

EDITORIAL

Why is a new journal dedicated to echocardiography required?

Petros Nihoyannopoulos MD FRCP FESC FACC FAHA

National Heart and Lung Institute, Imperial College London, London, UK

Correspondence should be addressed to P Nihoyannopoulos
Email
petros@imperial.ac.uk

The year 2013 marked the 60th anniversary of Inge Edler and Hellmuth Hertz's discovery of echocardiography and the 160th anniversary of the death of Christian Andreas Doppler (1803–1853). The work of these pioneers marked modern cardiology not only by providing a more accurate diagnosis of heart disease but also by guiding patients' management. Echocardiography has to be included among the top 10 greatest discoveries dating back to the discovery of piezoelectricity by Pierre and Jacques Curie (1). Echocardiography was 'conceived' in 1953 when Inge Edler, a physician from Lund University in Sweden, together with Hellmuth Hertz, a Swedish physicist and the son of a Nobel laureate in Physics, performed the first human echocardiogram, which they called ultrasound cardiography (2, 3).

Never before has the pace of innovation in echocardiography been so swift. Echocardiography today has been revolutionised alongside competition from other imaging modalities, such as cardiovascular magnetic resonance imaging (MRI) and computed tomography. It is by far the most used cardiac imaging technique, with the most common use being the assessment of ventricular function, valve disease and the haemodynamic assessment using Doppler echocardiography, so that it has become essential in managing all forms of heart disease. The daily cardiac haemodynamic assessment is now routinely based on Doppler-derived haemodynamics for valve disease and diastolic function, while invasive haemodynamics are only reserved for when clinical discrepancies occur. This saves patients from unnecessary and potentially hazardous ionising radiation.

During the 1970s and 1980s, intense collaboration between engineers and physicians culminated in the development of two-dimensional echocardiography, Doppler echocardiography, colour-flow Doppler echocardiography

and transoesophageal echocardiography (TOE). In Europe, Bom and colleagues (4) developed a multi-element transducer to provide electronic linear greyscale scans of real-time two-dimensional cardiac images. From the initial poorly understood M-mode echocardiographic recordings of the left ventricle, the development of two-dimensional echocardiography added spatial resolution to the imaging of the heart and clinicians were now able to recognise the anatomy and function of the heart, so that the method was quickly adopted. However, while imaging quality continued to improve, two-dimensional echocardiography could not always match the clarity of some of the cardiac MRI pictures, and some sceptics thought that cardiac MRI had become the reference technique and that echocardiography was a technique of the past. How wrong they were!

Technology in echocardiography, like progress, is always changing, and for the better. The wide variety of transducers, frequencies and applications that are available today are unlimited and will be so for the foreseeable future. New technologies such as tissue Doppler and speckle tracking are finding their way into daily practice; while improvements in image clarity of three-dimensional echocardiography, they are dominating technological development at a breathtaking speed so that subspecialising on the various echocardiological modalities is becoming necessary. Echocardiography is rapidly becoming a multimodal technique in its own right.

With the explosion of interventions for non-surgical structural heart disease, echocardiography has responded to the challenge with rapid developments of the real-time three-dimensional TOE. This has now become indispensable in a modern cardiac catheterisation laboratory. Guidance for therapeutic procedures is now so routine

that a new subspeciality in echocardiography has emerged, that of interventional echocardiography (5). Dedicated individuals need now to be familiarised with the procedures and communicate their results to the interventionist. Procedures like mitral clip cannot be performed without TOE guidance, while TOE during transcatheter aortic valve implantation (TAVI) has become indispensable for a more accurate assessment of the aortic annular diameter, the positioning of the TAVI valve and the early detection of complications.

Measurement of ejection fraction has dominated clinical decision making for decades. While widely accepted that it is subjected to severe limitations due to loading conditions, speckle tracking echocardiography and deformation imaging have emerged in order to better assess and quantify ventricular contraction (6). No other imaging modalities can match the detailed assessment and quantitation of myocardial function globally, and also regionally, with such high time resolution. New outcome data are rapidly accumulating for all sorts of clinical scenarios (7, 8). New measures such as the global longitudinal, radial and circumferential strains are entering the clinical routine. Recent studies have shown that where strain measurements are significantly reduced, they correspond to areas of myocardial fibrosis observed by cardiac MRI (9).

Our field continues to expand rapidly and our work increasingly intersects with that of associated disciplines and beyond. The unrestricted access offered by online open access publication facilitates the widest possible dissemination of research discoveries. The vision for our new journal is that it will draw from these opportunities to create a powerful new platform through which we can accelerate research, education and practice in echocardiography across disciplines.

Echo Research and Practice is the first open access echocardiography journal. The journal is brought to you by the British Society of Echocardiography and aims to be the premier international journal for physicians, sonographers, nurses and other allied health professionals practising echocardiography.

The journal will publish quality clinical and basic research, reviews, videos, education materials and selected case reports across all echocardiography modalities and disciplines, including paediatrics, anaesthetics, general practice, acute medicine and intensive care. Manuscripts will be published online shortly after acceptance and the final version of record will be published as soon as it is ready, with issues closed on a quarterly basis. This means papers will be citable immediately. We anticipate

that *Echo Research and Practice* will be accepted for inclusion in PubMed Central, Medline and Journal Citation Reports as soon as enough articles have been published, at which point indexing will be applied to all published articles retrospectively.

Our journal is truly international. The editorial boards include representatives from around the globe. High-profile honorary and advisory editors provide strategic advice to the editorial team. The world-class tier of associate editors represents a core of subject specialities within echocardiography and are responsible for overseeing the peer review of all submissions to the journal. A broad-ranging editorial board is committed to acting as dedicated reviewers. This structure ensures that we provide both high-quality peer review and rapid responses to authors.

Additionally, we have received endorsement from a number of other societies worldwide – represented on the editorial board by collaborating society editors – including the Association of Cardiothoracic Anaesthetists, the Echocardiography Association of Inter-American Society of Cardiology (ECOSIAC), and the International Contrast Ultrasound Society. We are delighted to have the support of these esteemed organisations and believe that this collaborative approach will help us achieve our aim of being the premier international journal in echocardiography.

Publication in *Echo Research and Practice* will be free for all articles submitted in 2014. Please submit your best work to the journal and support this new initiative from the British Society of Echocardiography.

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