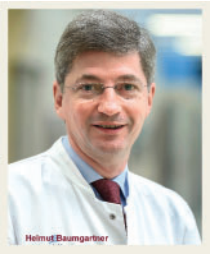
ESC European Society of Cardiology
European Heart Journal (2021) **00**, 1–2
doi:10.1093/eurheartj/ehaa1024

CARDIOPULSE

The Year in Cardiovascular Medicine 2020: Valvular Heart Disease

Discussing the Year in Cardiovascular Medicine for 2020 in the field of valvular heart disease is Professor Helmut Baumgartner and Dr Javier Bermejo. Mark Nicholls reports

Professor Helmut Baumgartner



Professor Helmut Baumgartner has been a leading figure in the field of valvular heart disease (VHD) for a number of years, conducting leading research and also playing a pivotal role in practice guidelines that have helped shape treatment advances.

He is Professor of Cardiology/Adult Congenital Heart Disease at the University of Münster and Director of the Department of Cardiology III: Adult Congenital and Valvular Heart Disease at the University Hospital Münster in Münster, Germany.

He trained in Austria and spent a year in the USA on a Research Fellowship in the Division of Cardiology at the Cedars-Sinai Medical Center in Los Angeles, returning to his home country as associate Professor of Medicine/Cardiology at the University of Vienna for 14 years, before his appointment at the University of Münster in 2007. During his time in Austria, he developed Adult Congenital Heart Disease and Valvular Heart Disease Programs at the Medical University of Vienna and was also one of the founding members of the Working Group on Adult Congenital Heart Disease of the Austrian Society of Cardiology.

He has served for many years as a member of the Working Group on Grown-up Congenital Heart Disease of the European Society of Cardiology (ESC), including chairmanship and lead of the task force for the ESC Guidelines on the management of grown-up congenital heart disease. He was also one of the chairs of the task force for the 2017 ESC Guidelines on valvular heart disease and the 2020 guidelines on adult congenital heart disease.

His research activities focus on non-invasive assessment, natural history, outcome after repair, and predictors of outcome for optimizing the time and type of intervention as well as development and evaluation of catheter interventional treatment options of adult congenital and valvular heart disease. This research has had an impact on the current practice guidelines for the management of valvular and adult congenital heart disease, such as the assessment of aortic stenosis and prosthetic heart valves, and the management of aortic stenosis, mitral regurgitation, atrial septal defect, and ventricular septal defect.

He points to the evolving role of catheter interventions in VHD as among the major recent developments in the field. ‘We have seen that particularly with aortic stenosis (TAVI - transcatheter aortic valve implantation), mitral regurgitation (edge-to-edge repair), tricuspid regurgitation (various new approaches), and failed bio-prostheses (valve-in-valve procedures)’, said Prof. Baumgartner. ‘With regard to antithrombotic treatment after TAVI, data from randomized trials are now helping to better define treatment strategies’.

He also acknowledged that there have been important publications in other fields—such as imaging and biomarkers for risk stratification or timing of interventions as well as basic and clinical research providing a new understanding of the basis of calcific-degenerative VHD, opening doors for future new pharmacological interventions in early disease phase.

However, Prof. Baumgartner also said particular challenges remain, notably when to intervene in asymptomatic patients with VHD (better risk stratification) and when to use which modality—catheter intervention or surgery. He said there have been technical improvements of catheter interventions for mitral and tricuspid valve, but there are still challenges surrounding how to select those patients with secondary mitral and tricuspid regurgitation, who are likely to benefit from intervention.

Dr Javier Bermejo

Javier Bermejo has spent almost three decades devoting his medical career to clinical patient care and cardiovascular imaging since joining the Department of Cardiology of the Hospital General Universitario Gregorio Marañón in Madrid as a resident in 1992.

He is now Director of the Area of Non-invasive Cardiology and Cardiovascular Imaging, Director of the Fellow Program in Cardiology, and Professor of Medicine in the Universidad Complutense de Madrid. In addition, he is Deputy Director of the Network-Center of Biomedical

Research in cardiovascular diseases (CIBER-CV), the governmental agency for nationwide collaborative research in the area.

Dr Bermejo leads a multidisciplinary research team of clinical cardiologists, surgeons, engineers, and physicists focusing on the invasive and non-invasive assessment of cardiac physiology and biomechanics, with a special emphasis on VHD. A particular focus has been on the indices of severity of VHD in terms of their physiological meaning, sensitivity for diagnosis, limitations, and errors, and value for clinical decision making, where his team has developed novel technical signal and image processing advances. In addition, he has focused on the clinical consequences of persistent pulmonary hypertension in VHD.

Key achievements include a better understanding of the mechanisms and consequences of flow-dependence of indices of aortic valve stenosis; improving the hemodynamic grading of severity of aortic valve stenosis using appropriate methods, both from catheterization and imaging data; developing novel tools for the characterization of cardiac function; and unequivocally demonstrating the deleterious effects of using pulmonary vasodilator drugs as phosphodiesterase 2 inhibitors (sildenafil) for treating residual pulmonary hypertension in patients with corrected VHD.

His interest in VHD is against a backdrop of the global prevalence of valvular disease nearing epidemic proportions. 'With one foot in the clinical ground and the other in cardiac imaging', he said, 'I became interested in improving diagnosis and patient management of patients with valvular disease'. That evolved from his early experiments and studies to building a 'wonderful' research team. That has also broadened the impact and seen them apply some of their physiological concepts and techniques to other fields where an accurate characterization of cardiovascular function is necessary.

Against the difficulties of COVID-19, he sees important highlights from 2020 as including results of RCTs clarifying the definite standards for antithrombotic therapy after TAVI, along with consistent research certifying the durability of transcatheter prostheses in the aortic position. However, he noted: 'Large-scale worldwide data is positive on the one hand showing that the global burden of VHD may be decreasing, but on the other, clearly demonstrating income-related inequalities to the access to highly efficient therapies such as TAVI'.

Looking ahead, he believes the years ahead will see rapidly growing technical and clinical improvements in percutaneous treatment of the mitral and tricuspid valves, and the risk of valve correction procedures being progressively lowered, expanding treatment indications to earlier stages of the disease.

A challenge remains in making surgical, and particularly percutaneous correction of VHD therapies, available in lower-income countries, and technical developments are still needed to facilitate percutaneous treatments in the mitral and tricuspid positions.

With a recognized record in mentoring young physician-scientists, Dr Bermejo is the author of more than 200 articles, and a reviewer for major Scientific Societies, governmental agencies, and more than 20 scientific journals.

Conflict of interest: none declared.

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