DARE | Delivery Science and Applied Research

Update 2021

Featuring the DARE Dozen

PERMANENTE MEDICINE®
The Permanente Medical Group

DARE | Delivery Science and Applied Research

Welcome to the first overview of The Permanente Medical Group's Delivery Science and Applied Research (DARE) program!

Founded in 2018, under the leadership of Rich Isaacs and the Associate Executive Directors, DARE provides infrastructure, connections, and analytic support to clinician-researchers for answering questions that will change care. It fosters collaborations between clinician-investigators and Division of Research scientists and provides support from initial idea development to when data informs implementation.

The DARE program includes:

- Multiple funding mechanisms for investigations of varying duration/complexity;
- The Physician Researcher Program, providing high-level support for selected clinicians across specialties;
- A one-stop idea/funding submission portal and efficient core administrative team;
- Specialty-specific research networks that build communities of evidence-driven clinicians.
- Research tools, collaborations, and funding for dissemination.

We invite you to learn more within, including the "DARE Dozen": twelve projects drawn from almost ninety DARE investigations in 2019–20 alone. These are poised to change care or have already done so.

We look forward, in 2021, to increased support for implementation — connecting research results with operational leaders to translate to clinical actions.

It has been an exciting two years — TPMG's clinician-investigators' talent, productivity, and dedication to evaluating and improving care is inspiring. We look forward to your new research ideas and welcome recommendations.

Warm regards on behalf of the DARE team,

Douglas Corley, MD, PhD
Director, Delivery Science and Applied Research, TPMG

Tracy Lieu, MD, MPH
Director, Kaiser Permanente Division of Research

Yi Fen Irene Chen, MD and Smita Rouillard, MD
Associate Executive Directors, TPMG

Overview

The Delivery Science and Applied Research Program (DARE) provides funding, analytic expertise, infrastructure support, and community for clinically-oriented researchers with innovative ideas.

Our mission is to cultivate the research and researchers that drive evidence-based medicine. The goal being, efficient, impactful investigations, developed in collaboration with clinical leaders, that answer important questions and directly inform changes in care. DARE facilitates these efforts by identifying experienced investigators to collaborate with clinicians and coordinating efforts, from start to finish via the following program components.

Specialty Research Networks
Communities of clinician researchers within a specialty are connected with research-knowledgeable investigators, who share expertise, prioritize projects, and collaboratively conduct research in partnership with regional clinical leadership. These networks help quickly evaluate feasibility, minimize startup time/costs, develop new investigators, disseminate research results, and position potential follow-up implementation within research designs.

Research Dissemination

DARE provides financial support for the dissemination of research results, by supporting submission of manuscripts to peer-reviewed journals, travel for scientific meeting presentations, internal specialty newsletters, and stakeholder communications.

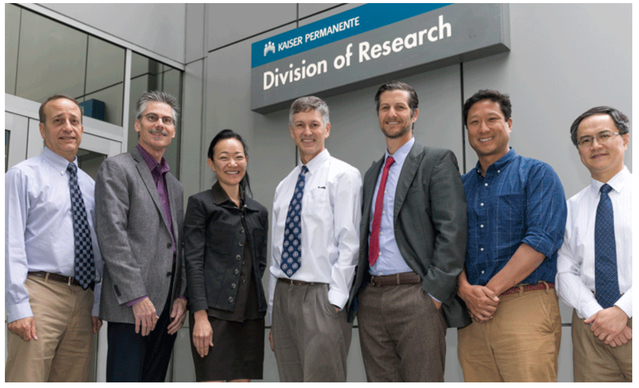
Funding

DARE provides funding for project-specific investigators and staff (analysts, research associates, and project managers), to support investigations of varying complexity through multiple mechanisms including:

- Targeted Analysis Program
- Rapid Analytics Unit
- Delivery Science Grants Program

Physician Researcher Program

This innovative program provides long-term professional development and research support for evaluating specialty-specific priority topics. Select TPMG clinicians receive modern research training, collaboration opportunities, dissemination/implementation support and support clinician researchers within their specialties.



Overview

Specialty Research Networks

The DARE program supports clinician-initiated research through specialty research networks that link clinician investigators with each other and with regional clinical leadership. These networks are comprised of investigators who initiate, encourage, and enable collaborative research to improve outcomes, value, and patient and provider experiences.

DARE provides Specialty Research Networks with tools for enhanced communications, connections for collaboration, coordinated research development, and clinical implementation of results including:

- Development, distribution and synthesis of specialty-specific surveys to assess ideas, identify who is interested in research, quantify prior experience and prioritize concepts.
- Facilitate communications with specialty newsletters to celebrate clinical research activities and inform members of relevant training and events.
- Provide meeting coordination support with clinical investigators and specialty thought leaders.
- Development of research concepts.

DARE has supported the development of 14 Specialty Research Networks to date with more coming soon! These networks have fostered collaborations and dissemination of clinician-led research results, within KPNC and beyond.

Cardiology
COVID research
Dermatology
Emergency Medicine (CREST)
Gastroenterology/ Hepatology
Hospital-Based Specialty
Obstetrics/Gynecology
Oncology/Hematology
Neurology
Population Health
Psychiatry
Radiology
Surgery
Urology

Research Dissemination

DARE financially supports dissemination of research results, including submission costs for manuscripts to peer-reviewed journals and travel costs for presentations at national scientific meetings. In 2019 alone this program supported 35 requests to attend local and national meetings and publication-related costs to ensure that valuable research conducted by TPMG clinician-investigators was included in peer-reviewed journals. While in-person meetings paused in 2020 due to COVID-19, DARE continues to support research dissemination through manuscript submissions and communicating research findings to TPMG leadership and other key decision makers to effect change in clinical care and practice.

Funding

Targeted Analysis Program (TAP)	Delivery Science Grants Program (DSGP)	Rapid Analytics Unit (RAU)
The Targeted Analysis Program supports projects that address high-impact research questions of value to quality leaders and researchers. Projects are co-led by a Division of Research scientist and a regional clinical or operational leader. The program selects about 4-6 projects each year for funding up to 6 months based on a competitive application process.	The Delivery Science Grants Program fosters projects that have high impact on health care delivery in areas of strategic priority for Kaiser Permanente. Projects are co-led by a TPMG physician and Division of Research scientist in collaboration with clinical leaders. The program funds about 15-20 projects each year up to 24 months.	The Rapid Analytics Unit, located within the Division of Research, collaborates with TPMG physicians to provide a utility for rapid-turnaround projects on high-priority topics with operational impact for The Permanente Medical Group (TPMG) in specialty and primary care. The unit's research scientists and programmer/analysts help physicians implement research questions. The program funds about 10-14 projects per year up to 12 months.
Eligibility criteria: • Small projects that address questions of high value to quality leaders and researchers • Primarily uses existing data • Completed within 6 months	**Eligibility criteria:** • Medium-size projects aimed at improving health care delivery • Completed within 2 years	**Eligibility criteria:** • Moderate-size projects designated as high priority by regional executives and clinical program leaders • Primarily uses existing computerized data • Completed within 1 year
Budget: $36K or less to support some DOR collaborator time and an analyst Applications: 2-3 funding cycles each year	Budget: $250K or less to support DOR collaborator time, an analyst, and clinician investigator time Applications: 3 funding cycles each year (LOI and full proposal)	Budget: No formal budget, but acceptance of project includes support in form of DOR collaborator and an analyst Applications: Open, rolling applications accepted at https://kp.org/dare
Additional TAP Information	Additional DSGP Information	Additional RAU Information

Physician Researcher Program (PRP)

The Physician Researcher Program supports a select group of TPMG clinicians to conduct research that transforms how care is delivered while continuing to make clinical contributions. This program provides long-term professional development and research support for evaluating priority topics to their specialty. Members also help support and develop other research-oriented clinicians in their specialties, become national thought-leaders, and facilitate implementation of research results.

In 2020, three additional physicians joined the program, which was founded in 2017, bringing the total of physicians in this program to 13. These physician researchers devote 20 to 40 percent of their time to these efforts. PRP MDs hold positions on many national leadership and guideline committees, hold regional leadership roles, mentor colleagues, and spear-head organization of their specialty's research network.

Cumulatively, the PRP MDs have had >100 publications in peer-reviewed journals and more than 50 presentations at local and national meetings since the year they joined the PRP!

Additional PRP Information

Vignesh Arasu
Radiology
Vallejo Medical Center

Robert Chang
Surgery
South San Francisco
Medical Center

Kathryn Erickson-Ridout
Psychiatry
Santa Rosa Medical Center

Matthew Hirschtritt
Psychiatry
Oakland Medical Center

Theodore R. Levin
Gastroenterology,
Population Health
Diablo Valley Service Area

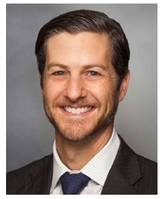
Dan Li
Gastroenterology
Santa Clara Medical Center

Mai Nguyen-Huynh
Neurology
Walnut Creek Medical Center

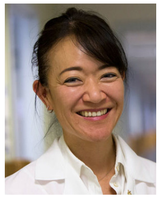
Joseph Presti
Urology
Oakland, Richmond
Medical Centers

Dana Sax
Emergency Medicine
Oakland Medical Center

Jacek Skarbinski
Infectious Diseases
Oakland Medical Center



Matthew Solomon
Cardiology
Oakland, Richmond
Medical Centers



Betty Suh-Burgmann
Gynecologic Oncology
Walnut Creek, Antioch
Medical Centers

David Vinson
Emergency Medicine
Sacramento, Roseville
Medical Centers

Short-Course 8-Week Treatment as Effective as 12-Week Treatment for Black Patients with Hepatitis C Virus (HCV) Infection

Julia L. Marcus, PhD, MPH; Leo B. Hurley, MPH; Scott Chamberland, PharmD; Jamila H. Champsi, MD; Laura C. Gittleman, RN, MBA; Daniel G. Korn, MD; Jennifer B. Lai, MSc, PharmD; Jennifer O. Lam, PhD, MPH; Mary Patricia Pauly, MD; Charles P. Quesenberry, Jr., PhD; Joanna Ready, MD; Varun Saxena, MD; Suk Seo, MD; David J. Witt, MD; and Michael J. Silverberg, PhD, MPH

Guidelines for hepatitis C treatment indicate that most people can be treated with ledipasvir and sofosbuvir for shorter durations (i.e., 8 weeks instead of the originally approved 12 weeks) but Black people with HCV were not included in this shorter recommendation based on data from older HCV treatments.

SVR12 for HCV treatment of 8 vs. 12 weeks among 2653 HCV-infected individuals otherwise eligible for 8-week regimens

	Adjusted RR (95% CI)	*P*	*P* interaction
Overall	1.00 (0.98–1.02)	0.92	
Race			0.90
Black	1.00 (0.95–1.04)	0.88	
Non-black	1.00 (0.98–1.02)	0.96	
Age in years			0.064
<50	1.06 (0.99–1.14)	0.09	
≥50	0.99 (0.97–1.01)	0.40	

Existing Evidence

Prior observational studies suggested reduced response for black patients with hepatitis C receiving 8 weeks of therapy. However, because prior studies did not limit analyses to black patients otherwise eligible for 8 weeks (i.e., treatment-naive, no cirrhosis, HIV-uninfected, and HCV RNA <6 million IU/mL), black patients receiving 8 and 12 weeks may have differed with respect to key factors for treatment response.

Target Population

KPNC patients with HCV genotype 1 infection eligible for 8 week direct-acting antiviral regimen of ledipasvir/sofosbuvir.

Intervention or Exposure

8 or 12 week ledipasvir (LDV)/sofosbuvir (SOF).

Outcomes/Key Findings

Of 2653 patients eligible for 8 weeks of treatment with LDV/SOF, 1958 (73.8%) received 8 weeks of treatment and 695 (26.2%) received 12 weeks; the proportions of patients with sustained virologic response 12 weeks after the end of treatment (SVR12) were 96.3% for those given 8-weeks and 96.3% for those given 12 weeks of treatment (P = .94). Similarly, when stratified by race, there was no difference in SVR12 by regimen duration (see figure). Specifically, for Black people with HCV, the percentages with SVR12 for 8- and 12-week regimens were 95.6% vs 95.8%, respectively, with an adjusted relative risk of 1.0 (P = .88).

Resulting Action/Change

These findings changed national KP clinical practice to an 8-week course of direct-acting anti-hepatitis C treatment for eligible black patients (instead of 12-weeks). This decreased patient inconvenience, decreased cost by one third, and may decrease toxicity associated with longer durations of treatment. In 2019, new liver society guidelines cited this study and revised guidance to shorter regimens for black people.

Additional Recommendations

These results recommend evaluations for treatment differences/similarities for other medication regimens with conflicting data in the literature.

Implementation Tools

New KP and national liver society guidelines based on these results.

Implementation and Follow-up Measures

Proportions of people with guideline concordant care, consistent with these findings: (e.g. 8 weeks for eligible patients); pharmacy utilization/cost; virologic response.

Reference

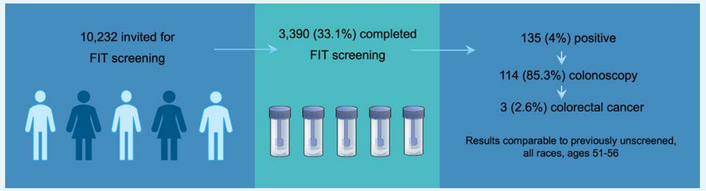
doi: 10.1016/j.cgh.2018.03.003

Outreach with FIT Testing Increases Detection of Polyps/CRC Among Younger African Americans (45–50 years)

Theodore R. Levin, MD; Christopher D. Jensen, PhD, MPH; Neetu M. Chawla, PhD; Lori C. Sakoda, PhD, MPH; Jeffrey K. Lee, MD, MAS; Wei K. Zhao, MPH; Molly A. Landau, MPH; Ariel Herm, MPH; Eryn Eby, MPH; Charles P. Quesenberry, PhD; Douglas A. Corley, MD, PhD

African Americans have increased incidence of colorectal cancer (CRC) before age 50 years, lower CRC screening rates, later stage at diagnosis and poorer survival compared to other races, but no prospective data on screening younger populations exist.

Fecal immunochemical test (FIT) colorectal cancer screening among African Americans ages 45–50



Existing Evidence

Some guidelines recommend starting CRC screening before age 50 years for African Americans, but there are few data on screening uptake, yield and long-term benefits of different screening tests below age 50 in this population.

Target Population

African Americans age 45–50 years.

Intervention or Exposure

A pilot study-directed mailed fecal immunochemical test (FIT) screening outreach program to the target populations.

Outcomes/Key Findings

Among 10,232 African Americans ages 45–50 mailed a FIT, screening was successfully completed by 33.1% and abnormal results were comparable to those routinely screened ages >50. Among the 4% with positive test results, 85.3% completed a follow-up colonoscopy: 57.8% had any adenoma, 33.6% had an advanced adenoma (adenoma with advanced histology or polyp 10 mm), and 2.6% were diagnosed with CRC. African Americans in the early screening group were modestly more likely to have completed screening than previously unscreened African Americans, whites, and Hispanics 51–56 years old.

Resulting Action/Change

Results led to change in TPMG policy to start screening African Americans at age 45, including mailed FIT. PROMPT updates are in process.

Additional Recommendations

Operational leaders can consider repeat evaluation to assess response rates with repeated invitations (similar approaches currently used to increase responses for older patients).

Implementation Tools

Study outreach letter.

Implementation and Follow-up Measures

Percentage of screening uptake among African Americans age 45–50 in comparison to previously unscreened African Americans, whites, Hispanics and Asian/Pacific-Islanders 51–56 years old (implementation); changes in cancers/cancer stage/advanced polyps detected (effectiveness); changes in need for surgery/chemotherapy (utilization).

Reference

doi: 10.1053/j.gastro.2020.07.011

Natural Language Processing Tool Accurately Identifies Aortic Stenosis and Severity to Inform New Clinical Tracking and Surveillance Programs

Matthew D. Solomon, MD, PhD; Grace Tabada, MPH; Amanda Allen; Sue Hee Sung, MPH; Alan S Go, MD

Valvular heart disease is common, but it is difficult to study the completion and effectiveness of guideline-consistent surveillance clinically, given widely-used diagnosis code-based approaches are inaccurate.

Application of Validated NLP Algorithm vs. Diagnosis Codes to Identify Aortic Stenosis Among All Echocardiograms

		Validated NLP Algorithm		
		Positive for AS	Negative for AS	Total Echoes N (col%)
AS ICD 9/10 Codes	Positive for AS	36,070	12,626	46,696 (5.1)
	Negative for AS	68,020	840,789	908,809 (94.9)
	Total Echoes N (row%)	104,090 (10.9)	853,415 (89.1)	957,505 (100.0)

Existing Evidence

Current diagnoses codes for heart disease conditions may be unreliable and no systematic methods exist with KPNC for accurately identifying patients for research and population management programs. Regional cardiologists have requested a population management program for valvular heart disease to aid in clinical care and to evaluate the effectiveness of current surveillance guidelines.

Target Population

Adult patients with at least one physician-read echocardiogram report from 2008–2018.

Intervention or Exposure

Identification of aortic stenosis and associated parameters using a novel natural language processing algorithm for large, unstructured echocardiogram reports.

Outcomes/Key Findings

957,505 eligible echocardiograms were identified among 522,633 patients. The final NLP algorithm achieved positive and negative predictive values of >95% for identifying people with aortic stenosis; this was much more accurate than using codes alone. It classified 104,090 (10.9%) echocardiograms as having AS; only 36,070 (34.7%) of these patients had a diagnosis code for AS around the time of the echocardiogram and 35% of these unidentified patients had hemodynamically significant AS (i.e., moderate or severe disease).

Resulting Action/Change

The study created the first accurate database of KPNC patients—and one of the world's largest—with aortic stenosis to allow for: 1) identification of center/provider variation; 2) improved understanding of the natural history of disease; 3) studying the effectiveness of surveillance intervals (ongoing); 4) creating a new regional effort for standardized reporting; and 5) informing a guideline consistent tracking/disease management program for surveillance.

Additional Recommendations

The results will inform next-steps for standardized regional reporting and further development of operational tracking and centralized surveillance for high-risk patients.

Implementation Tools

Natural language processing algorithms, valvular heart disease database.

Implementation and Follow-up Measures

Implementation of echocardiographic data base showing mild, moderate or severe aortic stenosis (implementation); variation in appropriate follow-up of patients for surveillance (clinical effectiveness); proportions of patients with follow-up echo, surgery, etc. (utilization).

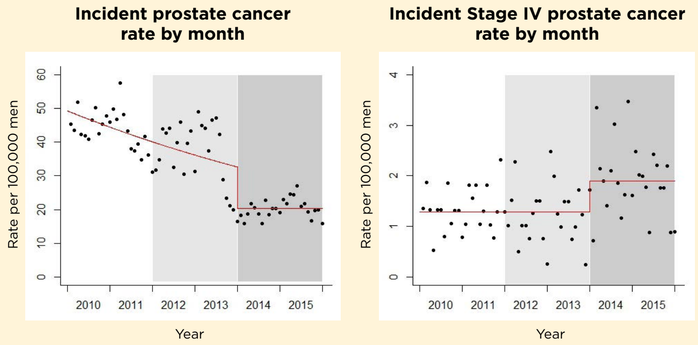
Reference

Manuscript pending.

Increase in Metastatic Prostate Cancer Following the 2012 USPSTF Statement Informs Efforts for Risk-Stratified Screening

Joseph Presti Jr, MD; Stacey Alexeeff, PhD; Brandon Horton, MPH; Stephanie Prausnitz, MA; Andrew L Avins, MD, MPH

In 2012, the US Preventive Services Task Force (USPSTF) recommended against PSA-based screening for prostate cancer for all men. The impact of the resulting marked decrease in screening on clinical outcomes (including metastatic disease) are unknown and would inform whether more targeted screening may be advisable, such as for higher-risk groups (e.g. African-Americans).



Existing Evidence

PSA-based prostate cancer screening was suggested to be minimally effective for prostate cancer decreasing mortality in randomized trials. Thus, the USPSTF's downgrading of PSA-based screening to "recommended against", theoretically, this should have little impact on morbidity and deaths from prostate cancer, but little community-based data exist.

Target Population

Screen eligible men without a history of prostate cancer.

Intervention or Exposure

2012 USPSTF Statement stating "Do not screen anyone for prostate cancer."

Outcomes/Key Findings

After the USPSTF recommended against routine prostate cancer screening, screening rates declined 23.4% (95% CI 23.0–23.8%) and biopsy rates declined 64.3% (95% CI 62.9–65.6%). Subsequently, incident prostate cancer diagnoses declined 53.5% (95% CI 50.1–56.7%), resulting in 1871 fewer incident cancers detected, but metastatic cancer rates increased 36.9% (95% CI 9.5–71.0%) resulting in 75 more stage IV cancers detected.

Resulting Action/Change

The finding of more advanced cancers informs next-step already-started analyses for identifying the impact on high-risk populations (e.g. African Americans) who may benefit from more targeted prostate cancer screening, to lower the rate of metastatic cancer while minimizing over-screening of populations not likely to benefit (or to have harm).

Additional Recommendations

These findings inform potential next steps such as outreach to higher risk groups for informed decision-making regarding screening and informing primary care about the consequences of not screening.

Implementation Tools

N/A

Implementation and Follow-up Measures

Development of risk-stratified screening tools (implementation); changes in stage IV cancer (effectiveness); PSA testing, surgery, chemotherapy (utilization).

Reference

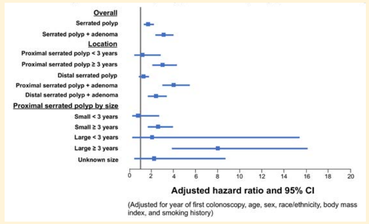
doi: 10.1007/s11606-019-05561-y

New Risk Estimates for Colon Cancer Among Persons with Serrated Colon Polyps Inform Guidelines for Timing of Repeat Colonoscopy

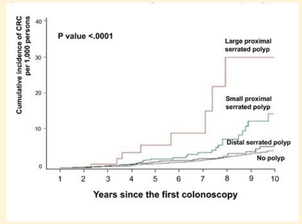
Dan Li, MD; Liyan Liu, MSc; Helene B Fevrier, MPH; Stacey E Alexeeff, PhD; Amanda R Doherty, MD; Menaka Raju, MD; Laura B Amsden, MSW, MPH; Jeffrey K Lee, MD, MPH; Theodore R Levin, MD; Douglas A Corley MD, PhD; and Lisa J Herrinton PhD

Serrated colon polyps (SPs) are precursors to 20% to 30% of cases of colorectal cancer (CRC), but patients' long-term risk after polyp removal is poorly understood, which may lead to inappropriate follow-up colonoscopy intervals. This study investigated the risk of CRC in individuals with a history of SPs.

Relative risk of colorectal cancer in patients with a history of serrated polyps vs. no polyp



Cumulative incidence of colorectal cancer in patients with a history of serrated polyps



Existing Evidence

Evidence around SPs and CRC risk is limited. Current surveillance guidelines suggest relatively frequent need for follow-up colonoscopy but the appropriateness relative to risk (and other polyp types) is unknown.

Target Population

Patients undergoing colonoscopy.

Intervention or Exposure

Presence of serrated colon polyps.

Outcomes/Key Findings

Among 233,393 individuals undergoing colonoscopy, 445 developed a subsequent CRC. 173,257 had no polyp on first colonoscopy; 11,505 had proximal SPs, 12,080 proximal SPs and synchronous adenomas, 19,410 distal SPs, and 17,141 distal SPs and synchronous adenomas. Among patients with SPs, risk of CRC was not increased until 3 years or more after the first colonoscopy (HR for small proximal SPs 2.6; 95% CI, 1.7–3.9 and HR for large proximal SPs 8.0; 95% CI, 3.6–16.1). The risk was higher if an adenoma was also diagnosed (HR for proximal SPs with synchronous adenomas 4.0; 95% CI, 3.0–5.5; and HR for distal SPs with synchronous adenomas 2.4; 95% CI, 1.7–3.4).

Resulting Action/Change

The study provided some of the first community-based evidence for post-colonoscopy risk stratification; this is influencing national and KP guidelines for follow-up colonoscopy surveillance after SP diagnosis (found on 1 of 10 colonoscopies).

Additional Recommendations

Dissemination of findings to practitioner and follow-up analysis with compliance of these data into KPNC practices can inform evidence-based follow-up intervals.

Implementation Tools

Colonoscopy surveillance guidelines and risk measures.

Implementation and Follow-up Measures

Serrated polyp diagnosis and guideline-concordant follow-up (implementation); cancer risk after colonoscopy (effectiveness); changes in colonoscopy and cancer care (utilization).

Reference

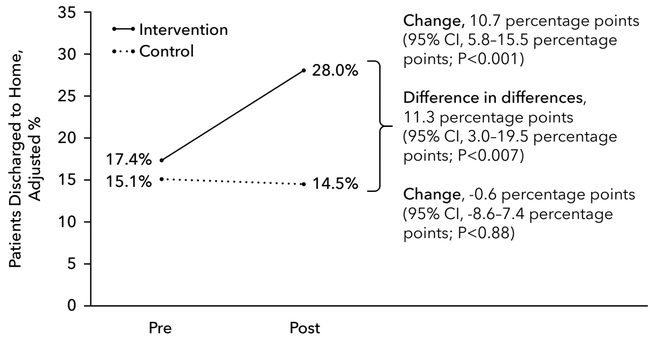
doi: 10.1053/j.gastro.2020.04.004. PMID: 32277950

New Clinical Decision Support Intervention Increased Safe Outpatient Management of ED Patients with Pulmonary Embolism

David R Vinson, MD Dustin G Mark, MD et. al. and the eSPEED Investigators of the KP CREST Network

Many low-risk patients with acute pulmonary embolism (PE) in the emergency department (ED) are eligible for outpatient care, but are hospitalized nonetheless. One impediment to home discharge is the difficulty of identifying which patients can safely have care at home.

Effect of intervention (from pre- to post-intervention periods) on home discharge of emergency department patients with acute PE.



Existing Evidence

Home discharge for pulmonary embolism in most medical centers globally is low, ranging from 1% to 8%, despite evidence that patients with acute PE are eligible for safe outpatient management. Specific methods for safely guiding decision-making are limited, such as proven, evidence-based decision-support systems.

Target Population

Adult patients with acute PE presenting to the emergency department.

Intervention or Exposure

Ten intervention sites received a multidimensional technology and education intervention—including a clinical decision support system at month 9 of a 16-month study period (1/2014 to 4/2015); the remaining 11 sites were controls.

Outcomes/Key Findings

A clinical decision support system significantly increased safe home-discharge rates for patients presenting with pulmonary embolism to the emergency room. Among 881 eligible PE patients at intervention sites vs. 822 at control sites, adjusted home discharge increased (17.4% to 28.0% pre/post vs. 15.1% to 14.5% pre/post at intervention vs. control, respectively, an absolute increase of 11.3 percentage points (95% CI, 3.0 to 19.5 percentage points; P = 0.007), without increases in relevant 5-day return visits or 30-day major adverse outcomes.

Resulting Action/Change

The project provided both the evidence and the specific electronic tool, accessible from the electronic medical record, for broader implementation: structured promotion of computer decision support for physicians in site-of-care decision making for ED patients with acute PE safely increased outpatient management.

Additional Recommendations

Dissemination across ED and other providers and follow-up measures of spread can assess and inform uptake

Implementation Tools

Clinical decision support system.

Implementation and Follow-up Measures

Utilization of decision support and appropriate discharge to home from either the ED or a short-term (<24-hour) ED observation unit for patients with PE (implementation); adverse outcomes (e.g. return visits for PE-related symptoms within 5 days, recurrent thromboembolism, hemorrhage, and all-cause mortality within 30 days) (effectiveness); hospital admissions from ED for PE (utilization)

Reference

doi: 10.7326/M18-1206

Integration of Standardized Ovarian Cyst Risk Stratification System Into Radiology Reports Estimates Risk and Informs Follow-Up

Elizabeth Suh-Burgmann, MD; Tracy Flanagan, MD; Todd Osinski, MD; Mubarika Alavi, MS; Lisa Herrinton, PhD

No established evidence-based, integrated decision systems exist for evaluating ovarian or adnexal masses/cysts. If achieved, it would identify high risk women for prompt surgical evaluation and avoid unnecessary surgery and morbidity for women at low risk.

Risk of ovarian cancer by ultrasound reporting category by baseline ultrasound findings

				Incidence rate	Incidence rate	Number needed to examine to detect one	
Ultrasound Category	Women at risk	Ovarian cancer	Cancer or borderline	Ovarian cancer	Cancer or borderline	Cancer	Cancer or borderline
0	36,768	38	42	0.10%	0.11%	967	875
1	4813	8	19	0.17%	0.39%	500	253
2	1404	18	33	1.28%	2.35%	77	43
3	251	15	26	5.98%	10.36%	17	10
X	370	48	70	12.97%	18.92%	8	5

Existing Evidence

Adnexal masses/cysts are common, present in 7–12% of asymptomatic women. The high prevalence of incidentally discovered benign masses on ultrasound, low cancer prevalence, and overlap between benign and malignant ultrasound characteristics explains the lack of benefit of ovarian cancer screening. However, ultrasound detection leads to concerns regarding ovarian cancer, subsequent surgical removal, or serial monitoring with ultrasound. Standardized risk assessment methods have been adopted for other abnormal imaging findings, such as the Breast Imaging Reporting and Data System (BIRADS) for mammography, the Fleischner system for lung nodules. Algorithms have been proposed for adnexal masses, but none have been widely adopted.

Target Population

Average-risk women undergoing ultrasonography.

Intervention or Exposure

Risk stratification system for adnexal masses based on standardized ultrasound characteristics.

Outcomes/Key Findings

A new evidence-based risk stratification system for ovarian cysts/masses, with follow-up recommendations, was developed, validated, and integrated into radiology reports. Reporting categories 1, 2, 3, and X allowed risk stratification (table) relative to women with normal examinations (category 0). Categories 1, 2, 3, and X were associated with increasing risks of ovarian cancer diagnosis: 0.2% (95% CI 0.05–0.3%) for category 1, 1.3% (95% CI 0.7–1.9%) for category 2, 6.0% (95% CI 3.0–8.9%), for category 3, and 13.0% (95% CI 9.5–16.4%) for category X while Category 0 studies were associated with a risk of 0.1% (95% CI 0.07–0.14%).

Resulting Action/Change

This category system provides the first standardized risk stratification system for adnexal masses integrated into routine care through radiology reporting in a community-based setting. This is changing current care and will further inform ongoing data-driven care.

Additional Recommendations

Development, validation, and implementation of similar risk estimating methods for other conditions requiring surveillance can inform evidence-based follow-up and decrease patient and provider uncertainty for care intervals.

Implementation Tools

Radiology reporting templates with evidence-based classification system and a Practice Resource that provides clinical recommendations.

Implementation and Follow-up Measures

Utilization of risk stratification and appropriate follow-up (implementation); cancer detection (effectiveness); use of surgery and ultrasound (utilization).

Reference

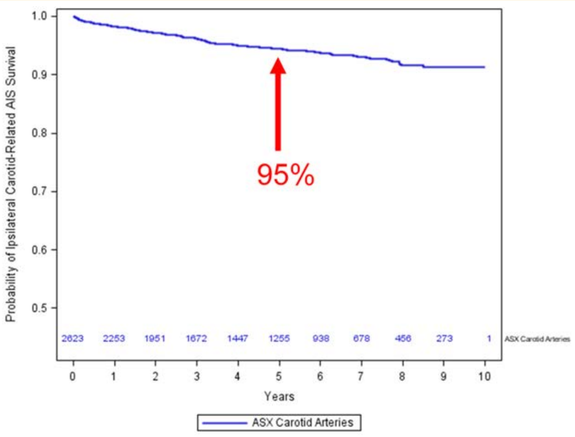
doi: 10.1097/AOG.0000000000002939

Patients with Severe Asymptomatic Carotid Stenosis are at Low Risk of Stroke with Contemporary Medical Management

Robert W Chang, MD; Lue-Yen Tucker, BA; Kara A Rothenberg, MD; Rishad M Faruqi, MD; Hui C Kuang, NP; Alexander C Flint, MD; Andrew L Avins, MD; Mai N Nguyen-Huynh, MD

Contemporary outcomes and long-term stroke risk for asymptomatic carotid stenosis management in patients who receive primary medical vs. surgical therapy are lacking. Such data would inform whether surgery is likely to be of benefit beyond medical therapy.

Kaplan-Meier estimate of 5-year freedom from same-sided carotid-related stroke.



Existing Evidence

Stroke is a leading cause of death in US. Carotid disease accounts for 12–20% of all strokes (historically) and 7–22% of elderly patients have carotid disease. Carotid stroke-related preventive intervention cost $21B annually. Both medical and surgical care decrease carotid stroke rates, but no current data exist for modern management of asymptomatic carotid stenosis. Randomized trial on medical vs. surgical therapies indicated a benefit for surgery, though these used treatments available in the 1990s.

Target Population

Patients with severe carotid stenosis and without prior intervention, prior ipsilateral stroke or transient ischemic attack.

Intervention or Exposure

Medical vs. surgical treatment (carotid endarterectomy or carotid artery stenting).

Outcomes/Key Findings

Among patients with severe asymptomatic carotid stenoses, stroke rates for medical treatment were lower than historical estimates and comparable to surgery. 95.3% of patients did not have a stroke on the same side as their stenosis after five years (95%CI 94.3%–96.1%). 1572 (42.1%) patients underwent 1676 carotid interventions (mean months diagnosis to intervention 6.2±12.5). In the cohort (n=4230) prior to any intervention, 129 strokes were attributable to same-side stenosis (annual rate 1.0%; 95% CI 0.7–1.3%). Among 2327 severe but not 'high-grade' stenoses without intervention, 385 (16.5%) progressed to high-grade and 89 (3.8%) to occlusion.

Resulting Action/Change

The results suggest comparable contemporary likely risk/benefit between medical and surgical therapy; pending modern trials, these data inform clinicians and their patients with stenosis for shared decision-making regarding treatment choice.

Additional recommendations

The development of information for decision-making and broader dissemination of these results would inform provider-patient informed decision-making.

Implementation Tools

Modern risk estimates for medical treatment for carotid endarterectomy (CEA) or carotid artery stenting (CAS) treatment.

Implementation and Follow-up Measures

Proportions of patients for med vs. surgery (implementation); stroke risk (effectiveness); use of surgery, stenting and other interventions (utilization).

Reference

Manuscript pending.

Structured Reporting of Lung Nodules Detected on Chest CT was Associated with Greater Chance of Detecting Early Stage Lung Cancer

Thomas H Urbania, MD; Jennifer R Dusendang, MPH; Lisa J Herrinton, PhD; Stacey Alexeeff, PhD; Douglas A Corley, MD, PhD, MPH; Sora Ely, MD; Ashish Patel, MD; Todd Osinski, MD; Lori C Sakoda, PhD, MPH

Lung cancer diagnoses require accurate, standardized CT nodule reporting and follow-up methods to optimize timely, appropriate care but none have been validated within KPNC.

Tags, Descriptions, and Recommendations Used to Code Lung-Specific Findings on Diagnostic Chest CT Imaging

Tag and Description	Recommendation
#PUL0: or standard phrase "No pulmonary nodule", "Lungs: Normal", or "Pulmonary Nodules/Masses: None": No pulmonary nodule **#PUL1:** Benign nodule	No further action.
#PUL2: Pulmonary nodule that is likely infectious, inflammatory, or part of diffuse nodular lung disease	The need for any follow-up imaging depends on the broader clinical context.
#PUL3: Subsolid nodule. Pure ground glass and part ground glass/part-solid nodules. Upgrade to #PUL5 if: i. a solid component is initially ≥4 mm; ii. solid component grows to ≥4 mm; iii. a new solid component develops; iv. the overall nodule grows by ≥2 mm. **#PUL4:** Indeterminate solid nodule ≤8 mm	Follow-up CT scheduled by the ordering provider according to Fleischner Society guidelines based on nodule and patient risk factors for lung cancer.
#PUL5: Suspicious for malignancy; solid nodule ≥9 mm; growth of a nodule by ≥2 mm; pure ground glass nodule that develops a solid component on follow-up; part-solid nodule with a solid component ≥4 mm; other finding suspicious for a primary thoracic malignancy	The CT report is automatically forwarded to an expert committee for review and follow-up.
#PUL6: Known lung cancer or suspected metastatic nodule; established diagnosis of lung cancer; nodules detected in patients with a known primary malignancy that are considered most likely metastatic **#PULX:** Technical limited: factors such as significant motion, artifacts, excluded lung portions, etc., prevent exclusion of pulmonary nodules	Follow-up by ordering provider.

Existing Evidence

Although lung cancer is usually diagnosed at a late stage, when diagnosed early, 5-year survival is >50%. Standardized reporting and follow-up may reduce time to diagnosis and provide more accurate diagnoses and more rapid stage-specific care for lung cancer. Methods have been proposed (Fleischner guidelines), but they need integration into KPNC workflows, testing for local accuracy, and potential modification to optimize performance.

Target Population

KP Northern California members undergoing non-screening chest CT imaging.

Intervention or Exposure

Standardized tagging and classification of chest CT pulmonary findings, auto-generated recommendations embedded in CT reports, and coordinated patient follow-up/referral for patients with findings tagged high risk (suggesting lung cancer) by a multidisciplinary care team.

Outcomes/Key Findings

Among 2,856 patients (2.9%) diagnoses with lung cancer, 28% had early-stage disease. 40% percent of all patients received the intervention. The intervention was associated with 9% greater odds of diagnosing any lung cancer (OR 1.09; 95% CI 1.00–1.18); 24% greater odds of early-stage diagnosis (OR 1.24; 95% CI 1.09–1.41); no change in the odds of late-stage diagnosis (OR 1.04; 95% CI 0.95–1.14); and no change in surgical treatment within 120 days.

Resulting Action/Change

These findings supported increased use of standardized tagging, classification, and multi-disciplinary care navigation for identifying early stage lung cancer patients. The intervention did not decrease time to diagnosis; this can inform efforts to decrease time to therapy.

Additional recommendations

Evaluation of steps for time to follow-up and misclassification can further optimize accuracy and expedite next-steps in patient care. Similar imaging tagging/standardized recommendation can be considered more broadly for other conditions.

Implementation Tools

Playbook/workflow for care navigation, reporting system integrated into radiology reports.

Implementation and Follow-up Measures

Proportions of cancers using risk stratification (implementation), early-stage lung cancer diagnosis and time to follow-up following implementation of standardized reporting system (effectiveness); appropriate use of biopsy and surgery (utilization).

Reference

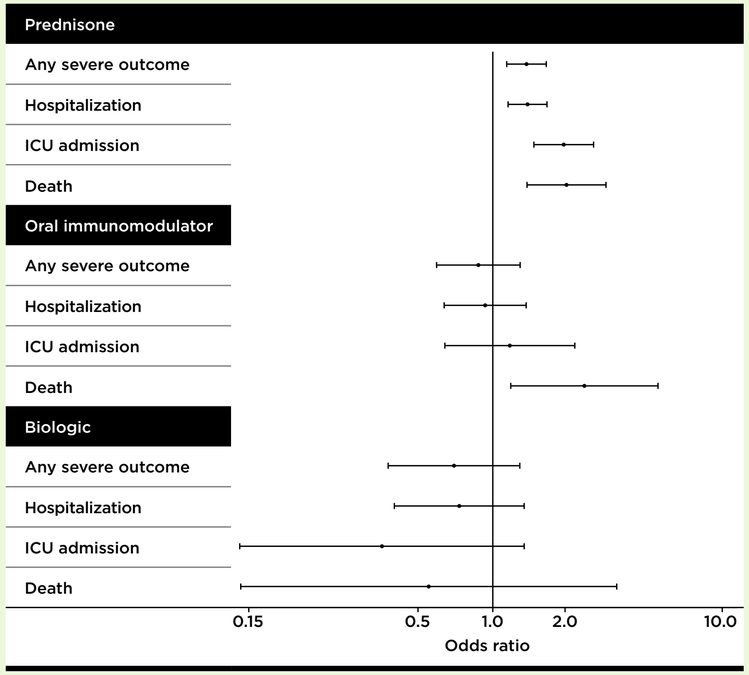
doi: 10.1016/j.chest.2020.05.595

COVID-19 Complications are not More Common Among Immunosuppressed Populations in KPNC

Fernando S Velayos, MD, MPH; Jennifer R Dusendang, MPH; Julie A Schmittdiel, PhD, MA

A growing number of individuals require biologics, prednisone, or oral immunomodulators to suppress a dysregulated immune system. It is unknown whether these therapies modify the risk for severe illness from SARS-CoV-2.

45-day severe outcomes of 39,686 patients for SARS-CoV-2 by prior medication



Existing Evidence

Evidence of immunosuppressant treatment and risk of severe outcomes from SARS-CoV-2 is lacking.

Target Population

Adults who have tested positive for SARS-CoV-2.

Intervention or Exposure

Use of biologics, prednisone, or oral immunomodulators.

Outcomes/Key Findings

Using immunosuppressants prior to a SARS-CoV-2 diagnosis was not associated with a higher (or lower) risk for the composite risk of severe illness, with the exception of prednisone. Out of 39,686 adults who tested positive for SARS-CoV-2, 2.4% (n=958) had a prior prednisone prescription, 0.9% (n=366) an immunomodulator, and 0.3% (n=130) for a biologic (proportions similar to the background population). A total of 10.0% (n=3,977) had at least one outcome of interest (hospitalization, ICU admission or death). Oral prednisone prior to SARS-CoV-2 diagnosis was associated with hospitalization (OR= 1.40, 95% CI 1.15–1.70), ICU admission (OR 1.96, CI 1.47–2.63), and death (OR 2.01, CI 1.37–2.93). A prescription for biologics or oral immunomodulators did not increase the risk for the composite outcome, although there was an association between oral immunomodulator therapy and mortality (OR 2.39; 95%CI 1.18–4.84).

Resulting Action/Change

These findings support the ongoing use of immunosuppressive medications in patients who need them and the ability of such patients to continue routine work, medical care, and other activities with appropriate (average risk) caution.

Additional recommendations

Clinical leaders can consider broader dissemination of this information to relevant providers and patient populations to address concern and patient management

Implementation Tools

N/A

Implementation and Follow-up Measures

Use of immunosuppressants (implementation); risk of illness from inappropriate discontinuation (effectiveness); hospitalizations or other adverse events from inappropriate discontinuation (utilization)

Reference

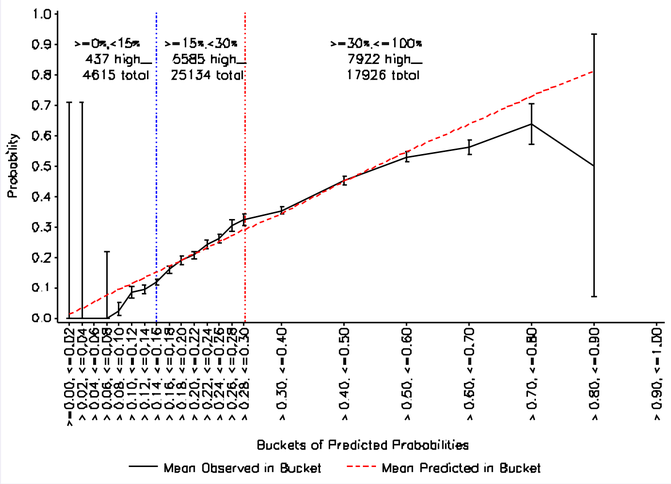
Research Letter submitted for publication.

An Electronic Algorithm Predicts Deteriorating Glycemic Control in Patients with Diabetes

Lisa Gilliam, MD, PhD; Julie Schmittdiel, PhD, MA; Rick Dlott, MD; Bharathi Ramachandran, MPH; Wendy Dyer, MS

Patients with controlled diabetes may “flip” from good to poor control (A1c>8%), no helpful prediction tools exist. Accurate prediction of which patients are likely to flip could inform workflows (i.e. closer monitoring and earlier interventions), decreasing likelihood of deterioration of glycemic control.

Validation data: Demonstrating good correlation between observed vs. predicted risk, C-statistic = 0.691



Existing Evidence

Accountable Population Managers (APMs) are empaneled with ~1300 patients with DM, of whom about 68% have “good” glycemic control, as assessed by an A1c <8%. Because the group of patients with higher A1c’s include many patients with compliance issues and social issues, this group is time consuming and receives the bulk of the APM’s focus. Unfortunately, among those in the much larger “controlled” group (A1c<8%), we are not good at predicting which patients will subsequently “flip” out of control (A1c>8%) at follow up. A single medical center analysis determined that among patients with A1c 7.6 to 7.9%, 40% of these patients had an A1c >8% at the subsequent follow up a1c test. Only high performing population managers were focusing on this controlled, but at-risk group, most were focusing on the patients currently out of control.

Target Population

KP members, ages 18–75, in the DOR Diabetes registry with an A1c <8%.

Intervention or Exposure

Significant predictors of glycemic deterioration.

Outcomes/Key Findings

A prediction tool was created with predictors of glycemic deterioration, including gender, age, race, number of oral DM meds, insulin use, index a1c value, smoking, BMI, AbLAPS, COPS2, EVS, and NDI. The training data validation demonstrated good correlation between observed vs. predicted risk generating a C-statistic of 0.691. Based on this model, if 5,000 members are targeted, the model identified 2,500 who would have a >1% increase in a1c in the next 2 years.

Resulting Action/Change

The creation of a prediction tool is informing a pilot intervention study looking at efficacy of incorporating the prediction algorithm into clinical practice.

Additional Recommendations

Once efficacy has been demonstrated, the prediction algorithm can be incorporated into the PROMPT care pathway to facilitate broader utilization.

Implementation Tools

N/A

Implementation and Follow-up Measures

Completion of pilot study and number of population care managers subsequently using the prediction tool in clinical practice (implementation): changes in deterioration rates following identification and more intensive management of at-risk patients using the prediction algorithm in a feasibility/intervention study and subsequently in practice (effectiveness). Risk of deterioration resulting in hospitalization, medication use, other complication (utilization).

Reference

Internal report.

Perinatal Nutritional Management Associated with Improved Pregnancy Outcomes Among Women Post-Bariatric Surgery

Mara Greenberg, MD; Monique Hedderson, PhD; Fei Xu, MS

Patients frequently have pregnancies post-bariatric surgery within KPNC, but the effectiveness of existing nutritional management efforts to improve pregnancy outcomes is unknown.

Risk for perinatal outcomes among women not referred to RPSC

Perinatal Outcome	Crude	Adjusted*
Preterm Birth	1.95 (1.49–2.57)	1.99 (1.49–2.66)
Cesarian Section	0.98 (0.88–1.08)	0.93 (0.84–1.04)
Pre-eclampsia	1.89 (1.22–2.93)	2.20 (1.40–3.45)
Gestational Hypertention	1.55 (1.06–2.28)	1.63 (1.11–2.38)
GDM or IFG	1.09 (0.90–1.31)	1.02 (0.83–1.24)
Admission to NICU Level 2	1.34 (0.89–2.01)	1.41 (0.91–2.17)
Admission to NICU Level 3	1.60 (1.15–2.21)	1.65 (1.16–2.36)
Exceeded IOM Guidelines	0.97 (0.91–1.03)	0.99 (0.92–1.05)
Below IOM Guidelines	1.05 (0.89–1.23)	1.03 (0.87–1.21)
LGA	1.10 (0.80–1.51)	1.04 (0.75–1.45)
SGA	0.80 (0.58–1.12)	0.84 (0.60–1.19)

* Adjusted for maternal age, race/ethnicity, pre-pregnancy BMI, parity and insurance type (Medicaid versus other).

Existing Evidence

Prior studies women post-bariatric surgery had small numbers inconclusive results regarding impact adverse pregnancy outcomes. Approximately 73% of post-bariatric surgery pregnancies are referred to the Regional Perinatal Service Center (RPSC), which requires multiple laboratory evaluations and adjustment of nutritional supplements. It is unknown whether this service improves pregnancy outcomes.

Target Population

KPNC enrolled women with pregnancy post-bariatric surgery.

Intervention or Exposure

Enrollment in Regional Perinatal Service Center for nutritional management.

Outcomes/Key Findings

Among women post-bariatric surgery, pregnancies enrolled in the Regional Center were less likely to have a preterm birth, experience hypertensive disorders (including pre-existing HTN, gestational HTN and preeclampsia), or to be admitted to the NICU. There were no differences for cesarean deliveries and gestational or pre-existing diabetes. Among all women post-bariatric surgery, >20% had HTN, >40% had impaired glucose tolerance or diabetes, and many (39%) were delivered by cesarean.

Resulting Action/Change

The results support the effective use of the Regional Perinatal Service Center for nutritional management and monitoring of post-bariatric surgery patients. These findings support improving rates of referral and uptake and efforts to identify which program components are most associated with better outcomes.

Additional recommendations

Consideration of additional measures for identifying and referring appropriate patients for nutritional evaluation.

Implementation Tools

None; tools could be developed around increasing awareness and referral.

Implementation and Follow-up Measures

RPSC referrals among women post-bariatric surgery (implementation); ongoing perinatal outcomes following referral (effectiveness); complications (utilization).

Reference

Internal report.

DARE Supported Projects 2019–2020

Delivery Science Grants Program		
Adult Hospital Medicine	Somalee Banerjee, Alyce Adams	Improving Outcomes and Care Experience Among Dual Eligible Members: the Role of Health System Factors
AFM	Joan Lo, Kendal Hamann, Mehreen Khan	Assessment of Fracture Prevention Quality Measures
AFM	Jeff East, Mark Moeller, Tracy Lieu	Developing New Strategies for Managing High Volume Patient-Physician Electronic Communication
AFM	Jonathan Volk, Michael Silverberg	Leveraging EHR Data To increase Uptake of HIC Preexposure Prophylaxis
AFM	TR Levin	Outreach with Fit Testing increases Detection of Polyps/CRC Among Younger African Americans (45-50 Years)
Cardiology	Jamal Rana, Alan Go	Identifying Variation and Barriers to Use of Non-Invasive Cardiac Imaging Tests for Suspected Coronary Heart Disease
Cardiology	Amir Axelrod, Andrew Ambrosy	Management Optimization Via Telemonitoring and Resource Utilization and Outcomes in Heart Failure (Monitor-Hf)
Cardiology	Ed McNulty, Alan Go	Personalizing Risk of Transcatheter Aortic Valve Replacement: Quality of Life, Complications, Mortality, and Utilization (TAVR - Predict)
Dermatology	Sangeeta Marwaha, Lisa Herrinton	Dermoscope Use Improves Cancer Detection While Decreasing Biopsy and in Person Visits
Emergency Medicine	Dana Sax, Mary Reed	Development of A Machine-Learning Tool to Risk Stratify Emergency Department Patients with Acute Heart Failure
Emergency Medicine	Dustin Mark, Mary Reed	Electronic Decision Support Safely Reduces Objective Cardiac Testing for Low Risk ED Patients with Chest Pain
Gastroenterology	Varun Saxena, Julie Schmittdiel	Optimization of Hepatocellular Carcinoma Surveillance Protocols
Infectious Diseases	Julia Marcus, Michael Silverberg	Short-Course Treatment (8 Weeks) as Effective as 12 Weeks Treatment for Black Patients with Hepatitis C Virus (HCV) infection
Mental Health	Kathryn Erickson-Ridout, Connie Weisner	Collaborative Care for Depression and Anxiety Requires Active Outreach, Accurate Diagnosis, and Regular Symptom Tracking
Nephrology	Sijie Zheng, Alan Go	Upstream Management of Patients with Chronic Kidney Disease to Delay and Avoid Renal and Major Cardiovascular Events
Neurology	Alex Flint, Jeff Klingman	Outcomes of Door-To-Needle Times in Stroke Patients
Ob/Gyn	Yvonee Crites, Anne Regenstein	Similar Neonatal Developmental and Delivery Outcomes, Fewer NICU Admissions When Gestational Diabetes Treated with Glyburide (Vs. insulin)
Ob/Gyn	Tracy Flanagan, Lyndsay Avalos	The Impact of Patch “Prenatal Care and Maternal & Child Health Outcomes” On Health Outcomes and Health Care Utilization.
Oncology	Raymond Liu, Gabriel Escobar	Automating Risk Stratification for Hospital-Acquired Thromboembolism Guides Provider Decision Making and Improves Patient Outcomes
Oncology	Charles Meltzer, Lori Sakoda	Consolidated Multidisciplinary Care Improves Survival for Head and Neck Cancer
Oncology	Jed Katzel, Stephen Van Den Eeden	Electronic Collection of Patient-Reported Outcomes in Head and Neck Cancer Patients to Improve Survival and Minimize Hospitalization
Oncology	Tatjana Kolevska, Yan Li, Ai Kubo	Mobile Health Mindfulness in Cancer Palliative Care
Oncology	Piyush Srivastava, Stephen Van Den Eeden	Patient Reported Outcomes in Pancreatic Cancer
Oncology	David Baer, Tracy Lieu	Prognostic information System (Prism): Refinement and Testing in Actual Practice
Oncology	Andrea Harzstark, Lisa Herrinton	Regionalization of Testicular Cancer Diagnosis and Treatment Planning Effective and increased Satisfaction Among Oncologists
Oncology	Bethan Powell, Larry Kushi	Streamlining Genetic Counseling increases Genetic Testing Among Women with Ovarian Cancer
Ophthalmology	Dariusz Tarasewicz, Oleg Sofrygin	Development and Implementation of an Evidence-Based Risk Calculator for Diabetic Retinopathy Screening and Population Management
Pediatrics	Lisa Chyi, Michael Kuzniewicz	Eat, Sleep, Console (ESC) Assessment Tool to Escape Postnatal Opioid Exposure in infants with Neonatal Opioid withdrawal Syndrome
Pediatrics	Mustafa Bseikri, Elizabeth Feliciano	Pediatric Obstructive Sleep Apnea: Predictive Modeling to Streamline Care
Pediatrics	Paul Espinas, Stacy Sterling	Screening for Aces in Pediatric Clinics Are Feasible and Acceptable
Pediatrics	Meghan Davignon, Lisa Croen	Setting the Stage to Measure the Long-Term Benefits of the More Than Words Program on KPNC’S Parents, Children, and Providers
Population Management	Gabriel Escobar, Laura Myers	Tools for Outpatient and Population Management of Sars-Cov-2 infections (Tops2)
Surgery Oncology	Veronica Shim, Laurie Habel	Development of A Clinical Pathway for Selective Oncotype Testing in Early Breast Cancer
Surgery Orthopedic	Adrian Hinman, Andy Avins	A Noninferiority Trial of the Adductor Canal Catheter in Total Knee Replacement
Surgery Plastic Surgery	Amanda Graff-Baker, Marilyn Kwan	LYMPHA – Collaboration in the Operating Room Results in Improved Outcomes for Breast Cancer Patients
Urology	Joseph Presti, Andrew Avins	Easy-To-Implement intervention Reduced inappropriate Prostate Cancer Screening in Men 70 and Over
Women's Health	Mara Greenberg, Assiamira Ferrara	Pandemic Associated Obstetric Care Delivery and COVID infection in Pregnancy: Impact on Outcomes

DARE Supported Projects 2019–2020

Rapid Analytics Unit		
Anesthesia, Surgery, Cardiology	Edward Yap, Lisa Herrinton	Adhering to Cardiovascular Risk Reduction Guidelines Decreases Myocardial Injury After Noncardiac Surgery
Cardiology	Richard Birnbaum, Andy Avins	Systemic Identification and Management of Familial Hypercholesterolemia Optimizes Patient Recognition and Treatment
Dermatology	Patrick McCleskey, Lisa Herrinton	Chilblains Is Not the Canary in the Covid19 Coal Mine
Emergency Medicine	Dale Cotton, Mary Reed	Covid-19 in the Ed Encounter: Characteristics and Predicting Outcomes
Emergency Medicine	Mamata Kene, Mary Reed	Opioid Safety Education Associated with Decreased Opioid Prescribing by Emergency Physicians
Gastroenterology	Krisna Chai & Joanna Ready, Andy Avins	An Organized Hepatitis B Surveillance Program increases Patient Identification and Optimizes Management
Gastroenterology	Fernando Velayos, Julie Schmittdiel	Covid-19 Complications Are Not More Common Among Immunosuppressed Populations in KPNC
Gastroenterology	Craig Munroe, Doug Corley	Telemedicine (Compared to in-Person Gastroenterology Visits) Had High Patient Satisfaction and Comparable Physician Decision-Making
Gastroenterology/Hepatology	Varun Saxena, Julie Schmittdiel	Benefits of Hepatitis C Virus Cure
Hematology/Oncology	Ashok Pai & Gwendolyn Ho, Julie Schmittdiel	Chronic Anticoagulant and Antiplatelet Use Is Not Associated with Decreased Disease Severity in Sars-Cov-2 infection
Interventional Radiology	Maud Morshedi, Lisa Herrinton	Improvements in Coordinated Hepatocellular Screening, Care Coordination, and Treatment Associated with 50% Decrease in Mortality
Mental Health	Kathryn Ridout, Esti Iturralde	Mental Health Service Demand in the Face of Covid-19
Neurology	Alex Flint, Andy Avins	KPNC Stroke Express Program Markedly Shortens Time-To-Thrombolysis for Patients with Ischemic Stroke
Ob/Gyn	Eve Zaritsky, Andy Avins	Covid-19 and Shelter-In-Place Results in Delayed Presentations for Emergency Gynecologic Care
Oncology	Andrea Harzstark, Julie Schmittdiel	Concomitant Cancer Treatment and SARS-Cov-Infection increased Risk of Noninvasive Ventilation Compared to Those without Cancer
Oncology	Andrea Harzstark, Liyan Liu	Rapid Ascertainment of New Bladder Cancer Diagnoses informs Regional Multi-Disciplinary Case Management
Oncology	Tilak Sundaresan, Liyan Liu	Rapid Case Ascertainment Using NLP Is Effective and Feasible in Pancreatic Cancer Management
Oncology	Lisa Law, Lisa Herrinton	Regionalizing Subspecialized Acute Myeloid Leukemia Care increased induction Therapy and Bone Marrow Transplantation and Decreased Mortality.
Oncology and Pulmonology	Nareg Roubinian, Julie Schmittdiel	The incidence of Venous Thromboembolism Is Similar in Outpatients with and without Sars-Cov-2 infection
Pediatric surgery	Albert Chong, Lisa Herrinton	Low Recurrence and Complication Rates with Minimally invasive Repair of Pediatric inguinal Hernia
Pediatrics/Adolescent Medicine	Josephine Lau, Julie Schmittdiel	A Systematic Evaluation of Eating Disorders in Children and Adolescents Identifies Patient Populations Under Care and Potential Needs
Radiology, Pulmonary, Thoracic Surgery	tom Urbania, Lisa Herrinton	Structured Reporting of Lung Nodules Detected on Chest Ct Was Associated with Greater Chance of Detecting Early Stage Lung Cancer
Surgery	Vinnie Liu, Andy Avins	Enhanced Recovery After Surgery (Eras) intervention Was Associated with Reduced Opioid Prescriptions After Surgery
Surgery	Gillian Kuehner, Mary Reed	Implementation of Telemedicine within Surgical Specialties Before and After Covid-19: Adjusting to A Changing Landscape
Surgery	Brooke Vuong, Julie Schmittdiel	Outpatient Mastectomy: Factors influencing Patient Selection and Predictors of Return to Care
Surgery	Robert Li, Lisa Herrinton	Regionalization of Sub-Specialized Gastric Cancer Care increased Use of Laparoscopic Approaches, Recommended Staging, and increased Survival
Surgery	Reza Rahbari, Lisa Herrinton	Regionalizing Sub-Specialized Adrenal Surgery Decreases Operative Time, Hospital Stay, and Major Complications
Surgery	Simon Ashiku, Andy Avins	Streamlined Surgical and Perioperative-Care Benefit Esophageal Cancer Patients Undergoing Esophagectomy
Surgery Head and Neck	Kevin Wang & Janet Lai, Andy Avins	Identifying Optimal Strategies for Improving Human Papilloma Virus Immunization Rates in Young-Adult KPNC Members
Surgery Orthopedic	David Ding, Andy Avins	Risk of Total Hip Replacement After Hip Arthroscopy increases with Age
Surgery Thoracic	Jeffrey Velotta, Lisa Herrinton	Outcomes Following interventions To Sustain Body Weight in Esophageal Cancer Patients Starting Preoperative Therapy

DARE Supported Projects 2019–2020

Physician Researcher Program		
Cardiology	Matt Solomon, Alan Go	Natural Language Processing Tool Accurately Identifies Aortic Stenosis and Severity To inform New Clinical Tracking and Surveillance Programs
Emergency Medicine	Dana Sax, Mary Reed	Build and Pilot Testing of a Machine Learning Acute Heart Failure Risk Prediction Tool
Emergency Medicine	David Vinson, Mary Reed	New Clinical Decision Support intervention increased Safe Outpatient Management of Emergency Department Patients with Pulmonary Embolism
Gastroenterology	Dan Li, Lisa Herrinton	New Risk Estimates for Colon Cancer Among Persons with Serrated Colon Polyps inform Guidelines for Timing of Repeat Colonoscopy
Gastroenterology	T.R. Levin, Jeffrey Lee	Predicting Serious Colonic Growths to Risk Stratify People Coming Due for Surveillance Colonoscopy
Gynecologic Oncology	Betty Suh-burgmann, Lisa Herrinton	Integration of Standardized Ovarian Cyst Risk Stratification System into Radiology Reports Estimates Risk and informs Follow-Up
Infectious Diseases	Jacek Skarbinski, Larry Kushi	Sars-Cov-2 Serological Antibody Testing for Disease Surveillance and Clinical Use
Mental Health	Kathryn Erickson-Ridout, Constance Weisner	High Ability to Deliver New and Ongoing Mental Health Care Visits During the Covid-19 Pandemic
Mental Health	Matthew Hirschtritt, Stacy Sterling	Service Use Following Initial Mental Health Evaluation and Referral Differs By Patient Characteristics
Neurology	Mai Nguyen-Huynh, Alan Go	Thrombectomy for Stroke Patients with Large Vessel Occlusion and Delayed Presentation: Community-Based Results Are Comparable to Trials
Radiology	Vignesh Arasu, Laurel Habel	Improved Selection of BRCA-Negative High-Risk Women for Breast MRI Screening Through Validation of Ibis Risk Model Variants
Surgery Vascular	Bobby Chang, Mai Nguyen-Huynh	Patients with Severe Asymptomatic Carotid Stenosis Are at Low Risk of Stroke with Contemporary Medical Management
Urology	Joe Presti, Stacey Alexeef	Decreased Prostate Cancer Screening Following the 2012 USPTF Statement Resulted in A Significant increase in Metastatic Cancer

Targeted Analysis Program		
Endocrinology	Lisa Gilliam, Julie Schmittdiel	An Electronic Algorithm Predicts Deteriorating Glycemic Control in Patients with Diabetes
Hospital Medicine	Vincent Liu	Inpatient Outcomes Associated with Regional Implementation of a Benzodiazepine-Sparing Alcohol withdrawal Orderset
Mental Health	Matthew Hirschtritt, Stacy Sterling	Telepsychiatry Provides Rapid Mental Health Evaluation and Referral for Treatment Among Adults with Mild-to-Moderate Symptoms
Ob/Gyn	Mara Greenberg, Monique Hedderson	Perinatal Nutritional Management Associated with Improved Pregnancy Outcomes Among Women Post-Bariatric Surgery
Urology	Mark Gasparini, Stephen VanDenEeden	Significance of Borderline High and High Serum Calcium Levels in High Risk Kidney Stone

DARE Leadership Team

DARE is supported by The Permanente Medical Group, under the leadership of the Associate Executive Directors, and in close collaboration with the Division of Research. For more information, please visit www.kp.org/dare or contact dare@kp.org.

Douglas Corley, MD, PhD
DARE Program Director
PRP Director

Tracy Lieu, MD, MPH
Division of Research Director
DSGP Director

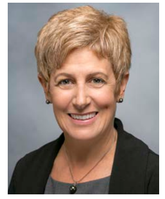
Smita Rouillard, MD
Associate Executive Director

Yi-Fen Irene Chen, MD, FACP, CPPS
Associate Executive Director

Julie Schmittdiel, PhD, MA
TAP Director
RAU Investigator

Mary Reed, PhD
RAU Investigator

Andrew Avins, MD, MPH
RAU Investigator



Lisa Herrinton, PhD
RAU Investigator

Jennifer Schneider, MPH
DARE Program Manager
PRP Manager

Deanne Wiley
TAP Manager

Suzanne Furuya, MPH, MBA
DSGP Manager

Stephanie Prausnitz, MS
RAU Manager

Cimone Parker, MPH
Research Associate