

Delivery Science Research Program Projects as of June 2019

Active Projects

Title	Physician and researcher leads	Start and end dates	Project description
Adult and family medicine			
Assessment of fracture prevention quality measures	Kendal Hamann Joan Lo	Jan 2019- Dec 2020	A systematic evaluation comparing the effectiveness the intervention approaches of the KPNC Osteoporosis Program and a high-risk secondary fracture prevention to assess gaps in care and identification of factors associated with bisphosphonate initiation and optimal adherence are critical for informing implementation targets in the future.
Opioid Safety Initiative (OSI)	Andrea Rubinstein Cynthia Campbell	May 2018- April 2020	The goal of this study is to understand how the KPNC Regional Opioid Safety Initiative has changed prescribed opioid use region-wide and how these changes impacted health services use, overdose and mortality, which will inform regional pain care and potential next steps for the initiative.
Colorectal cancer screening in African American patients	TR Levin, Neetu Chawla, Molly Landau, Michael Sanchez- Garcia	Jan 2018- Dec 2019	Guidelines recommend earlier colorectal cancer (CRC) screening for African Americans due to observed higher incidence of disease and earlier disease onset compared to whites. This study will evaluate acceptance and uptake of CRC screening through centralized fecal immunochemical test (FIT) kit mailings, completion of follow-up colonoscopy for FIT-positive patients and diagnostic yield compared to patients ages 50-54. Patient experiences and reasons for screening decisions will also be evaluated.
Electronic inbasket strategies	Jeff East, Mark Moeller, Tracy Lieu	Jan 2018- Dec 2019	The use of electronic messaging has become a key mode of communication with physicians and their patients and other clinical staff with its use increasing in recent years and for the foreseeable future. This study will evaluate whether variability in physicians' strategies for managing the electronic inbox is associated with multitasking and with stress and identify pragmatic interventions to reducing inbox-related distress based on the findings.

Active Projects

Title	Physician and researcher leads	Start and end dates	Project description
Cardiology			
Use and outcomes of CT angiography	Jamal Rana, Alan Go	Jan 2018- Dec 2019	This study will evaluate regional practice patterns and variation for Myocardial Perfusion Imaging (MPI), coronary CT angiography (CTA) and Stress Echo (SE) in adults with suspected coronary heart disease.
Dermatology			
Tele-dermatology to diagnose rash	Sangeeta Marwaha Lisa Herrinton	Jan 2019- Dec 2020	This study will research the difference in care quality and efficiency across tele-dermatology modalities to diagnose rashes.
Emergency Medicine			
KP-specific cardiac history and risk summaries: standardizing Emergency Work-ups Around Risk Data (STEWARD) Chest Pain Project - Phase 3	Dustin Mark, Mary Reed	Jan 2019- Dec 2020	This project will examine the impact of the KP-specific emergency department electronic clinical decision support tool for acute chest pain on short-term health care delivery and patient outcome measures.
Improving risk stratification of E.D. patients with acute heart failure: external validation of the STRATIFY tool	Dana Sax, Mary Reed	July 2018- June 2020	This study will conduct a retrospective cohort study of patients presenting to KPNC Emergency Department between 2015-2017 with acute heart failure to test two clinical decision tools and determine KPNC-specific risk estimates for a 30 day serious adverse event.
Neurology			
Outcomes of door-to-needle times in stroke patients	Alex Flint, Jeff Klingman, Mai Nguyen-Huynh	Jan 2018- Dec 2019	KPNC has implemented Stroke Express which virtually connects centralized stroke expert neurologists with patients and stroke-trained neurologists via secure video link to improve treatment time. This study will determine if there is an association between door-to-needle (DTN) times of acute stroke patients receiving IV thrombolysis and mortality at 90-day post treatment, pre and post implementation of Stroke Express. The study will also evaluate DTN time and 90-day functional outcomes as part of Stroke Express care.

Active Projects

Title	Physician and researcher leads	Start and end dates	Project description
Ob/Gyn			
Glyburide vs insulin for the treatment of women with gestational diabetes	Yvonee Crites, Anne Regenstein, Monique Hedderson	July 2017- June 2019	Gestational diabetes mellitus (GDM) is one of the most common pregnancy complications and women with GDM are at increased risk for several perinatal complications. If diet therapy doesn't lead to glycemic control, then medication is initiated. This research will use a cohort study design of women with GDM from 2007-2016 to compare the effectiveness and safety of glyburide and insulin at improving neonatal and maternal outcomes.
Oncology			
Genetic testing of women with hereditary breast and ovarian cancer syndrome	Bethan Powell, Larry Kushi	Feb 2019 – Jan 2021	This study will identify the gaps in appropriate utilization of multi-gene panel testing to identify women at increased inherited breast and ovarian cancer risk and provide guideline concordant management.
Evaluating outcomes and efficiency of consolidated multidisciplinary care for head and neck cancer	Charles Meltzer, Lori Sakoda	Jan 2019 – Dec 2020	This project will evaluate the impact of the consolidated multidisciplinary care program for head and neck cancers on better health outcomes and efficiency gains.
Regionalization of testicular cancer	Andrea Harzstark Lisa Herrinton	Jan 2018 - Dec 2019	Testicular Cancer Redesign is one of the first of several rare diseases to test and implement an analytic/visualization workflow to enable population management and regional specialization of testicular cancer care. This study will evaluate the effectiveness of Redesign on rates of use guideline-adherent utilization. Factors that contributed to the success and those that posed barriers to adoption and maintenance of Testicular Cancer Redesign will also be evaluated.
Patient reported outcomes in pancreatic cancer	Piyush Srivastava Stephen Van Den Eeden	Jan 2018 – Dec 2019	This pilot study will assess the optimal ways to incorporate the collection of patient reported outcomes (PRO) and clinical reported outcomes (CRO) into an electronic medical record (EMR). A prospective clinical series of patients with newly diagnosed metastatic pancreatic cancer and the primary oncologists will be queried on physical function status. The study will describe the relationship between PRO and CRO physical function score change and other clinical events captured in the EMR related to escalation of treatment and care.

Active Projects

Title	Physician and researcher leads	Start and end dates	Project description
Mobile health mindfulness in cancer palliative care	Tatjana Kolevska, Yan Li, Ai Kubo	Jan 2018 – Dec 2019	The objectives of the study are to assess acceptability, feasibility and efficacy of incorporating a mindfulness app intervention as part of palliative care. Preliminary efficacy of the intervention based on patient reported outcomes and health care utilization will be evaluated along with qualitative feedback on the intervention from patients, clinicians and caregivers.
PRognostic Information System (PRISM)	David Baer, Tracy Lieu	July 2017- June 2019	This study will extend the PRISM tool to generate prognostic information for pancreatic cancer. PRISM generates individualized prognostic information based on a cancer patient's diagnosis, stage, age, sex and other factors. The study will also create and test learning tools to help oncologists interpret the information and conduct a pilot study on the effects of PRISM on oncologists' workflow and satisfaction.

Pediatrics

Screening for adverse childhood experiences in pediatric primary care	Paul Espinas, Stacy Sterling	Jan 2018 – Dec 2019	This study will examine the feasibility and acceptability of the ACE screening and intervention protocol, prevalence of a history of ACE exposure, severity and patient characteristics of those that screen positive.
---	------------------------------	---------------------	--

Delivery Science Research Program Projects as of June 2019

Completed Projects

Title	Physician and researcher leads	Start and end dates	Description	Deliverables, impact on delivery system
Adult and family medicine				
Evaluation of a novel equity-focused intervention to optimize thiazide dosing and improve blood pressure control among African Americans	Joe Young, Alyce Adams	July 2016- June 2018	This study evaluated the implementation of the TPMG Patient Management Tool to improve identification of African Americans with poor blood pressure control and the clinical impact of those who may benefit from thiazide diuretic initiation or intensification.	Presented findings at two national research meetings. Learnings included the importance of considering implementation challenges during the design phase such as variance in understanding and fidelity to the project among medical centers and an unanticipated deactivation of the thiazide dosing tool.
Complex chronic patients	Julie Sandoval, Richard Grant	May 2013 – April 2015	This study used novel data to provide a clearer understanding of factors associated with optimal case management referral for complex patients with chronic conditions with the goal of improving the patient referral process.	Identified factors associated with appropriateness of referral to case management. Findings led to creation of CarePlus, an integrated primary care model, being piloted at 3 facilities with 6 care teams and studied by DOR.
Cardiology				
THRIVE: Heart failure readmission intervention	Keane Lee, Alan Go	Jan 2017- Dec 2018	A pragmatic randomized trial evaluated the effectiveness of telephone follow-up compared to clinic follow-up in adults after heart failure hospitalizations.	Created multiple clinical workflows for effective patient follow up within 7 days of discharge for heart failure. Early findings identify positive clinical outcomes for patients receiving telephone follow-up.
Emergency Medicine				
KP-specific Cardiac History and Risk Summaries: Standardizing Emergency Work-ups Around Risk Data (STEWARD) Chest Pain Project - Phase 1	Dustin Mark, Mary Reed	July 2016- August 2018	This study examined KPNC ED chest pain care and outcomes to determine KPNC-specific risk estimates among patients with chest pain. Created mock-up of web-based shared decision tool.	Manuscripts published. A pragmatic controlled trial of the clinical decision support tool is currently underway at 13 KPNC emergency departments to assess impact upon resource utilization and patient outcomes.

Completed Projects

Title	Physician and researcher leads	Start and end dates	Description	Deliverables, impact on delivery system
Emergency Medicine (continued)				
Real-time decision support algorithms for pulmonary embolism in the ED	CREST Network, Mary Reed	Sept 2014 – Aug 2015	Evaluated data capture methods and incorporated KP-specific mortality point estimates in a risk stratification decision support tool	Enhanced risk stratification tool (RISTRA) now in use in E.D. and outcomes have led to funding for another study on customizing the risk stratification tool for chest pain.
Hospital Medicine				
VentViz: mechanical ventilation and Acute Respiratory Distress (ARDS) care through data visualization	Greg Marelich, Vincent Liu	July 2016- Dec 2018	To address gaps in ARDS care, this study developed a ventilator/ARDS data visualization tool that empowered clinicians to improve their care for ventilated patients.	Created an algorithm to extract mechanical ventilation metrics and developed a ventilator/ARDS data visualization tool for clinicians. Implementation of the native visualization tool within KP's EHR is now available for every ICU patient across the region. Mechanical ventilation metrics now a part of Regional ICU Quality Scorecard.
Improving Acute Respiratory Distress (ARDS) care	Greg Marelich, Vincent Liu	July 2014 – June 2015	This study used an informatics approach in multiple modalities to translate EHR data into improved diagnostic tools for physicians to use in treating patients with ARDS.	Built data frameworks to enhance metrics and reporting for ARDS. Regional clinical leads have integrated the enhanced metrics into the EHR dashboard to enable clinicians to identify ARDS at-risk patients earlier.
Infectious Diseases				
Effectiveness and safety of interferon-free treatment for hepatitis C virus (HCV) infection	David Witt, Michael Allerton, Michael Silverberg	Oct 2016 – Dec 2018	The study identified the demographic and clinical predictors of interferon-free treatment regimen failure and serious adverse events during treatment and evaluated long-term outcomes to inform hepatocellular carcinoma and extrahepatic outcomes after achieving HCV cure.	Findings led to change in KPNC clinical practice to an 8- week course of direct-acting anti-viral agents treatment for black patients vs a 12-week regimen. Published findings and multiple conference presentations with study findings.

Completed Projects

Title	Physician and researcher leads	Start and end dates	Description	Deliverables, impact on delivery system
Ob/Gyn				
Effects of prenatal screening biochemical analyte levels on pregnancy outcomes	Leslie Manace Brenmann, Erica Gunderson	Oct 2016- Sept 2018	This project evaluated increased antenatal monitoring of pregnancies with abnormal prenatal analyte screening levels and its impact to improve or alter perinatal outcomes.	Identified that additional prenatal monitoring, including blood pressure checks after 28 weeks' gestation, of women who had abnormal analytes were associated with improved perinatal outcomes.
Development and testing of a mobile-health (m-health) intervention tool to help obese women achieve appropriate gestational weight gain	Tracy Flanagan, Sarah Mandel, Monique Hedderson	June 2016-Aug 2018	This project studied whether a mobile-health (m-health) tool intervention for obese pregnant women increased the proportion of obese women that met the Institute of Medicine (IOM) gestational weight gain guidelines.	Developed prototype m-health website with patient and clinician portal to extract data from wireless scales and activity trackers. Pilot feasibility results enabled submission of NIH R01 grant to test the intervention in a large-scale cluster randomized trial.
The relationship of robotic approach and surgical volume with outcomes of hysterectomy for benign gynecologic disease (Phase 2)	Fred Ramos, Tracy Flanagan, Lisa Herrinton	June 2016 - Dec 2017	This study analyzed several outcomes questions related to the use robotic laparoscopic-assisted hysterectomy (RLAH) in patients with benign gynecologic disease, including relationship of disease complexity and surgeon factors with outcome.	560 robotic and 6,785 conventional laparoscopic patient outcomes studied. Analysis showed expert robotic surgeons faster than expert conventional surgeons for complex patients.
Robotic hysterectomy for benign gynecologic disease - Phase 1 feasibility	Fred Ramos, Tina Raine-Bennett, Lisa Herrinton	March 2014 – Feb 2015	Compared outcomes of women with complex benign disease with robotic surgery to women that received traditional minimally invasive surgery.	Developed outcome measures and described variation in case complexity; found that a full study was feasible. Generalizability of deliverables to other surgical procedures: NLP processing of operative note and pathology report, approach to coding hospital and surgeon-level factors, surgical indications.

Completed Projects

Title	Physician and researcher leads	Start and end dates	Description	Deliverables, impact on delivery system
Oncology				
Assessing practice patterns and potential quality gaps in primary nodule evaluation	Archan Shah, Dinesh Kotek, Lori Sakoda	Jan 2015 – Aug 2016	Compared incidence of pulmonary nodules and patterns of pulmonary nodule evaluation among medical centers	Findings from this study enabled Chiefs of Pulmonology to address gaps in care and standardize, when appropriate, following current guidelines.
Pediatrics				
Evaluating ASD interventions in KPNC	Meghan Davignon, Lisa Croen	July 2014 – June 2016	Compared children referred and not referred for intervention services; used qualitative methods to understand parents’ and providers’ experiences with the intervention process.	Based on study outcomes that parents have difficulty navigating the system, the Regional ASD Task Force is looking at the care path with DOR evaluating the testing of two interventions.
Multispecialty				
Patient experiences with video visits	Irwin Barr, Craig Wargon, Rahul Parikh, Mary Reed	April 2015 – March 2016	Examined characteristics of all video visits (patient characteristics and history, visit reasons/diagnoses), and patient-reported experiences with video visits, including patient-reported benefits of or barriers.	Findings from study informed operational implementation of video visits, including provider-outreach/education. Findings also led to funding of a federally-funded study in patients with diabetes.
Population management reports	Quality & Operations Support, Lisa Herrinton	Jan–Dec 2015	This study examined four different ways to share knowledge (rapid reports, structured documentation, source data, scope QI projects) to increase deployment of measurement systems and technology for population management and quality improvement.	Built structured reports and documentation to support a variety of quality improvement projects. Reports for ten specialty areas (e.g. Endocrinology, Ophthalmology, Genetics, Oncology) increased awareness of workflow or quality improvement opportunities for clinical and operational leaders to address.
Delivery Science Rapid Analysis Program (RAP)	Rick Dlott, Julie Schmittiel	June-Dec 2014	Developed a funding infrastructure to support rapid analysis of delivery science research ideas.	This internal funding model is effective and has been renewed. (This program is now titled, “Targeted Analysis Program”).