

DEVELOPING *and* SHARING KNOWLEDGE

Sharing Our Insights for the Greater Good

At Kaiser Permanente, creating knowledge and translating it into clinical practice is a core aspect of how we give back to our communities. Our unique combination of assets provides a major advantage for clinical and health services research. With a large, stable membership that is representative of diverse populations, and care documented in a state-of-the-art electronic health record, our highly experienced investigators have a unique toolset at hand. Together, these assets facilitate in-depth analyses that create valuable insights and knowledge that can be quickly translated into practice to benefit our members and communities.

Developing Knowledge

Operating in every region, our research centers generate important findings that contribute to the advancement of the prevention and treatment of a variety of health concerns. Collectively, our body of research illustrates our commitment to tackling major health problems and sharing that knowledge with the field.

Last year, our investigators were engaged in more than 3,150 research and evaluation studies and published more than 700 articles in peer-reviewed journals generated from study findings. The studies were featured in prestigious publications such as *The New England Journal of Medicine*, *The Journal of the American Medical Association*, *American Journal of Public Health*, *Annals of Internal Medicine*, *Obstetrics & Gynecology* and many other general and specialized journals.

Among our many research findings in 2008 were studies documenting a link between mid-life abdominal fat and the risk of dementia; a correlation between food diaries and weight loss; the effects of stress on aging; and a possible link between red wine consumption and the incidence of lung cancer. These studies, along with the following projects, are examples of how our research teams are making a difference in the lives of people around the world:

- **Diabetes Prevention and Treatment:** Our Southern California researchers found the incidence of diabetes before motherhood has more than doubled among teenage and adult women in the last six years. Another study by our researchers in the Northwest found that those who lose weight soon after a diagnosis of type 2 diabetes are more likely to maintain control over blood pressure and blood sugar. We also have one of the country's most comprehensive registries of patients diagnosed with diabetes, which helps clinicians better serve patients, and patients better manage their disease.
- **Obesity, Asthma and Osteoporosis at our Center for Health Research:** Researchers in the Northwest, Georgia, and Hawaii published several key studies in 2008. Among their findings was that keeping a food diary doubles weight loss and that obese people with asthma have a much greater risk of hospitalization. In collaboration with the University of Alabama at Birmingham research team, investigators are currently conducting a randomized trial study to test the effect of simple interventions to improve health care among women at least 65 years of age who are at high risk for osteoporosis.
- **Coronary Artery Risk Development Study in Young Adults:** Investigators at the Northern California Division of Research demonstrated that healthy lifestyle behaviors in young adulthood protect against heart disease. The study found that participants who reported five unhealthy lifestyle practices at the baseline exam—such as smoking, high alcohol intake,

unhealthy diet, low physical activity, and being overweight—had nearly five times greater chance of developing coronary artery calcification 15 years later than did participants who reported none of these behaviors.

- **Human Immunodeficiency Virus Initiative:** Our investigators studied a wide range of issues, from the cost of HIV medications and HIV testing to HIV-related malignancies, quality performance measures, HIV multidisciplinary care, cardiovascular disease in HIV-infected patients, and toxicities of HIV therapy.
- **Cancer:** We expanded collaborations with other research partners to participate in large-scale clinical trials. Southern California's Department of Research and Evaluation was honored by the American Society of Clinical Oncology for its clinical trials research, and our Northern California Oncology Clinical Trials program became a full member of the Southwest Oncology Group, one of the largest cancer clinical trials cooperative groups in the United States.

Translating Research into Practice

In 2008, we also expanded collaborations with major public health agencies, academic institutions, health foundations, and other research partners to launch large-scale studies. We are partnering with the National Heart, Lung and Blood Institute, part of the National Institutes of Health, on one of the largest and longest running weight-loss maintenance trials ever conducted.

We go beyond conducting research to ensure that our communities and the field of health care benefit from the findings. It has long been our practice to actively disseminate what we learn by partnering with influential professional and scientific organizations and by translating our knowledge for a variety of audiences, including health care and public health practitioners, policymakers, and the public at large. We have expanded our partnerships with professional, scientific, and academic organizations to actively translate research into practice.



Evolution of Gene Environment Research Program

Our Research Program on Genes, Environment, and Health was launched in 2007, with the goal to identify genetic and environmental factors that affect human health and to use that knowledge to improve health care for our members and the general public. It involves collecting information from Northern California members who consent to participate anonymously in the program from three sources: participant surveys regarding lifestyle, family history, and other factors; participants' electronic health records; and genetic information from saliva and/or blood samples that the participants contribute. All of this information is "de-identified"—a careful process that ensures protection of the confidentiality of participant information—and is then entered into a databank, which can be linked as needed with other databases, with detailed environmental information on air quality, exposure to toxins, and even aspects of the social and built environment, such as neighborhoods that lack sidewalks and safe parks.

Research utilizing the RPGEH data could lead to entirely new ways of diagnosing, treating, and even preventing major diseases like cancer, heart disease, asthma, diabetes, and mental health disorders.

RPGEH RECEIVES EXTERNAL SUPPORT

In December 2008, the Robert Wood Johnson Foundation awarded \$8.5 million to the RPGEH, reflecting the interest the program has attracted outside Kaiser Permanente. Prior to 2008, the RPGEH was funded by Kaiser Permanente and also received grants totaling \$4.7 million from the Wayne and Gladys Valley Foundation and The Ellison Medical Foundation. Over the next four to five years, the RPGEH aims to collect information and saliva or blood samples from 500,000 consenting Kaiser Permanente members in Northern California. The size, diversity, and comprehensiveness of the resulting resource should enable researchers to identify the subtle effects of interacting environmental and genetic factors in common and less common health conditions.

BEGINNING COLLECTION OF DNA SAMPLES

In 2008, the RPGEH entered the second phase of developing the databank. After approximately 400,000 members responded to the initial RPGEH health and lifestyle survey, the project began collecting saliva samples from participants for DNA samples. By year-end, close to 100,000 consent forms and approximately 40,000 saliva samples had been collected by mail. The program will continue to contact survey respondents and other Kaiser Permanente members in Northern California to obtain consent forms and saliva samples, with an expectation of collecting more than 100,000 samples by the end of 2009.

RESEARCH ALREADY UNDERWAY

Together with the University of California, San Francisco, RPGEH researchers received \$2.3 million in grant funds from the National Cancer Institute to study prostate cancer in African Americans. Prostate cancer is the most common non-skin cancer in the United States and affects one in six men, and it disproportionately affects African Americans.

The National Institute of Mental Health has awarded a five-year, \$12.7 million grant to the RPGEH and UCSF Institute for Human Genetics for a multiethnic study of the genetic factors that may determine risk for bipolar disorder, which affects about 1 to 2 percent of the population. Evidence from prior research strongly suggests that bipolar disorder has a genetic basis. The research provides an outstanding opportunity to enhance understanding of the causes of the disorder and may eventually lead to more effective treatment options for individual patients.

With our systemwide conversion to Kaiser Permanente HealthConnect®, the largest civilian electronic health record system in the world, we are rapidly accumulating data that will provide clinicians and researchers detailed information about the characteristics of the patients we serve, the care they receive, and the health outcomes they experience. By assessing and improving the quality, consistency, and accessibility of our integrated clinical data resources, we are making it easier for clinicians to learn from each other and enhance the quality and affordability of the care we deliver.

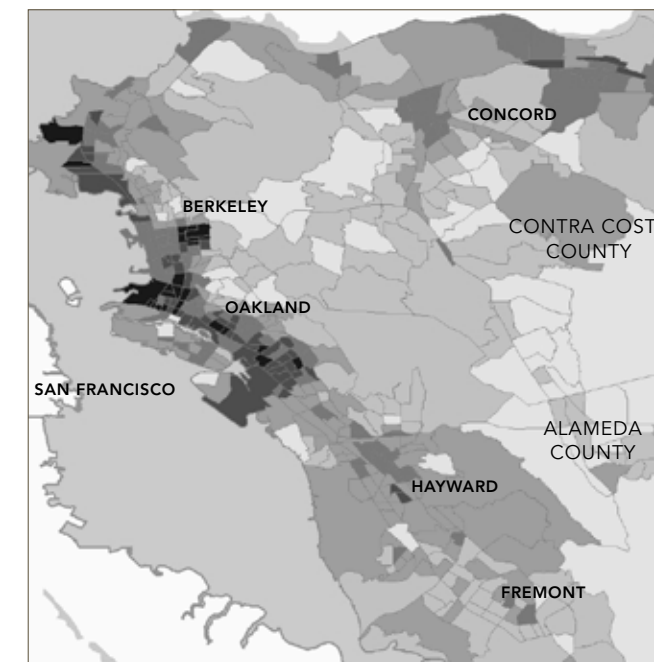
Our research informs the entire field of medicine and contributes to a growing body of science around the origins, factors, and treatment of chronic disease. It also contributes to improvement of Kaiser Permanente's care and service delivery. Last year, we published results of a pilot that substantially improved the heart attack survival rate for our members in Colorado. An innovative program links

coronary artery disease patients and teams of pharmacists, nurses, primary care doctors, and cardiologists with an electronic health record and advanced clinical care registry. These teams were able to reduce coronary artery disease deaths by 73 percent. Now, we are spreading this practice and testing the same technologies and processes to tackle other chronic conditions throughout our delivery system.

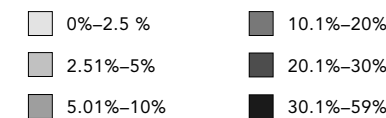
Several years ago, we designed the Archimedes Model, a full-scale simulation model of human physiology, diseases, behaviors, interventions, and health care systems that predicts risk factors and treatment benefits. Doctors will soon be able to use a tool derived from Archimedes to help develop customized treatment plans for their patients.

We began to use geographic information system technology to help understand how social and environmental determinants of health like poverty affect the prevalence of diseases like diabetes in our communities.

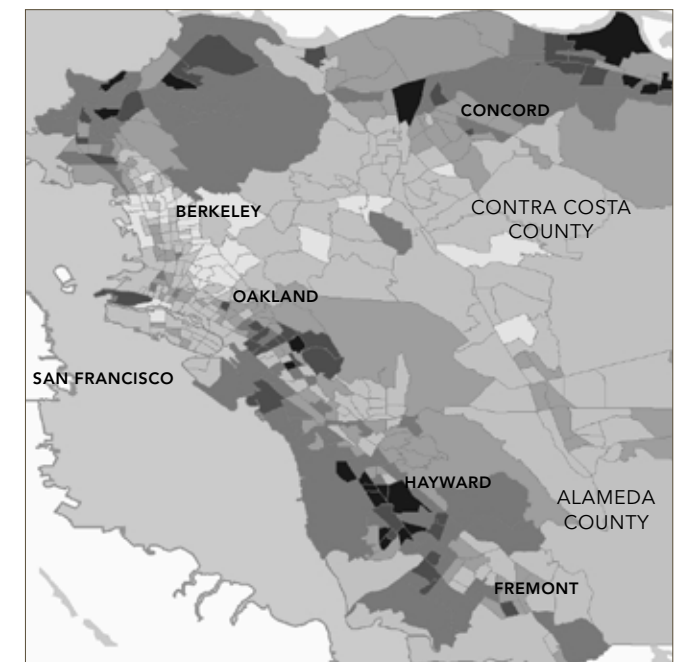
ALAMEDA COUNTY AND CONTRA COSTA COUNTY—POVERTY RATES



% BELOW POVERTY BY CENSUS TRACT



ALL MEMBERS—ALAMEDA COUNTY AND CONTRA COSTA COUNTY—DIABETES PREVALENCE RATES BY CENSUS TRACT



ALL MEMBERS RATE OF DIABETES CASES BY CENSUS TRACT



KFRI: Celebrating 50 Years of Innovation Through Research

During 2008, the Kaiser Foundation Research Institute celebrated its 50th anniversary. Since 1958, KFRI investigators have worked to improve the health of future generations through research. The anniversary celebration highlighted some of the key milestones in the early years of the program:

- In the 1940s, our pioneering chief of medicine, Morris Collen, MD, set the standard for healing pneumonia victims in a pre-penicillin world. At that time, Dr. Collen also began the project that ultimately laid the foundation for KP HealthConnect. Dr. Collen later was the founding director of Northern California's Division of Research.
- In the mid-1940s, Herman Kabat, MD, PhD, called "boy wonder" by *TIME* magazine in 1946, was asked by Henry Kaiser to start the Kaiser-Kabat Institute in Washington, DC, to help persons with multiple sclerosis like Kaiser's son, Henry Kaiser Jr. Dr. Kabat's legacy lives on at our rehabilitation center in Vallejo, Calif., and in the techniques used worldwide to treat victims of neuromuscular disabilities.

The collective contributions of more than 115 researchers in our research centers reflect the ways in which our scientific findings contribute to evidence-based knowledge that improves the lives of our members, the communities we serve, and the medical field as a whole.



Henry Kaiser and Herman Kabat, MD, PhD, with a patient at the Kabat-Kaiser Institute in Vallejo, Calif.



The Kabat-Kaiser Institute in Washington, D.C.

Educating the Health Care Partners of the Future

Our first and largest graduate medical education program began more than 60 years ago in Oakland, Calif. Last year, we invested approximately \$74 million to educate health care professionals across our regions. We trained approximately 2,607 residents and interns, and made significant investments to train nurses, pharmacists, and other allied health professionals.

In San Francisco, one of our residency programs offers a four-year program that combines internal medicine, public health, and preventive medicine. This is one of only six such combined programs in the United States. The residency program is a collaboration with the University of California, San Francisco Division of Preventive Medicine and Public Health and the University of California, Berkeley School of Public Health. A similar combined residency program in Oakland offers residents involvement with our Division of Research to increase skill and competencies in core public health areas, including biostatistics, epidemiology, and health policy management.

We're also pleased to be one of the inaugural financial supporters of the Institute for Healthcare Improvement's Open School for Health Professions. Our three-year, \$750,000 commitment supported the development of a "virtual school." The first of its kind, the Open School introduces health professional students to the tools and skill sets required to be leaders in quality improvement in their future careers. Featuring world-renowned experts in performance improvement, patient safety, and quality measurement, the online school provides a curriculum that introduces students to the science of quality improvement, and also supports peer-to-peer networking through local chapters and mentoring arrangements. The school will allow thousands of health professional students,

including those headed to careers in the safety net, access to expansive course material not currently offered in their customary clinical education.

In addition, we supported a number of other educational programs for health professionals:

- *Nurse Practitioner and Non-MD Staff Trained*—In 2008, in response to the regional and national shortage of allied health care professionals, we provided on-site training opportunities to more than 5,400 nurses, radiology and sonography technicians, and other allied health care professionals.
- *Pharmacy Postgraduate Residency Program in California*—There is a serious national pharmacist shortage, including a greater shortage of pharmacists trained and qualified to manage high-risk drug therapies for high-risk patients. In 2008, Kaiser Permanente community benefit supported 48 nationally accredited pharmacist postgraduate residency students.

Combining Medical Training and Care for the Uninsured and Underserved in California

A number of our training and education programs offer a unique community service rotation through community clinics to support safety net providers. They also deliver care for vulnerable populations and provide training for our graduates in providing culturally responsive and competent care for diverse populations. Graduate medical education programs in Northern and Southern California rotate residents through local community health centers and clinics, providing comprehensive care for families, women's health evaluations, general gynecological care, and pediatric care.

Institute for Health Policy—Making It a Practice to Improve Health Care

The Kaiser Permanente Institute for Health Policy provides a focus and resources for us to help shape the nation's health policy agenda. Working in collaboration with foundations, policy institutes, research programs, federal and state policymakers, and other stakeholders, the institute seeks to develop unbiased information about health policy issues to increase understanding and help provide solutions.

In 2008, the institute sponsored or cosponsored a variety of policy roundtables on a range of subjects that leverage our expertise, experience, and interests, including:

- Hospital/Physician Collaboration
- Patient-Centered Care and Health Reform
- California Health Care Reform

Publications

IHP produced or commissioned policy briefs and background papers on the following subjects in 2008:

- *Kaiser Permanente HealthConnect®: Lessons From the Research Literature*
- *Hospital-Physician Collaboration: Landscape of Economic Integration and Impact on Clinical Integration*
- *Physician Organization in Relation to Quality and Efficiency of Care: A Synthesis of Recent Literature*
- *Preparing for the Personal Health Record*

Whether they are addressing health reform, patient safety, or Medicare solvency, the success of policy proposals is profoundly influenced by their coverage in the media. Last year, IHP implemented a new project developed to engage both veteran and future journalists in improving coverage of complex health policy issues.

Making a Personal Contribution Toward a Better World

At Kaiser Permanente, we recognize that our greatest strength is our people. We are proud to have dedicated, generous physicians and employees who go beyond the call of duty to have a positive impact on the community.

Volunteerism and community service by employees, physicians, and their friends and families can make measurable impacts on the health of our communities.

Every year, our employees nationwide are encouraged to celebrate the Martin Luther King Jr. holiday honoring Dr. King's legacy by spending the day providing service to their communities—dubbed a “day on” rather than a “day off.” In 2008, nearly 5,000 employees and physicians at 79 sites across all eight regions dedicated their time and talent as part of Kaiser Permanente's day of community service.

Last year, as part of our ongoing commitment to help rebuild communities devastated by Hurricanes Katrina and Rita, we organized a group of 60 employee and physician volunteers to assist in recovery and rebuilding efforts in the Gulf Coast. Volunteers from each of our regions focused on assisting people in the New Orleans, La., and Biloxi, Miss., areas. The volunteers worked on various recovery projects, including painting murals, erecting a greenhouse at a local high school; homes rehabilitation; and environmental restoration projects. The two weeks of service in the Gulf Coast area was the longest corporate commitment that the Points of Light Institute and the HandsOn Network have coordinated since Hurricane Katrina hit the region in August 2005. We continue to honor the pledge we made

community journal

INSTITUTE FOR HEALTHCARE IMPROVEMENT SCHOLAR: IMAN'S STORY

Iman Nazeeri-Simmons, MPH, associate administrator of Quality and Patient Safety at San Francisco General Hospital, the city's public hospital and trauma center, is someone who knows from personal experience that one person can make a difference.

Through the support of Kaiser Permanente, Iman attended the Institute for Healthcare Improvement training on becoming a patient safety officer. It involved a one-week intensive course in Cambridge, Mass., and gave her the tools she needed to affect change at her institution—to provide consistently high-quality care for patients.

“The IHI training was close to career altering and an inspiration around the topic of patient safety,” Iman says. “After I got back, I began to ask, ‘How do I take this information to the 5,000 colleagues who work in my hospital facility?’”

Three months after her return from the patient safety officer training, she had assembled a multidisciplinary group of experts to create a training curriculum. One project the team initiated was a structured implementation of care processes to help reduce the risk of pneumonia for all patients on specialized ventilators. Specifically, the standards of care included elevating the head of the bed and oral care more than once per day. In addition to these basic care processes, the quality team found that the administration of antibiotics also played a key role in determining patient outcomes.

The team's analysis showed that some clinical departments needed more support with infectious disease experts and clinical pharmacists to appropriately diagnose and treat a patient who might require antibiotics. By addressing these issues, the team successfully implemented optimal care to patients on a ventilator and decreased the potential overuse of antibiotics.

“I am so grateful to Kaiser Permanente. Because of what we've learned, we've seen changes in our care processes, and we've seen a mindset shift because the nurses are feeling ownership in care outcomes that will lead to better patient outcomes,” Iman says. “You can make improvements in complicated systems.”



then to help with the long-term recovery and rebuilding efforts needed to help people affected by the storms.

In response to the enthusiasm of our employees and physicians to volunteer, we're developing a new volunteer Web site, with rollout expected in 2009. The KP Cares site was designed to facilitate physician and employee engagement in meaningful and effective community service. The site will allow administrators to identify volunteers who have specific clinical and other skills in times of need, including disaster relief, as well as providing ongoing opportunities to engage in local community service projects.

This unique combination of responsive and proactive components is an innovative approach to community service management. We look forward to leveraging these tools in combination with a workforce of 167,000 employees and physicians eager to act on the myriad of volunteer opportunities available.

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Educational Theatre Program

Our Educational Theatre Program is a potent strategy for disseminating our experience and clinically honed prevention messages to students, families, and their broader communities. ETP is free of charge to schools and the general community.

Using live theatre, music, comedy, and drama, ETP engages kids, teens, and adults on a wide range of subjects, including: healthy eating, physical activity, conflict resolution, peer pressure, HIV/AIDS, tobacco use, and dealing with grief and loss. The program's goal is to inspire individuals and communities to make healthy choices.

In 2008, we extended ETP to every Kaiser Permanente region. Performances and workshops reached 557,426 students and 121,061 adults in schools nationwide. ETP has become increasingly integrated with our community health initiatives effort to promote Health Eating Active Living.

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Thomas Barber, MD, associate physician-in-chief at our Oakland Medical Center in Oakland, Calif., shows international visitors how we use information technology to improve integrated care delivery during one of Kaiser Permanente International's "Integration and Innovation in Health Care" conferences.

Kaiser Permanente International— Supporting Quality Care Around the World

Kaiser Permanente International brings our knowledge and experience to governments, health care providers, health plans, and other institutions throughout the world that are striving to improve their health care systems. In 2008, we shared our knowledge and experience with hundreds of health care leaders in more than 20 countries. We held two *Integration and Innovation in Health Care* programs in the San Francisco Bay Area, attracting about 50 leaders each.

For the first time, we also conducted a Spanish-language program for a group of hospital leaders from Catalonia, Spain visiting Southern California.

Sharing Knowledge by the Numbers—2008

Published research studies.....	701
Research and evaluation studies underway	3,150
Educational Theatre Program performances	2,631
Children and adults reached through our Educational Theatre Program.....	678,487
Residents and interns trained.....	2,607
Nurse practitioner and other non-MD staff trained.....	5,419