

## Book review



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***A Change of Heart: How the People of Framingham, Massachusetts, Helped Unravel the Mysteries of Cardiovascular Disease***  
by Daniel Levy, MD, and Susan Brink

258 pp. New York: Alfred A. Knopf, 2005.

**P**assionate pioneers who are willing to take risks to fulfill a mission often precipitate great discoveries. The fields of science, space exploration, and medicine abound

with examples. The history of the Framingham Heart Study is one such story with all the compelling elements of perseverance, conflict, triumph, tragedy, success, failure, intrigue, and a fair share of heroes. Daniel Levy, MD, the current director of the Framingham Heart Study, and Susan Brink, a senior writer for *U.S. News & World Report*, unravel a compelling drama that started almost 50 years ago and continues today.

The Framingham Heart Study was the first epidemiological study to target a noninfectious disease. The results produced from the first generation of volunteers—5209 citizens of Framingham, Massachusetts—yielded an evidenced-based list of risk factors for cardiovascular disease, the majority of them modifiable. The very term “risk factors” is a legacy from this revolutionary study. Although this book is a historical account of the Heart Study, it is sprinkled with personal stories of scientists, physicians, patients, and study volunteers who stand out as road markers on

the trail of discovery. Their contributions form the foundation for the successes the Heart Study has delivered, and Dr. Levy is quick to give them credit. He is equally frank in naming those whose decisions had the potential to derail or terminate the study at various points along the way. The results of this study have changed the course of medical history by giving physicians a scientific basis for recommending lifestyle changes to their patients and by giving Americans a stake in reducing their risk of cardiovascular disease. Preventive cardiology is Framingham’s contribution to the world.

The Framingham Heart Study was established during the presidency of Harry S Truman by the US Public Health Service, the parent agency of the current National Institutes of Health. In 1948 Congress passed the National Heart Act, creating the National Heart Institute known today as the National Heart, Lung, and Blood Institute. That decision was but one of many factors that serendipitously led to the Heart Study. Postwar America was ready to take funds previously diverted to the war effort and invest them in medical research. Cardiology was gaining momentum as a specialty, leading to the establishment 4 years later of the

American College of Cardiology. Given that heart disease was the number one killer of Americans at the time, Congress voted to invest \$500,000 to uncover the root cause of heart disease. With that seed money, the Framingham Heart Study served to alter the focus of medicine from treatment toward prevention. In the late 1940s when the study began, the first and only symptom of cardiovascular disease was often coronary death. Prevention was essential.

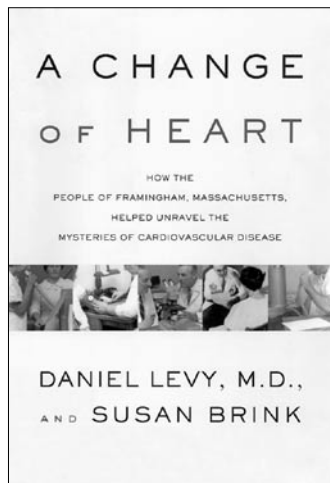
Another coincidental factor in the success of the Heart Study was the availability of the electrocardiograph capable of documenting changes in electrical activity of the heart consistent with myocardial infarction. As early as 1912, James Herrick published an article in the *Journal of the American Medical Association* describing myocardial infarction as an episode in which insufficient blood supply causes death to a part of the heart muscle. His landmark contribution was all but ignored until 7 years later,

when he added electrocardiograph tracings to his hypothesis, providing scientific evidence of the loss of voltage following a heart attack, reflecting death of part of the heart muscle. This technology “united the work of three visionaries: Einthoven, White, and Herrick. Einthoven invented a miraculous diagnostic device; White brought it to Boston and began using it to diagnose heart disease; Herrick employed the device to prove his theory that human beings could survive a heart attack. Together, White and Herrick founded the American Heart Association in 1924.”

But the most compelling impetus for the Framingham Heart Study was the tragic event on April 12, 1945, when Franklin D. Roosevelt, the 32nd president of the USA, died of

a massive stroke as a result of uncontrolled severe hypertension. Roosevelt had been on the road to cardiovascular disaster for several years prior to his death. The year before his death, his blood pressure was 260/150 mm Hg, and on the day he died it had risen to 300/190 mm Hg. The only treatment for heart failure at that time was digitalis. Roosevelt’s personal physician, Admiral Ross McIntire, an ENT specialist, was not convinced that controlling hypertension was necessary—that’s why it was called “essential”—and only agreed to prescribe digitalis upon the insistence of a young cardiologist, Dr. Howard Bruenn. Bruenn had tried to convince Roosevelt of the need for lifestyle alterations but was thwarted in his efforts by Dr. McIntire’s reluctance to communicate the urgency of the changes to the president. Dr. McIntire also had an agenda to present the president to the public and his family as strong, healthy, and capable of seeing the country through the dark days of the war.

Thus, in 1948, America was ready for a scientific study that would provide the needed evidence in the battle against cardiovascular disease. The Framingham Heart Study has done just that. In telling the story, Dr. Levy fills the reader with a sense of



pride in vicariously viewing the American spirit collaborating for a just cause.

Franklin D. Roosevelt's final inaugural speech on January 20, 1945—although meant for an American public faced with the challenge of building a durable peace—could apply to the victories and defeats experienced by the participants in the Framingham Heart Study:

I remember that my old schoolmaster, Dr. Peabody, said, in days that seemed to us then to be secure and untroubled: "Things in life will not always run smoothly. Sometimes we will be rising toward the heights—then all will seem to reverse itself and start downward. The

great fact to remember is that the trend of civilization itself is forever upward; that a line drawn through the middle of the peaks and the valleys of the centuries always has an upward trend."

That trend continues upward for the Framingham Heart Study as it approaches 50 years of research by following 3500 third-generation volunteers who, like their parents and grandparents, have donated their medical histories to science.

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