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Albert Starr wins Lasker Award

The Portland doctor is honored for developing an artificial heart valve

JOE ROJAS-BURKE

Shortly after arriving in Portland in 1957, a young surgeon named Albert Starr received a visit from a 65-year-old electrical engineer in rumpled clothes who wanted help building an artificial heart. It was a pipe dream, but Starr took Lowell Edwards seriously. Less than two years later, the unlikely collaborators produced an artificial heart valve that allowed Starr's surgical team to perform the world's first successful valve replacement.

Starr is one of four winners of this year's Lasker Awards, widely considered the nation's most prestigious medical prizes. Since the inception of the awards in 1946, 72 recipients have gone on to receive the Nobel Prize. The Albert and Mary Lasker Foundation announced the awards Saturday. The other winners of the $150,000 prizes from the foundation were Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, for his leadership in combating AIDS; Ralph Steinman of the Rockefeller (N.Y.) University, who discovered how the immune system coordinates defenses against microbial invaders; and Alain Carpentier, a French heart surgeon who adapted animal valves for use in humans.

Reflecting on his success during a recent interview, Starr said blind luck played a significant role by supplying a partner such as Edwards. But Starr also emphasized the necessity of being decisive and bold when pushing into the unknown.

"In surgery, either you operate or not; there's no horsing around," he said.

At 81, he spends an hour or two a week seeing patients but is no longer active as a surgeon. He holds a number of administrative posts in the Providence health system, where he has directed the Heart & Vascular Institute at Providence St. Vincent Medical Center since 1986.

Before Starr and Edwards developed their mechanical heart valve, no patient had lived longer than three months after valve-replacement attempts. Four of Starr's earliest patients have lived for more than 40 years with a Starr-Edwards artificial valve.

"Fifty years ago, heart-valve replacement surgery did not exist. Today, it is the second-most common cardiac surgery in the United States and one of the most successful," Joseph Goldstein, chairman of the scientific selection committee, said in a written statement. "The invention of mechanical and tissue-based valves by Albert Starr and Alain Carpentier benefits several hundred thousand people each year, who otherwise would suffer from heart failure or premature death."

Starr was born in Brooklyn, N.Y., and enrolled at Columbia University at 16. He earned a medical degree at Columbia's College of Physicians and Surgeons at 22, and served as in the Army as a combat battalion surgeon in Korea.

He was an up-and-coming surgical resident at Bellevue and Presbyterian hospitals in New York when the University of Oregon Medical School, now Oregon Health & Science University, offered him the chance to launch Oregon's first open-heart surgery program in 1957.

Starr was focusing on children's heart defects and hadn't seriously considered artificial heart valves until Edwards, the engineer, showed up in the spring of 1958. Within a few weeks, Edwards returned with a prototype heart valve. Edwards had patented more than 63 inventions and earned a fortune from a fuel booster pump that allowed aircraft engines to run at high altitudes.

Experimenting on dogs, Starr's medical team found that the first valve designs became clogged with blood clots and most dogs died within days. He and Edwards abandoned the idea of copying biological heart valves, which have a set of flaps. They turned to a ball-and-cage design: pulses of blood push the ball away from the opening to allow flow, then as pressure drops, the ball falls back into a ring to form a seal.

By 1960, the team achieved lasting survival in several dogs. Starr said he remained reluctant to try the device in people, but the medical school's chief of cardiology, Herbert Griswold, urged him to go forward. There was no other hope for patients dying from valve disease.

The first patient, a 33-year-old woman, died 10 hours after surgery because air bubbles had formed in a major vein and traveled to her brain. But the surgical team stuck with its commitment to perform five cases before drawing conclusions.

The second patient, Philip Admunson, lived for 15 years with his valve and died after falling from a ladder at home.

The successes led to international acclaim, and patients needing heart-valve replacement came to Portland from around the world.

Edwards, who died in 1982, started a medical devices company in Southern California that generated hundreds of millions in worldwide sales.

More than 175,000 people have received Starr-Edwards valves, and it wasn't until the mid-1990s that they were overtaken by tissue valves pioneered by Carpentier, Starr's co-recipient of the Lasker Award.