The future of the European Association of Cardiovascular Imaging

by Bogdan Alexandru Popescu, EACVI President 2016–2018, and Prof. of Cardiology, University of Medicine and Pharmacy ‘Carol Davila’, Bucharest, Romania

I believe that the main mission of the European Association of Cardiovascular Imaging (EACVI) is to provide excellent education to its members and to a worldwide audience. In this regard, we will work on developing innovative educational materials that complement conventional education and allow people from a wider audience to benefit from the experience of the EACVI.

Multimodal education

We would like to cover both the standard and advanced educational needs of all the imaging modalities, from focused echocardiography to high-end advanced imaging systems, and provide education for the multimodality imager. The aim therefore should be to organize multimodality imaging courses, centred on a specific clinical scenario and involving colleagues from all the EACVI sections. We foresee the organization of a large multimodality EACVI congress in future. Education is also aimed at certifying that an individual who will undertake a specific type of training is able to perform and accurately interpret imaging studies. We will therefore link educational products with the increase in certification exams and, in doing so, cover all four imaging modalities by the end of 2018. Thus, we would like to develop certification in nuclear cardiology next year, as well as hopefully in cardiovascular computed tomography in 2018.

We will develop a comprehensive program dedicated to focused echocardiography in collaboration with other relevant scientific societies, to meet the increasing need for this type of examination. Echocardiography is increasingly undertaken by non-cardiologists at the point of care, and we need to provide education to ensure that it is used properly.

We also need to discuss the educational requirements of the cardiovascular imager, and to link this to developing certification in cardiovascular imaging in the coming years.

Collaborative research projects

Research is one of the major components of the EACVI mission, and we would like to strengthen the collaboration between the EACVI, the national societies, and the other associations of the ESC. To those ends, we would like to develop cross collaborative research projects on specific clinical scenarios. We also need to standardize the use of newer imaging techniques to provide reference values for clinically relevant parameters. For this, we would like to involve non-physicians, such as engineers and physicists, as the technical developments are extremely fast, and we need to incorporate those and hopefully innovate in the field of imaging.

Lastly, we need to define proper imaging diagnostic pathways in different clinical scenarios. We should use the imaging modality that is most relevant to the specific patient and not simply focus on the technique that we know how to use.

A society that belongs to its members

The link we have with the national societies is very important, because the association belongs to its members. We therefore need to work for them to provide what they require. In this regard, cooperative projects such as the multicentre European registries are very important because they offer further insights into what is happening in every country in terms of how scientific recommendations can be applied locally and how this can be improved.

During the recent EACVI Summits a need for increased awareness among members of the benefits of becoming an EACVI member were identified. Improved communication with the national societies to ascertain the needs of their representatives, to showcase what is available, and what is of benefit for their members. I am very honoured to work together with great scientists on the EACVI Board, sections and committees in order to achieve these aims.
Overview of the research project

The European Association of Cardiovascular Imaging’s (EACVI) Research & Innovation committee has conducted a number of research projects during the past two years, and the results of several that aim to show the value of cardiovascular imaging and prove its cost-effectiveness will be presented during EuroEcho-Imaging 2016.

Benefits to the patient

In general, there have been few instances in which a specific imaging tool currently used in cardiology has been demonstrated to have a direct impact on the treatment and the prognosis of the patient.

Until now, the evidence supporting the use of imaging techniques, even in ischaemic heart disease, has been very weak. We are therefore aiming to use the capabilities of the EACVI in general and the committee in particular to build large-scale studies to try to demonstrate that we can, thanks to the new imaging techniques, have an impact on patient outcomes.

Specifically, we want to use the Research & Innovation committee of the EACVI, to push for prospective, large-scale multicentre studies to try to show that, with echocardiography, cardiac magnetic resonance imaging or nuclear cardiac imaging, we can positively impact the way in which the patient will be treated and, in turn, improve the patient’s prognosis. This is our goal.

Demonstrating cost effectiveness

Another key area in which large-scale studies could be of benefit is that of showing cost-effectiveness. The problem is that, currently, if you perform cardiac magnetic resonance or if you use echocardiography, you think that you are being useful to your patient, but, as I mentioned, that has not been clearly demonstrated.

However, if we are able to show that performing echocardiography and cardiovascular imaging is clinically useful, it should be possible to also show that the technique is cost effective. That might be a way to make sure that the cost burden of, for instance, cardiac magnetic resonance is reimbursed at the real cost of the examination.

If we use France as an example, the reimbursement received for cardiac magnetic resonance is probably significantly below the cost of the examination in real terms. We therefore have to work really hard to demonstrate that we need these kinds of techniques, that they will improve the treatment of the patient, and that they will improve patient outcomes and therefore reduce ongoing healthcare costs.

Collaborating on a European level

To be able to show that echocardiography and cardiovascular imaging have a significant impact on patient outcomes and are cost effective, it is crucial that any studies include as many patients as possible, from as many centres as possible.

It is therefore important that they are conducted on a pan-European level. We are fortunate that the EACVI is a huge association, with a large number of members from across the continent. Moreover, we have many people close to the association are who are not only able to participate in our research projects but are also eager to take part.

In particular, we have many friends from the eastern part of Europe who are happy to participate in our projects and provide their data, which has clearly shown that what they are doing is close to what we are doing in the western part of Europe and is a valuable contribution.

Key research projects

The first major project that will be presented at EuroEcho-Imaging 2016 is the EURO-FILLING study, which is the first multicentre, prospective investigation performed in Europe through the EACVI comparing the value of echocardiographic assessment of filling pressures against invasive measurements (left ventricular end-diastolic pressure).

Specifically, the study aims to validate the E/e’ ratio, alongside additional non-invasive estimates against simultaneously measured left ventricular filling pressure obtained by left heart catheterization in echocardiography laboratories in eight reference European centres in a wide population sample size of cardiac patients with and without heart failure.

The study has now been completed and the results will be published very soon, with a first look at the findings to be presented in Leipzig.

The Research & Innovation committee has also been working on several other projects, including a meta-analysis using individual participant data conducted with Julien Magne, Limoges, France. This analysis combines all of the existing data in the field to determine whether global longitudinal strain is a prognostic marker in asymptomatic patients with severe aortic valve stenosis who have a preserved left ventricular ejection fraction. (To find out more about this study and to read an interview with Dr. J. Magne, turn to page 4.)

The third project that will be discussed at EuroEcho-Imaging 2016 is a registry involving the young community on the current situation with low flow, low gradient aortic valve stenosis.

Finally, we are starting an observational, prospective, multimodality imaging study called EuroCRT to examine the ability of cardiac magnetic resonance and echocardiographic findings to predict patient responses to cardiac resynchronization therapy (CRT).

This is an important project, as there has been no large study in the literature that has been able to demonstrate any beneficial effect of the use of imaging techniques in the field of CRT. However, we believe that, with the latest technologies and by combining cardiac magnetic resonance and echocardiography, we can better select the patients that might be responders to CRT.

We therefore designed a prospective, observational study involving 10–15 European centres, with the goal being to include 250 patients to undergo cardiac magnetic resonance imaging and echocardiography before implantation of CRT. These patients will then be re-evaluated six months after the procedure.

We are hoping that we might be able to demonstrate that this combination of imaging techniques is capable of defining responders and non-responders to CRT through the identification of reproducible markers.

We have been able to undertake this study thanks to the EACVI and the efforts of the Research & Innovation committee. Once we have published the results, we hope to be able to convert it into a Horizon 2020 project (see Box), and have therefore applied for a grant from the European Union. We aim to conduct a prospective, randomized study comparing the conventional use plus combined cardiac magnetic resonance imaging and echocardiography in the selection of candidates for CRT.

References

Join the Philips Healthcare Satellite Symposium

Discover the future of Live 3D TEE

What’s new in peri-operative and peri-interventional Live 3D TEE, cardio-oncology and fusion imaging

Today, 12:45 - 13:45, Room Wagner – Level 0

Chaired by two world-leading experts in the field of transesophageal echocardiography (TEE), the Philips Satellite Symposium will spotlight the latest clinical experiences and technological advances – showing you how fresh innovations could help deliver improved quality of care.

Dr. D. Berson (Austin, USA)
Advances in fusion of Live 3D transesophageal echo with fluoroscopy. How peri-procedural guidance can be further improved.

Dr. med. P. Biaggi (Zurich, CH)
Clinical benefits of left heart volumetry and left ventricle deformation assessment for patients during cancer therapy.

Dr. med. T. López Fernández (Madrid, ES)

Join the Philips Healthcare Satellite Symposium

What’s new in peri-operative and peri-interventional Live 3D TEE, cardio-oncology and fusion imaging

Today, 12:45 - 13:45, Room Wagner – Level 0

Chaired by: Prof. M. Monaghan (London, GB)
Dr. med. R. S. von Bardeleben (Mainz, DE)

How peri-operative and peri-interventional Live 3D TEE is evolving. Latest advances illustrated by clinical cases.

Dr. D. Berson (Austin, USA)
Advances in fusion of Live 3D transesophageal echo with fluoroscopy. How peri-procedural guidance can be further improved.

Dr. med. P. Biaggi (Zurich, CH)
Clinical benefits of left heart volumetry and left ventricle deformation assessment for patients during cancer therapy.

Dr. med. T. López Fernández (Madrid, ES)
Imaging Campus 1

“Understanding Echo guidance for Percutaneous Mitral Valve Repair. Patients screening and procedure.”

Learning Objectives:

Percutaneous Mitral Valve Repair therapy and patient screening overview.

Hands-on tutorials with GE Echo Workstation:
TTE and TEE screening.

Hands-on tutorials with Percutaneous Mitral Valve Repair system: Preparation, introduction, steering and grasping on the model.

R. S. v. Bardeleben MD, Mainz
F. Kreidel MD, Hamburg
P. Nikolai MD, Stuttgart
Thursday, December 8, 2016
12:45-13:45, room Schumann

EuroEcho-imaging 2016, Leipzig
Bracco Satellite Symposium

Echocardiography 2016 - Is it still acceptable to not use contrast and satisfy with suboptimal images?

Moderator: Harald Becher

- Contrast Echocardiography in Cardiology: an update
  Harald Becher

- The Incremental Value of Contrast Enhanced Stress Echocardiography in Patients with suspected CAD
  Roxy Senior

- Conclusions: It is really acceptable to not use contrast?
  Harald Becher, Roxy Senior

- Q/A 10 minutes

Faculty:
Harald Becher, Mazankowski Alberta Heart Institute, Canada
Roxy Senior, Royal Brompton Hospital, London, UK

A light lunch will be offered
TOSHIKA SATELLITE SYMPOSIUM: THURSDAY, 8 DECEMBER, ROOM MAHLER, 12:45 – 13:45

NEW APPROACH FOR ADVANCE CARDIAC FUNCTION:
NEW ASSESSMENTS OF MYOCARDIAL FUNCTION AND CARDIAC FLOW

Chairpersons:
H-J Nesser (Linz, AT) - P Nihoyannopoulos (London, GB)

12:45 Clinical value of advanced cardiac analysis using 2D and 3D speckle tracking for the daily routine.
L Pérez de Isla (Madrid, ES)

13:05 New assessments of myocardial function and cardiac flow.
H-J Nesser (Linz, AT)

13:25 Advanced cardiac analysis and its value in sports medicine.
G. E. Pieles (Bristol, GB)

Learning Objectives:
Learn about new applications and techniques to assess myocardial functionally and cardiac flow analysis.
Learn clinical applications and the value in sports medicine.

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Thursday 8th December 2016, Imaging Campus 3

Automated Strain analysis for Cardio-Oncology in practice

session 1  9:00 am–10:30 am
session 2  4:00 pm–5:30 pm

Stam Kapetanakis, St Thomas’ Hospital, Cardiovascular Imaging, London (Great Britain)

Pulmonary Hypertension – Comprehensive evaluation of the Right Ventricle

session 1  11:00 am–12:30 pm
session 2  2:00 pm–3:30 pm

Denisa Muraru, MD, PhD, Dpt of Cardiac, Thoracic, and Vascular Sciences, University of Padua (Italy)
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Prof. A. Klein: A look at his life and achievements, and into future of imaging in atrial fibrillation

Prof. A. Klein at the Cleveland Clinic in Cleveland, Ohio, the USA, for the past 27 years and is the Director of the Center of the Diagnosis and Treatment of Pericardial Diseases and a staff cardiologist in the Section of Cardiovascular Imaging. In addition, he is Prof. of Medicine at the Lerner College of Medicine of Case Western University and was the Director of Cardiovascular Research for over 20 years. He is also the president of the American Society of Echocardiography.

Prof. Klein is an echocardiographer with an interest in atrial fibrillation (AF). In the early 1990s, he worked on the role of transesophageal echocardiography (TEE) guided cardioversion in AF. He and his colleagues conducted the first randomized clinical trial to be published on the role of TEE-guided therapy in AF, which has significantly changed the practice of cardioversion in AF patients.

Spotting the potential of TE

Prof. Klein’s journey began with a conference held by the American Society of Echocardiography, where he noticed that TEE is a powerful instrument in visualising left atrial appendage (LAA) clots in AF. After he returned, he and Dr. Richard Grimm, a fellow at the time at the Cleveland Clinic, had a patient that needed cardioversion in AF. They debated the proper approach to cardioverting the patient from AF to sinus rhythm. The traditional thinking was that these patients would need a blood thinner such as warfarin for at least 3 weeks prior to any cardioversion, and then for 4 weeks afterwards. Prof. Klein asked why they could not expedite the cardioversion by visualizing the LAA, where the clots form, and, if there was no clot, they could cardiovert successfully while on anticoagulation. They started a small pilot project at the Cleveland Clinic, which was very successful.

A bigger randomized clinical trial of 1,222 patients worldwide compared TEE-guided cardioversion or conventionally guided treatment, finding that the TEE-guided approach was a clinically alternative strategy to conventional therapy for cardioversion of AF.

Following that, Prof. Klein and his colleagues asked whether anticoagulation could be achieved faster with enoxaparin, which became the ACUTE II study. Most recently, Prof. Klein was involved in the multicentre X-VERT study, which found that oral rivaroxaban is an effective and safe alternative to vitamin K antagonists in the cardioversion of AF.

Prof. Klein considers himself very fortunate to have started his training in Canada, initially at McGill University in Montreal, and then the University of Toronto and the University of Ottawa. From there, he went to the Mayo Clinic and then to Cleveland. During this journey, Prof. Klein profited from having a series of mentors, most recently Drs Liv Hafte, Jamil Tajik and Jim Seward at the Mayo Clinic and Drs Bill Stewart and Jim Thomas at the Cleveland Clinic.

Prof. Klein also believes that a certain degree of drive and persistence is required to succeed, even if things do not always work out. Above all, he says that you need to have life and have fun, and enjoy your sports and family outside of work.

The future of imaging in AF

Prof. Klein believes that imaging will be increasingly important in AF, whether echocardiography, cardiac CT scans, intracardiac echo or fusion imaging combining CT and fluoroscopy.

For Prof. Klein, one of the big recent developments in recent years has been devices that exclude the LAA, with the Watchman Left Atrial Appendage Closure Device (Boston Scientific, Marlborough, MA, USA) already approved in the USA.

Prof. Klein also expects that the new oral anticoagulants (NOACs) will be refined further to help patients in AF. In addition, the population of patients who receives LAA excluders and NOACs will be clarified further and contrasted with those who receive warfarin. With clinicians exploring novel indications for the drugs and potential price falls, there may come a time when warfarin could disappear altogether.

These changes will be accompanied by refinements to surgical techniques, and an explosion of percutaneous transcatheter aortic valve replacement, as well as mitral and tricuspid valve procedures. Prof. Klein envisions that an older person who takes blood thinners and has AF, and needs a new valve, will eventually undergo concomitant valve percutaneous surgeries and LAA percutaneous procedures, which he describes as “one-stop shopping”.

The future will also see assessment of left atrial function. When electrophysiologists perform an ablation they do not have a good sense of the return of atrial function. Novel strain techniques measure the mechanics of the left atrium and determine whether the patient needs to be on blood thinners or not, which offers an avenue for research.

Together, these changes are leading to a convergence of the percutaneous fields, with cross-talk between structural heart interventional cardiologists and electrophysiologists and imagers, who are also competing for the LAA space. In the words of Prof. Klein: “It’s exciting to see where the field is going in curing AF.”

References
Dr. J. Magne, Scientific Programme Advisor to EuroEcho–Imaging 2016, and CHU Limoges, Limoges, France

Dr. Magne will present the abstract “Distribution and prognostic significance of left ventricular global longitudinal strain in asymptomatic significant aortic stenosis: an individual participant data meta-analysis” during Poster session 5: Heart Valves on Friday at 14:00–18:00 in the Poster area.

“This is a project from the EACVI’s research and innovation committee, which is chaired, until December, by Prof. E. Donal, Rennes, France. We have several ongoing projects in the committee and we decided a year ago to perform a meta-analyses as we have expertise in this area.

One of the first and simplest for us to perform was this current study, which is an individual patient data meta-analysis of patients with significant aortic stenosis patients who were asymptomatic and had a preserved LV ejection fraction, and for whom outcome data was available. For each of the studies that met the inclusion criteria, we contacted the authors to ask them to share their individual patient data, and we performed a meta-analysis of the overall dataset, with the primary end-point being mortality and the secondary end-point combined death and cardiac-related hospitalization, including valve intervention.

The abstract of the study has been accepted as a poster at EuroEcho–Imaging, which will be presented on Friday, and we are preparing the manuscript. We hope to finish the first draft in December, during the congress, and will probably submit it for publication in the new year.”

Dr. R. Fontes-Carvalho, MD, PhD, FESC, Porto, Portugal

The Cardiac Imaging Quiz takes place on 8 December, 11:00–12:30, in room Mahler. Prof. Fontes-Carvalho tells us what to expect.

“We will do something that is not traditional at a congress but can be highly educational. First, we will show an image from a difficult case in echocardiography, magnetic resonance imaging or computed tomography and give the clinical context. We will then ask multiple choice questions and people can vote, via the EuroEcho2016 app, on the correct diagnosis. We will then explain how to reach the diagnosis, and discuss any tips and tricks. Every case will end with a slide with a take-home message for clinical practice in cardiac imaging.

Why should people go to this session? Because of four reasons. First, it will be a highly educational session, as the idea is not only to show the case but also to explain how you could reach the correct diagnosis. The second reason is that it will be highly interactive, with the audience voting and asking questions. It will be interesting for people not just to stand there watching, like a normal presentation, but to interact with the presenters.

The fourth reason is that it will, I think, be a funny session, not only due to the interaction but also because there will be some surprises that will engage and amuse the audience.

The quiz was inspired by similar sessions at the ESC Congress, which audiences really enjoyed and found educational. Plus, this kind of quiz is very well-suited to a cardiac imaging congress because, if you see an image of a strange or rare case, you never forget it!”