

Interview

David R Holmes Jr speaks to Laura Dormer, Commissioning Editor



Dr David Holmes is currently a Professor of Medicine at the Mayo Clinic College of Medicine and a consultant in the Division of Cardiovascular Diseases and the Department of Internal Medicine at Mayo Clinic in Rochester, Minnesota. Holmes has also been named the Edward W and Betty Knight Scripps Professor in Cardiovascular Medicine in Honor of George M Gura Jr. In 2009, he was elected Vice President of the American College of Cardiology. His special areas of interest include acute coronary syndromes, interventional cardiology, restenosis, vascular biology, risk outcomes analysis and telemedicine. In addition, he is involved in the development of new catheter design and new approaches for the treatment of a wide variety of patients with coronary artery disease and vein graft disease. Finally, he is involved in the development of continued application of percutaneous coronary intervention technology to noncoronary vascular beds. Holmes received his medical degree at Marquette University Medical School in Milwaukee and completed his internship at Virginia Mason Hospital in Seattle. He also served in the US Navy at the National Naval Medical Center in Bethesda.



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■ You have been a faculty member at Mayo since 1976. What led to your interest in interventional cardiology?

Exposure to my mentors in the catheterization laboratory from the early days led to my interest in invasive and interventional cardiology. Those physicians were intellectually keen, enjoyed mental and physical challenges, enjoyed new creative approaches and problem solving, and wanted to make procedures safer, better and more efficient to improve patient outcome.

■ What would you consider to be your greatest achievement in the field?

I consider the ability to interact with colleagues worldwide, to evaluate data together and try to formulate approaches to optimize patient care a great achievement. I would also say the ability to identify the best possible informed care, to provide for each patient that I interact with.

■ You were the Principal Investigator on the recent PROTECT AF trial. Briefly, could you describe the main findings of this study?

The Watchman Left Atrial Appendage System for Embolic Protection in Patients with Atrial Fibrillation (PROTECT AF) trial [1] evaluated the concept that left atrial appendage occlusion in patients with

nonvalvular atrial fibrillation would result in similar outcomes in terms of freedom from thromboembolic events compared with warfarin, but without the need for longer term warfarin treatment. In this trial, noninferiority criteria were met for the primary efficacy end point and there was superiority for a reduction in hemorrhagic stroke in the patients in the device group. These findings validated the concept of left atrial appendage occlusion as an approach for prevention of thromboembolism without the need for long-term anticoagulant therapy.

■ What are your thoughts on the apparently higher short-term complication rates with the Watchman® device compared with warfarin therapy alone?

There were indeed increased risks of short-term complications in the PROTECT AF trial. These were typically peri-procedural and related mainly to pericardial effusions. These effusions, while they did not result in mortality, certainly increased the duration of hospital stay. Any invasive procedure has potential complications. By contrast, the complications in those patients treated with long-term warfarin occurred later. I do believe that the longer a person is on warfarin, the greater the chance for bleeding. The risk:benefit ratio of early procedural complication rates versus later drug

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complications must always be considered. In the Continued Access Registry, which was carried out after the PROTECT AF trial was finished, procedural complications have been significantly decreased. This relates to improved operator experience, and device and procedural modifications. Such changes are essential for optimizing the initial outcome in patients treated with this approach.

■ **What will future research look at in terms of left atrial appendage occlusion with the device?**

Future research with left atrial appendage occlusion devices will include the use of these devices in patients in whom warfarin or any anticoagulant drug is contraindicated. In addition, improved devices with better safety profiles are being tested. There will also be new groups of patients; for example, those undergoing atrial fibrillation ablation who will be studied for routine device implantation. Finally, several new devices and procedural approaches by multiple companies are also being tested. This has been the result of confirmation of the hypothesis that left atrial appendage occlusion provides at least similar results to warfarin for embolic protection in those patients with nonvalvular atrial fibrillation.

■ **You are also involved in research looking at the use of autologous skeletal myoblasts in the replacement of damaged heart muscle. What are your hopes for this area of research?**

Congestive heart failure remains a leading cause of mortality and morbidity. Despite our improvements in the treatment of acute myocardial infarction, many patients are left with abnormal left ventricular function. In addition, patients with nonischemic cardiomyopathy continue to present very difficult problems. Attempts to restore more normal left ventricular function by either stem cells or skeletal myoblasts or other regenerative approaches have the potential to truly revolutionize cardiology.

■ **What other areas do you think will be important to interventional cardiology over the next 5–10 years?**

Interventional cardiology will continue to grow to include interventional cardiovascular disease as we expand the breadth of the field to more patient groups with diseases involving different vascular beds as well as the growing area of treatment of structural heart disease.

■ **Finally, where will you be focusing your time and research over the next 5 years?**

My focus and research will be on expanding invasive approaches to optimize the treatment and outcome of many different disease states. The use of robotic guidance as a means to optimize procedural performance will occupy a central role. Finally, I will be involved in the development of new curricula for training of the ‘interventionalist’ of the future.

Financial & competing interests disclosure

David R Holmes Jr and Mayo Clinic have financial interest in technology related to this research. That technology has been licensed to Atritech, and Mayo Clinic and Dr Holmes have contractual rights to receive future royalties from this license. To date, no royalties have been received by either Mayo Clinic or David R Holmes Jr. The author has no other relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript apart from those disclosed.

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Bibliography

- 1 Holmes DR, Reddy VY, Turi ZG *et al.*: Percutaneous closure of the left atrial appendage versus warfarin therapy for prevention of stroke in patients with atrial fibrillation: a randomised non-inferiority trial. *Lancet* 374(9689), 534–542 (2009).