Kaiser Permanente
Research

Care Improvement Research Team

Kaiser Permanente Southern California | 2022 Annual Report

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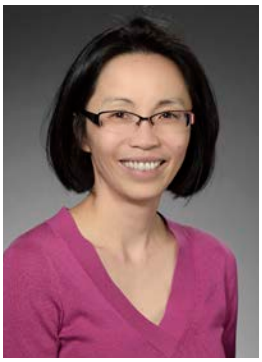
Message from the Director



The year 2022 marks the tenth anniversary for the Care Improvement Research Team program. What started as a small but mighty team of 5 dedicated scientists has grown to nearly 30 CIRT-funded investigators and projects with a laser focus on improving care delivery and patient outcomes. In 2022, projects ranged from evaluating the safety of current care practices in our tiniest members, assessing the timeliness of next-generation sequencing results to guide lung cancer treatments, to confirming the safety and efficiency of taking an "endoscopy first" approach to large polyps and early gastrointestinal cancers versus traditional surgery. I hope you enjoy reading the findings of these projects and others in this annual report!

As always, our deepest gratitude to our executive sponsors, Nancy Gin, MD, FACP, and Benjamin Broder, MD, PhD, and our many clinical partners who have been instrumental in translating the results of our research into everyday clinical practice. On behalf of all the CIRT investigators, I would like to acknowledge our research and administrative support staff members for everything they do—it truly does take a village! I especially want to recognize Angel Alem, MPH, MS, for her steadfast contributions to managing the evolving CIRT portfolio over the past few years and extend a warm welcome to Thearis Osuji, MPH, as the new CIRT program manager.

Looking ahead, we are excited to re-envision the CIRT program to further strengthen our partnerships with regional clinical and operational leaders. Together, we'll continue to partner on care improvement efforts that will have an enduring impact on care delivery and patient outcomes in Kaiser Permanente Southern California.

Huong Q. Nguyen, PhD, RN
CIRT Interim Director

Dr. Aaron Reitman, Sharon Burdick, Angel Shatto, and Chelsea Jones

On the cover: Dr. Karl Kwok and Dr. Michael Najem

Dr. John Sim and Dr. Karen Coleman

Care Improvement Research Team

Kaiser Permanente Southern California

The Care Improvement Research Team works to build capacity for research embedded in clinical practice. CIRT aims to improve the access, quality, and affordability of care delivery and the health of patients, families, and communities. CIRT initiated and continued the following projects during 2022.

Discontinuing car seat tolerance screening: Effect on postdischarge adverse outcomes

—David Braun, MD

The American Academy of Pediatrics has recommended car seat tolerance screening (CSTS) for preterm newborns without evidence that CSTS programs improve outcomes. For this reason, the Kaiser Permanente Southern California health care system discontinued CSTS in about 2017. In this study, researchers compared outcomes of infants born in hospitals practicing CSTS to infants born in hospitals when CSTS was no longer practiced. The primary outcome was the composite frequency of death; 911 calls; readmissions for respiratory, apnea, and apparent life-threatening events; or brief, resolved, unexplained event-related diagnostic codes within 30 days of discharge. They found no statistically significant difference in the primary outcome or across related outcomes. Researchers concluded that CSTS as a standard predischarge practice needs to be reconsidered.

Retrospective regional review of risk factors for intracranial hemorrhage, morbidity, and mortality in transported preterm infants of 32 weeks gestation or less, as compared to a control group

—Kim Chi Bui, MD, FAAP

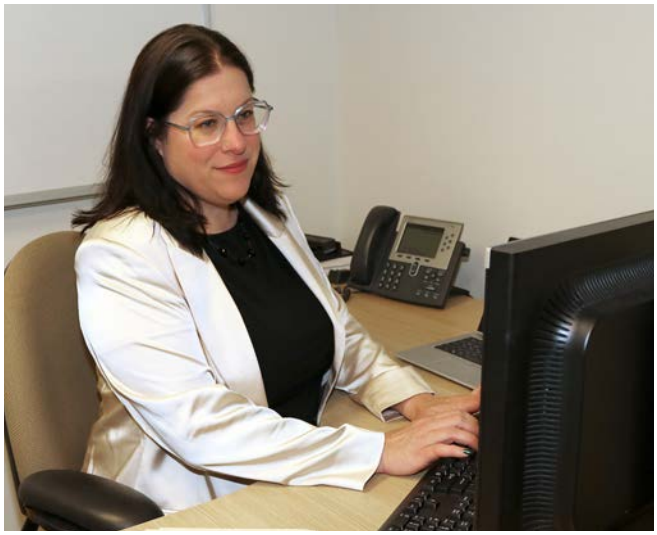
Infants born at 32 weeks gestational age or less may require transport to a tertiary level NICU after birth. Within KPSC, approximately 25% to 30% of infants born at ≤32

weeks or with a birth weight ≤1,500 grams are transported each year for a variety of reasons: tertiary care, subspecialty consultation, or lower level of care. This project sought to determine whether neonatal transport is an independent risk factor for intraventricular hemorrhage (IVH) and mortality associated with neonatal transport. They found that mortality was lower in the transported group. Morbidities and IVH rate were higher in the transported group. However, most transports (58%) occurred after 7 days of age with IVH present before transport. They were not able to reach any conclusions about IVH risk related to transport because the diagnosis was linked to timing of head ultrasound studies, which were often obtained after transport in patients transported before 7 days of age. Researchers say their insights may help increase neonatal transport safety.

Piloting approaches to improve cultural sensitivity and humility in the care of patients with depression

—Karen J. Coleman, PhD, MS

Depression will be the greatest global disease burden by 2030, disproportionately affecting Black, Hispanic, and Asian communities. This project created patient-centered approaches to depression treatment that emphasized cultural values and humility. Researchers examined if new patient-centered approaches could be implemented with minimal impact on workflows and providers. They found that clinical partners were critical to designing and implementing culturally relevant care processes with standardized materials. Researchers also determined that telehealth has some disadvantages for depression screening, symptom monitoring, and medication-related treatment. They recommend additional work to ensure that research teams are embedded in clinical teams.



Beth Creekmur

Evaluating COVID-19 decision-support tools (COVAS, COVID-HDI, and COVID-IMV)

—Beth Creekmur, MA

Early in the pandemic, KPSC created 3 risk prevention models for COVID-19: the COVAS Score (Comorbidity Obesity Vital Signs Age Sex), COVID-HDI (Early Deterioration Index for Hospitalized Patients), and COVID-IMV (COVID Invasive Mechanical Ventilation). This project aimed to evaluate utilization and validate performance using noncontemporaneous data. Researchers found penetration of the COVID-HDI and COVID-IMV models was limited across regional medical centers. Where the COVAS and COVID-HDI models were used, the trends aligned with COVID-19 surges. Models performed better after launch than during the initial development phase because of improvements made during implementation. Researchers said providers can be confident in using these 3 models for decision support and resource allocation as COVID-19 challenges continue.

Enhanced implementation of lung cancer screening

—Michael K. Gould, MD, MS

Low-dose computed tomography (LDCT) screening has been shown to reduce lung cancer mortality by at least 20% in high-risk smokers, but a variety of factors have hindered uptake in the target population. This project aims to improve screening of people within KPSC who smoke or previously smoked. The project team introduced several interventions in 2022 to reduce inappropriate screening and provide educational decision aids to patients. However, screening remained suboptimal, and inappropriate screening continued to be problematic. Additional interventions, including centralization of core functions supporting lung cancer screening, may be necessary to meet goals. Researchers will continue to monitor progress in 2023.

Corrine Munoz-Plaza, Dr. Ernest Shen and Janet Lee

Prevention of venous thromboembolism in abdominal cancer surgery

—Michael K. Gould, MD, MS

Venous thromboembolism (VTE) is a frequent and potentially serious but preventable complication following major abdominal surgery for cancer. This study evaluated the effect of interventions to increase extended duration thromboprophylaxis in patients discharged after high-risk abdominal cancer surgery. Interventions included informal provider notification and education and implementation of a new standardized discharge order set to increase the use of postdischarge prophylaxis. As of late 2022, the study found a 65% improvement in the use of postdischarge prophylaxis with no observable effect on the frequency of perioperative VTE or bleeding. Researchers plan to continue monitoring and measuring outcomes through June 2023.

Implementing systemic depression screening in medical oncology

—Erin E. Hahn, PhD, MPH

Depression screening in oncology is recommended by the American Society of Clinical Oncology and others. This implementation study drew on strategies developed in an earlier cluster-randomized pragmatic trial to introduce depression screening at medical oncology departments across all 15 KPSC medical centers. By the end of 2022, more than 11,000 members diagnosed with cancer had been screened for depression. Of those, 16% scored in the range requiring referral, and 60% were referred to behavioral health care within 10 days. Nearly 80% of those with moderate or high scores had not previously been seen in behavioral health. Researchers noted that sustaining this screening program is dependent on local resources and requires ongoing support and training.

Next-generation sequencing to inform clinical decision-making for non-small cell lung cancer treatment in a large integrated health care delivery system

—Reina Haque, PhD, MPH and Eric McGary, MD, PhD, MPH

Next generation sequencing (NGS) of lung cancer can identify mutations and match them with an FDA-approved targeted therapy, improving efficacy of treatment. KPSC implemented NGS testing of tumor tissue for patients diagnosed with non-small cell lung cancer in 2019. Researchers evaluated the quality and timeliness of NGS results obtained from an outside vendor and examined how clinicians utilized results to guide first line treatment decisions. They found the average time for NGS results was 25 days. Clinicians began treatment in 52% of patients before receiving results; 29% were subsequently found to have a targetable mutation on NGS. Based on these findings, the KPSC Cancer Care Program is taking steps to accelerate the turnaround time for NGS results, including implementing NGS testing from blood.

Medication initiated at discharge to reduce readmission and mortality in heart failure (MIDTERM-HF)

—Cheng-Wei "Charlie" Huang, MD

Guideline-directed medical therapy (GDMT) and other interventions have been shown to improve outcomes for patients with heart failure but have also been reported to be underutilized. This study sought to identify potential care gaps in coronary artery disease (CAD) testing and initiation of GDMT medications. Researchers found multiple factors associated with CAD testing, suggesting that testing reflected

Dr. Charlie Huang and Dr. Joon Park

clinical decision making and goals of care. They concluded that a push for increased testing may not be warranted in KPSC. They also found no benefit to simultaneous or rapid sequence initiation of mineralocorticoid receptor antagonists (MRA) in addition to beta blockers and renin angiotensin system inhibitors during acute heart failure hospitalization in terms of postdischarge outcomes. They recommended that initiation of MRA during hospitalization and/or at discharge may be safely deferred until the outpatient setting when there is concern with its initiation during hospitalization.

Endoscopy first versus surgery first: An analysis of organ-sparing tissue resection techniques across the gastrointestinal tract versus comparative surgery in an integrated health care organization

—Karl Kwok, MD

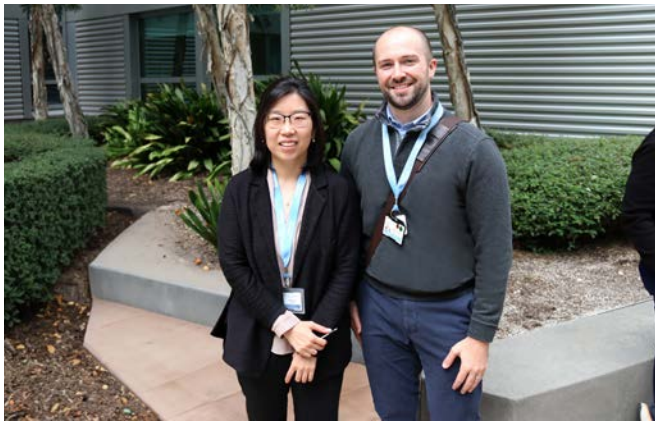
Historically, large polyps and early cancers in the esophagus, gastrointestinal system, or colon have been treated surgically. While effective, surgeries have high morbidity and drive high health care utilization. This study assessed the impact of an "endoscopy first" approach. It compared clinical outcomes and 5-year mortality of patients who underwent organ-preserving endoscopic mucosal resection (EMR) versus traditional surgery. It also compared health care utilization, including emergency visits,

operating room use, and days in the hospital. EMR saved nearly 6 days in the hospital. Procedures were 3 times faster, and fewer units of blood were transfused. No operating rooms were used, freeing up space for other surgeries. Results from this timely study may be used to help create a standardized referral policy.

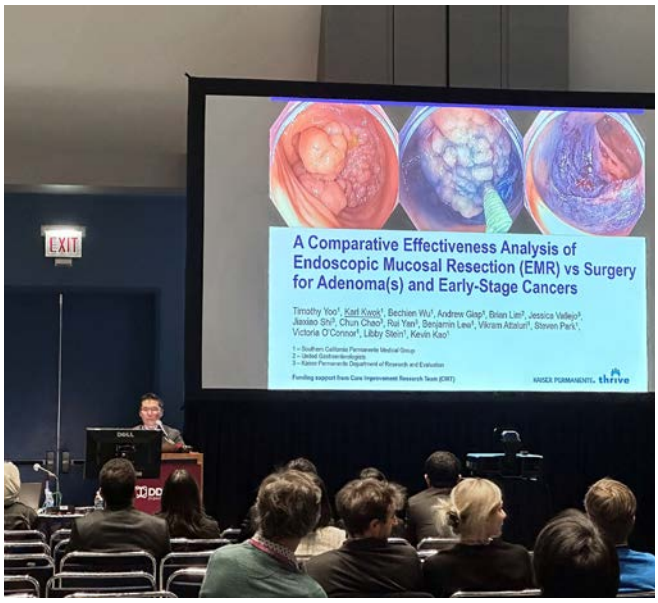
ASCVD safety program: Statin initiation and follow-up of lipid panels among patients with high LDL-C

—Matthew T. Mefford, PhD

Statins are effective at lowering high low-density lipoprotein-cholesterol (LDL-C) and reducing cardiovascular risk but remain underutilized. This study evaluated a patient safety net program (KP SureNet) that facilitates high-intensity statin orders and lipid panel orders to determine if the program improved rates of statin initiation and lab completions. The study compared patients before and after SureNet implementation. Researchers found that eligible adults had a higher likelihood of receiving and filling their prescription, completing their lipid panel; and improving their LDL-C after SureNet implementation (36%, 32%, 41%, and 21%, respectively). Researchers concluded that the SureNet program was effective and recommended expanding its eligibility and providing patient reminders to maximize the impact of this successful program.



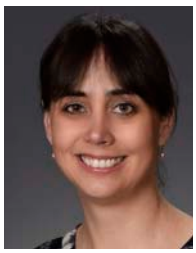
Dr. Jaejin An and Dr. Matthew Mefford



Dr. Karl Kwok, presenter

Development of an equitable COVID-19-compatible risk stratification tool to support reporting and planning of specialty palliative care services

—Claudia Nau, PhD



Models to identify patients in need of specialty palliative care (SPC) can support timely referrals and staff planning, but existing models lacked sensitivity, had not been assessed for statistical fairness, and had not accounted for COVID-19. Researchers collaborated with KPSC's palliative care leadership to build a high-performing, statistically fair risk model that addressed these issues. The tool improved sensitivity by 30 to 50% compared with other models while maintaining comparable positive predictive values of approximately 30%. Researchers also used natural language processing to identify seriously ill patients who were homeless or at risk of homelessness. They found emergency visits were 4 times higher in this high-risk population. As of the end of 2022, options to fund implementation of the new risk model were being explored.

Implementation and evaluation of an enhanced adverse childhood experiences (ACES) screening and referral system in pediatric primary care

—Sonya Negriff, PhD

There is a clear link between adverse childhood experiences (ACEs) and poor physical and mental health outcomes over a person's life span. In California, screening in pediatric primary care is recommended to combat these negative sequalae. This study examined the impact of ACEs screening on the rate of referrals and visits to social work and behavioral health. Researchers found a small but not statistically significant increase in rates of visits to social work and behavioral health providers after ACEs screening was implemented in 28 clinics. Researchers noted that this increase was manageable, indicating that there should not be a large influx of patients after instituting screening. Findings supported a continuation of the regional rollout.

Improving care transitions and reducing readmissions: Impact of posthospitalization home-delivered meals for Medicare members

—Huong Q. Nguyen, PhD, RN

Reducing avoidable readmission without causing patient harm is a high priority for KPSC. This study evaluated a Medicare 4-week, posthospitalization home-delivered meal benefit introduced in 2021. Researchers examined uptake and satisfaction with meals as well as readmission rates. Half of referred members accepted the meals, with more than two-thirds reporting high satisfaction. Patients experiencing financial strain or food insecurity were more likely to accept and be satisfied with the meals. Meal recipients had lower odds of 30- and 60-day readmission and mortality, but the effects were attenuated in patients admitted for heart failure compared with other medical conditions. Researchers recommended continuing to optimize the meals benefit to accrue larger sample sizes, and to repeat analyses in 2023.

Mayra Martinez, Ting Chow, Dr. Anny Xiang, and Dr. Margo Sidell

Prevalence, trend, care delivery, and disparity in mental health conditions in children, adolescents, and young adults among KPSC members

— Anny H. Xiang, PhD, MS

As rates of childhood depression rise, it is critical for health care providers to identify children currently in need. This study assessed the prevalence, incidence, and trend of depression and anxiety in children, teens, and young adults up to age 22 within KPSC. Preliminary data showed that both the prevalence and incidence of depression and anxiety increased substantially between 2017 and 2021. Rates of depression were higher among adolescents, with a steeper increase in girls. Those affected by obesity, overweight, or underweight also had higher rates of depression. Researchers will continue the study in 2023 and examine clinical care trajectories, screening rates, adherence to follow-up, and potential disparities.

Observed role of cooling on hemodynamics in inpatient dialysis (ORCHID)

—Hui Xue, MD, MMSc

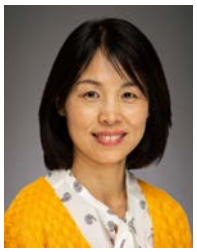
Cardiovascular morbidity and mortality rates are 10 to 30 times higher for patients receiving hemodialysis. Intradialytic hypotension (IDH) occurs in 20 to 40% of dialysis treatments, potentially impairing perfusion in major organs. Cooling dialysate — the fluid used during dialysis — to less than 36.5 degrees Celsius has been used to reduce IDH in the outpatient treatment for decades. But the effect is unknown in hospitalized patients, who experience IDH more frequently. This study randomized 8 hospitals at KPSC to use dialysate at different temperatures for 3 months; then each hospital serves as its own control for months 4 through 6 using a different temperature. Researchers will analyze the impact of temperature on IDH and evaluate morbidity and mortality rates. Findings from this study could potentially change the practice of inpatient hemodialysis if lower temperatures are found to be protective.

Dr. Hui Zhou and Dr. Margo Sidell

Dr. John Sim and Dr. Hui Xue

Investigating disparities in telephone and video appointment visits among patients with chronic kidney disease

—Hui Zhou, PhD, MS



Regular follow up visits play a critical role in preventing progression of chronic kidney disease (CKD) and related medical complications. As a trend toward telehealth visits, including telephone appointment visits (TAVs) and video appointment visits (VAVs) as alternatives to in-person visits, accelerated during the pandemic, researchers sought to identify barriers to successful telehealth visits as well as potential differences in health outcomes for patients with CKD. About 74% of patients with CKD had at least one successful TAV/VAV during the study period. Patients who spoke a language other than English or who were older, Asian, or male had lower success rates. Those with Medicaid coverage or kp.org access had higher success rates. The study identified no significant neighborhood, socioeconomic, or technology barriers to telehealth. Patients who had telehealth and no in-person visits had higher rates of non-COVID-related death or hospitalization, major cardiovascular events, and CKD progression. Findings can be used to improve outreach and promote more successful telehealth visits, especially among seniors and non-English speakers. They added that enhanced follow-up may be needed to achieve telehealth care as efficient as in-person care.

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Southern California Regional Readmissions Reduction Steering Committee

Southern California Regional VTE Steering Committee

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