

Radiology Research Newsletter

Fall 2024 Newsletter

Welcome to the TPMG **Radiology Research Newsletter!**

Here, we present current or recently completed research projects led by clinician researchers as well as ongoing studies led by investigators at the Division of Research (DOR) that involve our clinician researchers.

Conducting research to improve care is important to many KPNC TPMG clinicians and DARE is proud to provide our physicians with research collaboration opportunities through several DARE funding mechanisms.

In this issue, we will provide you with updates regarding research interests among TPMG clinicians and a list of the incredible recently published research.



A Deeper Look Inside This Update:

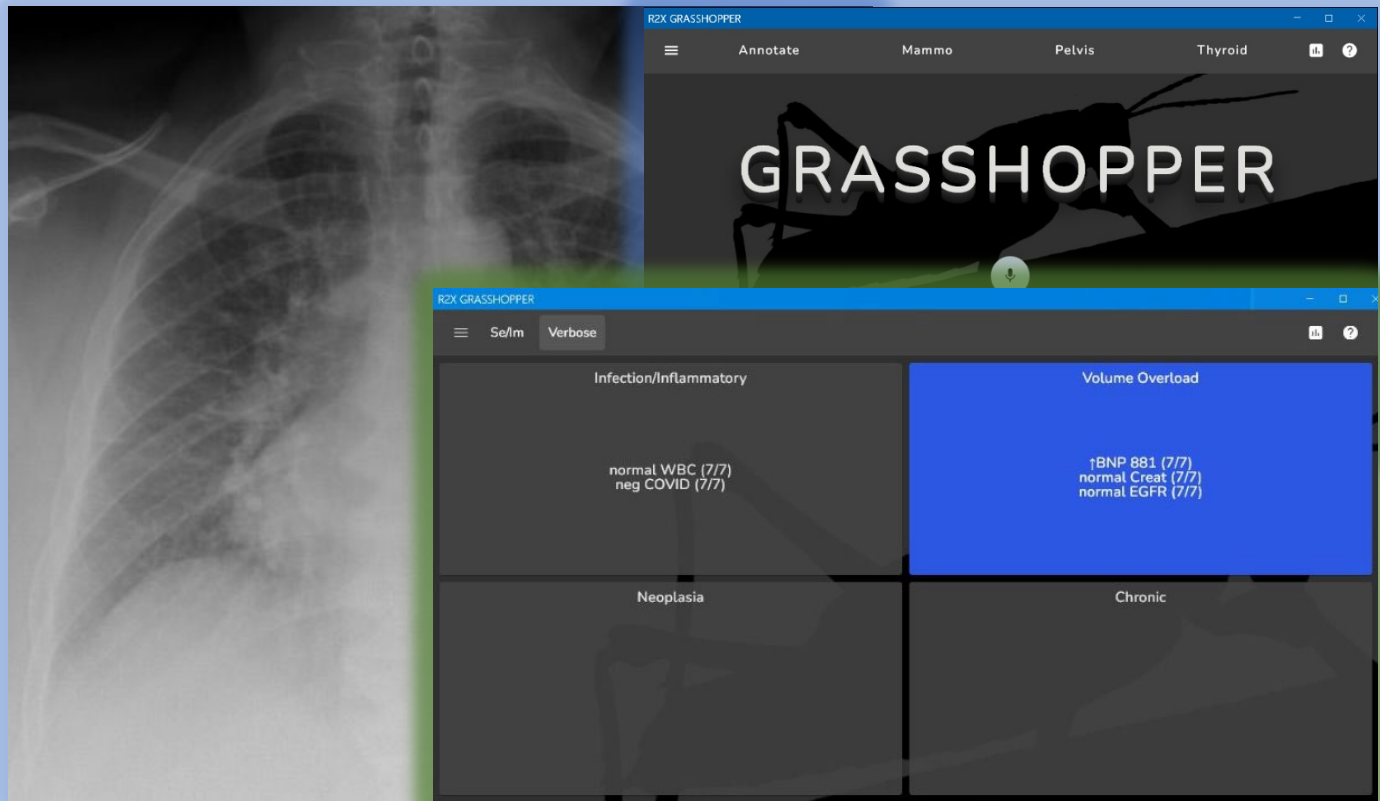
- Research Highlight
- Who's doing research
- Upcoming events & funding
- Active and recent research projects
- Recent peer reviewed publications

Research Spotlight:

Delivery Science and Applied Research Grant 2024-2025

Grasshopper: A Novel Clinical Dashboard for Radiologists

Jason Balkman¹, Vignesh Arasu^{2,3}



SYNOPSIS: *Grasshopper* is a multipurpose clinical dashboard and toolkit for radiologists. This project studies the outcomes of a new CXR module that aggregates clinical information into four broad categories of disease.

PURPOSE: CXRs are the most common radiologic exam, comprising nearly one third of total KPNC imaging volume, including 500,000 studies performed in the ED and inpatient settings each year alone. Despite high CXR utilization, diagnostic yield is frequently low, partly due to the paucity of clinical information provided to radiologists at the time of CXR interpretation, resulting in frequent nonspecific CXR assessments which anchor on terms like “opacities” instead of diagnostic terms such as “pulmonary edema” or “pneumonia”. This may contribute to over-treatment and unnecessary follow-up CT imaging.

METHODS & MATERIALS: This is a prospective stepped wedge cluster randomized trial across KPNC representing ~300 radiologists reading an estimated 90,000 exams during the study period. We anticipate approximately 2 years for accrual and comprehensive assessment. The CXR module

will be rolled out to each KPNC service area after presenting a training video to individual departments.

GOALS, HYPOTHESES, AND ANTICIPATED RESULTS: We aim to prospectively evaluate the impact of *Grasshopper* on CXR report specificity in ED settings across 15 KPNC service areas, and on downstream care process measures such as prescription and imaging utilization. Our primary aim is to examine whether *Grasshopper* will improve CXR reporting by increasing the number of specific CXR reads by way of radiologists calling more nonspecific CXRs “negative” or “nonacute”, and/or by way of increasing use of specific terms in report impressions that correspond to ICD codes (e.g., “pneumonia” or “pulmonary edema”); our two secondary aims are to determine whether these CXR reporting improvements translate to improved clinical management as determined by decreased utilization of (1) antibiotic and diuretic prescriptions and (2) follow-up CT imaging. We hypothesize that when CXRs are read with dashboard assistance (versus without), KPNC radiologists will generate ~4000 more specific CXR reports every year, leading to ~1000 fewer antibiotic and diuretic prescriptions, as well as similarly fewer follow-up CT chest imaging exams.

CLINICAL RELEVANCE/APPLICATION: Positive results would improve communication between radiologists and ordering clinicians, optimize patient care and resource utilization by decreasing unnecessary prescriptions and downstream CT orders, and inform similar future efforts potentially beyond medical imaging.

CLICK ON THE IMAGE BELOW TO VIEW THE TRAINING VIDEO



Jason Balkman, MD¹, Vignesh Arasu MD, PhD^{2,3}

¹Radiology, Kaiser San Leandro Medical Center, San Leandro, California

²Division of Research, Kaiser Permanente Northern California, Pleasanton, California

³Radiology, Kaiser Vallejo Medical Center, Vallejo, California

Upcoming Events

Radiological Society of North America (RSNA)

Date: December 1-5, 2024

Location: Virtual or in-person in Chicago, IL, US

For more information: <https://www.rsna.org/>

Society of Breast Imaging Symposium (SBI)

Date: April 24-27, 2025

Location: Colorado Springs, CO, US

For more information: <https://www.sbi-online.org/events/2025-sbi-breast-imaging-symposium>

Internal Funding & Research Resources



General Funding Opportunities



Delivery Science and Applied Research



Specialty Research Networks



Getting Started with Research



Division of Research

Active Research Projects and Collaborations

Evaluating safety and efficacy of current imaging guidelines for gallbladder polyps

Chang, Liao, Nayak, Arasu | CH | Ongoing

Grasshopper: A Novel Clinical Dashboard for Radiologists

Jason Balkman, Vignesh Arasu | DSGP | Ongoing

Health Disparities in Head and Neck Cancer

Jed Katzel | CH | Ongoing

Improving Diagnostic Efficiency of Adult Neck Masses

Kevin Wang, Andy Avins | RAU | Ongoing

Prospective Evaluation of Mammography AI to Improve Cancer Detection and Result Efficiency

Vignesh Arasu | PRP | Ongoing

Validation of risk models used for recommending high risk MRI screening

Vignesh Arasu | DSGP | Ongoing

WISDOM: A platform to optimize subtype-specific screening and prevention

Vignesh Arasu | NIH P01 | Ongoing

Evaluation of AI Fairness in the WISDOM Study

Vignesh Arasu | McGovern Foundation | Ongoing

Risk of Pancreatic Cancer in Indeterminate Pancreatic Cysts

Eleanor Ormsby, Marilyn Kwan | RAU | Ongoing

Outcomes of incidental pulmonary nodules detected on chest CT

Thomas Urbania | RAU | Ongoing

Recent Peer Reviewed Radiology - Authored Publications in 2023 - June 2024

*KPNC authors listed in alphabetical order below. For details on author order, click on the link included to the PubMed Abstract.

Revised Diagnosis From Histiocytic Neoplasm to Optic Chiasm Glioblastoma After Genetic Analysis [[PubMed Abstract](#)] Mamlouk, Mark D | 6/27/2024 | Journal Of Neuro-Ophthalmology : The Official Journal Of The North American Neuro-Ophthalmology Society

MRI of Soft-Tissue Tumors: What to Include in the Report [[PubMed Abstract](#)] Kwong, Steven K | 6/1/2024 | Radiographics : A Review Publication Of The Radiological Society Of North America, Inc

Clinical and Imaging Findings in Children with Myelin Oligodendrocyte Glycoprotein Antibody Associated Disease (MOGAD): From Presentation to Relapse [[PubMed Abstract](#)] Mamlouk, Mark D | 2/7/2024 | Ajnr. American Journal Of Neuroradiology

Advanced Image-Guided Percutaneous Technique Versus Advanced Laparoscopic Surgical Technique for Peritoneal Dialysis Catheter Placement [[PubMed Abstract](#)] Armstrong, Maryanne; Bhalla, Neelam M; Drasin, Todd E; Dybbro, Paul; Darbinian, Jeanne; Zheng, Sijie | 1/1/2024 | Kidney Medicine

Comparative safety of tenecteplase vs alteplase for acute ischemic stroke [[PubMed Abstract](#)] Flint, Alexander C; Hartman, Jonathan; Kapadia, Brij; Klingman, Jeffrey G; Patel, Nihar U; Chan, Sheila; Cullen, Sean P; Eaton, Abigail; Melles, Ronald; Nguyen-Huynh, Mai N; Rao, Vivek A | 1/1/2024 | Journal Of Stroke And Cerebrovascular Diseases : The Official Journal Of National Stroke Association'

Factors Predictive of Treatment Success in CT-Guided Fibrin Occlusion of CSF-Venous Fistulas: A Multicenter Retrospective Cross-Sectional Study [[PubMed Abstract](#)] Mamlouk, Mark D; Shen, Peter Y | 11/1/2023 | Ajnr. American Journal Of Neuroradiology

Solid and Vascular Neck Masses in Children [[PubMed Abstract](#)] Mamlouk, Mark D | 11/1/2023 | Neuroimaging Clinics Of North America

Why Medical Students Pursue Radiology: A Current Longitudinal Survey on Motivations and Controversial Issues in Radiology [[PubMed Abstract](#)] Mamlouk, Mark D | 10/16/2023 | Academic Radiology

Examination of fully automated mammographic density measures using LIBRA and breast cancer risk in a cohort of 21,000 non-Hispanic white women [[PubMed Abstract](#)] Achacoso, Ninah S; Alexeeff, Stacey; Arasu, Vignesh A; Gerstley, Lawrence D; Habel, Laurel; Villaseñor, Marvella A; Westley, Mark | 8/6/2023 | Breast Cancer Research : Bcr

The effects of flattening filter-free beams and aperture shape controller on the complexity of conventional large-field treatment plans [[PubMed Abstract](#)] Hui, Cheukkai B; Mutaf, Yildirim D; Pourmoghaddas, Amir | 8/1/2023 | Journal Of Applied Clinical Medical Physics

Factors Predictive of Treatment Success in CT-Guided Fibrin Occlusion of CSF-Venous Fistulas: A Multicenter Retrospective Cross-Sectional Study [[PubMed Abstract](#)] Andrew L Callen; Lalani Carlton Jones; Vincent M Timpono; Jack Pattee; Daniel J Scoffings; David Butteriss; Thien Huynh; Peter Y Shen; Mark D Mamlouk | 10/5/2023 | AJNR Am J Neuroradiol

Solid and Vascular Neck Masses in Children [[PubMed Abstract](#)] Mark D Mamlouk, Shen PY. [06/28/2023] Neuroimaging Clin N Am.

The New Normal or a Return to Normal: Nationwide Remote Radiology Reading Practices after Two Years of the COVID-19 Pandemic [[PubMed Abstract](#)] Mamlouk, Mark D | 6/27/2023 | Journal Of The American College Of Radiology : Jacr

Comparison of Mammography AI Algorithms with a Clinical Risk Model for 5-year Breast Cancer Risk Prediction: An Observational Study [[PubMed Abstract](#)] Arasu, Vignesh A; Achacoso, Ninah S; Habel, Laurel; Kushi, Larry; Lee, Catherine; Liu, Vincent | 6/1/2023 | Radiology

Mortality Following Diagnosis of Nontraumatic Intracerebral Hemorrhage Within an Integrated "Hub-and-Spoke" Neuroscience Care Model: Is Spoke Presentation Noninferior to Hub Presentation? [[PubMed Abstract](#)] Sonne, D Christian; Huang, Jie; Mark, Dustin G; Rauchwerger, Adina; Reed, Mary E | 6/1/2023 | Neurocritical Care

CT Use Reduction In Ostensive Ureteral Stone (CURIOUS) [[PubMed Abstract](#)] Arasu, Vignesh A; Bernal, Raymond M; Durant, Edward J; Rauchwerger, Adina; Reed, Mary E; Vinson, David R; Warton, Margaret M | 5/1/2023 | The American Journal Of Emergency Medicine

Pulmonary Arteriovenous Malformation (With A Secondary Erythrocytosis): A Diagnosis Hastened by COVID-19 Pandemic [[PubMed Abstract](#)] Biller, Jason A; Wallace, Karen L; Yavorkovsky, Leonid L | 3/1/2023 | Mayo Clinic Proceedings

Modified Dynamic CT Myelography for Type 1 and 2 CSF Leaks: A Procedural Approach [[PubMed Abstract](#)] Dahlin, Brian C; Mamlouk, Mark D; Shen, Peter Y | 3/1/2023 | Ajnr. American Journal Of Neuroradiology

Myelographic Timing Matters [[PubMed Abstract](#)] M D Mamlouk, P Y Shen | 02/23/2023 | AJNR Am J Neuroradiol.

Imaging of pediatric calvarial and skull base tumors: A COG Diagnostic Imaging Committee/SPR Oncology Committee/ASPNR White Paper [[PubMed Abstract](#)]

Intrapiromkul J, Wangaryattawanich P, Patay Z, Huisman TAGM, Wright JN, Jones JY, Ramakrishnaiah R, Patel R, Goldman-Yassen AE, Kralik S, Desai NK Mamlouk, Mark D | 12/24/2022 | Pediatric Blood & Cancer

Pain, Nausea, and Hospital Admission Following Uterine Fibroid Embolization (UFE): A Comparison of Two Protocols [[PubMed Abstract](#)]

Hastings, Geoffrey S; Howles-Banerji, Gabriel P | 12/12/2022 | Journal Of Vascular And Interventional Radiology : Jvir

Neuroimaging features of genetic syndromes associated with CNS overgrowth [[PubMed Abstract](#)]

Mamlouk, Mark D | 12/1/2022 | Pediatric Radiology

Complex Inferior Vena Cava Filter Retrievals: Success Rate and Predictors of Adverse Events at a Large Specialized Referral Center [[PubMed Abstract](#)]

Bolanos, Francis; Farzanegan, Farhad; Freed, Robert C; Liu, Chi-Mei; Morshedi, Maud M; Rajan, Sudhir S; Wang, Danny | 9/28/2022 | Ajr. American Journal Of Roentgenology

Headache response after CT-guided fibrin glue occlusion of CSF-venous fistulas [[PubMed Abstract](#)]

Mamlouk, Mark D; Shen, Peter Y | 8/26/2022 | Headache

T1 signal intensity ratio of the pancreas as an imaging biomarker for the staging of chronic pancreatitis [[PubMed Abstract](#)]

Mawad, Kareem; Van_Den_Eeden, Stephen | 7/20/2022 | Abdominal Radiology (New York)

Telehealth for Preoperative Evaluation of Patients With Breast Cancer During the COVID-19 Pandemic [[PubMed Abstract](#)]

Arasu, Vignesh A; Chang, Sharon B; Habel, Laurel; Kolevska, Tatjana; Kuehner, Gillian E; Kushi, Larry; Liu, Raymond; Lyon, Liisa L; Mentakis, Margaret A; Patel, Milan D; Savitz, Alison C; Seaward, Samantha A; Vuong, Brooke | 6/29/2022 | The Permanente Journal

Spontaneous Spinal CSF Leaks Stratified by Age, Body Mass Index, and Spinal Level [[PubMed Abstract](#)]

Jun, Peter; Mamlouk, Mark D; Sedrak, Mark F; Shen, Peter Y | 6/23/2022 | Ajnr. American Journal Of Neuroradiology

Chapter 21 (Child Abuse) of 'Problem Solving in Pediatric Imaging' [[Science Direct](#)]

Alexis B.R. Maddocks, Mesha L.D. Martinez, William P. McCullough, Sabah Servaes | 05/13/2022 | Science Direct - Problem solving in Pediatric Imaging

Association of standardized radiology reporting and management of abdominal CT and MRI with diagnosis of pancreatic cancer [[PubMed Abstract](#)]

Chang, Patrick C; Herrinton, Lisa; Kojouri, Kouros; Lin, Teresa Y; Ormsby, Eleanor L; Ramirez, Rene M; Schueler, Kristen M; Sweet, Clifford F; Vuong, Brooke | 4/15/2022 | Clinical Gastroenterology And Hepatology : The Official Clinical Practice Journal Of The American Gastroenterological Association

The diagnostic value of grey-scale inversion technique in chest radiography [[PubMed Abstract](#)]

Nayak, Sundeep | 1/18/2022 | La Radiologia Medica

Management and Outcomes of Adults Diagnosed with Acute Pulmonary Embolism in Primary Care: Community-Based Retrospective Cohort Study [[PubMed Abstract](#)]

Hofmann, Erik R; Huang, Jie; Mark, Dustin G; Rangarajan, Suresh; Rauchwerger, Adina; Reed, Mary E; Shan, Judy; Vinson, David R; Wallace, Karen L | 1/12/2022 | Journal Of General Internal Medicine

European lung cancer screening: valuable trial evidence for optimal practice

implementation [[PubMed Abstract](#)] Nayak, Sundeep | 1/7/2022 | The British Journal Of Radiology

Care in the time of COVID-19: impact on the diagnosis and treatment of breast cancer in a large, integrated health care system [[PubMed Abstract](#)]

Anshu, Prachi; Arasu, Vignesh A; Chang, Sharon B; Habel, Laurel; Kolevska, Tatjana; Kuehner, Gillian E; Kushi, Larry; Liu, Raymond; Lyon, Liisa L; Mentakis, Margaret A; Patel, Milan D; Savitz, Alison C; Seaward, Samantha A; Vuong, Brooke | 1/6/2022 | Breast Cancer Research And Treatment