Becoming the Framingham Study 1947–1950

In the epidemiological imagination, the Framingham Heart Study has attained iconic status, both as the prototype of the cohort study and as a result of its scientific success.

When the Public Health Service launched the study in 1947, epidemiological knowledge of coronary heart disease was poor, and epidemiology primarily involved the study of infectious disease. In constructing their investigation, Framingham's initiators had to invent new approaches to epidemiological research. These scientific goals were heavily influenced by the contending institutional and personal interests buffeting the study.

The study passed through vicissitudes and stages during its earliest years as its organizers grappled to define its relationship to medicine, epidemiology, and the local community. (*Am J Public Health.* 2005;95:602–610. doi:10.2105/AJPH.2003.026419)

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> *"Framingham 'is the epitome of successful epidemiological research, productive of insights and applications...[and] the prototype and model of the cohort study.' [8(p31)]"*

THE FRAMINGHAM HEART STUDY has attained iconic status in the epidemiological imagination. Initiated in 1947, the study endures, having left in its wake more than 1200 peer-reviewed articles. A pioneering effort in the epidemiological investigation of chronic noninfectious disease, it has made rich methodological use of the term "risk factor,"[1–3] which it popularized.[4] Framingham's results, reinforced by those of similar contemporary investigations,[5–7] mapped the relations of coronary heart disease (CHD) to factors such as serum cholesterol, blood pressure, and cigarette smoking. Unlike those other epidemiological studies, however, it analyzed such factors in women, who constituted more than half of its participants.

The fact that Framingham has followed its cohort for more than half a century has allowed investigation of a spectrum of diseases, including those of old age. According to Mervyn Susser, Framingham "is the epitome of successful epidemiological research, productive of insights and applications . . . [and] the prototype and model of the cohort study."[8(p31)] Few modern textbooks in epidemiology miss the opportunity to refer to it.[9–12]

In 1947, epidemiological knowledge of CHD was spotty; morbidity incidence and prevalence rates from unbiased samples were almost nonexistent. Mortality statistics, collected by the government[13,14] and the insurance industry,[15] revealed the weight of heart disease, variously defined. The newly formed National Heart Institute (NHI) reported that, by 1948, 44% of deaths in the United States could be attributed to cardiovascular disease, an increase of 20% since 1940.[16] The causes of cardiovascular disease, unfortunately, were poorly understood. Heart disease experts, however, increasingly stressed the role of arteriosclerosis in the development of CHD[17] and the importance of environmental factors, as opposed to aging, in the etiology of arterial disease.[18]

In 1946, epidemiology's prime focus remained the study of infectious disease. At the US Public Health Service (PHS), Joseph Mountin, director of the Bureau of States Services, had just created for that purpose the Communicable Disease Center.[19,20] But Mountin, a master of public health policy, also recognized the significance of the epidemiological transition (and the importance of earlier work on chronic disorders conducted by the PHS).[21–23] After World War II, he championed control programs for chronic, noninfectious diseases, including community-based screening and diagnostic interventions.[19,24,25] In pressing for heart disease control efforts, Mountin added an epidemiological investigation.[2] He subsequently selected Gilcin Meadors, a young PHS officer, to initiate that epidemiological research, an investigation that evolved into the Framingham Heart Study.[2]

He also approached local public health departments and academic experts to advance and bolster this plan.

In launching what became the Framingham Study, the government flagged CHD as a problem of national significance. However, the PHS, by inviting multiple parties to participate in the investigation, left its objectives open to contestation and negotiation. Subsequently, competing institutional interests buffeted the study, shaping its research design and scientific goals. I describe the vicissitudes and stages through which the study passed during its earliest years, as organizers grappled with its relationship to medicine and the local community. The sway of competing interests was the greater because the science supporting the research was so weak. How did one design and analyze an epidemiological study of chronic noninfectious disorders? Previous experience was sparse.[2] The solution was especially difficult because, unlike tobacco and lung cancer research, one had to incorporate into the study multiple hypothetically causal variables.[26–28]

RESEARCH PARTNERS

Thomas Dawber, often identified as Framingham's initial investigator, succeeded Meadors in 1950.[2] Under his direction, the research crystallized into the structure we celebrate. However, as with cathedrals built over previous basilicas, the Framingham of the textbooks rests upon and incorporates the little known, critical work of Meadors and his colleagues.

Born in Mississippi, Meadors graduated from Tulane University Medical School in 1940, becoming a commissioned PHS officer in 1942. When tapped by Mountin in 1946, he was completing a master's of public health in epidemiology at Johns Hopkins.[29] He appears to have been a more gifted organizer of studies than a master of design. To his credit, he possessed the political skills and charm to persuade local interests, some of them highly suspicious of federal intentions, to cooperate in the construction of a community-based research program.

For the PHS to insert a study into a state required the cooperation of its department of health. By summer 1947, the PHS was negotiating with Massachusetts Commissioner of Health Vlado Getting. The commonwealth had historically demonstrated a strong interest in chronic disease, pioneering public programs for the diagnosis, treatment, and epidemiological study of cancer.[22,30] Now committed to building a chronic disease hospital, Getting was anxious to expand its mission to screening for heart problems. In the absence of widely accepted techniques for that purpose, he was, according to the PHS, "warmly enthusiastic to the possibility of a pilot study to develop some screening devices for heart disease."[31] He also hoped to create a "heart disease control program" that would include physician education and community-wide case finding. Getting supported the possibility of combining Mountin's epidemiological study and his control program into a single demonstration project at the same site, a plan of interest to the PHS.[31,32]

The third party in these discussions was David Rutstein, newly appointed chair of Harvard's Department of Preventive Medicine. He had previously been Medical Director of the American Heart Association (AHA).[33] At that time, the AHA was busy repudiating its earlier focus on public health cardiology (particularly prevention of rheumatic heart disease), instead supporting more "scientific" avenues: physiological and clinical studies of hypertension and atherosclerosis.[34] After leaving, Rutstein retained links to the academic elite that dominated the AHA, drawing upon its Boston area members to form Framingham's technical advisory group.[35]

Rutstein was the prime mover behind Framingham's selection as the study site, suggesting it to Meadors and to Getting, who proposed it to the PHS as one of 3 possible towns during their first planning session in September 1947.[36] Getting noted that Framingham, just west of Boston and of suitable size for the investigation, had previously par-

Framingham in the 1950s. At the time of its selection, Framingham, 20 miles west of Boston, was a politically autonomous, overwhelmingly White industrial and commercial community. It had already been the site of a famous public health tuberculosis intervention project conducted between 1917 and 1923.
Phot courtesy of National Heart, Lung, and Blood Institute.

Photo courtesy of Joseph W. Mountin Memorial Committee.

Joseph Mountin (1891–1952) of the US Public Health Service, an innovative public health planner and administrator, began advocating for programs to control noninfectious disorders a decade before he proposed an epidemiological study of coronary heart disease in 1947. Well known for launching the Office of Malaria Control in War Areas (later the Centers for Disease Control), he strongly supported population screening and intervention efforts to prevent and control diabetes, hypertension, cancer, and accidents.

ticipated in an important community study of tuberculosis (conducted from 1917 to 1923).[31,37] (In addition, Framingham had a stable, locally employed and medically served population.[2]) Bert Boone, Meadors's immediate superior at the PHS, was less sanguine about Framingham, believing its population was too small for a joint epidemiology–heart disease control project.[38] Only in November 1947, once a decision had been made to geographically separate the programs, was Framingham tentatively selected as the locus of the epidemiology study.

FORMULATING A STUDY PLAN

Meadors had begun planning his research well before the September meeting. He honed his initial ideas after meeting with Kenneth Maxcy, chair of epidemiology at Johns Hopkins University, in January 1947.[39] By July, when Meadors sent an outline of his study to Boone, he alluded to earlier drafts.[40] Barely a page in length, the outline proposed a goal recognizable to later leaders of the Framingham Heart Study:

> This project is designed to study the expression of coronary artery disease in a normal or unselected population and to determine the factors predisposing to the development of the disease through clinical and laboratory examination and long term follow-up of such a group.[40]

Meadors envisioned a multistep study 5 to 10 years in duration. Initially, 8000 individuals between the ages of 30 and 60 years would be asked to complete a medical history and undergo a thorough physical examination. Researchers would track these participants, periodically interviewing and testing them to identify those with incipient CHD. Subsequent analysis would "determine the influence of such relatively constant factors as body build, psychic status, occupation, dietary habits and the use of stimulants on the development of coronary insufficiency."[40] Meadors believed that this design would allow him to calculate CHD prevalence and incidence rates and to develop "methods for examination of large population groups for heart disease,"[40] something of interest to Getting. Ultimately, the proposed study might lead to the prevention or delay of CHD through the development of "recommendations for the modification of personal habits and environment."[40]

In his design, Meadors sought strategies for injecting the passage of time into his study of chronic disease. Wade Hampton Frost, who had preceded Maxcy at Hopkins, had already recognized that epidemiological investigations of tuberculosis required new methodologies that captured its long latency period and its indefinite onset and course. He subsequently developed techniques to conduct longitudinal investigations.[41] Meadors's task was to formulate a similar approach to chronic, noninfectious disorders. His solution was to follow a self-selected population. However, he still lacked a clear grasp on a number of fundamental problems, including analytic techniques appropriate for multiple independent variables. Moreover, still struggling to formulate his approach to heart disease, Meadors could not substantiate his claims for the importance of analytic epidemiology to those skeptical of its usefulness or committed to alternative scientific paths.

The PHS, by the fall of 1947, was anxious to field its epidemiological study.[42] Rutstein wisely slowed the process down but also bent it to his own purpose. Writing Surgeon General Thomas Parran, he suggested the first step should be a study of particular interest to clinicians and clinical researchers, namely an evaluation of the survey's screening tools (especially the electrokymograph, a new fluoroscopic machine championed by Boone).[2,35,39] As if to strengthen his brief for the primacy of clinical medicine and research, he further informed Parran that the study's Technical Advisory Committee would be drawn from the Executive Board of the New England Heart Association, chiefly academic cardiologists. Their particular focus was to be on diagnostic criteria and clinical performance.[43]

By calling for a careful clinical approach, Rutstein pressed his own imprint on the study, reordering its priorities. Rutstein always regarded Meadors's analytic epidemiology as least important,[44] bolstering his position with the power of his personality and professional status. Consequently, what had been one of Meadors's subsidiary aims now became the study's primary goal. As Meadors retrospectively observed, Rutstein's reconceptualization "represented an about face to the original plan that the community survey would be the first objective."[39]

A reordering of priorities is evident in the first comprehensive outline of the epidemiological study the PHS, the Massachusetts Health Department, and Harvard agreed upon in November 1947.[45] In this outline, the evaluation of diagnostic instruments is listed first, followed by case find-

ing, calculation of population prevalence, and, only last, analytic/causal epidemiology. That sequence, it could be argued, was scientifically sound (albeit politically motivated). During the first year, investigators would test the sensitivity of the electrokymograph using previously diagnosed cardiovascular cases. Additional diagnostic techniques would be developed, with the Technical Advisory Committee assisting.

During the second and third years, researchers would examine at least 5000 individuals "in the older age groups" for the existence of cardiovascular disease and calculate baseline prevalence rates. Researchers would periodically conduct home visits and reexaminations over 5 to 10 years of follow-up. Significantly, the epidemiological study, described last, remained vague; it was a vestige of an earlier blueprint incorporated into a research design dominated by clinical concerns. Although it alluded to possible primary prevention programs, the thrust of the proposed study was case finding and early treatment.

In early 1948, that stress on case finding intensified. After meeting with the AHA's statistician at Rutstein's behest, Meadors actually described Framingham as composed of 2 types of research: a mass screening survey and a follow-up study.[46,47] Although the consultation deepened the former, it made little difference in the substance or design of the latter. However, given the paucity of ideas in Meadors's correspondence, one suspects that, in addition to Rutstein's scientific posture and domineering personality, the study's emerging shape may have owed something to Meadors's inability to build upon his initial epidemiological intentions.

By November 1947, Rutstein had already shown the PHS he could be rash and proprietary. The previous month, he had had a confrontation with the PHS over administrative control of the heart disease program.[39] After that dispute, Rutstein moved to split the epidemiological and control projects, perhaps initiating the decision by all parties some weeks later to locate the latter in Newton. During that same period, Rutstein infuriated the PHS by demanding that the AHA have precedence over the American Medical Association (AMA) in shaping the new heart research.[48] Ironically, the PHS had approached Harvard believing it would help draw the medical profession to the project.

> *"Barely a page in length, the outline proposed a goal recognizable to later leaders of the Framingham Heart Study: 'This project is designed to study the expression of coronary artery disease in a normal or unselected population and to determine the factors predisposing to the development of the disease through clinical and laboratory examination and long term follow-up of such a group.'"*[40]

ACCOMMODATING ORGANIZED MEDICINE

The PHS was wary of antagonizing the AMA, knowing how much its studies needed support from organized medicine.[49] If doctors cautioned their patients against participating in the demonstration projects, the projects would come to nothing. Furthermore, relations between the federal government and many physicians were already frosty. Since 1945, President Truman had been calling for a national health program; by 1947, he had begun actively campaigning for it.[50,51]

In negotiating with organized medicine, physicians, and hospitals, Getting and his department became, in fact, the most important ally of the PHS. With his help and that of David Moxon, Framingham's health officer, the medical staff of the 2 local hospitals, Framingham Union and Framingham Community, agreed to become actively involved in the study.[52] And the Massachusetts Medical Society, despite serious reservations about promoting "state medicine," approved the study in May 1948, following Getting's strong endorsement.[53]

Meadors worked to reassure Framingham's doctors that the epidemiological study would neither replace nor interfere with their private practice. To win their trust, he created the Professional Advisory Committee, which safeguarded the doctors' interests. Headed by Thomas Cornicelli, Framingham's only certified cardiologist, the committee placed a number of restrictions on the study to which Meadors readily acceded.[54] First, each research participant would be required to identify a physician as his or her source of care. Second, any information on a participant would be sent to the doctor identified. Finally, no participant would learn his or her examination results from the study's staff.

An epidemiological project limited to research proved very appealing to a powerful group of Framingham physicians. They had settled in town during the

1930s and moved quickly to supplant the older practitioners, most of whom were graduates of nonapproved medical schools.[54] The newcomers took over Framingham Union, excluding all but board-certified surgeons. At a time when most doctors were general practitioners, they worked to draw specialists to Framingham. Dominating local medical circles after the war, these "young Turks" embraced the possibility of a scientific study in Framingham.[54]

NEGOTIATING WITH THE COMMUNITY

Although support from medicine was crucial, Meadors realized he also had to negotiate with the Framingham community, whose goodwill, resources, and bodies he needed to initiate and sustain his study. Meadors, aided by Moxon, drafted community leaders to form the core of the town's Executive Committee. Speaking at its initial meeting, Meadors insisted that "the Heart Disease Study belongs to the community of Framingham, is a part of the local health program, and . . . will represent a service to the advancement of medicine."[55]

The PHS repeated that message over the years. It recognized that, to be successful, the study had to be adopted, if not truly "owned," by the citizenry. Strong community support, much like physicians' approval, would stimulate voluntary participation. If the research was a popular cooperative venture, dropping out might be more difficult. Interestingly, the Framingham study is usually identified as an investigation *of* heart disease in a community sample. Few recognize its sociological dynamics as a study *within* a community, requiring the careful nurture of the community's elite and the ongoing commitment of its citizen-participants.

Realization by the PHS that long-term epidemiological follow-up depended on the goodwill of volunteers helped shape the culture and limits of the Framingham Study. The study used an appointment system for participants, kept their waiting time to a minimum, maintained a welcoming environment, and thanked participants for their cooperation before and after their examinations. A surviving member of the cohort recently remarked that examinations never intruded to the point where one would think "I'll never do that again."[56] Most volunteers, in fact, were "eager to go back," if only because they underwent, gratis, a checkup more complete than they received from their own physicians.[56] The study's supportive culture, the volunteers' power to refuse, and the community's early adoption of the new research may help account for one of Framingham's most enduring successes: after almost 30 years of follow-up, the study reported that only 3% of participants had dropped out.[57]

To further the aims of the study, the Executive Committee recruited critical constituencies to develop and staff 6 subcommittees. The Publicity Committee, composed of advertising and media specialists in town, developed recruitment campaigns. The Civic, Industry, and Business Committees placed the support of local economic leaders behind the study. The Arrangements Committee offered administrative assistance to Meadors's skeletal staff. Finally, the Neighborhood Organization Committee solicited volunteers for the study. "It had been the aim," a Framingham house history notes, "that every participant in the study should come into it on the basis of an invitation from someone he knew, and in whom he had confidence."[58] Meadors hoped to use his committees to maintain good public relations and secure a high retention rate in the future.[43]

FRAMINGHAM HEART EPIDEMIOLOGY STUDIES

On October 11, 1948, the first participants in the Framingham Study, all volunteers, officially underwent their examinations.[59] The study consisted of 2 parts, the first a survey of up to 6000 residents.[60] Its aim was to screen for CHD using a personal history, physical examination, electrocardiogram, electrokymograph, and other tests and measurements. The survey also explored the efficacy of shorter versions of the history and examination for use in mass population screenings. In addition, Meadors sought to use the survey to calculate CHD prevalence rates. Part 2 was a 5- to 10-year follow-up study of the volunteers to establish those "factors suspected of causing predisposition to coronary heart disease."[61] Hypothesized factors included heredity, obesity, "nervous and mental states," hypercholesterolemia, occupation, economic status, and use of stimulants.

In no document found does Meadors propose how variables would be measured and analyzed. Presumably, he would learn to do that over the research trajectory. As it happened, the study gained rigor not only through time and experience but also through being expropriated by yet another organization, the new NHI, which redefined Framingham's aims, sample, goals, and hypotheses.

After World War II, federal commitment to basic research on chronic disease included expansion of the National Institute of Health and a substantial increase in its funding.[62–64] Behind that drive were important private lobbyists such as Alfred and Mary Lasker, who were deeply invested in cancer and heart research. They worked closely with the new surgeon general, Leonard Scheele, and a bipartisan congressional coalition they promoted and rewarded.[22,63] When the NHI was established in June 1948, Cassius Van Slyke was appointed director.

A veteran PHS administrator with experience in syphilis control, Van Slyke believed strongly in epidemiological research as a prelude to prevention.[2] Subsequently, he moved to acquire Framingham for the NHI, arguing that research focusing on disease prevention and control fell under its jurisdiction.[2,65] Even before Mountin reluctantly reassigned Framingham to the NHI in June 1949,[66] Van Slyke acted decisively, directing his new chief of biometrics, Felix Moore, to evaluate Framingham's statistical methods.[67] Together, they visited the site, meeting with the Technical Advisory Committee and Getting to ease the transition.[68]

Moore was a quantitative sociologist with considerable federal experience at the Bureau of the Census, War Department, and Veterans Administration.[69,70] He brought to Framingham a talent for applied statistics (T. Gordon, oral communication, November 2001), an appreciation of random sampling (its advantages had been recognized by the federal government officials for more than a decade[71]), expertise in writing and scaling questionnaires, and the rigor of years of research work.

During Framingham's first year under the NHI, he was probably the principal architect of its scientific transformation.[72]

Over the summer and autumn of 1949, Moore and Meadors, under Van Slyke's managerial eye, redesigned the Framingham Study and superimposed it on what had preexisted.[43,72–75] They stood the previous investigation on its head. Framingham would be a "follow-up" study, 20 years in duration, of individuals free initially of atherosclerotic or hypertensive cardiovascular disease. (Later, to retain community support, the NHI agreed to follow nearly everyone examined.[76]) Mass diagnostic screening methods were given subproject status, as were prevalence measurements for CHD. Moore recognized that true population prevalence required random sampling and suggested selecting two thirds of all adult residents aged 30 to 59 years as study participants, replacing the volunteers.

Although that proportion was based, in part, on expected number of cases, Moore and Meadors's memos stressed another consideration: How many participants could feasibly be processed over the months allotted for the first biannual examination?[72,73]

In September, Moore changed the sampling unit from individuals to households. That change was not based on scientific judgment; rather, it was made in response to pressure from the Framingham Executive Committee, which argued that choosing one family member while excluding another would produce a public relations nightmare.[58,75] However, systematically barring up to one third of eligible adults from the study, it turned out, proved to be a perennial sore point (T. Dawber, oral communication, November 2001).

Moore might have been better off including all who met the eligibility criteria. Having ob-

After transfer of the Framingham Study to the newly formed National Heart Institute in 1949, its director asked Thomas Dawber to head the investigation, replacing Gilcin Meadors, the original organizer. A board-certified internist, Dawber, like most of those pioneering similar cardiovascular studies in the 1940s and 1950s, lacked formal training in epidemiology. In their early articles, Dawber, Jeremiah Stamler, Joseph Doyle, and other researchers had to justify to skeptical scientific and medical audiences the application of epidemiology to chronic disease.

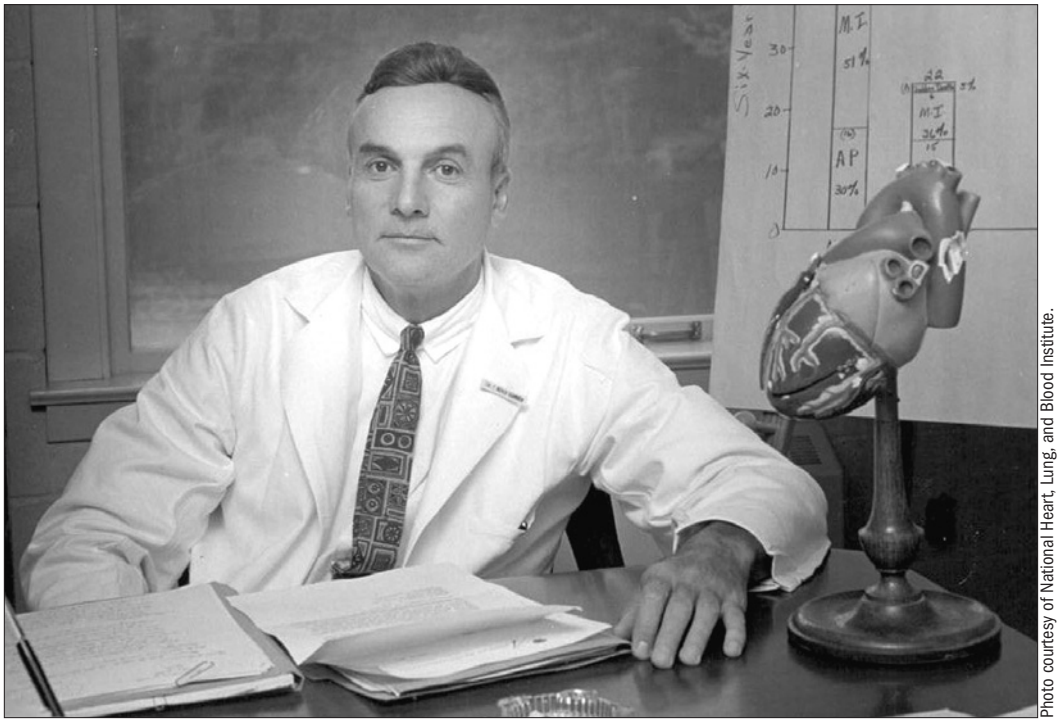


Photo courtesy of National Heart, Lung, and Blood Institute.

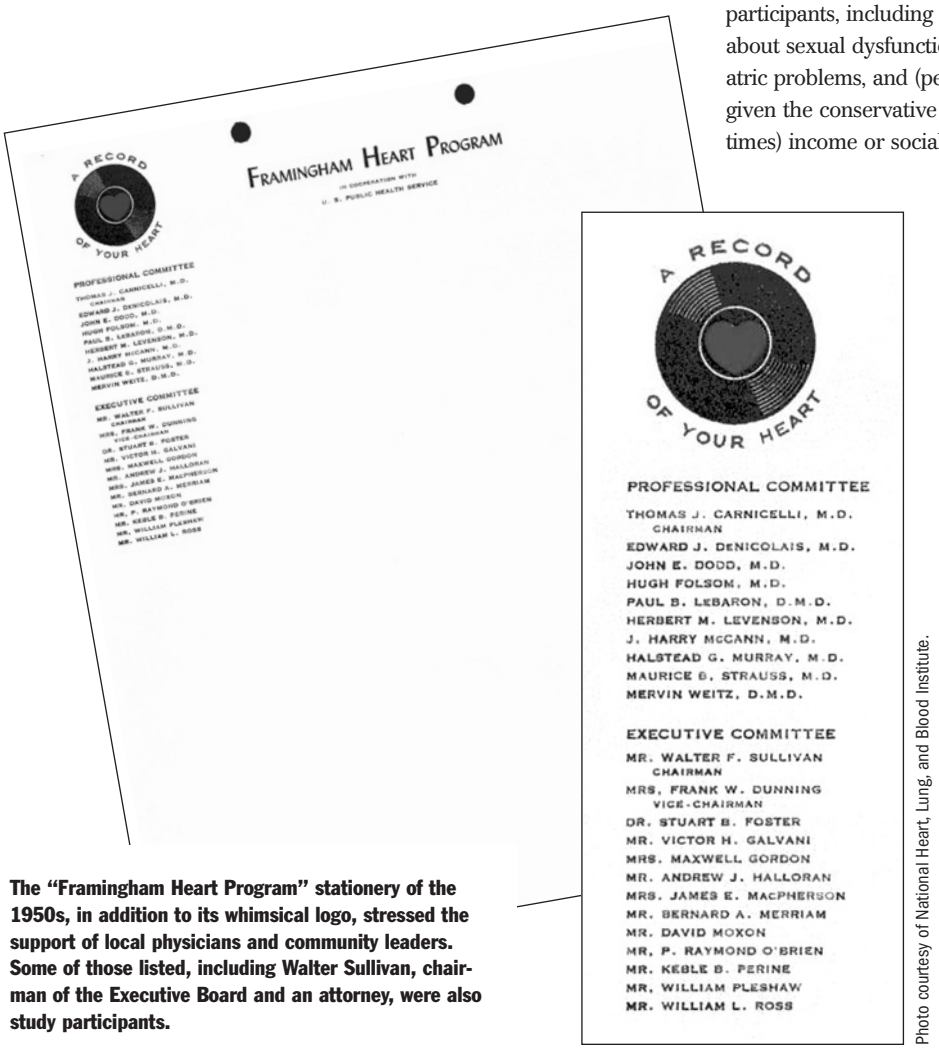
served the enthusiasm with which volunteers presented for examinations, he underestimated the refusal rate among those randomly selected. Assuming only a 10% loss, he proposed a sampling frame that would yield 6600 individuals, 600 more than needed. After exhaustive outreach, only 68.8 % (n = 4494) of the sample agreed to participate. Those who refused tended to be of lower socioeconomic status, foreign born, or in poorer health.[2,58,77] Of necessity, the investigators recalled all age-eligible volunteers who agreed to undergo a second examination. Ultimately, they constituted 14% of the study's 5127 participants.[58]

Beginning in August, the NHI researchers debated which variables to include in the study. Despite some objections, cholesterol testing was approved.[74] Alcohol and tobacco consumption (but not smoking history) were included. Remarkably, the record forms from the first examination list only a few other social items (i.e., name, address, education level, and nationality).[78] From the start, clinical variables predominated. Moore was quick to dismiss variables that eluded valid or reliable measurement, among which he included psychological tension and occupation.[73]

The Framingham Study, as it emerged in the 1950s, was clinically narrow, with little interest in investigating psychosomatic, constitutional, or sociological determinants of heart disease.[1,79] Although Moore and Meadors were heavily influenced by measurement problems in choosing their variables, other issues also may have played a role. As mentioned earlier, the PHS depended on the goodwill of its study participants. Dawber, who replaced Meadors in April 1950, made it policy to exclude items he thought would disturb or alienate participants, including questions about sexual dysfunction, psychiatric problems, and (perhaps given the conservative Cold War times) income or social class.[2,76,80] Moreover, Dawber, who shaped the study over its first few decades, was dubious of the value of social science in what he regarded as the domain of medicine (T. Dawber, oral communication, November 2001). For him, epidemiology was "clinical investigation on a community level."[81(p84)] Consequently, he held that Framingham should be dominated by physicians and that its results, above all, should prove directly useful to doctors in practice (T Dawber, oral communication, November 2001).

As the study developed, Moore and Meadors proposed a manual of operation, a detailed description of their "methods of examination and acceptable criteria for diagnosis."[43,73] Once completed, probably in late 1949, the manual described Framingham's principal aim, using the language of early detection. The authors hoped to correlate the clinical and laboratory data collected prior to disease onset with "findings related to and diagnostic of . . . degenerative cardiovascular disease" so as to "detect early signs pointing to probable development of disease" and to "discover etiological factors."[43] Assuming clinical data reflected constitutional and environmental factors that incrementally stressed and undermined the cardiovascular system, the NHI developed 28 factor-specific hypotheses. These hypotheses followed a common logical format linking CHD with degree of exposure; for example, "[d]egenerative cardiovascular disease appears earlier and progresses more rapidly in persons who habitually use tobacco."[43]

These hypotheses were to be the basis of future data analyses.[74] In them, one can already



The "Framingham Heart Program" stationery of the 1950s, in addition to its whimsical logo, stressed the support of local physicians and community leaders. Some of those listed, including Walter Sullivan, chairman of the Executive Board and an attorney, were also study participants.

Photo courtesy of National Heart, Lung, and Blood Institute.

perceive the kernel of the "risk factor," an attribute or exposure that increases the probability of disease occurrence.[82] The concept of "risk factor" predates 1949,[3] but the term itself only appears in a Framingham article in the Kannel et al. 1961 piece.[4] Still, one can trace the use of "risk language" in Framingham publications over the 1950s.[76,78] Once Kannel et al. employed both concept and term, however, "risk factor" swiftly entered and dominated heart disease epidemiology.[83,84]

In the 1950s, once Dawber operationalized the NHI research design, Framingham proved to be a smoothly running study. Rutstein, so troublesome initially, was eased from his position late in 1948 after turning against Meadors. Vital interests—physicians, community members, epidemiologists—were reconciled. In that decade, Framingham first reported significant correlations between CHD and blood pressure, obesity, and cholesterol,[76,78] as well as pivotal techniques for analyzing such multiple factors simultaneously.[85]

Framingham's importance resides in these scientific observations. But during its early years, it owed its status, as well, to its association with the federal government. The NHI, whose funding assured Framingham a continuity denied other studies, also provided political support. Furthermore, it guaranteed access to a superb cadre of statisticians in Bethesda who collaborated on scores of articles that secured Framingham's reputation (T. Gordon, oral communication, November 2001). Group interests, however, continued to affect Framingham's scientific parameters. In particular, late in the 1960s, bench researchers at NIH, skeptical of epidemiology's usefulness, almost shut Framingham down. In response, a constituency of scientists, physicians, and corporations both rescued it and widened its epidemiological purview.[2] Unlike in 1947, heart disease epidemiology, bristling with institutional links and conceptual confidence, was too robust to be dismissed.■

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Human Participant Protection

This study was approved by the Brooklyn College institutional review board.

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