

The first European Congress on e-Cardiology & e-Health

The first European Congress on e-Cardiology & e-Health was held in the city of Bern, Switzerland on 29–31 October 2014. This conference was initiated by Prof. Hugo Saner (Department for Preventive Cardiology & Sports Medicine, University Clinic for Cardiology, Inselspital Bern, Switzerland) together with a local and international scientific faculty (Figure 1) including many members of the Working Group (WG) on e-Cardiology of the European Society of Cardiology (ESC), which strongly supported and endorsed this congress.



Figure 1 The Faculty, left to right front row: Catherine Chronaki, Ewa Piotrowicz, Hugo Saner (Congress organizer), Paul Dendale and Goran Krstacic (Chairman WG e-Cardiology); from left to right, back row: Matthias Wilhelm, Friedrich Köhler, Marek Malik (past-chairman WG e-Cardiology), Enrico Caiani (Chairman-elect WG e-Cardiology), Enno van der Velde, Panos Stafylas, Nico Bruining, and Detlev Willemsen).

e-Health is a broad term that encompasses a range of different sub-topics such as electronic medical records (EMR), telemedicine and mobile health (m-Health), just to name a few in which e-Cardiology indicates the role of these electronic services within Cardiology. The past-president of the ESC, Prof. Panos Vardas, eluded to the current increasingly important role of e-Health within Cardiology during his farewell speech at the end of the annual ESC congress in Barcelona (2014), which is also supported by the current leadership of ESC-president Prof. F. Pinto. Besides this strong ESC leadership support, this first congress on e-Cardiology was also endorsed by the ESC associations of EHRA (the Heart Rhythm Association), EHFA (Heart Failure Association) and the EACPR (Prevention and Rehabilitation Association).

The congress in Bern contained 27 sessions with 90 speakers from 17 countries, while approximately 250 participants were present covering not only Europe but all also parts and continents of the

world, ranging from Australia to Asia and the Americas. A broad range of topics was covered on prevention, treatment and rehabilitation using new sensors and devices, new possibilities to acquire large sets of data (so-called big data) and new or improved ways to access data for both patients and medical professionals. The enthusiasm and dedication of all participants was huge, which resulted in lively discussions and debates. Some of the presentations as well as some more in-depth background information can be found in a supplement published in November 2014 by the European Journal of Preventive Cardiology (EJPC November 2014, Volume 21, Supplement 2).

Over the past two decades we have seen a large shift towards digitization of healthcare. The development of standards to store and exchange digital medical data has been initiated (for example for the DICOM standard for images). However, implementation into clinical practice is still a huge challenge, which was addressed in many presentations. As an example, a standard has been developed (by vendors and hospital representatives) for data exchange between implantable cardiac defibrillators (ICDs) and the EMR, but this standard has only been implemented at a few pilot sites.

Another topic was telemedicine, where many initiatives and feasibility studies were presented, including tele-Cardiology, with the goal to improve and provide healthcare to people who either have difficulties accessing it because they live in remote locations, or to prevent hospitalization by providing remote care at home. The results of a number of previous studies have been somewhat disappointing because no real improvement in outcome or other direct benefits could be demonstrated. However, with widespread internet access and the new generation of smartphones and fitness-related devices, which are much more reliable, that could change the outcomes of such studies considerably.

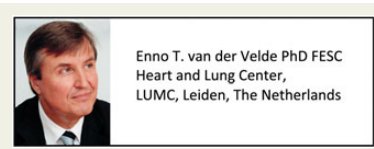
The ability to track heart rate and estimate consumed energy levels has been incorporated in the latest smartphone models today. The consumers/patients could, with the gained knowledge about their own performances and health status, drive the healthcare 'market' for m-Health. This could be good for prevention but also could incorporate some potential risks. An important issue is how accurate are these devices and software's (also called Apps)? How are they validated and what are the perspectives to apply these new technologies into daily clinical practice? Many presentations touched these potentials, possible pitfalls and opportunities. Concerning cardiovascular signals, devices, and apps, a review paper can be found in the earlier mentioned Supplement of the *European Journal of Preventive Cardiology*.

A great example to show the potential of the new m-Health developments within e-Cardiology for prevention was presented by Prof. Saner. He showed the significance of early detection of atrial

fibrillation (AF). The detection of AF in its early phase carries a great potential to prevent possible adverse effects such as stroke. Atrial fibrillation might be difficult to diagnose as the patient could come in reporting symptoms, whereas at that specific moment an ECG recording might not show the presence of AF. The same could also happen if the patient would undergo a 24 h Holter recording, because a period of AF may be just outside that 24 h window and therefore not be identified. Continuous, or more often longitudinal, measurements by so-called wearables (sensors included into smartphones, fitness devices, watches or even clothing) might be able to help in this respect of early AF detection preventing possible adverse effects, reducing costs and, most importantly, improving quality of life for these patients and their families.

As the current developments in e-Health and e-Cardiology are progressing rapidly and due to the sheer enthusiasm of the participants at this first meeting, the organizers are aiming to organize a second congress in 2016. E-Health, and in particular e-Cardiology, carries a huge potential, even though there are still many challenges to overcome. Some of them have already mentioned, others such as funding, regulation, reimbursement, and privacy need to be addressed as well. This first European congress offered an excellent

platform to start exchanging knowledge and providing networking on a larger scale, two key components to bring e-Cardiology closer to the clinic.



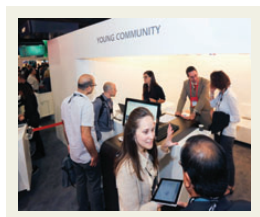
Supporting the cardiologists of tomorrow at the European Society of Cardiology

Working today for an even better future

'The future depends on what you do today.' —Mahatma Gandhi (1869–1948)



CoT Young leaders
31 August 2014



ESC Young Community stand, ESC Congress 2014

Young cardiologists are a key driving force within the European Society of Cardiology (ESC) activities, as well as an important audience for the new presidency of the ESC. Today, the young community represents 19% of the ESC membership and around 47% of the abstracts submitted to the last ESC Congress held in Barcelona 2014 were presented by cardiologists over 35 years of age.

To better engage young cardiologists in the ESC's activities and to ensure those activities reflect the needs of this group, the ESC launched a new initiative in 2010 focused on young cardiologists (under 35 years) and cardiologists in training: the ESC Cardiologists of Tomorrow (CoT).

Cardiologists of tomorrow and the ESC young community: still growing

Four years later the CoT is now a global initiative. At a national level 28 European countries that have young cardiology groups are part of the CoT initiative, with others currently being formed. Each country leader is engaged in sharing information with its members and meets with ESC leaders at each ESC Congress to exchange about the experiences and challenges facing cardiologists today.

To address specific educational needs of subspecialty formation and training, many ESC Constituent Bodies and Working groups have also created their respective young cardiologist subgroups that have generated a highly active and vibrant Young Community within the ESC. These groups include:

- ESC Scientists of Tomorrow—for basic researchers
- YOUNG EAPCI—for young interventionists
- Young EP—for young electrophysiologists
- EACVI Club 35—for young imaging experts
- Heart Failure Specialists of Tomorrow
- Young ACCA for young acute cardiovascular care experts
- Young Thrombosis Researchers Group

The ESC Council of Hypertension is also set to launch a group and the European Association for Prevention & Rehabilitation has a



dedicated Research Project Support programme to help young cardiologists in designing research or PhD theses, through a dedicated network of senior experts in preventive cardiology (more at www.escardio.org/eacpr).

ESC Cardiologists of Tomorrow activities

The ESC CoT is co-ordinated by a nucleus of seven young cardiologists, and is responsible for developing several educational and scientific activities, including the dedicated Cardiologists of Tomorrow track at ESC Congress, which provides young cardiologists with some of the most relevant and up to date information on key areas in cardiovascular medicine.

The track includes practical 'how to' sessions, applying the new Guidelines in daily practice, as well as clinical case learning sessions, in which challenging cases are presented in a highly interactive forum. Nearly 500 cases were submitted in 2014 by young cardiologists looking to present their work at this unique forum! In 2014 the overall winner was Enrico Ammirati from Italy with his case on extracorporeal membrane oxygenation associated with steroids as a bridge to recovery in cardiogenic shock due to necrotizing eosinophilic myocarditis in the first manifestation of Churg-Strauss syndrome.

There are also Young Investigator Awards for abstract presenters. In 2014 the five YIA winners came from Denmark, Austria, the UK, and

Sweden, with moderated poster winners coming from all over the globe, including Australia, America, Japan, Saudi Arabia, and Singapore!

Slides, videos, and reports from the CoT track and abstracts are freely available at the online library ESC Congress 365 at www.escardio.org/esccongress365. Other resources include short videos from ESC TV—in 2014 members of the CoT nucleus interviewed experts on hot topics such as:

- Wide complex tachycardia, differential diagnosis
- The challenges of evaluating aortic stenosis
- Novelties in acute heart failure

ESC Congress is as much about networking as it is about attending the sessions. The leaders of the national young groups, the CoT nucleus and ESC leaders take the time to exchange and share at a dedicated meeting, which is followed by a cocktail to which all cardiologists in training attending the congress are invited.

Support for young cardiologists all year round

There is a fantastic range of tools, educational opportunities, grants, and initiatives to support young cardiologists. Online learning at the ESC is of particular interest, with a dedicated platform hosting courses in general cardiology (new in 2014!), as well as a range of sub-specialties including prevention, heart failure, acute cardiovascular care, imaging, heart rhythm, and intervention.

The clinical case gallery is also a great resource where personal knowledge can be tested and cases shared and, of course, there is a year-long webinar programme—many of which are free.

During the coming years we hope the CoT initiative will continue to grow by combining the enthusiasm and the creativity that must characterize the young community, with the advice and experience of our Cardiology mentors. The future of cardiology will depend on what we do and learn today!

Rafael Vidal-Pérez rafavidal@hotmail.com

Ricardo Fontes-Carvalho, Janine Pöss, Ewa Jankowska, Michal Pazdernik, Markus Wallner, Saverio Muscoli

Cochrane III

Stem cells for heart failure: the experience of writing a Cochrane systematic review

Cochrane reviews are hard work, but the exercise is invaluable for giving researchers a deeper understanding of their subject, as well as identifying 'the gaps' for further research, Dr Enca Martin-Rendon tells Barry Shurlock PhD

The take-home message from a Cochrane systematic review published online in *The Cochrane Library* last year, April 2014, is that stem cell therapy has promise for treating heart failure and other

conditions after a myocardial infarction. It showed that people with chronic ischaemic heart disease and congestive heart failure given autologous bone marrow and blood-derived cells in conjunction with

standard treatment seemed to do better than controls, though larger trials are now called for.



Lead author Dr Enca Martin-Rendon MSc PhD FSB (Stem Cell Laboratory, NHS Blood and Transplant and Radcliffe Department of Medicine, University of Oxford, Oxford, UK) said: 'Autologous bone marrow cells seemed to give a reduction in the rate of mortality and rehospitalisation due to heart failure in the longer term, beyond the first year. Because of the good survival rates now possible with the current medical treatments, the number of deaths was very small – and a combination of small trials and a small number of events is not robust statistically. Larger trials are needed'. The review was based on 1255 participants in 23 relatively small trials, the largest of which had only 61 subjects randomized to each arm.

The study is now part of *The Cochrane Library* and, as such, will undergo regular updates incorporating new trials. Already Professor Anthony Mathur, who was a co-author of the Cochrane review, and is a consultant cardiologist at St Bartholomews and The London Hospital, London, where three of the small-scale studies were undertaken, is running the BAMI trial (the effect of intracoronary reinfusion of Bone marrow-derived mononuclear cells on all-cause mortality in Acute Myocardial Infarction). This will recruit 3000 people from 19 centres in 10 European Countries and is financed to the tune of €5.9 million by the European Commission.

For Dr Martin-Rendon who in 2012 was appointed one of the editors of the Cochrane Heart Group (CHG), this is the second systematic review as lead author. The first, which dealt with stem cells for treating AMI, was published in 2008 and updated 4 years later. Situated in Oxford, where the Cochrane Collaboration was created by Professor Sir Iain Chalmers and others, she is perhaps best placed to make use of the system that has been devised for writing these reviews. In fact, her AMI review was the first *Cochrane Systematic Review* on cell therapies to be published by the CHG, which is now headed by Professor Juan Pablo Casas at the London School of Hygiene and Tropical Medicine, London. Like many Cochrane authors, she received specific training on the writing of reviews, which start life as a detailed protocol. Much of the content of such courses is contained in *The Cochrane Handbook for Systematic Reviews of Interventions*.

Commenting on the training, which spanned 2 days, she said: 'It was really helpful. We learned how to develop and write the protocol and how to structure the review. Cochrane insists on a very high standard,

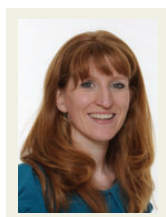
and being very objective. Once the protocol is written, you have to adhere to it. Electronic databases are searched for references and randomized controlled trials [RCTs], and when you have the RCTs, all data have to be extracted by two reviewers independently which minimizes errors. You also have to be aware of the risks of bias and extract quite a lot of information [metadata], such as the sources of funding, the numbers of centres involved, how the outcomes were defined etc. You also carry out sensitivity analysis, so you might, for example, separate the results of academic trials from those funded by industry, or trials that blinded the participants to treatment versus those that did not, to see if the same results are obtained when a particular set of data is removed, in comparison to the results from the primary analysis . . . with the full data set'.

Dr Martin-Rendon, who studied genetics in her home city of Seville, Spain, before coming to Oxford in 1992, emphasized the importance of having a group of authors with a range of skills. For the latest review, which she co-authored with five others, information specialist Dr Carolyn Dorée carried out a search of major databases, in all languages, using agreed search terms. This generated a list of 7704 references, which was whittled down for various reasons—such as duplication or non-relevance to the review question—to ~1000. Then Dr Martin-Rendon and one of two colleagues, both systematic review specialists—statistician Dr Sheila Fisher and scientist Susan J Brunskill—independently screened the list against pre-established eligibility criteria and ended up with 52 key articles, which they then examined, independently, in detail to extract the key data from 23 RCTs. They were aided by Review Manager (RevMan), a software package, including metaanalysis routines, produced by the Cochrane Collaboration for preparing and maintaining reviews. Clinical input came from Professor Mathur and cardiac surgeon Professor David P. Taggart (Oxford Heart Centre, John Radcliffe Hospital, Oxford).

All Cochrane reviews are published online. In order to extend readership, Dr Martin-Rendon's review on stem cells for AMI also appeared in the *European Heart Journal*, and 'was very well received'. The main message was also picked up by national news media, including in the UK the BBC. She believes that the experience of writing systematic reviews has been a considerable benefit: 'I have found that it has influenced my research. It helps to put everything into perspective, to see where we can take our studies from bench to clinic – to spot the gaps. And it's given me a much better understanding of my subject. It involves quite a lot of work, but I would be happy to do it again. If you are entering a new field of research I would recommend considering doing a Cochrane review, to identify the existing (or lack of) clinical evidence early on. But note that you have to



Dr Sheila Fisher Stem Cell Laboratory, NHS Blood and Transplant and Radcliffe Department of Medicine, University of Oxford, Oxford, UK



Susan J. Brunskill, Stem Cell Laboratory, NHS Blood and Transplant and Radcliffe Department of Medicine, University of Oxford, Oxford, UK



Professor David P. Taggart, Chair of Cardiovascular Surgery, University of Oxford, and consultant surgeon, Oxford Heart Centre, Oxford, UK

update the reviews regularly, which means that you really need to reconvene a group of specialists – someone to handle the literature searches, co-reviewers, statistical and clinical advice at regular intervals in the life cycle of the systematic review’.

Like most researchers, Dr Martin-Rendon is well organized in keeping abreast of the literature. She receives weekly email

updates from the most important journals in her field and uses tools such as the Mendeley Desktop, which means that papers uploaded by any member of her group are seen by all others. Currently, she is investigating how to improve cell therapies for heart disease, funded by NHS Blood and Transplant and the charity Heart Research UK.

Mediterranean diet linked to improved cardiovascular function in erectile dysfunction patients

Scientific highlights from EuroEcho-Imaging 2014 in Vienna, Austria

The Mediterranean diet is linked to improved cardiovascular performance in patients with erectile dysfunction, according to research presented at EuroEcho-Imaging 2014. Patients with erectile dysfunction who had poor adherence to the Mediterranean diet had more vascular and cardiac damage.

The study included 75 men with erectile dysfunction, aged 56 years on average, who attended the Department of Cardiology at Hippokration Hospital in Athens, Greece. Adherence to the Mediterranean diet was assessed with the Med-Diet Score which ranks patients as high (30–55), intermediate (21–29), or low (0–20) according to consumption of cereals, fruit, vegetables, meat, fish, dairy products, wine, and olive oil.

Vascular function was assessed by measuring two aspects of atherosclerosis, namely atheromatosis and arteriosclerosis. Atheromatosis was measured by the intima-media thickness (IMT) of the common carotid artery. Arteriosclerosis was evaluated with carotid-femoral pulse wave velocity (PWV). Heart involvement was based on diastolic function and left ventricular mass.

The researchers found that a lower Med-Diet Score correlated with significantly worse vascular and heart function. These patients had greater IMT and aortic stiffness as well as higher left ventricular mass and more profound diastolic dysfunction.

Dr Athanasios Angelis, first author of the study, said: ‘Patients with erectile dysfunction who had unhealthy diets had more vascular and cardiac damage than those who followed the Mediterranean diet. Previous studies have shown that patients with erectile dysfunction have vascular damage but we found that the heart is also damaged. This may help to further explain why these patients are more prone to cardiovascular events. The formation of atheroma and the poor cardiac function can eventually lead to a cardiac event’.

He added: ‘Our findings suggest that adopting the Mediterranean diet can improve the cardiovascular risk profile of patients with erectile dysfunction and may reduce their chances of having a heart attack or stroke. This needs to be tested in a larger study’.

The Mediterranean diet is characterized by daily consumption of fruit, vegetables, unrefined cereals and pasta, olive oil, and nuts. Dairy products are eaten in modest amounts, in the form of yogurt and cheese. Consumption of meat is low, with red meat once a week and poultry once a week considered a healthy level. A modest amount of wine can be consumed, and refined sugar should be avoided in favour of natural desserts like fruit.

Jennifer Taylor