Bud Frazier's 1,000th Implantation of a Ventricular Assist Device

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Genius is the very eye of intellect and the wing of thought; it is always in advance of its time, and is the pioneer for the generation which it precedes.
—William Gilmore Simms

Dr. O.H. "Bud" Frazier recently implanted his 1,000th ventricular assist device to help a patient with advanced heart failure. This alone is an amazing feat that is a testament to his surgical skills and the program he has developed for treating patients with advanced heart failure. Although this is monumental and worthy of recognition, it is only a small part of Dr. Frazier's contributions to the development of mechanical circulatory support (MCS) as a treatment for advanced heart failure.

Dr. Frazier and the heart failure program at the Texas Heart Institute were early participants in and significant contributors to the field of heart transplantation. Through this experience, Dr. Frazier recognized the need to develop a mechanical support solution for patients who were too sick for heart transplantation or were dying on the transplant waiting list. This early recognition of an unmet clinical need resulted in a lifelong commitment to finding an alternative solution for patients dying of heart failure.

Dr. Frazier has been instrumental in the design, development, testing, and subsequent clinical introduction of almost all ventricular assist devices used today. When the initial devices were being developed as an "alternative" to heart transplantation, the main focus was on pulsatile total artificial hearts (TAH). In the course of the development and clinical use of the TAH,[1-3] it was recognized that many patients could be adequately supported with restoration of flow and pressure just by the use of a left ventricular assist device (LVAD). Once again, Dr. Frazier and colleagues led the way with their work on pulsatile LVADs.[4] This work and collaboration with Vic Poirier, PhD, and others resulted in the clinically successful HeartMate IP LVAD.[5,6] Although many additional advances and iterations of pulsatile devices would follow, Dr. Frazier and others were already looking into the future.

Perhaps one of the greatest contributions to the current state of LVAD technology was the concept of a continuous-flow pump design that would result in diminished pulsatility or perhaps no pulse at all. This radical concept, championed by Dr. Frazier and Dr. Richard Wampler, resulted in the development of the Hemopump.[7,8] This success with a miniaturized continuous rotary-flow pump redirected the field of MCS and is responsible for the tremendous success of current LVADs.[9]

In addition to his participation in the design and development of many past and current VADs, Dr. Frazier has always been a leader in the clinical introduction and use of these new technologies. This includes the clinical use and indication of LVADs as a bridge to transplantation, for destination therapy, and for myocardial recovery, as well.[10-14]

The story does not stop here. His earliest work included transplantation and developing a TAH, and he has continued to pursue this dream. Dr. Frazier seeks to develop a TAH by modifying current continuous-flow pumps into a functional TAH[15-17] and is also teaming with engineers from Australia to develop the BiVACOR® TAH (BiVACOR Pty Ltd.; Brisbane, Australia). Perhaps someday patients will no longer need heart transplantion because of the efforts of Dr. Frazier.

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According to Kurt Dasse, PhD, friend and colleague of Dr. Frazier, "He has an eagerness to always listen to new concepts for mechanical circulatory support. Bud has always been open to mentoring new investigators to assist in advancing their ideas, and willing to pursue practical innovative solutions outside the box. He's always been the 'MCS blackboard' for testing the water on new ideas."

Dr. Frazier's impact on patients extends well beyond his 1,000th VAD implantation. Because of his pioneering efforts and willingness to share his knowledge and experience, there are many successful VAD programs around the country and the world and thousands of patients worldwide who have benefited from his work at the Texas Heart Institute.

Dr. Frazier has been a true pioneer. He has helped save the lives of many patients who previously had no option. We are thankful that he has not slowed down and continues to innovate, to contribute, and to mentor future leaders.

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