



By Robert Aquinas McNally

Feature Article

Something in the Genes: Kaiser Permanente's Continuing Commitment to Research

When Henry J Kaiser and Sidney R Garfield, MD, joined their considerable forces to found what would become Kaiser Permanente (KP), they understood the creative power of stepping outside traditional boundaries. That vision extended to bridging the institutional gap separating medical research from clinical medicine.

On August 21, 1942, when the Permanente Foundation Hospital (old Fabiola) was dedicated, Henry Kaiser enumerated the goals of the health plan. One, he said, was “to provide funds for research” in industrial medicine.¹

Later that same year, in an address to a meeting of the National Association of Manufacturers in New York City, Kaiser took this idea further. He challenged manufacturers to provide “essential medical care” to working people. “Will the manufacturers,” he continued, “now dare to organize, finance, and manage medical centers in every industrial community ... which would bring not only skill and facilities, but all of the advantages of research, within the reach of the common man?”²

Dr Garfield was already working to deliver on this bold vision. In 1943, he requested funds from the Permanente Foundation to study new methods of curing syphilis and to launch a research journal. In his first annual report on the Permanente Foundation Hospital (published in the following year), Dr Garfield characterized the new organization as “a plan which can ... provide its own research ...”^{3,39}

KP Research During the Early Days

In 1943, the *Permanente Foundation Medical Bulletin*,⁴ which was funded by the money Dr Garfield

had requested, made its first appearance with the help of editorial support from the Department of Scientific Publication (now the Department of Medical Editing). An article in the inaugural issue characterized the research effort that would follow. Titled “The Management of Pneumonia: A Review of 517 Cases,”⁵ the paper was written by Morris Collen, MD, who was then a young internist.

During the Second World War, Dr Collen and his colleagues found themselves operating the largest pneumonia service in the country. “It was cold and damp in the shipyards, and they [the workers] would get pneumococcal pneumonias, and they would die,” Dr Collen told an interviewer, Steve Gilford, in the Fall of 2000 (Morris Collen, MD; Steve Gilford, BA).³ Because use of horse serum caused serum sickness, Kaiser Permanente’s physicians opted instead for aggressive doses of sulfa drugs, and they became adept at treating the urologic problems that complicated this protocol. The approach was so successful—and was made so well known by publication⁵ of the clinical results—that interns from the University of Cincinnati and the University of California San Francisco trained in pneumonia treatment under Dr Collen.

At the end of the war, Kaiser Permanente was following two research tracks. One track began be-

cause Henry J Kaiser’s son, Henry Jr, was diagnosed with multiple sclerosis (MS). Paul De Kruif, best-selling author of *Microbe Hunters*,⁶ directed the senior Kaiser to Herman Kabat, MD, a physical medicine specialist who was developing a new approach to treating MS. In 1946, the industrialist and the doctor together established the Kabat-Kaiser Institute, whose purpose—among others—was to conduct medical research in neuromuscular disorders. A series of *Permanente Foundation Medical Bulletin* research articles began in 1947.

The other effort centered on the newly founded Department of Medical Research, which published its first paper⁷ in 1946—a study of the effect of acetylsalicylic acid in induced pain. This study initiated Kaiser Permanente’s foray into basic science. During the next several years, working first in a facility across from the Richmond Field Hospital and then on what had been the grounds of the Belmont Country Club, researchers pursued projects that included studies of nematodes, carotene, the nitrogen-fixing abilities of marine organisms, biting insects, the basic mechanisms of the allergic response, cockroaches, and animal models of cancer. By 1958, the Kaiser Foundation Research Institute was established as the medical group’s nonprofit arm for seeking funding from foundation and governmental sources. About the same time, however, basic research was abandoned.

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that type of research, and that we would not do basic animal research ...," Dr Morris Collen told a University of California interviewer later.^{8:204} "Our unique capabilities for research are that we have a defined population of people. Therefore, given a specific number of people that we take care of, we have a denominator that permits us to measure rates of illness and rates of cure ... which ordinarily are not available."^{8:204}

The Multiphasic Health Checkup and Medical Methods Research

Even before the basic research effort ceased, an initiative had begun that drew on the very strengths Dr Collen pointed to. After a pilot project conducted at Longshoreman's Hall on the San Francisco waterfront confirmed the feasibility of multiphasic testing, multiphasic centers were opened in Oakland and San Francisco in the winter of 1951-52.^{9:87-8} At the time, all records were kept in the standard paper-and-pencil fashion. With computers still bulky, expensive, and slow, no one had yet thought of automating the multiphasic testing procedure.

That event happened several years later, after Drs Garfield and Cutting asked Dr Collen—who holds an undergraduate degree in electrical engineering—to attend a national congress on medical electronics. Dr Collen reported back that medical computing was entering a time of diffusion and innovation and that Kaiser Permanente should take advantage of the coming ferment. As a result, the Medical Methods Research (MMR) department—named by Dr Cutting, who saw its charge as developing better methods of care—was established in 1961. Dr Collen became

the department's first director.

MMR's initial outside grant came from the United States Public Health Service, which provided money to computerize multiphasic testing, both to evaluate the efficiency of this screening method and to determine whether annual physical examinations affected rates of morbidity and mortality in adults. A randomized trial designed by MMR and involving 10,000 new Oakland and San Francisco members¹⁰⁻¹³ showed that multiphasic testing substantially lowered rates of mortality from postponable conditions.

This research led to subsequent grants to develop a pilot computerized medical information system. According to Dr Collen⁸, the result was the most comprehensive inpatient and outpatient medical information system in the world, a program that demonstrated what computers could do for medicine and that led, along with ongoing multiphasic studies, to a long list of scholarly papers and books.

Charting the Course for Health Services Research

As part of the medical group, MMR concerned itself primarily with research on clinical innovation. Just as MMR was automating multiphasic testing, Kaiser Permanente's Oregon (now Northwest) Region was launching a different approach. Ernest Saward, MD, that region's medical director, envisioned prepaid group practice as a social experiment. As much as he loved the theory, however, too little was known about the practice.

"... [W]e really didn't know in any real way enough about the effects of such an organization," Dr Saward told a University of California interviewer years later.^{14:62} "We didn't know its demography, its epide-

miology, the costing of various kinds of services, the costing of various kinds of morbidities, and so forth ..." Little effort had been focused on bridging this knowledge gap; research "was not basically looking at the organizations and how they were performing ..." ^{14:63}

Dr Saward committed 5% of hospital revenue to creating an institute of health services research, one that would answer these unanswered questions. He sought a director for the effort and found Merwyn R Greenlick, who was finishing his doctorate in health services research at the University of Michigan. Dr Greenlick came aboard in September 1964 as the first director of what was then known as the Medical Care Research Unit.^{9:183}

"Dr Saward felt that to be a successful social experiment, Kaiser Permanente needed to make itself available for doing health services research in the public domain," Dr Greenlick relayed. "The public domain was our original intention. Because we were part of the community services activity of Kaiser Foundation Hospitals, we reported our results to the nation, not only to the doctors" (Merwyn R Greenlick, PhD, personal communication, June 21, 2001).^b

Dr Greenlick was also drawn to the nascent center because it provided a known population (the denominator), access to medical records (the numerator), and a commitment from Dr Saward that the KP system could be changed experimentally to evaluate outcomes.

The Medical Care Research Unit's initial efforts focused on health care utilization: specifically, on an effort to gather complete data on 5% of the member population over a 30-year period. That effort led to more than 200 published papers on fac-



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tors affecting use of health services. Other studies examined predictors of posthospitalization need, established a demonstration project on utilization of skilled nursing and home health services by members under 65 years of age, and used a grant from the US Office of Economic Opportunity to show how poor people could be brought into group care—a project that led directly to the prepaid Medicare program. Clinical trials [initially the Multiple Risk Factor Intervention Trial (MRFIT) study], epidemiologic studies, and behavioral intervention for smoking, weight loss, and improved diet and nutrition were later added to the Unit's research agenda.

In 1968, with selection of the Medical Care Research Unit as one of the health services research centers funded by the US Department of Health, Education and Welfare (HEW), the group's name was changed to Health Services Research Center. That name was retained until 1984, the twentieth anniversary of the program, when the current name—Center for Health Research (CHR)—was adopted.

A Joining of Paths

Meanwhile, MMR—which by the early 1970s was increasingly becoming a public-domain research organization—was forced into a different avenue of research when the Nixon Administration abruptly canceled MMR's funding for medical informatics. The loss of \$500,000 per year led to shutdown of the hospital computer system in San

Francisco and eventually to discontinuation of research in computer applications to medicine. In time, the computer effort shifted over to Information Technology.

In 1979, Edmund Van Brunt, MD, succeeded Dr Collen as director of MMR, and he later changed the name of the research group to the Division of Research (DOR). "Medical Methods Research didn't really mean anything inside or outside Kaiser Permanente, while the Division of Research had an obvious meaning," Dr Van Brunt said. "I saw research as the face Kaiser Permanente presented to important people all over the country—in academia, government, the media, and other health care systems" (Edmund Van Brunt, MD, personal communication, June 5, 2001).^c

During his tenure at DOR, Dr Van Brunt focused on building the databases and staff needed to support a major research operation in epidemiology and health services research. This fundamental research agenda has both continued and grown under Dr Van Brunt's successors at DOR—first Gary D Friedman, MD, and currently Joseph V Selby, MD, MPH.

Research Throughout KP: Sharing the Wealth

To this day, DOR and CHR remain Kaiser Permanente's flagship research organizations. They are, however, only the longest chapters in the book, not the whole story. Today every Kaiser Permanente

region mounts a research effort that advances the organization's overall goal of research for the common good.

Division of Research (Oakland, California)

DOR is currently focusing on the behavioral, environmental, and medical care factors affecting health; evaluating effectiveness of patient and provider education programs; assessing new models of health care delivery; developing improved methods of outcome measurement; evaluating screening procedures; and studying clinical management strategies. Currently, DOR has about 45 investigators as well as a large number of clinician-researchers across Northern California who produce more than 100 papers annually. DOR's annual budget totals \$27 million in direct costs.

Center for Health Research (Portland, Oregon; and Honolulu, Hawaii)

The Center for Health Research (CHR) is the only Kaiser Permanente research organization with two sites: one in Oregon, and the other in Hawaii. Mary Durham, PhD, is CHR's director, and Thomas M Vogt, MD, MPH, serves both as director of the Hawaii program and as an associate director. In addition to a long-standing focus on health services research, epidemiology, clinical trials, and behavioral interventions, CHR has in the past several years added programs in dental research, complementary and alternative medicine, genetics, mental health, medical informatics, clinical trials coordinating centers, and data warehousing. CHR has 31 investigators with PhD or MD degrees (or both) and a \$25 million budget for 2001.

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Kaiser Permanente Vaccine Study Center (Oakland, California)

Founded in 1985 by current codirectors Stephen Black, MD, and Henry Shinefield, MD, the Kaiser Permanente Vaccine Study Center began as a way of responding to numerous requests to use Kaiser Permanente's large population for vaccine efficacy studies. "We have the ability to do phase III and phase IV studies probably better than anybody in the country, and as well as anybody in the world," Dr Shinefield said (Henry Shinefield, MD, personal communication, June 18, 2001).^d Key studies have focused on *Haemophilus influenzae*, type B (Hib), chickenpox, pneumococcus, rotavirus, and flu vaccines. The center operates 31 sites and collaborates with Kaiser Permanente's Georgia, Hawaii, and Colorado Regions and with Group Health Cooperative in Seattle.

Department of Research and Evaluation (Pasadena, California)

The Southern California Region has been conducting research since the late 1970s. This function was formalized in 1987 and later became a department with the appointment of its current director, Diana Petitti, MD. Organized explicitly to foster physician involvement in research and to coordinate knowledge used to formulate that region's clinical and organizational goals, the Department of Research and Evaluation is focusing on cancer clinical trials, prevention of birth defects, detection of cognitive impairment, evaluation of cancer screening methods, development of diabetes management programs, and determining effectiveness of testing for coronary artery disease. Having grown from 17 federal and other governmental grants (in 1994)

to 77 (in 2000), the department has nine full-time investigators and a 2000 budget of \$7.6 million in expenditures for 560 active projects.

Clinical Research Unit (Denver, Colorado)

The Clinical Research Unit (CRU) was founded in 1990 by Arne Beck, PhD, and Paul Barrett, MD, MSPH, who remain CRU's codirectors. CRU's original purpose was to provide research funding and support to clinicians, and it has since enlarged its mission by conducting applied health services research and by securing federal funding. Research has focused primarily on new models of care for chronic illness, pediatrics and pediatric immunization, diabetes, mental health services, geriatrics, emergency services, and asthma. CRU has 40 ongoing grants and contracts, had an expenditures budget of \$1.9 million in 2000, and published 27 articles in peer-reviewed journals during 2000.

Division of Clinical Innovation (Brooklyn Heights, Ohio)

The Division of Clinical Innovation is headed by Allan Khoury, MD, PhD, who also serves as associate medical director. Founded in 1995 as a way to manage projects in quality improvement and medical informatics, the division focuses on applied research on outreach and follow-up—and, in Dr Khoury's words, "occasionally does things worthy of publication" (Allan Khoury, MD, PhD, personal communication, June 15, 2001).^e Current investigations are looking into ways of improving asthma care, determining the best antihypertensive agents to prevent renal deterioration in minority patients, and developing an automated intervention system for people suspected of alcohol abuse.

Department of Research (Atlanta, Georgia)

Research activities in the Georgia Region began in 1995, and the Atlanta-based Department of Research came into being in 1998, headed by Dennis Tolsma, MPH. The research agenda covers health services research, clinical trials of vaccines and pharmaceuticals, and epidemiology. The research team includes two PhD scientists and several associates with master's or RN degrees as well as numerous participating clinicians. In the past two years, external funding for the department has doubled to more than \$500,000 annually.

Research and Information Management (Rockville, Maryland)

Research began approximately ten years ago in the Mid-Atlantic Region, where Mark H Snyder, MD, has headed the Research and Information Management program since 1998. Driven primarily by the research interests of participating clinicians and supported by a small staff for grant administration and data access, the program's current agenda includes therapy for hepatitis C; the relation between congestive heart failure, lipids, and antiarrhythmic and antihypertensive drugs; collaboration with the University of Maryland on ways of helping physicians to communicate with adolescents about drugs, alcohol, and sexual activity; HIV; and collaboration with Johns Hopkins University on screening for sexually transmitted diseases (STDs), particularly chlamydia.

A Debt of Gratitude to KP's Founders

Given the myriad changes in medicine and the extraordinary success of the Kaiser Permanente program since the 1940s, the re-



search effort envisioned by Henry J Kaiser in his Fabiola dedication speech and promised by Dr Garfield in his first annual report has expanded in directions neither founder could have prophesied. Nonetheless, the core values underlying that commitment keep research at the heart of Kaiser Permanente's mission.

"By publishing the data gained from Kaiser Permanente members, we offer knowledge to the world," says DOR's Dr Joseph V Selby. "We see ourselves leveraging the wonderful data and resources of this organization for the public good. By putting our work in the public domain, we are bettering the health, health status, and access to care of the population at large" (Joseph V Selby, MD, personal communication, June 4, 2001).^f

Dr Greenlick of CHR agrees, and he points out the efficacy of the research effort. "We really did things that changed the way health care was delivered in the state and the nation. That was the social mission," he says (Merwyn R Greenlick, PhD, personal communication, June 21, 2001).^b

Possibly, this social mission is even more of a reason for Kaiser Permanente's success in research than the organization's extraordinary database or the statistical benefits of a known denominator.

"Databases are important, but they are very much overemphasized," says Diana Petitti, MD. "What we really capitalize on is our members' trust. In my opinion, the real reason why we get such good research is that when we ask people to do something, they believe that we are doing it for the good of the world, and they are very cooperative" (Diana Petitti, MD, personal communication, June 19, 2001).^g ❖

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^b Center for Health Research, Northwest Permanente, Portland, Oregon.

^c Kaiser Foundation Research Institute, Oakland, California.

^d Vaccine Center, Kaiser Permanente Medical Center, San Francisco, California.

^e Division of Clinical Innovation, Ohio Permanente Medical Group, Brooklyn Heights, Ohio.

^f Division of Research, Kaiser Permanente Medical Care Program, Oakland, California.

^g Department of Research and Evaluation, Southern California Permanente Medical Group, Pasadena, California.

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