

GUEST EDITORS' PAGE



Arthur J. Moss, MD

In Memoriam



Eric N. Prystowsky, MD,^{a,b} James P. Daubert, MD^c

“Every animal leaves traces of what it was; man alone leaves traces of what he created.”

—J. Bronowski, *The Ascent of Man* (1)

Arthur J. Moss, MD, was born June 21, 1931, and died on February 14, 2018. He was a true gentleman scholar, whose research spanned decades and resulted in major changes in the approach to identifying and treating those at risk for sudden cardiac death (SCD). We are honored to remember him in this piece, together and individually.

He graduated from Yale University and then received his medical degree from Harvard University in 1957. After his house staff training in medicine at Massachusetts General Hospital and a tour of duty in the U.S. Navy, Arthur joined the medical staff at the University of Rochester Medical Center. He became the Founding Director of the Heart Research Follow-up Program from 1969 to 2014. He had a prolific research career that culminated in the “MADIT years,” as the results of several randomized clinical trials starting with MADIT (Multicenter Automatic Defibrillator Implantation Trial) changed our approach to the use of the implantable cardioverter-defibrillator (ICD) in the primary prevention of SCD.

Arthur embodied high ethical standards, intellectual curiosity, and humanity throughout his career. He was keenly focused on sudden death prevention for long QT syndrome (LQTS) and ischemic heart disease, continually evolving from his clinical cardiology background to becoming well-versed in clinical trial design and statistics, and even molecular biology. Arthur authored a prodigious 750

publications and maintained continuous National Institutes of Health funding from 1966 to 2018, all while mentoring numerous fellows. However, hearing the depth and breadth of his connection to his 3 accomplished children through their moving and humorous eulogies at the memorial service, you might think that Art worked part time.

THE PRE-MADIT YEARS

Eric N. Prystowsky

I first became acquainted with Arthur through his research publications during my cardiology training at Duke in the mid-to-late 1970s. He had written many papers on cardiac pacing, but I was more intrigued by his early observations on the LQTS, and his seminal observation that cervicothoracic sympathetic ganglionectomy could be employed in the treatment of LQTS. He went on to create the Long QT Registry in 1979, from which much valuable data on this syndrome have been published. Yet, it was his superb research on the prognostic role of ventricular arrhythmias in the early post-myocardial infarction (MI) period and the importance of reduced left ventricular ejection fraction in such individuals that eventually brought us together.

During the 1970s and into the 1980s, many authorities advocated suppression of premature ventricular contractions and nonsustained ventricular tachycardias in patients after an MI to improve survival. Dr. Moss published results from the Multicenter Post-Infarction Research Group (2) that showed the very important role of left ventricular ejection fraction in the risk stratification of mortality after MI—I have shown the figure from that study for decades. This critical observation laid the groundwork for many subsequent studies in this area. Not long afterward, I was asked to debate Arthur at one of the national heart meetings, and the topic was whether we should suppress premature ventricular

From the ^aCardiac Arrhythmia Service, St. Vincent Hospital, Indianapolis, Indiana; ^bDuke University Medical Center, Durham, North Carolina; and the ^cDepartment of Medicine, Division of Cardiology, Cardiac Electrophysiology, Duke University Health System, Durham, North Carolina.

contractions post-MI—I took the con side. To say I was nervous is an understatement, but after it was over we sat and talked and it was the start of our friendship, which meant a great deal to me. Although I was not part of the MADIT group of investigators, for more than 25 years we met at various arrhythmia symposia in and outside the United States, and I took every opportunity to find time to chat with Art about science and life in general. His intellect was obvious to all, but it was matched in kind by his humanity and kindness. I'll never regret accepting that debate!

THE MADIT YEARS

James P. Daubert

After completing cardiology and electrophysiology (EP) at Duke, I joined the University of Rochester faculty in 1992, fortuitously near the inception of the MADIT I trial. Arthur graciously invited me to join the MADIT Executive Committee, a team of leaders in the EP domain drawn from the United States and Europe. Notwithstanding my junior status and relative lack of experience, Arthur made me feel that my opinions were somehow as valued as those of the field's leaders. It was an exceptional and career-changing opportunity.

Arthur was unmistakably the MADIT Executive Committee leader, but he fostered a climate that not only encouraged, but rather insisted upon input from all. It was a genuine group effort, a team of rivals if you will; it was not a band of sycophants endorsing the Principal Investigator's preconceived plan. Nevertheless, Arthur subtly steered the process just enough. Audacious ideas for aggressive trials were floated and (respectfully) left for another day. Arthur somehow knew just how far to push the field to yield a blockbuster result yet maximize the likelihood of accomplishing it. He insisted that we "keep it simple." All trials were investigator initiated, with data collection in Rochester. The partnership included international EP leaders, an outstanding project

management team headed by Mary Brown, superb clinical trials statistic leadership guided by Jack Hall until his death, and the sponsor (CPI, then Guidant, then Boston Scientific). We had Executive Committee-only breakout sessions to address scientific priorities, removed from commercial or funding concerns. The clinicians, statisticians, project managers, and corporate partners respected and valued the roles, input, and contributions of the others. The partnership between academia and industry is increasingly criticized, but this one flourished on a high ethical and scientific plane. The Executive Committee meeting scheduling process was unique by today's standards in that Arthur would announce a day and time. Despite everyone's jam-packed schedule, physical attendance was virtually 100%. Over time, the Executive Committee evolved to incorporate additional expertise, including heart failure and imaging. It is remarkable that Arthur's team prevailed for nearly 3 decades from 1990 to 2018.

So, who was Arthur J. Moss? This question is both easy and difficult to answer. It depends on your perspective. If you were a colleague, he was an esteemed investigator who was cordial, respectful, and someone to admire and emulate. If you were a student or fellow, he was a fantastic mentor with an endless stream of actionable ideas and the practical sense to get them done. If you were his patient, he was a trusted, empathic expert who left no stone unturned. He was a devoted husband to Joy Folkman Moss.

In conclusion, Dr. Arthur Moss will be missed for his many research accomplishments, his ability to look beyond the horizon, and for his kindness to others. Such an individual rarely passes among us, and we have been blessed to know him.

ADDRESS FOR CORRESPONDENCE: Dr. Eric N. Prystowsky, Cardiac Arrhythmia Service, 8333 Naab Road, Suite 400, Indianapolis, Indiana. E-mail: ENPrysto@ascension.org.

REFERENCES

1. Bronowski J. *The Ascent of Man*. Little, Brown & Company: Boston/Toronto, 1973:42.
2. The Multicenter Postinfarction Research Group. Risk stratification and survival after myocardial infarction. *N Engl J Med* 1983;309:331-6.