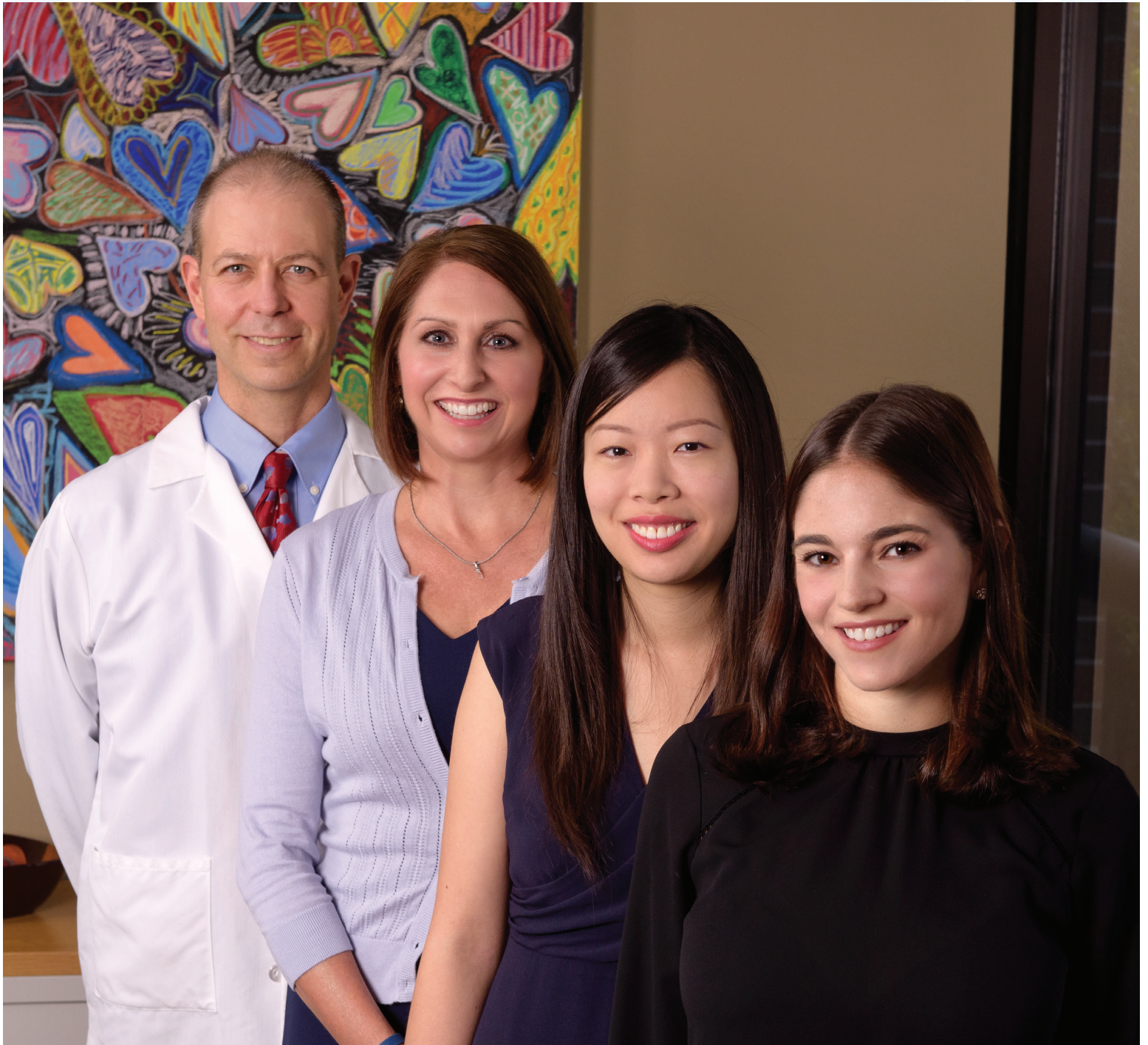


# Kaiser Permanente Research



## Preventing heart attacks

Research shows heart attack rates declining at KPSC



**D**uring medical school, Ronald D. Scott debated which field of medicine to enter. But he knew one thing for sure: He wanted to be able to prevent illness, not just treat it.

So, he called a Kaiser Permanente Southern California recruiter for advice.

“I admired that Kaiser Permanente did a lot of prevention work and could also make a difference in public health,” he said.

Today, Ronald Scott, MD, is the cardiovascular co-lead for the Southern California Permanente Medical Group. He’s been working with other physicians and researchers from the Department of Research & Evaluation to prevent heart attacks, helping patients live longer and healthier lives.

Recently he worked with Kristi Reynolds, PhD, MPH, the director of the Division of Epidemiologic Research at R&E. Their research shows that KPSC members are being hospitalized less frequently for heart attacks in all sex, racial/ethnic, and age groups.

“Our rates of heart attacks have been declining over the past 15 years,” said Dr. Reynolds, who is leading the study. “From 2000 to 2014, we’ve seen about a 4% decline per year in the number of people hospitalized with heart attacks, which has coincided with advances in many prevention efforts.”

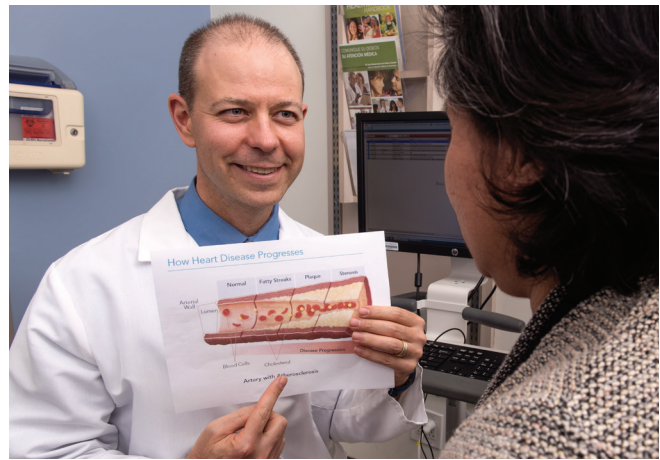
### Blood pressure control improved

In the early 2000s, about 40% of KPSC members with hypertension, one of the major causes of heart attacks, had their blood pressure controlled. Now that rate is 90%.

Among the many research studies that guided the efforts were in-depth looks at lipid screenings, statin adherence, and cholesterol guidelines. At the same time, physicians developed systems to share best practices, and developed metrics to compare performance from medical center to medical center.

### Organization changed focus to prevent disease

Since the early 2000s, KPSC has changed its focus from managing individual chronic conditions to a system focused on creating reliable processes for care of multiple conditions at the same time. The program, known as Complete Care, encompassed system-wide efforts to cut heart disease by lowering cholesterol and blood



Dr. Ronald Scott, Ema Montañez

pressure. This included the creation of a hypertension registry, standardization of blood pressure measurements, and creation of internal treatment guidelines. Patients received easy access to nonphysicians, such as medical assistants and nurses, to help manage their conditions.

In addition, steps were taken to motivate and involve physicians and patients. Physicians talked to patients about quitting smoking, losing weight, eating healthy, exercising, and improving glucose control for those with diabetes. Efforts were made to prescribe cholesterol-lowering statins for people with high cholesterol, but also for people at risk of heart attacks.

Research was the tool that measured the progress along the way. It also showed physicians what worked.

“We do our best work when we have research involved in the clinical operations and performance improvement activities with our physicians and regional quality efforts,” said Michael Kanter, MD, regional medical director, Quality and Clinical Analysis, SCPMG.

### Studying the trends of heart attacks at KPSC

Dr. Reynolds recalls that from the time she arrived at R&E in 2007, she and Dr. Kanter had multiple conversations about her studying the trends in heart attacks at KPSC.

“There had been a lot of work done around hypertension control and aggressive treatment of lipids—identifying patients with high cholesterol and treating them with statins. With that work, we hoped to see our heart attack rates go down,” she said.

Dr. Reynolds worked with physicians including Dr. Scott, and researchers Stephanie Reading, PhD, MPH, and Gloria Chi, PhD, MPH, among others.



Dr. Ronald Scott, Ema Montañez

### Heart attack rates differ by sex and ethnicity

In addition to assessing the trends in the rate of heart attacks at KPSC, researchers also examined how the rates of heart attacks differed by race/ethnicity, age, and sex. The work has been presented at several conferences and is being submitted for publication.

Dr. Reading's research focused on the age and sex-specific differences in incidence rates of acute myocardial infarction, commonly known as heart attack, from 2000 to 2014. Findings included:

- Declines in acute myocardial infarction incidence rates across all age groups and in both sexes.
- The most dramatic declines were in the incidence rates of STEMI (ST-Elevation Myocardial Infarction), the most severe form of myocardial infarction.
  - Researchers found relative declines in women from 67.9% to 73.7% and in men from 59.4% to 69.0% over 3 age groups.
  - Non-STEMI also showed consistent relative declines, with men declining between 10.9% and 41.6% and women declining between 16.1% and 30.7% over 3 age groups.

"It was great to see that rates of all types of heart attacks decreased," Dr. Reading said.

Dr. Chi noted that the large KPSC membership allowed researchers to look at a more diverse population than previous research. In addition to non-Hispanic blacks and non-Hispanic whites, researchers assessed trends in Hispanics, and Asians or Pacific Islanders.

"The work showed that the rates of heart attacks declined substantially in all racial/ethnic groups," Dr. Chi said.

### Research is a team effort that benefits patients

The results were reassuring to Jeffrey Cavendish, MD, the regional co-lead for cardiovascular disease for SCPMG. He felt the work showed that what he was doing was making a difference. He lauded the research as a true team effort between physicians and researchers, who "took the ball and ran with it."

He added that there is a great advantage for patients being treated in organizations like Kaiser Permanente that focus on high-quality patient care and participate in research.

"Research makes us better doctors and health care providers and improves the overall practice of medicine," Dr. Cavendish said.

And that research is shared both inside and outside of Kaiser Permanente. For instance, Dr. Scott meets regularly with Kaiser Permanente's national cardiovascular leaders to exchange best practices, share research, and update guidelines. He collaborates with a national group to improve cholesterol decision support across the country, and he works with several groups in Los Angeles County to improve cardiovascular preventive care.

"A lot of cardiovascular disease is preventable," Dr. Scott said. "We use all of the different tools we have to drive the rates down. We want our patients, and the people in our communities, to live long and healthy lives. That's why we are here."





## Gloria Chi, PhD, MPH

### EIS officer takes 2-year post at Kaiser Permanente

*“Having an Epidemic Intelligence Service officer assigned to Kaiser Permanente provides unique opportunities for the EIS program to collaborate with a nongovernmental health organization to train tomorrow’s public health leaders.”*

— Byron Robinson, PhD, Centers for Disease Control and Prevention

**A**s a high school student, Gloria Chi competed in science fairs and worked on genetic epidemiology in a cancer lab. Those early experiments cemented her love of science.

Today, Dr. Chi has embarked on a different sort of experiment. In 2016, she embraced the challenge of being the only Epidemic Intelligence Service (EIS) officer stationed at a nongovernmental agency: Kaiser Permanente’s Department of Research & Evaluation.

The Centers for Disease Control and Prevention’s EIS officers are known for stepping up at a moment’s notice to investigate public health threats in the United States and around the world. Most spend the 2-year training program stationed at CDC headquarters in Atlanta. Others work in state and local health departments across the country.

“Having an EIS officer assigned to Kaiser Permanente provides unique opportunities for the EIS program to collaborate with a nongovernmental health organization to train tomorrow’s public health leaders,” said Dr. Chi’s CDC supervisor Byron Robinson, PhD.

#### Discussion about post began a few years ago

The idea of placing an EIS officer at Kaiser Permanente first came up several years ago. Diana M. Bensyl, PhD, and Steven Jacobsen, MD, PhD, senior director of research at R&E, discussed it after attending an American College of Epidemiology board meeting. At the time, Dr. Bensyl was overseeing the EIS program for the CDC.

“As we talked about what Kaiser Permanente could offer, placement of an EIS officer seemed an ideal way to begin to blend traditional epidemiology training with the opportunity to work with a group that was already fully tackling ‘big data,’” said Dr. Bensyl, who now works for the CDC’s Emergency Response and Recovery Branch.

Before Dr. Chi completed her first year at R&E, she had studied the trends in hospitalized heart attack rates by race/ethnicity (see article on pages 7 and 8) as well as lead testing and elevated blood lead levels in children ages 6 to 30 months. She also assessed how accurately ICD-10-CM diabetes diagnosis codes in Kaiser Permanente HealthConnect® can be used to distinguish between type 1 and type 2 diabetes. In addition, she assisted the Los Angeles County Department of Public Health on several investigations.

#### A unique training opportunity

“Working with epidemiologists and other researchers at Kaiser Permanente is great training for an EIS officer,” said Dr. Chi’s primary supervisor at R&E, Jean Lawrence, ScD, MPH, MSSA. “Here she has many opportunities to do research based on her interests, which may include working with electronic health records, starting her own cohort, and collaborating with researchers on ongoing studies.”

Dr. Chi’s secondary supervisor at R&E, Sara Tartof, PhD, MPH, noted that having Dr. Chi stationed at Kaiser Permanente puts R&E “on the map in a public health forum.”

Dr. Lawrence and Dr. Tartof are both EIS alumni.

Dr. Chi hopes that as an EIS pioneer in a nongovernmental agency, she can prove the value of collaboration between the public sector and research partners such as Kaiser Permanente.

She noted, “There’s increasing recognition that public health and clinical medicine can work collaboratively to better patient health and population health.”