

2014 Director's Letter

Making the most of our vantage point within a learning health care system

One of the most compelling health care articles of 2014 was a [New England Journal of Medicine](#) paper by University of Michigan investigator John Ayanian, MD, MPP. He found national disparities in the control of health risk factors among Medicare beneficiaries — and concluded that these disparities have been eliminated in the West among Kaiser Permanente members. Our work at the [Division of Research](#) played a key role in Ayanian's interpretation that Kaiser Permanente's interventions have succeeded and reduced disparities. He cited four studies by our Division that looked at diabetes, cardiovascular disease, and hypertension, exploring the ways that Kaiser Permanente's programs have improved patient outcomes. This high-profile paper offers a compelling endorsement of the importance of our work.



These studies underscore the powerful advantage we have in being embedded within Kaiser Permanente. Our Division is fortunate to have the sponsorship of a parent organization that is a model for current health care reforms. Our robust relationships with clinical and program leaders stimulate creativity and deepen our perspectives.

An increasing number of our internal collaborations involve health care quality and specialty care. For example, our Division is making key contributions to Kaiser Permanente's pursuit of cancer clinical accreditation in many facilities. Work by our research scientists, Regional Cancer Registry, and [Comprehensive Clinical Research Unit](#) was critical to the success of our [Santa Clara Medical Center](#) in attaining the most prestigious level of cancer center accreditation this past year.

Many of our newest studies focus on engaging patients and learning what is most important to them. Together with many other researchers within Kaiser Permanente, we are leading a clinical data research network sponsored by the [Patient-Centered Outcomes Research Institute](#), which has patient and clinician engagement as its distinguishing feature.

In the rapidly expanding field of genetics, our [Research Program on Genes, Environment and Health](#) made a significant contribution to the future of precision medicine with the deposit of 55 billion bits of discrete genetic data from 74,000 volunteer Kaiser Permanente members into the national database of Genotypes and Phenotypes. In announcing the deposit last year, Francis Collins, MD, director of the [National Institutes of Health](#), hailed it as "a tremendous resource for science."

We continue to build on the visionary work in clinical informatics initiated by our Division's beloved founder, [Morris Collen, MD](#), who passed away in 2014 at the age of 100. Our work in clinical informatics — which Morrie initiated in the 1960s, when a computer had less power than a phone does today — enables us to harness Kaiser Permanente's rich data for the benefit of both our science and our health care system. Through informatics, we are inventing new clinical decision support tools that help physicians at the bedside, and we are laying the foundation for future applications of genomic research and other personalized care approaches.

I am optimistic about our ability to capitalize on the new opportunities in today's research landscape — in delivery science, patient-centered outcomes, genomics, and informatics. Our scientists are among the most talented and creative in the country. Our research and infrastructure staff members are sophisticated and capable partners. Our sponsors within Kaiser Permanente are insightful and steady supporters who see research as an integral part of our organization. Our research is making a real difference in the way we understand health and deliver health care.

Warm regards,

A handwritten signature in dark blue ink that reads "Tracy Lieu". The signature is fluid and cursive, with the first name "Tracy" and last name "Lieu" clearly distinguishable.

Tracy A. Lieu, MD, MPH
Director, Division of Research

2014 Research Highlights



Behavioral Health and Aging

Alcohol as A Vital Sign: The alcohol screening and counseling clinical protocol developed by the Drug and Alcohol Research Team was cited by the Centers for Disease Control and Prevention in its report on [alcohol consumption](#). During his briefing to the media, Tom Frieden, MD, MPH, director of the Centers for Disease Control and Prevention, cited Kaiser Permanente Northern California as an example of how health systems can make alcohol screening and brief counseling part of routine care.

[Read more](#)

Dementia Risk and Diabetes: Research by [Rachel Whitmer, PhD](#), into metabolic, cardiovascular, and inflammatory predictors of cognitive aging and dementia — specifically that examining the relationship between diabetes and risk of dementia — was highlighted by the venerable *Physician's Weekly*, which has been providing medical news and information to physicians and other clinicians for 25 years.

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Genetic Data for Research: The [Research Program on Genes, Environment and Health](#) made a significant deposit — 55 billion bits of discrete genetic data — into the national database of Genotypes and Phenotypes. This [contribution to genetic research](#) was announced by Francis Collins, director of the National Institutes of Health, and Richard Hodes, director of the National Institute on Aging.

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Prescription Opioid Studies: [Cynthia I. Campbell, MD, MPH](#), is beginning two innovative studies related to prescription opioids. The first is a primary care intervention for chronic pain patients, which takes a patient activation approach. The other is an intervention in chemical dependency treatment related to prescription opioid dependence. Both studies address important clinical and policy issues for Kaiser Permanente and other health systems.

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Role Model for Women in Science: [Constance Weisner, DrPH, MPH](#), chief of the Division's Behavioral Health and Aging section, as well as a professor in the Department of Psychiatry at UC San Francisco, received a Woman of the Year STEM Award (Science, Technology, Engineering and Math) from California Assemblywoman Nancy Skinner for outstanding contributions during her 40-plus year career as a scientist, mentor, and advocate for better alcohol and drug disorder treatment.

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Biostatistics

Comparative Effectiveness Research: [Romain Neugebauer, PhD](#), received a \$1.03 million grant from the [Patient-Centered Outcomes Research Institute \(PCORI\)](#) to develop analytic tools for drawing causal inferences with electronic health record data in comparative effectiveness research, with the goal of better informing decision-making in the treatment of chronic conditions such as type 2 diabetes.

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Research Consultations: Under the direction of [Mary Anne Armstrong, MA](#), in 2014 the [Biostatistical Consulting Unit](#) provided support for 169 resident research projects, 26 miscellaneous funded projects, and 14 miscellaneous unfunded consultations (via funding from the [Comprehensive Clinical Research Unit](#)); and helped clinical partners develop 46 Community Benefit grant proposals. The unit also provided intensive consultations on 18 Community Benefit projects that were funded in 2014. Throughout the year, BSCU staff contributed to 23 publications and 19 conference presentations for their clients.

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Cancer

Adenoma Detection and Colorectal Cancer: A study of more than 224,000 patients and 314,000 colonoscopies found that high rates of adenoma detection were associated with decreased subsequent risk of colorectal cancers. The study by [Douglas A. Corley, MD, PhD, et al.](#), published in the [New England Journal of Medicine](#), was the largest ever conducted and the first in the United States to examine the relationship between adenoma detection and the future risk of colorectal cancer and death.

[Read more](#)

Bladder Cancer Study: A new \$4.9 million study — led by [Marilyn L. Kwan, PhD](#), [Lawrence H. Kushi, ScD](#), and colleagues at the Roswell Park Cancer Institute, and funded by the National Cancer Institute — seeks to identify dietary changes to prevent or delay the recurrence and progression of the most common form of bladder cancer.

[Read more](#)

Breast Cancer Survivorship Paper Honored: The National Cancer Institute's Epidemiology and Genomics Research program selected a paper by [Marilyn L. Kwan, PhD](#), [Bette J. Caan, DrPH](#), and colleagues as a 2014 Research Highlight; the paper was deemed to have "the greatest potential for scientific and/or public health impact." "Obesity and mortality after breast cancer by race/ethnicity: The California Breast Cancer Survivorship Consortium" was published in the [American Journal of Epidemiology](#) in January.

[Read more](#)

Cancer Clinical Trials, Delivery Science: Kaiser Permanente is expanding its innovative cancer clinical trials program under a new five-year, \$10.4 million award from the [National Cancer Institute](#). The [NCI Community Oncology Research Program](#) also provides funds for new research into cancer care delivery, including evaluating alternative treatment delivery systems, exploring pain and symptom management, and investigating disparities in cancer outcomes and how to eliminate them.

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Faith-based Cancer Outreach: [Carol P. Somkin, PhD](#), and researchers with the UC Berkeley School of Public Health are investigating innovative ways improve cancer screening rates in faith-based communities, in order to reduce cancer screening disparities among racial and ethnic minorities. The study is evaluating personal-story videos, discussion groups and other outreach methods at predominantly African American and Latino churches.

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HER 2+ Breast Cancer Tumors: In a review of 16,975 breast cancer cases (2000 to 2006), Lou Fehrenbacher, MD, Laurel A. Habel, PhD, and colleagues with the Division of Research found that patients with HER2+ breast cancer tumors have a low risk of the cancer recurring five years after diagnosis, even without chemotherapy or treatment with a common antibody.

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Sarcopenia and Breast Cancer "Obesity Paradox": Among breast cancer survivors, those who are overweight or mildly obese paradoxically have lower mortality than those who are normal weight or underweight. Bette J. Caan, DrPH, received a new four-year, \$2.2 million Provocative Questions grant from the National Cancer Institute to investigate the role of sarcopenia (muscle wasting) in understanding how the obesity paradox contributes to breast cancer prognosis.

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Cardiovascular and Metabolic Conditions

Hypertension: Controlling the Silent Killer: In the United States, blacks are twice as likely as whites to experience a first stroke; blacks are also more likely to die as a result of a stroke. In addition, strokes among younger adults are becoming more common. *Bring It Down* is a multifaceted research program, led by Stephen Sidney, MD, MPH, and Mai Nguyen-Huynh, MD, MAS, aimed at lowering stroke risk among black populations and younger stroke victims by targeting high blood pressure.

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Irregular Heartbeat and Digoxin Risks: Digoxin, a drug commonly used to treat heart conditions, was independently associated with a 71 percent higher risk of death and a 63 percent higher risk of hospitalization among adults with diagnosed atrial fibrillation and no evidence of heart failure, according to a study led by Alan S. Go, MD and published in the journal. *Circulation: Arrhythmia and Electrophysiology*.

[Read more](#)

Pregnancy-Related Diabetes and Heart Risk: In a study based on 20 years of data from the CARDIA study and published in the Journal of the American Heart Association, Erica P. Gunderson, PhD, MS, MPH, RD, and colleagues found that women who experience gestational diabetes may face an increased risk of early heart disease later in life, even if they do not develop type 2 diabetes mellitus or metabolic syndrome subsequent to their pregnancy.

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CARDIA at 30 — Cognitive Function: The ongoing Coronary Artery Risk Development in Young Adults (CARDIA) study, begun in 1985, will reach its 30-year milestone in 2015. With funding from the National Heart, Lung, and Blood Institute, principal investigator [Stephen Sidney, MD, MPH](#), will lead an ancillary study examining the association between cardiovascular risk factors in young adulthood on cognitive function at mid-life.

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Health Care Delivery and Policy

Big Data and Health Care Costs: With the use electronic health records dramatically expanding in the United States, the analysis of clinical data can potentially identify new ways to improve health care and reduce costs. Case studies presented by [Gabriel J. Escobar, MD](#), and colleagues in the journal *Health Affairs* have policy implications for regulatory oversight, ways to address privacy concerns, and the support of research on analytics. For example, a new predictive model developed with funding from the National Institute of General Medical Sciences has the potential to decrease the use of antibiotics in hundreds of thousands of newborns each year.

[Read more](#)

Electronic Health Records and Prediabetes: An analysis of more than 358,000 adults members of a large, integrated, health care system between 2006 and 2010 found that documented rates of follow-up and treatment for prediabetes were low; the study by [Julie Schmitttdiel, PhD](#), et al., published in *Diabetes Care*, demonstrates how EHR data may be a valuable tool for improving the identification and treatment of prediabetes in the United States.

[Read more](#)

New Health Research Network: The [Patient-Centered Outcomes Research Institute](#) awarded nearly \$7 million to Kaiser Permanente principal investigator [Elizabeth McGlynn, PhD](#) and co-principal investigator [Tracy A. Lieu, MD, MPH](#) to build a data network aimed at improving patient outcomes. In the work's first phase, researchers are focusing on building datasets and surveying patients with colorectal cancer, congenital heart disease, and obesity. The [PORTAL](#) network is one of 29 projects forming [PCORnet](#), a new national resource that aims to boost the efficiency of health research.

[Read more](#)

Online Portals and Medication Adherence: Patients with diabetes who used an online patient portal to refill medications showed improvement in their medication adherence and had better cholesterol levels, according to a study of 17,760 diabetes patients by [Andrew J. Karter, PhD](#), et al., in the journal *Medical Care*.

[Read more](#)

Patient Portal Use: A new \$1.9 million study by [Mary E. Reed, DrPh](#), funded by the Patient Centered Outcomes Research Institute, will study and survey patients with complex, chronic conditions to better understand how and why they use web-based portal tools, as well as how these tools affect their health care experiences and clinical outcomes.

[Read more](#)

Safer Cataract Surgery: Research by [Lisa Herrinton, PhD](#), and [Neal Shorstein, MD](#), shows that intracameral injections following cataract surgery can reduce the rate of a rare but dangerous eye infection (endophthalmitis) to nearly negligible levels; following implementation of the practice the rate was 0.14 per 1,000 in Kaiser Permanente's Diablo Service Area.

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Sepsis and Hospital Deaths: Severe infections known as sepsis occur in about 10 percent of hospital admissions and account for as many as half of U.S. hospital deaths, according to a study by [Vincent Liu, MD, MS](#), et al. of 6.5 million hospitalizations in 2010.

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Infectious Diseases and Vaccine Study Center

Chicken Pox and Varicella Vaccine: A 14-year study that followed more than 7,500 children who were vaccinated in 1995, when the varicella vaccine was licensed in the United States, established that chicken pox, the childhood affliction of earlier generations, has been largely neutralized by the vaccine. The study, led by [Roger Baxter, MD](#), attributes the continuing decline in breakthrough rates to the implementation of the second dose in 2006.

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Pertussis Vaccine Effectiveness: The effectiveness of the pertussis vaccine has been a hot topic of discussion since researchers — including [Nicola P. Klein, MD, PhD](#) — began to investigate the possibility of a waning effect over time with the acellular pertussis vaccines (DTaP) introduced in the 1990s. Interest has grown as pertussis makes a comeback now that children who received all DTaP vaccinations are reaching their teens.

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Stroke Risk in People With HIV: A 15-year study found that HIV-positive individuals had a 40 percent increased risk of ischemic stroke, but stroke rates were nearly the same for HIV-positive individuals with high CD4 cell counts as for HIV-negative subjects. Co-authors [Daniel Klein, MD](#), and [Michael J. Silverberg, PhD, MPH](#), say the finding suggests an association between current immunodeficiency and ischemic stroke risk.

[Read more](#)

Vaccine Study Center Co-Director Honored: Is a vaccine safe? Is it effective? [Roger Baxter, MD](#), has spent much of his career answering those critical questions, to the benefit of people around the globe. In 2014, he received the Colten Research Award, which recognizes TPMG physicians who make significant contributions to scientific literature and the health of our communities.

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Women's and Children's Health

Co-morbidities in Adults with Autism: A study by [Lisa A. Croen, PhD](#), and colleagues — the first large analysis of its kind — found that adults with autism spectrum disorder have higher-than-normal rates of nearly all major medical and psychiatric disorders; Croen presented the results at the International Meeting for Autism Research.

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Genital Herpes and Preterm Delivery: A study of more than 660,000 mother-newborn pairs from 1997 to 2010 found that having untreated genital herpes during first or second trimester was associated with more than double the risk of preterm delivery (after controlling for potential confounders), and antiherpes medication use during pregnancy was effective in mitigating this risk.

[Read more](#)

Gestational Diabetes and Overweight Daughters: Women who developed gestational diabetes and were overweight before pregnancy were at a higher risk of having daughters who were obese later in childhood, according to a study by [Ai Kubo, MPH, PhD](#), [Lawrence H. Kushi, ScD](#), [Assiamira Ferrara, MD, PhD](#), and colleagues. The cohort of 421 girls was part of the Cohort study of Young Girls' Nutrition, Environment, and Transitions (CYGNET). The CYGNET Study is part of the National Institutes of Health-funded Breast Cancer and the Environment Research Program, which includes a consortium of three studies examining early determinants of puberty.

[Read more](#)

Pregnancy Weight Gain and Childhood Obesity: Gaining both too much or too little weight during pregnancy appears to increase the risk of obesity in the child, according to a study by Monique M. Hedderson, PhD, Sneha B. Sridhar, MPH, and colleagues.

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Women at High Risk for Diabetes: A new \$680,000 award to Susan D. Brown, PhD, from the National Institute of Diabetes and Digestive and Kidney Diseases will evaluate novel outreach strategies to increase patient engagement in lifestyle programs for diabetes prevention, focusing on women who are at high risk. The study seeks to expand knowledge of evidence-based patient engagement strategies in order to improve the health of high-risk patients and reduce diabetes health disparities.

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2014 Financial Report

The Division of Research (DOR) is currently home to about 55 investigators and staff scientists, with more than 500 employees. The DOR also works with more than 20 adjunct investigators from within Kaiser Permanente and from other academic institutions and has worked with more than 270 clinician collaborators from The Permanente Medical Group. DOR scientists are involved in more than 350 research studies. Since its founding in 1961, DOR researchers have published more than 3,000 scientific papers, including more than 350 papers in 2014.

*Estimated based on January-July actual data.

2014 Funding Sources Based on Expenditures

- \$76 Million Total Expenditures

