heart failure at one year, was not significantly different between groups.” He finishes with a plea, “If our conclusion on the primary endpoint seems robust, our analysis on a smaller sub-group of patients is more fragile. Therefore, more randomised studies are necessary to confirm our results and to define possible sub-groups of patients who could really benefit from mitral valve repair.”

1. Obadia J-F, et al. N Engl J Med 2018;August 27;doi:10.1056/NEJMoa1805374.

# The ESC Journal Family: In the lead worldwide in 2018



**Prof. Thomas Lüscher**

**From its flagship journal, *European Heart Journal (EHJ)*, to the most recent addition, *EHJ - Case Reports*, the ESC journal family boasts the largest range of cardiovascular journals in the world. Designed to provide a comprehensive and complete education, the scope of the 15 journals ensures that doctors working across the field of cardiology have access to the latest science, helping them to stay up to date with current knowledge.**

“EHJ and its associated specialty journals aim to cover the wide range of topics for general cardiologists—who form a large part of the ESC membership—and specialists alike,” says EHJ Editor-in-Chief, Professor Thomas Lüscher (Royal Brompton and Imperial College, London, UK and Zurich Heart House, Zurich, Switzerland). “While EHJ has a broad scope, the other members of the ESC journal family focus on the specific needs of those working in specialist cardiology areas.”

The newest journal in the family, *EHJ - Case Reports*, really stands out for its primary

aim of promoting the education of junior cardiologists, both through its published content and the chance it gives doctors to get experience with the manuscript review and editorial process. “This is a really good opportunity for young cardiologists at the start of their career,” says Prof. Lüscher. “Senior House Officers, for example, are very busy and have interesting cases that are ideal for writing up as a case report. This is a great way of learning how to write a paper and it opens the door to clinical research.”

In 2017, *EHJ* became the highest ranking cardiology journal in the world, a position it retained in 2018. Prof. Lüscher thinks that ESC’s drive to widen the journal’s audience to the global cardiology community has paid off. “That *EHJ* continues to lead the top three journals, ahead of *Circulation* and *Journal of the American College of Cardiology*, is a great achievement and reflects the move to invite contributions from distinguished cardiology professionals around the world,” he says. “When one considers that a half of all the papers published today come from authors in the USA, *EHJ* and its sister journals have to pursue a global approach to reflect science at large.” He regards *EHJ*’s achievement as a success not just for the individual journal but for the whole ESC journal family, three of which now feature in the top ten Cardiac and Cardiovascular Systems Impact Factor category journals (Table).

**“One of the advantages of having a journal family is that the newer titles benefit from having a flagship journal to really help them get off the ground.”**

Much as ESC members help and support each other, so do the journals in the ESC family, says Prof. Lüscher. “One of the most important ways we do this is by sharing manuscripts and targeting them to the most relevant audience. For example, *EHJ* receives many manuscripts that are of excellent quality but that are not really suitable for the general cardiology audience of the journal. Regular liaison between the editorial boards of the different journals means these types of manuscripts, rather than being rejected, can be recommended for publication in one of *EHJ*’s more specialist sister journals, with the permission of the author,” he explains. “We are currently transferring 350-400 articles per year to other journals in the family. This is beneficial not only for the authors but also for the journals, particularly the newer ones, which can find it difficult to become established, particularly when they have not received an Impact Factor.”

The strong links between the journals mean that the ESC Journal Family goes from strength to strength and with 15 titles

covering the spectrum of cardiovascular medicine and the support of a strong flagship journal, the family’s future is looking good.

## Impact Factors of the top 10 journals in the Cardiac and Cardiovascular Systems category

Journal Title	2017 Journal Impact Factor
<b>European Heart Journal</b>	<b>23.425</b>
Circulation	18.880
Journal of the American College of Cardiology	16.834
Circulation Research	15.211
Nature Reviews Cardiology	15.162
<b>European Journal of Heart Failure</b>	<b>10.683</b>
JACC - Cardiovascular imaging	10.247
JAMA Cardiology	10.133
JACC - Cardiovascular Interventions	9.881
<b>EHJ - Cardiovascular Imaging</b>	<b>8.336</b>



# No changes in survival after acute myocardial infarction in the last decade

## New data from SWEDEHEART



**Prof. Tomas Jernberg**

**Despite continued efforts to improve care after acute myocardial infarction (MI), the impact of the new strategies on real-life health care has not been recently documented.**

Professor Tomas Jernberg (Danderyd University Hospital, Karolinska Institutet, Stockholm, Sweden) shared new data yesterday in a late-breaking presentation from the SWEDEHEART (Swedish Web-system for Enhancement and Development of Evidence-based care in Heart disease Evaluated According to Recommended Therapies) registry. "SWEDEHEART is a unique complete national registry that enables us to assess characteristics, treatment strategies and outcomes for all patients with acute MI in Sweden," says Prof.



Jernberg. Data from 371,431 patients were analysed between 1995 and 2018.

Prof. Jernberg explains, "From 1995 to 2009, with the gradual implementation of new effective treatments, such as percutaneous coronary intervention (PCI), dual antiplatelet therapy, statins and angiotensin-converting enzyme inhibitors, we saw a substantial reduction in one-year mortality in acute

MI from 25% to around 15%. However, during the last 6-8 years, mortality rates have reached a plateau and remain almost unchanged. Interestingly, mortality appears to have plateaued earlier in patients with ST-elevation MI (STEMI) than in those with non-STEMI (NSTEMI)." He goes on to say, "Between 1995 and 2009, there were marked changes in management approaches, with more STEMI patients having primary

PCI and more NSTEMI patients having coronary angiography but as the proportion undergoing these procedures has levelled off, so have the mortality rates."

**"Over the last 6-8 years, mortality after acute MI has reached a plateau. Simultaneously, established treatment concepts have been further fine tuned and improved but few new treatment concepts have been introduced."**

Prof. Jernberg concludes, "There is an urgent need for better individual tailoring of more costly treatments in order to maintain cost-effectiveness and we should also look at identifying new breakthrough treatments to further improve outcomes in acute MI."

# Bayer at ESC Congress 2018





*Tuesday 28th August*

**Satellite Symposium**

**13.00 – 14.00**  
Baku – Village 5

**New Directions in the Management of Thrombotic Risks in Patients with Heart Failure?**

Co-Chairs:  
Faiez Zannad and John Cleland

To learn more about our programme at ESC Congress 2018, visit us at booth **#B200**

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**10.15 – 10.45, The Hub – Bach**  
**Setting the COMPASS into New Directions: Reducing Risk in Coronary Artery Disease and Peripheral Artery Disease**

**16.00 – 16.30, The Hub – Bach**  
**New Directions in Antithrombotic Management of High Risk Patients**

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## Prevention as an effective treatment: The ESC Prevention of CVD Programme



**Prof.  
Diederick Grobbee**

**Up to 45% of deaths following a myocardial infarction could be avoided with effective secondary prevention measures, which can also significantly reduce the risk of a subsequent clinical event.**

The aim of the ESC Prevention of Cardiovascular Disease (CVD) Programme—led by the European Association of Preventive Cardiology (EAPC) in collaboration with the Acute Cardiovascular Care Association and the ESC Council on Cardiovascular Nursing and Allied Professions—is to spread the word about secondary prevention and facilitate its realisation.

Professor Diederick Grobbee (University Medical Centre Utrecht, Utrecht, The Netherlands), EAPC President, explains, “This innovative programme provides a variety of educational and scientific resources designed to help doctors achieve effective prevention. Tools prepared by a multidisciplinary team are available to help with risk assessment (such as the easy-to-use online SMART

risk score), treatment goals and rehabilitation, including tips on encouraging appropriate exercise, optimal selection and promotion of compliance with pharmacological treatment, managing diet and controlling risk factors, for example diabetes.”

The resources are available in a range of formats. “Health care professionals can access scientific documents, webcasts from congresses and masterclasses, and webinars,” he says. “Now in its third and final phase, the programme is looking to increase awareness within the health care community and to extend it beyond, to patients and, eventually, the general public. As a part of this, we will soon be launching a patient website to actively encourage them in the secondary prevention process,” says Prof. Grobbee. “We will also be auditing the performance of secondary prevention across Europe to monitor the implementation and, where possible, the impact of this programme.”

Check out the website for more details: [www.escardio.org/Education/ESC-Prevention-of-CVD-Programme](http://www.escardio.org/Education/ESC-Prevention-of-CVD-Programme)

### Don't miss!

Cardiovascular prevention in diabetes.  
Today, 16:45 - 17:45; Stockholm - Village 1

## Under 40 or in training?

**NEW Combined Young Membership**



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### Abstract of the day:

## Caution against cutting down on carbohydrates

**In the early 2000s, low-carbohydrate diets featured prominently in the popular press and social media, with these diets hailed as being safe and a means of achieving substantial weight loss. More recently, however, opinions have shifted and evidence continues to emerge of the negative impact of such diets.**

Today, a team led by Professor Maciej Banach (Medical University of Lodz, Lodz, Poland) will present the findings of an analysis into the long-term impact of low-carbohydrate diets on mortality (Abstract P5409). “Using data for almost 25,000 participants from the National Health and Nutrition Examination Survey (NHANES), we found that individuals on the lowest-carbohydrate diet had the highest risk of overall (hazard ratio [HR] 1.32;  $p < 0.001$ ), cardiovascular (HR 1.50;  $p < 0.001$ ), cerebrovascular (HR 1.51;  $p < 0.001$ ) and cancer (HR 1.36;  $p < 0.001$ ) mortality,” says Prof. Banach. The association between low-carbohydrate diets and overall mortality was stronger for non-obese than obese individuals.

Prof. Banach adds, “From a meta-analysis of seven published prospective studies, with data on 447,506 participants and 39,326 deaths, we also found, and in fact confirm, a positive association between low-carbohydrate diets and overall (relative risk [RR] 1.15;  $p < 0.001$ ), cardiovascular (RR 1.13;  $p < 0.001$ ) and cancer (RR 1.07;  $p = 0.02$ ) mortality.”

This study adds to the growing body of evidence showing the harmful long-term effects of a low-carbohydrate diet. Further studies are needed to examine the effect of diet duration and clarify other reasons for these associations.

### Don't miss!

Poster Session 6: Nutrition, malnutrition and heart disease.  
Today, 08:30 - 12:30; Posters - Poster Area

## Endurance training is associated with a high degree of left atrial fibrosis

**The risk of atrial fibrillation (AF) typically increases with age, owing to the development of cardiovascular disease and structural damage to the heart, specifically to the left atrium.**

Interestingly, an unusually high incidence of AF has been noted in healthy endurance athletes. While myocardial fibrosis is known to be present in this population, there are currently no standard techniques used to specifically quantify left atrial (LA) fibrosis. Evaluating LA fibrosis could potentially help predict an endurance athlete's risk of developing atrial arrhythmia.

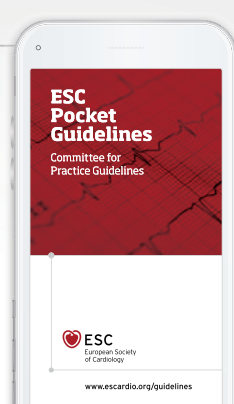
Using late gadolinium-enhancement (LGE) MRI, a team from the University of Utah, Salt Lake City, Utah, USA, quantified the degree of LA fibrosis in 16 endurance athletes compared with 20 healthy controls, and the results were presented yesterday by Doctor David Peritz. All participants underwent cardiac MRI with 3D visualisation using processing software.

Although the endurance athletes tended to have a lower body mass index and were younger than the controls (all athletes were older than 35 years of age), they had a greater mean LA fibrosis score compared with the controls:  $13.7\% \pm 5.4$  vs  $11.8\% \pm 7.3$ , respectively. Dr. Peritz says that, “In our study, endurance athletes who had consistently participated in at least 10 years of competitive sports and actively trained for at least 10 hours per week had a significantly greater degree of LA fibrosis than the controls.” He adds, “What is more, being an endurance athlete appears to have a greater impact on the degree of fibrosis than any of the usual comorbidities linked to LA fibrosis, such as diabetes, hypertension and tobacco use.”

While there is a significant correlation between endurance training and the degree of LA fibrosis, as detected on cardiac MRI, the researchers caution that the clinical significance of this finding is unclear. They suggest that the increased LA fibrosis in endurance athletes could explain the higher incidence of atrial arrhythmia, including AF, in this population.

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# Low-dose rivaroxaban in heart failure: **COMMANDER HF**



**Prof. Faiez Zannad**

**In a Hot Line session yesterday, Professor Faiez Zannad (Centre Hospitalier Universitaire de Nancy, Nancy, France) presented results from the COMMANDER HF trial investigating whether low-dose rivaroxaban reduces the morbidity and mortality associated with vascular and haemostatic dysfunction in patients with heart failure (HF).<sup>1</sup>**

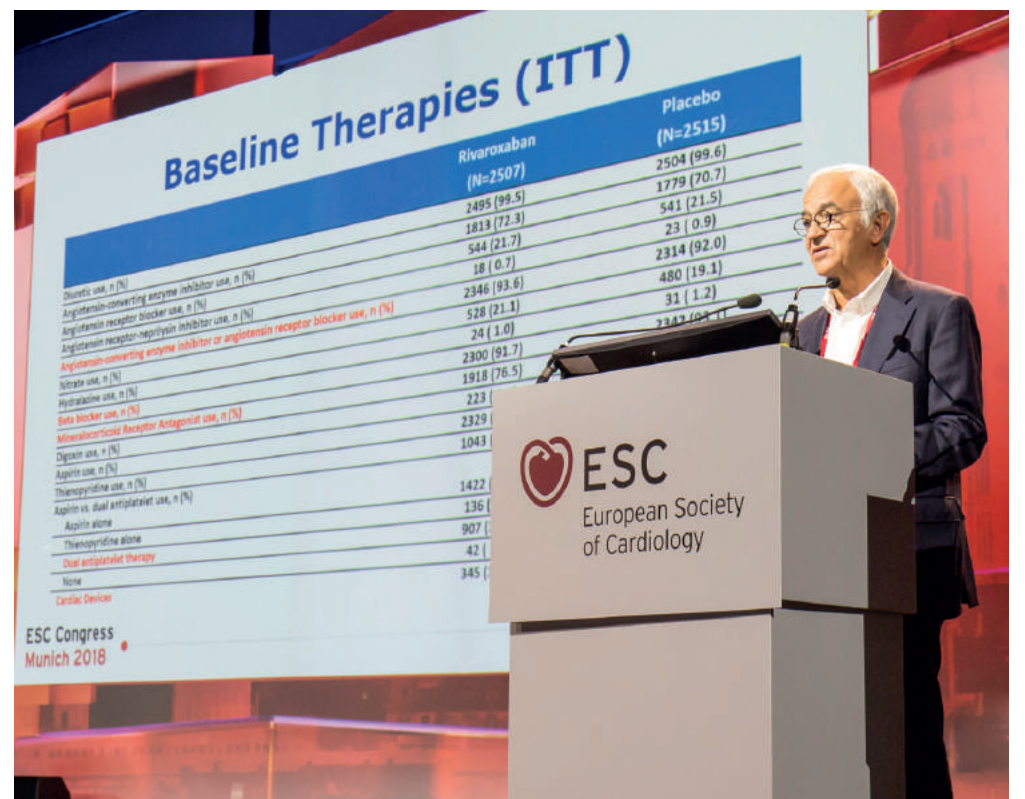
The trial compared rivaroxaban with placebo in more than 5,000 patients with significant coronary artery disease (CAD) and reduced left ventricular ejection fraction (LVEF;  $\leq 40\%$ ) following an episode of decompensated chronic HF. Prof. Zannad points out that, "Rivaroxaban is approved at higher doses to treat conditions such as atrial fibrillation (AF) and venous thromboembolism, but in COMMANDER HF, patients were randomised to a lower dose (2.5 mg twice daily) or matching placebo, in combination with antiplatelet therapy and standard therapy for HF." The primary efficacy endpoint was a composite of all-

cause mortality, myocardial infarction (MI) and stroke, and the primary safety endpoint was a composite of fatal bleeding or bleeding into a critical space with potential for permanent disability. Regarding patient baseline characteristics, the median age was 66 years, the majority of patients were men (77%) and median LVEF was 34%.

Prof. Zannad explains the main findings, "During a median follow-up of 21.1 months, we found no significant difference in the primary efficacy outcome, which occurred in 25.0% of patients in the rivaroxaban group compared with 26.2% on placebo (hazard ratio [HR] 0.94, 95% confidence interval [CI] 0.84-1.05,  $p=0.27$ ). There were no differences between groups in all-cause mortality or nonfatal MI but there was a significantly lower rate of nonfatal stroke with rivaroxaban vs placebo (HR 0.66, 95% CI 0.47-0.95,  $p=0.023$ )."

**"We found no significant difference in the primary efficacy outcome."**

No significant difference in the principal safety outcome was observed, which occurred in 0.7% of patients in the rivaroxaban group and 0.9% in the placebo group (HR 0.80, 95% CI 0.43-1.49,  $p=0.48$ ); however, patients taking rivaroxaban had a significantly higher



risk of International Society on Thrombosis and Haemostasis-defined major bleeding compared with those on placebo (HR 1.68, 95% CI 1.18-2.39,  $p=0.003$ ).

Prof. Zannad concludes, "The most likely reason rivaroxaban failed to improve the

primary efficacy outcome is that thrombin-mediated events are not the major driver of cardiovascular events in patients with recent HF hospitalisation."

1. Zannad F, et al. N Engl J Med 2018;August 27;doi:10.1056/NEJMoa1808848.

## Faces in the crowd

What do you like most about ESC Congress?

**Ana Abreu**  
Portugal

For me, I really like the networking opportunities and the chance to meet up with collaborators. It's good to connect with people in my Association and also to connect with other Associations. The programme is very good this year-the quality of the speakers is excellent and there is great interest in the sessions.



**Marten Rosenqvist**  
Sweden

The best thing about ESC Congress for me is that it provides a great forum to meet with colleagues in the field. It is really the only opportunity we have to get together.



**Fatima Smith**  
France

What do I like most about ESC Congress? Everything! It is the best way to meet everybody in our field. And of course, there are so many interesting presentations in all the different areas. You just need to look at the number of attendees to understand the popularity of ESC Congress.



**Stephania Teresa Mercado Bascope**  
Brazil/Bolivia

This is my first ESC Congress and I think that it is amazing! You can learn a lot from all the different sessions, hear about the ESC Guidelines and find out what's new in cardiology. It is also useful for making contacts with others who are interested in the same area.



**Manish Saxena**  
UK

ESC Congress is great because you get to hear about all the different areas of cardiology in one place, to find out what the latest data are and to learn about the new trials that are taking place. And it is a really good way to hear about developments with the ESC Guidelines.



**Julian Chun**  
Germany

What I like best about ESC Congress is that it is a great place to mingle with people from all over the world and to learn about advances in cardiovascular medicine. It is also a good opportunity to interact with the pharma industry and to find out about new and innovative projects.



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