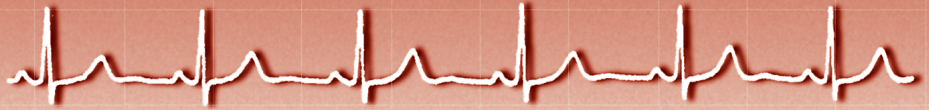


# The Framingham Heartbeat



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Winter 2012

## William B. Kannel, MD, Pioneer in Cardiovascular Epidemiology, 1923-2011



William B. Kannel, MD, Director of the Framingham Heart Study, 1966-1979

Dr. Kannel was active in the field of cardiovascular epidemiology for more than 60 years, enabling the Framingham Heart Study to become a leader in this field of research. He joined the Heart Study in 1950. In 1966, he became the NIH Director of the Heart Study, replacing Dr. Thomas R. Dawber, the original architect of the study, serving in this capacity until 1979. Between 1979 and 1987, as Professor of Medicine and Chair of the Preventive Medicine Section at Boston University School of Medicine, he served as the Principal Investigator of the Framingham Study. Subsequently, he continued work as the senior-most investigator at the Heart Study until his recent illness curtailed those efforts.

The Framingham Study was acknowledged to be among the top ten medical advances in the last century in several reports, in no small measure attributable to Dr. Kannel's scientific contributions. He published over 600 medical articles, numerous editorials and book chapters in premier texts. His work at the Framingham Study established the utility of population-based research for seeking out correctable predisposing factors for cardiovascular disease (CVD), putting prevention at the forefront of cardiology. Dr. Kannel coined the medical term "risk factor" in 1961 in a landmark publication in the *Annals of Internal Medicine*, and promoted the concept that CVD is multifactorial in origin. He promoted the notion of combining information about multiple risk factors mathematically to estimate risk of CVD (the Fram-

ingham risk score). His research established the importance of distinguishing between usual (average in the population) and optimal risk factor levels. In several seminal papers he dispelled the concept that rising systolic blood pressure in older people is a harmless finding. Data collected by Dr. Kannel and his colleagues at the Heart Study in the late 1950s and early 1960s resulted in the reporting of population incidence of CVD at a time when only mortality statistics were available.

In 1971 (approximately three decades before the completion of the human genome project), Dr. Kannel began the second generation study called the Framingham Offspring Study that quantified the hazard of a family history of CVD based on observations on parents and their offspring. His research on the two generations of Study participants provided insights on mechanisms of atherogenesis and stimulated national campaigns against smoking, high cholesterol, high blood pressure, and obesity. He warned in 1985 of the lack of efficacy and danger of estrogen replacement for preventing CVD. In 2008, along with his colleagues, he formulated the Framingham risk score, to enable primary care physicians to pull together risk factor information to assess the risk of heart attacks, heart failure, and strokes. Dr. Kannel influenced several generations of physicians and was one of a handful of "founding fathers" of preventive cardiology. He also trained scores of postdoctoral research fellows at the Heart Study who are following in his footsteps. In the various articles of this newsletter you may see the continuing influences of Dr. Kannel's work. ♥

William B. Kannel, MD, died August 20, 2011. He is survived by his wife, four children, 12 grandchildren and 23 great-grandchildren. A William B. Kannel Legacy Fund has been established at Boston University to support projects at the Framingham Heart Study. Alternatively, contributions may be made in Dr. Kannel's memory to the Friends of the Framingham Heart Study. Contributions to either fund may be sent to 73 Mt. Wayte Ave., Suite 2, Framingham, MA

## The Legacy Continues in the 9th Exam for Offspring (Generation 2).

The Framingham Heart Study Offspring Cohort participants, first organized by Dr. Kannel in 1971, have been famously responsive to the programs of the Heart Study over the years. We are scheduling now for the 9th Exam. Many of the research tests are repeats from past exams. There will be some new tests as well, including a motion monitor and a 24 hour urine collection. The recruitment team is eager to schedule participants for this new exam. In fact, you may have already received a call! **Especially if you live out of town and are planning to visit the Framingham area, please contact your coordinator, Maureen, at 800-536-4143 right away for a morning appointment.** ♥

## “Induced Pluripotent Stem Cell” Progress Notes.

We are happy to report that most attendees at the current FHS examination cycle (approximately 1000 so far) have agreed to allow some of their white blood cells be used in “induced pluripotent stem cell” research. The FHS laboratory sends white cell samples collected at the examination to our colleagues and scientific collaborators at a stem cell laboratory at Harvard. The researchers create cells known as iPS (induced pluripotent stem) cells. New technology has enabled scientists to “reprogram” cells, sending them back along their developmental path to an earlier stage. From the resulting, more primitive iPS cells, many other cell types can be developed and their functioning can be studied. Since these are not cells that are developed from human embryos cells, their use is not controversial.

Your DNA is in nearly every type of cell in your body. DNA expresses itself in different ways in different tissues, which is why heart cells act like heart cells and liver cells act like liver cells. By taking a sample of your white blood cells, we can change them into iPS cells that genetically match you, and then further develop them to imitate your liver, heart, and other cells. Furthermore, we can study these FHS iPS cells to see how those of one person differ from those of others. We can test drugs in these cells to see how they respond. We can study disease progression in these cells in a laboratory setting. We hope this research will be a step in the process of better understanding and curing heart, lung and blood diseases. ♥



### Easy does it. Try the FHS “Motion Detector”.

As you know, exercise is a part of healthy living. Dr. Kannel and other FHS researchers first studied physical activity from answers on questionnaires. Now Offspring and Omni participants are being asked to wear an “Actical” physical activity monitor after their exams at the FHS research clinic. The monitor is as small as a wrist watch and is worn on a fabric belt loosely around the waist. As

you move, it records your activity. After 8 days, you mail it back to FHS in a prepaid envelope provided to you. The little monitors are quite costly, but FHS can use them again and again after the information they record is transferred to an FHS computer. We have already downloaded over 3500 recordings from FHS participants in the Third Generation, Omni Group 2, Offspring and Omni Group1.

If the week following your clinic exam is not the best time for you to wear the monitor, simply ask for it to be sent to you at a date that will be more convenient. Your physical activity recording will become a part of many FHS research projects in the years to come. We thank you again for your participation. ♥

## Body Chemistry Studied At FHS From 24-Hour Urine Collection.

Researchers at FHS look for new ways to learn about health and disease. We measure the anatomy by height and weight and with CT and MRI scans. We measure functions with electrocardiograms, physical activity monitors and grip strength tests. Genetic effects are found through DNA analyses. Now, more and more, scientists are learning about many individual differences in body chemistry with better and better laboratory tools. The two fluids commonly studied by chemical analysis at FHS are blood and urine. Each sample contains large numbers of biological materials that are clues to how the complex human body is working.

At the current Offspring and Omni Group 1 exam cycle, participants are asked to use a kit at home to collect a 24-hour urine sample. Then a small sample from the collection is mailed to a lab for detailed analysis and another sample is stored in the FHS lab for future use. We expect to learn from the various biochemical measurements in urine and how this relates to overall health and disease. Many FHS participants in the Offspring and Omni Group 1 cohorts have already provided 24-urine samples. The kits are easy to use. We hope many others will agree to participate in this way, in the coming two years. If you were too busy last year to accept or use the 24-urine kit at the time of your FHS examination, please consider doing it now. You may contact Barbara Inglese at (508) 935-3451 or (800) 601-3582, to order a new kit or get instructions on use and mailing of a kit you already received. As always, the more FHS individuals who participate in an FHS project, the more clearly we can define the complex patterns that effect disease and health. ♥

## The Annual Dawber Memorial Scholarship Contest.

In memory of Dr. Thomas R. Dawber, Director of the Framingham Heart Study from 1949 to 1966, the Friends of the Framingham Heart Study awarded a \$1,000 scholarship last year to Reilly Garrett for his prize-winning essay. The 2012 competition for the Dawber award is open to all children of Framingham Heart Study participants who will be graduating from high school in the spring of 2012 and going on to college. The winning essay will be selected by the Board of the Friends. Essays entitled “What It Means to be a Participant in Medical Research” should be sent as a Word document of a minimum of 1,000 words attached to an e-mail to Greta Lee Splansky at gretalee@bu.edu, no later than April 3, 2012. The e-mail message should include college and career plans after graduation, as well as name, address, and phone number. (If you do not receive an e-mail acknowledging receipt of your essay, please call Greta Lee Splansky at 508-935-3418.) The winner will be notified by the end of May of 2012 and will be invited to meet the Friends and receive the award. ♥

## FHS Medical Record Department.

FHS medical records contain all the participants' exams and outside medical record information compiled and collected for 63 years. The medical record department is responsible for maintaining, preserving, and protecting the confidentiality of these records. The medical record department obtains and processes participant medical records necessary for physician review and ancillary and special studies. We also respond to participants and their healthcare provider's requests for medical record information and assist researchers in medical record review. ♥



**MEMBERS OF THE FHS MEDICAL RECORDS STAFF (FRONT ROW-LEFT TO RIGHT):** Lindsey Witnauer, and Rajeswari Reddy. **BACK ROW (LEFT TO RIGHT):** Susan Chau, Lynne McDonald, Donna Chandler.



**MEMBERS OF FHS HEALTH UPDATE AND STROKE STAFF (LEFT TO RIGHT):** Lois Abel, Deb Foulkes, Mary Ann Crossen and Crystal Holmes.

## How Does Medical Information Get Verified And Coded For FHS Research?

The Framingham Heart Study Review Department coordinates and oversees the review of cardiovascular events and deaths within the participant population. We obtain reports of participants' medical histories from their Heart Study examinations, and from Medical History Update forms completed by mail or telephone every two years. With participant consent, the Medical Records Department obtains records for medical encounters from healthcare providers. These records are carefully reviewed by a panel of Framingham Heart Study physicians and coded as specific events, such as myocardial infarctions and strokes. The event codes are added to the Framingham database for further study.

Dr. Kannel taught us that good research at the FHS starts with good data. We greatly appreciate the information provided by our participants at Heart Study examinations and on Medical History Updates. ♥

## THE FRAMINGHAM HEART STUDY EXAMINES CHANGES IN BRAIN AND BONE STRUCTURE Offspring Exam 9 / Omni Exam 4 Callback

The Neurology research group at the Framingham Heart Study (FHS) has in the past two years collaborated with researchers from all over the world to identify over 15 new genes and several new biomarkers associated with brain aging, Alzheimer's disease, and stroke. We are particularly interested in understanding how brain structure changes over time in persons who remain well as they grow older compared to those who go on to develop a neurological disease. Since 1992, more than 5000 FHS participants have undergone one or more brain MRI scans and completed tests of memory, planning, and other cognitive abilities. In early 2012, we are beginning an additional round of brain MRI and cognitive testing, as a callback examination of the participants attending Offspring Exam 9 and Omni Group 1 Exam 4. This round of MRI will include a study of subtle changes within the white matter of the brain using a technique called diffusion tensor imaging (DTI).

Since 1988, FHS participants have had bone mineral density (BMD) measured as part of the Framingham Osteoporosis Study (FOS) study. The FOS study goal is to measure the density and structure of your bones to see how well these measures predict your risk for future fracture. The FOS will be collaborating with the Neurology group to repeat bone mineral density (BMD) studies during the callback examination. The current FOS bone exam will include a new technology, high resolution peripheral quantitative tomography (HR-pQCT), to measure bone microarchitecture of the lower arm and leg. HR-pQCT creates 3-D images of bone using a weak radiation dose and provides information on very fine bone structure. We will also measure bone mineral density the way we have done in the past. Mary Hogan, our certified bone density technician, will once again be working with you to obtain these measurements.

**For more information about the cognitive testing brain MRI and/or brain donation program, please contact Linda Farese at 508-935-3488, 800-248-0409 or lfarese@bu.edu ♥**

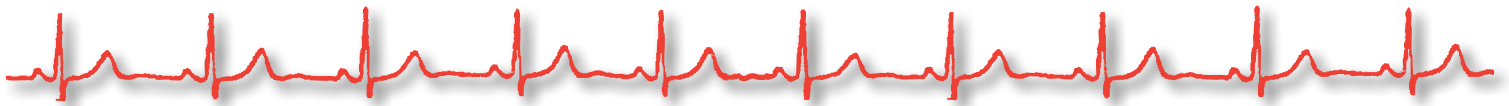
**Remember: Framingham Heart Study examinations are designed for research. They do not replace your regular check-ups with your own doctor(s)!**

Trustees of Boston University  
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Framingham Heart Study

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### OMNI Generation 1, Have You Scheduled Your Current Exam?

We are calling Omni Group 1 participants for their 4th clinic exam. Each of you holds unique pieces of the Framingham Heart Study research puzzles. Please help increase the research value of your early tests by repeating the exam now. Most of the tests this time are similar to those of previous exams. New tests include a slight scraping of the inside of the cheek to obtain DNA cells, an activity monitor to wear for a week and a 24 hour urine test (these last two are ancillary studies).

If you live out of state (or in another country) and plan to visit Massachusetts, please let us know and we will try to accommodate your schedule. Appointments are in the mornings, Monday through Friday, and take 4 hours or less. If you cannot make it this time, please call us at 888-689-1682 to update your medical records. In just a few minutes you can give us extremely useful data. ♥

### Find out more about the Framingham Heart Study on our website, at [www.framinghamheartstudy.org](http://www.framinghamheartstudy.org).

The website is designed to serve the FHS participants, the community of researchers and the general public. We welcome your feedback and suggestions for improving the FHS website. If you have ideas for the website, please send them to the editor, Heather Arruda, by email ([harruda@bu.edu](mailto:harruda@bu.edu)) or by phone to 617-414-1244.

### TO CONTACT US

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