Bud Frazier's 1,000th LVAD at THI

Bud Frazier Has Pioneered Mechanical Circulatory Support

Eric A. Rose, MD

In celebrating the 1,000th implantation of a left ventricular assist device (LVAD) at the Texas Heart Institute (THI), we find it particularly appropriate to recognize the contributions of Dr. O.H. (Bud) Frazier. As important as Bud's contributions have been to THI, they have been that much more important to the entire field of cardiac replacement therapy.

Early in his career, Bud was inspired by the vision of Dr. Michael DeBakey and the energy of Dr. Denton Cooley, who pioneered mechanical circulatory support (MCS) and replacement in the 1960s. The early attempts to replace the human heart have been compared to the first manned mission to the moon, which took place during the same era; both of these heroic endeavors were fraught with danger and difficulty. By the 1980s, most cardiac surgeons had turned away from MCS and replacement. Instead, they had committed themselves to the boom in reparative heart operations, including coronary artery bypass grafting, valve replacement and repair, and aneurysm surgery.

Bud was one of the few who remained committed to developing a surgical approach to benefit the sickest of the sick: patients with end-stage heart disease. His diligent, systematic approach entailed the creation of one of the world's most sophisticated large-animal surgical laboratories, as well as a clinical program for heart transplantation and MCS. In collaboration with industry pioneers, including Victor Poirier, of Thoratec Corporation, and John Watson, of the National Institutes of Health (NIH)—the "godfather" of MCS—Bud pioneered the use of mechanical devices as bridges to heart transplantation. Most important, he perceived the important role of bridging to transplantation as a "clinical laboratory" for developing MCS devices that could be used for long-term destination therapy (DT).

In the late 1980s, the dismal results obtained with the Jarvik 7 Total Artificial Heart caused attention to be focused on left ventricular support as a simpler alternative. While the leading NIH-supported MCS researchers focused on mock circulatory loop studies and the durability of potential LVADs, Drs. Frazier, Poirier, and Watson focused on reducing the risk of stroke and creating a wearable pulsatile device rather than a fully implantable one. The results of the Randomized Evaluation of Mechanical Assistance for the Treatment of Congestive Heart Failure (REMATCH) trial,[1] reported in 2001, proved that, compared with maximal medical therapy, this wearable device dramatically reduced the mortality rate of patients with end-stage heart disease who were not eligible for transplantation. More important, the quality of life of DT patients was superior to that of medically treated (control) patients, despite a high incidence of bleeding, cardiovascular accident, device failure, and infection. This validation of DT was followed by U.S. Food and Drug Administration approval of the first DT device and Medicare approval of reimbursement for DT.

Clearly, because of his pioneering work, Bud Frazier was largely responsible for the current era of MCS. Whereas the 1,000th LVAD implantation at THI is certainly a cause for celebration, the continuing progress in this field—combined with the increasing incidence of severe heart failure—leads us to envision a future characterized by tens of thousands, if not hundreds of thousands, of LVAD implants.

From: *Department of Health Policy, Mount Sinai Medical Center, New York, New York 10029*

Address for reprints: *Eric A. Rose, MD, Chairman, Department of Health Policy, Mount Sinai Medical Center, 1 Gustave L. Levy Place, Box 1077, New York, NY 10029*

E-mail: *erose@mafgrp.com*

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