The Longmire Surgical Society

Dedicated to "the art of detachment, the virtue of method, the quality of thoroughness and the grace of humility" ~ Osler

Scientific Day
Wednesday, May 7, 2025

Dr. William P. Longmire, Jr. (1913-2003)

Longmire Visiting Professors

1985	C. Rollins Hanlon, MD	2005	John L. Cameron, MD
1986	G. Tom Shires, MD	2006	Pierre Clavien, MD
1988	David C. Sabiston, MD	2007	Hiram C. Polk, Jr., MD
1989	Frank C. Spencer, MD	2008	F. William Blaisdell, MD
1990	Robert M. Zollinger, MD	2009	Courtney M. Townsend, Jr. MD
1992	James C. Thompson, MD	2010	Murray F. Brennan, MD
1993	Alexander J. Walt, MD	2011	Andrew L. Warshaw, MD
1994	Joseph E. Murray, MD	2012	Patricia K. Donahoe, MD
1995	John L. Sawyers, MD	2013	Larry R. Kaiser, MD
1996	La Salle D. Leffall, Jr., MD	2014	Leslie H. Blumgart, MD
1997	Samuel A. Wells, Jr., MD	2015	L. D. Britt, MD, MPH
1998	Clyde F. Barker, MD	2016	Ignazio R. Marino, MD
1999	Paul I. Terasaki, PhD	2017	Pedro del Nido, MD
2000	Eric W. Fonkalsrud, MD	2018	Ronald W. Busuttil, MD, PhD
2001	M. Judah Folkman, MD	2019	Barbara Bass, MD
2002	Haile T. Debas, MD	2021	Frederick R. Eilber, MD
2003	Louis J. Ignarro, PhD	2023	Christopher Ellison, MD, FACS, MAMSE
2004	Seymour I. Schwartz, MD	2024	Michael J. Stamos, MD

Established in 1985, the Longmire Visiting Professorship provides an outstanding opportunity for UCLA students, residents, and faculty members to meet with distinguished leaders in the field.

2025 Scientific Day Keynote Address

"Collaborative Science: Innovations in Breast Cancer Treatments"

Kelly K. Hunt, MD, FACS

Professor and Chair, Department of Breast Surgical Oncology at University of Texas MD Anderson Cancer Center and the immediate past-president of the Society of Surgical Oncology

Dr. Hunt is Professor and Chair of the Department of Breast Surgical Oncology at The University of Texas MD Anderson Cancer Center. She holds the Olla Stribling Distinguished Chair for Cancer Research. She has joint appointments as a Professor in Experimental Radiation Oncology and Professor in the Department of Surgical Oncology.

Dr. Hunt's work focuses on finding more effective therapeutics for patients with breast cancer and soft tissue sarcomas. Her translational research investigations focus on developing novel treatment strategies involving agents that target cell cycle regulation. One of the KeyHunt lab's significant projects, was identification of low molecular weight cyclin E as an important prognostic marker of breast cancer. Ongoing studies are investigating the underlying mechanisms of resistance to standard of care therapeutics and metastasis for estrogen receptor positive breast cancer. The team has also identified a novel combination treatment strategy using cell cycle checkpoint defects in soft tissue sarcoma. Dr. Hunt has to her credit more than 700 peer-reviewed publications, 69 book chapters and eight books. As an international leader in breast cancer research, she has directed major clinical trials whose results have changed standard of care treatment for many patients with breast cancer.

Dr. Hunt served as the Chair of the Breast Committee for the American College of Surgeons Oncology Group (ACOSOG) and Vice Chair of the Breast Committee for the Alliance in Clinical Trials in Oncology. She also served as Program Director of the American College of Surgeons (ACS) Cancer Research Program, and Vice Chair of the ACS Cancer Surgery Standards Program. She is the Immediate Past President of the Society of Surgical Oncology, Past President of the American Radium Society and Recorder of the American Surgical Association. Her contributions to the field of oncology and translational research have been recognized through numerous awards and accolades, including: Faculty Achievement Award in Clinical Research from MD Anderson, a Texas Business Women's Award and induction into the Greater Houston Women's Chamber of Commerce Hall of Fame, America's Top Doctors, the John Mendelsohn Award for Faculty Leadership and OncLive 2024 Giants of Cancer Care. She was elected as a fellow of the American Academy for the Advancement of Science (AAAS).

SCIENTIFIC DAY PROGRAM – MAY 7, 2025

7:00 am Breakfast (B-Level RRUMC)
7:45 am Attendees file into auditorium
8:00 am Introduction by Jessica O'Connell, MD
8:05 am Keynote Address by Kelly K. Hunt, MD, FACS
9:05 am Longmire Award "Outstanding Medical Student" presented by Justin Wagner, MD
9:10 am Scientific Presentation – Session 1

1. Parsimonious Risk Score to Predict Inpatient Mortality Following Total Hip Arthroplasty Related Periprosthetic Joint Infections
Presenter: **Christopher Hamad, MD**
Mentor: **Alexandra Stavrakis, MD**
Department: Orthopaedic Surgery

2. Outcomes Following Implementation of a Risk-Based Treatment Algorithm for Infants with Necrotizing Enterocolitis and Congenital Heart Disease
Presenter: **Madison Betcher, MD**
Mentor: **Justin Wagner, MD**
Department: Pediatric Surgery

3. Risk Analysis Index vs. Modified Frailty Index: Outcomes After Otolaryngologic Surgery
Presenter: **Lauran Evans, MD**
Mentor: **Maie St. John, MD & Dinesh Chhetri, MD**
Department: Head & Neck Surgery

4. Pancreatic Cancer Treated with Checkpoint Inhibition Exhibits Immune Changes Linked to Survival
Presenter: **Serena Zheng, MD**
Mentor: **Timothy Donahue, MD**
Department: Surgical Oncology

5. The Impact of the Vascular Low Frequency Disease Consortium (VLFDC) on Guidelines Regarding the Management of Uncommon Vascular Diseases
Presenter: **Jasmine Nguyen, Medical Student**
Mentor: **Peter Lawrence, MD**
Department: Vascular Surgery

6. Why are surgeons sued after performing amputations? A 40-year analysis of malpractice litigation
Presenter: **Mikayla Mefford, Medical Student**
Mentor: **Lauren Wessel, MD**
Department: Orthopaedic Surgery, Orthopaedic Oncology

7. 3D digital models for robotic prostatectomy: Surgeon survey and outcomes correlation from a randomized clinical trial
Presenter: **Anael Rizzo, Medical Student**
Mentor: **Joseph Shirk, MD & Asha Ayub, MD**
Department: Urology

8. An Implementation Science-Driven Approach to Successfully Establish a Program to Reduce Preventable Emergency Department Visits in Urology Patients with Catheters
Presenter: **Anthony Bettencourt, Medical Student**
Mentor: **Kathy H. Huen, MD**
Department: Urology

9. Single-Stage Virtual Surgical Planning Guided Resection and Custom PEEK Implant Reconstruction of Complex Craniofacial Defects
Presenter: **Brendan J. Cronin, MD**
Mentor: **Reza Jarrahy, MD**
Department: Plastic and Reconstructive Surgery

10:15 am Intermission
10:45 am Scientific Presentation Session II

10. Bicarbonate Receptor SLC4A4 Sensitizes Infiltrating Glioblastoma Cells to Changes in Extracellular pH
Presenter: **Stuart Harper, Medical Student**
Mentor: **Kunal Patel, MD**
Department: Neurosurgery

11. Racial Disparities in Lung Allocation: Comparing Pre and Post Composite Allocation Score Policy Implementation
Presenter: **Stephanie McKay, Medical Student**
Mentor: **Abbas Ardehali, MD**
Department: Cardiac Surgery

12. Delayed immunological tolerance in recipients with pre-existing kidney transplants
Presenter: **Lauren (Frankie) Schafrank, Medical Student**
Mentor: **Nima Nassiri, MD and Jeffrey L. Veale**
Department: Urology

13. Hospital Price Markup and Outcomes of Major Elective Operations in the United States
Presenter: **Sara Sakowitz, Medical Student**
Mentor: **Peyman Benharash, MD**
Department: Cardiac Surgery

14. Implementation of a Smartphone-Based Ultrasound Program to Improve Timely Diagnosis of Life-Threatening Injuries in Cameroon: Results from a Prospective, Multisite Feasibility Study
Presenter: **Mark Yost, MD**
Mentor: **S. Ariane Christie, MD**
Department: General Surgery

15. The Robotic Era: 11-Year Review of Cholecystectomy Trends & Outcomes at a Veterans Affairs Hospital
Presenter: **Tess Huy, MD**
Mentor: **Mark Girgis, MD**
Department: General Surgery

16. Understanding Watch-and-Wait Utilization in Rectal Cancer: Surgeon Perspectives and Institutional Practices
Presenter: **Kera Kwan, MD**
Mentor: **Tara Russell, MD**
Department: Colorectal Surgery

17. Artificial Intelligence in Liver Transplant Donor-Recipient Matching - an Application of Offline Reinforcement Learning
Presenter: **Andrew Melehy, MD**
Mentor: **Vatche Agopian, MD**
Department: Liver and Pancreas Transplantation

18. Anterior Temporal Naming Area: a Patch Near the Anterior Tip of the Fusiform Causally Linked to Reading and Language
Presenter: **Michael Ward, Medical Student**
Mentor: **Ausaf Bari, MD**
Department: Neurosurgery

Parsimonious Risk Score to Predict Inpatient Mortality Following Total Hip Arthroplasty Related Periprosthetic Joint Infections

Presenting Author: Christopher D. Hamad
Mentor: Alexandra Stavrakis
Department: University of California, Los Angeles Department of Orthopaedic Surgery

Introduction: Periprosthetic joint infection (PJI) following total hip arthroplasty (THA) is associated with high morbidity and a 25% 5-year mortality. This is the first study to utilize machine learning (ML) robust oversampling techniques to identify risk factors and predict postoperative mortality occurring during the same admission after revision THA for PJI. These techniques enable improved mortality risk prediction critical to identifying high-risk patients and implementing preventive strategies.

Methods: This retrospective cohort study utilized the Nationwide Readmissions Database (NRD) to identify adult patients undergoing elective total hip arthroplasty (THA) complicated by periprosthetic joint infection (PJI). ML classification models were developed to predict in-hospital mortality and compared to logistic regression. Synthetic Minority Oversampling Technique (SMOTE) was applied to address data imbalance by duplicating observations in the deceased cohort to improve classification accuracy. Model performance was assessed using AUROC, Brier score, and F1 score, with SHapley Additive exPlanation (SHAP) analysis identifying key predictors.

Results: Among 20,742 patients undergoing revision THA for PJI, there was a 0.8% inpatient mortality rate. The deceased cohort was older, more commonly female, and had higher rates of congestive heart failure, coagulopathy, and renal failure. Logistic regression (AUROC 0.921) and gradient boosting (AUROC 0.923) outperformed random forest (AUROC 0.855), with gradient boosting demonstrating the highest F1 score (0.287). SMOTE increased the deceased cohort to 5%, improving model calibration (Brier score 0.009) and substantially enhancing the F1 score (mean increase 0.688). SHAP analysis identified fluid and electrolyte disorders, cardiac arrhythmias, and advancing age as key predictors of mortality.

Conclusion: Gradient boosting demonstrated strong predictive performance for in-hospital mortality in THA PJI patients. SMOTE improved model calibration and precision, highlighting its utility in imbalanced orthopaedic datasets. The two greatest predictors of mortality include fluid and electrolyte disorders and cardiac arrhythmias. Perioperative optimization of fluid and electrolyte balance can potentially reduce mortality in these at-risk patients.

Outcomes Following Implementation of a Risk-Based Treatment Algorithm for Infants with Necrotizing Enterocolitis and Congenital Heart Disease

Presenting Author: Madison Betcher
Mentor: Justin Wagner
Department and Division: Department of Surgery, Division of Pediatric Surgery

Purpose: Necrotizing enterocolitis (NEC) is a disease of prematurity characterized by bacterial infiltration and necrosis of intestinal tissue. Children with congenital heart disease (CHD) are at risk for bowel ischemia due to splanchnic hypoperfusion. Despite divergent pathophysiology, infants with CHD and features of NEC receive identical treatment to premature infants with NEC. This study evaluates clinical outcomes following implementation of a risk-based treatment algorithm for infants with NEC+CHD.

Methods: This single-institution pretest-posttest study evaluated implementation of a treatment algorithm for infants with NEC+CHD. Infants were stratified into low-, medium-, or high-risk categories based on 11 clinical factors including cardiac anatomy, echocardiogram findings, and laboratory values. We assessed the following outcomes: antibiotic days, NPO days, and total abdominal radiographs, with balancing measures of 10- and 30-day recurrences. We compared outcomes pre-implementation (01/2021-04/2023) versus post-implementation (05/2023-07/2024). We assessed variation with run charts and differences with chi-squared and t-tests.

Results: Overall, 47 patients received treatment for NEC+CHD including 17 (36%) post-implementation. The most common cardiac defects were hypoplastic left heart syndrome (19%) and double-outlet right ventricle (17%). Single ventricle physiology was more common in the post-implementation period (76% vs 23%, p<0.001). Four (9%) infants required surgery and 5 (11%) died during NEC treatment, with no difference pre- vs post-implementation. Run charts (Figure) qualitatively demonstrated less variation in treatment following implementation with trends suggesting decreased mean NPO days (7.3 vs 8.8; p=0.25), antibiotic days (6.9 vs 8.4; p=0.19), and abdominal radiographs (7.3 vs 10.5; p=0.07). There were no changes in 10-day (21% vs 15%; p=0.59) nor 30-day (29% vs 22%; p=0.20) recurrence.

Conclusion: Implementation of a risk-based treatment algorithm may safely reduce treatment duration for infants with NEC+CHD. While limited by a small sample, these preliminary data support a prospective multicenter study powered to fully evaluate the efficacy of this algorithm specific to NEC+CHD.

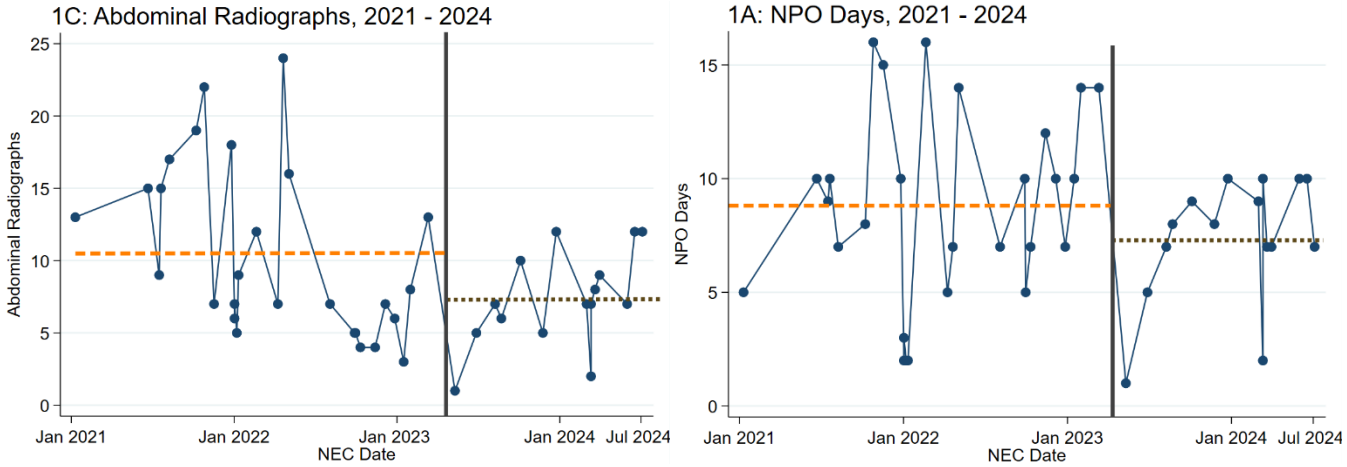


Figure: Run Charts Depicting NPO days and abdominal radiographs, January 2021 to July 2024

Risk Analysis Index vs. Modified Frailty Index: Outcomes After Otolaryngologic Surgery

Presenting author: Lauran Evans
Mentors: Maie St. John, Dinesh Chhetri
Department: UCLA Department of Head & Neck Surgery

Introduction: Patient frailty negatively impacts post-surgical outcomes across multiple specialties. Commonly used frailty scoring systems include the Modified 5-Item Frailty Index (MFI-5) and the Risk Analysis Index (RAI). We compared these frailty indices in predicting post-surgical outcomes in otolaryngology, a comparison which has never been completed to date.

Methods: Retrospective chart review of patients undergoing otolaryngologic surgery at a quaternary care medical center (2022-2024) with an RAI score available for analysis. Chi-square analysis and ROC curves were utilized to determine associations and predictive ability of each scoring system.

Results: Among 1,209 patients, 21% met MFI-5 frailty criteria (MFI-5 score >1), and 23% met RAI frailty criteria (RAI score >30). Pearson correlation coefficient between MFI-5 and RAI-C was 0.481, indicating a moderate correlation between the two metrics. Patients deemed frail by RAI-C had 5.7 times higher odds of experiencing a postoperative complication than non-frail counterparts (95% CI [3.51,9.28], $p<0.0001$), but MFI-5 frailty status was not associated with postoperative complications. Both RAI-C and MFI-5 demonstrated significant predictive ability for 30-day readmission (AUC 0.77, 95% CI [0.64, 0.89] vs. AUC 0.76, 95% CI [0.61, 0.88]) respectively. When compared to MFI-5, RAI-C had greater predictive performance for all other postoperative outcomes in this study.

Conclusions: RAI outperformed MFI-5 in predicting postoperative outcomes in patients undergoing otolaryngologic surgeries. RAI assessment should be considered in frailty research, multidisciplinary treatment planning, and managing patient expectations and outcomes.

Pancreatic Cancer Treated with Checkpoint Inhibition Exhibits Immune Changes Linked to Survival
Presenting author: Serena Zheng
Mentor: Timothy Donahue
Department: Department of Surgery, Division of Surgical Oncology

Introduction: Pancreatic ductal adenocarcinoma (PDAC) is a lethal malignancy with a dismal 5-year survival rate of 13%. Immune checkpoint inhibitors (ICIs) have limited efficacy in metastatic PDAC due to its immunosuppressive tumor microenvironment and barriers to immune cell infiltration. Most clinical trials evaluating ICIs focused on advanced disease. We conducted a preoperative trial of PD-1 inhibition in early-stage PDAC to assess its efficacy and characterize immune cell changes in resected tumors.

Methods: In a single-arm, phase I/II trial, we investigated the immune-related effects of FOLFIRINOX (FFX) with PD-1 inhibition (nivolumab) in patients with borderline-resectable PDAC. Tumor infiltrating leukocytes were characterized with bulk RNA sequencing of tumor specimens with CIBERSORT deconvolution. Lymphoid aggregates (LAs) were evaluated by immunohistochemistry (IHC). Functional phenotypes of LA cell populations were defined by Xenium 5K Prime spatial transcriptomics on nine patient tumors.

Results: Twenty-eight patients were enrolled and received FFX+nivolumab, with a median survival of 33 months. Twenty-two proceeded to surgical resection. Patients with high intra-tumoral plasma cells and normal CA19-9 had longer survival (HR:0.22, P=0.045). Bulk RNA sequencing revealed an increase in intra-tumoral plasma cell abundance with PD-1 inhibition. IHC identified more than 400 LAs across all samples, with LA density – rather than B cell density – predicting intra-tumoral plasma cells. Spatial transcriptomics demonstrated that LAs were enriched with plasma cells at the expense of B cells, and the plasma cell-to-B cell ratio (PBR) correlated with proliferating T cells.

Conclusions: In borderline-resectable PDAC, PD-1 inhibition plus FOLFIRINOX did not improve survival compared to FOLFIRINOX alone, mirroring findings in advanced disease. However, PD-1 inhibition increased intra-tumoral plasma cells, which correlated with LA density and immune activation. Patients with high plasma cells and low tumor burden had significantly longer survival. While PD-1 inhibition induces immune changes, efficacy remains limited, highlighting the need to investigate other factors contributing to immune evasion in PDAC.

The Impact of the Vascular Low Frequency Disease Consortium (VLFDC) on Guidelines Regarding the Management of Uncommon Vascular Diseases

Presenting author: Jasmine Nguyen
Mentor: Peter Lawrence, MD
Department: Vascular Surgery

Objectives: Large multi-institutional prospective vascular surgery databases such as VQI report on common vascular diseases and procedures. Reports of uncommon vascular diseases, however, often do not study enough patients to provide clinically impactful data. To fulfill this unmet need, the Vascular Low Frequency Disease Consortium (VLFDC) was developed.

Methods: The VLFDC was created 24 years ago as a multi-institutional collaboration to study uncommon vascular diseases. Potential topics are submitted to an advisory board. A review of the literature identifies previous research publications on the topic, to determine if it is truly low frequency and if there are unanswered questions regarding the diagnosis and/or management of the disease. If all criteria are met, a pilot study is conducted at the lead investigator's institution and occasionally published. Following revisions to improve data collection, the study is disseminated to an international network of VLFDC investigators. Deidentified data entry of consecutive patients with the disease is conducted by each institution, using a secure online software program, Redcap, and analyzed by core investigators with advanced statistical training.

Results: Over the past 20 years, there have been 24 studies (Table 1) published in peer-review journals. Topics range from uncommon aneurysms (2) to graft infection (8), arterial anomalies (5), spontaneous dissections (1), collagen vascular diseases (3), vascular tumors (1), carotid body tumors (1), venous leg ulcers (1), and arterial compression syndromes (2). Overall, studies have enrolled 5944 patients from 138 institutions (54 international), by 309 investigators, many of whom have participated in multiple studies. These studies have been cited in 957 research papers and downloaded 1,158 times for a mean of 40 citations and 48 downloads per study. Two VLFDC papers have been the initial study leading to a funded PCORI grant. Each study has generated diagnostic and treatment guidelines that are usually the best available evidence on the management of that disease.

Conclusion: The VLFDC is a unique database system developed to study uncommon vascular diseases, with the majority of studies being the largest series published. VLFDC has effectively leveraged a network of international investigators, leading to landmark publications that have created guidelines for the management of uncommon vascular disorders.

Why are surgeons sued after performing amputations? A 40-year analysis of malpractice litigation.
Presenting author: Mikayla Mefford
Mentor: Lauren Wessel, MD
Department: UCLA Department of Orthopaedic Surgery, Orthopaedic Oncology

Introduction: Limb amputations represent a significant and life-altering medical intervention and can lead to litigation for surgeons. This study aims to identify factors associated with legal outcomes favoring plaintiffs following amputation.

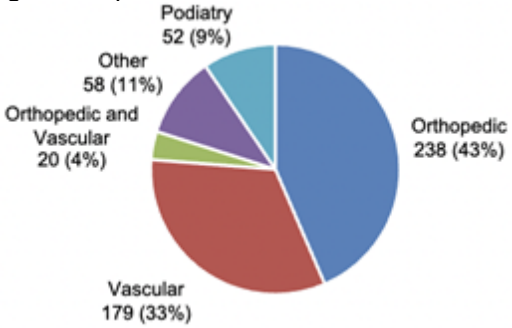
Methods: The national medicolegal Westlaw database was queried for malpractice claims related to amputations that resulted in verdicts or settlements. Cases in the United States from 1982 to 2024 that listed a surgeon as a defendant were included. Data collected included patient age, gender, region, type and cause of amputation, defendant specialty, alleged lack of informed consent, and reason for litigation. Primary outcome was plaintiff rulings. Settlement amounts were noted. Multivariate analysis was performed to identify factors associated with a plaintiff verdict and settlement award.

Results: 547 cases were analyzed. 64 (12%) were upper extremity (UE) amputations, 480 (88%) lower extremity (LE), and 3 (1%) involved multiple limbs. Plaintiffs were adults in 512 (94%) of cases and pediatric in 35 (6%). 228 cases (42%) resulted in a plaintiff ruling, including 70 (13%) settlements and 158 (29%) verdicts; average indemnity payment was $2.3 million +/- $3.8 million. Defendants were most often orthopedic surgeons (238, 44%), followed by vascular (179, 33%), with 20 (4%) involving both specialties. Amputations due to infection or surgical complication were more likely to result in a plaintiff ruling (P=0.04, P<0.001), as were claims of improper postoperative management or surgical error (P=0.01, P=0.04). Lack of informed consent, defendant specialty, and type of amputation did not influence plaintiff rulings.

Conclusion: Malpractice claims related to amputation result in high plaintiff ruling rates and settlements. Legal outcomes do not vary significantly by site or surgeon specialty. Malpractice risk can be mitigated by having a high diagnostic threshold for severe limb infection and strict peri/post-operative management.

Figure 1. Malpractice claims over time.

Figure 2. Specialties of defendants names in medical malpractice claims (N=547).



3D digital models for robotic prostatectomy: Surgeon survey and outcomes correlation from a randomized clinical trial

Presenting Author: Anael Rizzo
Mentors: Joseph Shirk (Faculty mentor) and Asha Ayub (Resident Mentor)
Department and Division: Urology

Objectives: Previously, we demonstrated that the use of three-dimensional (3D) digital models for planning robotic assisted prostatectomy (RALP) is associated with better oncologic and functional outcomes at 3 and 18 months (Shirk et al, Journal of Urology 2022, JAMA Network Open 2024). Here we report surgeon survey data and correlation to patient outcomes.

Materials and Methods: We conducted a randomized, single-blind clinical trial from January 2019 to December 2022 at six academic institutions. Patients in the intervention group had RALP performed using a 3D digital model (Ceevra Reveal) created from mpMRI and biopsy data. This was viewed on the surgeon's mobile phone and picture-in-picture in the robotic console. Surgeons completed a survey after the surgery, consisting of nine Likert (1-5) or yes/no questions, and patients were assessed for oncologic and functional outcomes at 3-6 and 18-24 months.

Results: The 41 patients analyzed were 66% White, with a mean age of 62 years. Surgeons modified their operative plan in 33% of cases based on the 3D digital model (Table 1). 3D models significantly improved cancer visualization compared to mpMRI (Likert score: 4.5 vs 2.9, p=0.001), and the ability to see and understand the relationship between the mass and surrounding anatomic structures (3.0 vs 4.5, p=0.001) (Table 2). In 74% of cases, surgeons reported enhanced clarity of anatomic details. On multivariable analysis, the model's ability to aid in performing nerve sparing was associated with negative margin status, early continence, and erectile function (measured by pads/day and SHIM score at 3 months postoperatively), and durable erectile function (SHIM score at 18 months) ($p<0.05$).

Conclusions: Surgeons performing RALP with the aid of 3D digital models often changed their surgical plans after viewing the models and better understood key anatomic considerations. The association with nerve sparing suggest the model helps surgeons identify the appropriate surgical plane and may drive for the improved outcomes previously described.

Table 2: Surgeon survey results when 3D digital model used for RALP planning

Survey Questions	Likert mean (SD)	Percent (absolute value)
Rate your ability to see and define the area of cancer in the MRI (Likert)	2.9 (1.1)	*
Rate your ability to see and understand the relationship between the mass and the adjacent structures in the MRI (Likert)	3.0 (1.2)	*
Rate your ability to see and define the area of cancer in the model (Likert)	4.5 (0.7)	*
Rate your ability to see and understand the relationship between the mass and the adjacent structures in the model (Likert)	4.5 (0.6)	*
Were there any anatomical structures that you were able to see (or see better) in the model as opposed to the MRI (yes, no)	*	74% (29/39)
Were there any structures or details that you could see better in the source MRI (yes, no)	*	5% (2/39)
Did you modify your preoperative plan in any way as a result of what you saw in the model (yes, no)	*	33% (13/39)
How much did the model aid you in performing nerve sparing, if performed (Likert)	3.8 (1.2)	*
How much did the model aid you in performing bladder neck sparing, if performed (Likert)	3.3 (1.1)	*

Table 3: Modification in surgical plan after viewing 3D Digital Model

Modification	Number reported
Unilateral to bilateral nerve sparing	4
No nerve sparing to unilateral nerve sparing	2
Bilateral to unilateral nerve sparing	2
More aggressive nerve sparing	4
Wider margin at location of mass	3
Altered bladder neck dissection	1
Altered apical dissection	2

An Implementation Science-Driven Approach to Successfully Establish a Program to Reduce Preventable Emergency Department Visits in Urology Patients with Catheters

Presenting author: Anthony Bettencourt
Mentor: Kathy Huen, MD
Department: Department of Urology

INTRODUCTION: In prior work, we identified Foley catheter malfunction as a major cause of preventable emergency department (ED) visits in postoperative urologic patients. We sought to use the Institute for Healthcare Improvement's Model for Improvement to optimize our intervention's "reach" (proportion of patients eligible who received the intervention) based on the Plan-Do-Study-Act (PDSA) learning cycles.

METHODS: We created a driver diagram to define our theory for achieving our aim of reducing preventable ED visits and located patient self-catheter irrigation as a change idea on the diagram. We developed process, outcome, and balancing measures for our intervention. We used iterative PDSA cycles to refine our intervention.

RESULTS: We conducted four PDSA cycles (Fig 1) to improve patient reach for catheter irrigation teaching. Initially, reach was low (10%, 1/10 patients) when teaching was limited to the urology clinic. In cycle 1, we expanded teaching to the post-anesthesia care unit in the ambulatory surgery center. In cycle 2, nursing in-services were introduced, increasing reach to 33%. Based on nursing and patient feedback, we added video instructions to patient discharges. In cycles 3 and 4, workflow standardization further improved reach to 44%. To monitor progress, we developed a dashboard on Tableau with biweekly data updates and bimonthly meetings to refine fidelity (Fig 2). We tracked the 'time between ED events' in patients who receive catheter teaching as a real-time measure of intervention effectiveness. A longer interval between ED visits suggests a reduction in unnecessary visits.

CONCLUSIONS: PDSA cycles, along with patient input, standardized teaching, and robust process/outcome measures, effectively improved intervention reach. Ongoing refinements will be guided by real-time process and outcome monitoring.

Self-Catheter Irrigation: PDSAs of Teaching and Patient Outreach

	Cycle 1	Cycle 2	Cycle 3	Cycle 4
Test Description:	Clark Clinic Nursing: Irrigation Teaching	Expansion to ASC PACU Nursing: Irrigation Teaching	Development of Patient Education Materials: Written Instructions, Video	Residents: Nursing Communication Orders, Patient Instructions
Test Population:	2 patients and their clinic nurses	7 patients and their PACU nurses	Clinic and PACU nurses	10 patients and their Urology residents, PACU nurses
Location of Test:	Urology Clinic	Ambulatory Surgery Center (ASC) PACU	Urology Clinic, ASC PACU, CareConnect	MP2 SC PACU
Date (To – From)	06/3/2024 to 07/22/2024	08/1/2024 to 10/1/2024	8/1/2024 to 10/8/2024	09/4/2024 to 10/17/2024
Executed By:	Dr. Kathy Huen, Anthony Bettencourt, Saam Kazemi, Nancy Lima	Dr. Kathy Huen, Anthony Bettencourt, Saam Kazemi, Sarah Pate, Kharen Palacio	Dr. Kathy Huen, Anthony Bettencourt, Saam Kazemi, Julie Gaspar	Dr. Kathy Huen

Test Results:	• We provided a one-time in-service to clinic nursing and interviewed applicable patients
	  • 1 out of 2 patients were correctly identified and received teaching, supplies
	• This patient irrigated their catheter at home and avoided the ED, says he felt "less anxious" but would like more information to reference at home for troubleshooting
	• The patient who didn't receive teaching went to ED with clot retention
	• Only 2 patients were discharged w/ a catheter from clinic relative to 41 total patients discharged w/ catheters across our hospitals and SC
		• 7 patients were discharged with a catheter. 4 patients received teaching, none of them tried irrigation at home and also did not have ED visit.
		• Patients who received teaching didn't receive any written instructions, "felt unsure" about the process at home.
		• All patients endorsed that a visual reference at home would be helpful and more empowering," wanted "troubleshooting" tips to be "less freaked out" about complications.
		• Patient who didn't receive teaching and went to ED "would have tried it"
		• Nursing leadership said some staff may have missed initial in-services
		• Improved consistency of teaching
			• Developed written instructions handout
			  • Spoke with nursing leadership about optimal way to implement this, they explained that images and format made it incompatible to use as a SmartPhrase
			  • Nursing suggested AVS integration
			  • Workflow is better if instructions are added to existing protocols rather than additional documents
			• Video demonstration created and uploaded to Youtube
			  • Accessible to patients via QR code which will be integrated into AVS instructions
				• We asked residents to use two SmartPhrases: 1) written self-irrigation teaching for patients and 2) manual nursing communication order with the goal to improve teaching reach and fidelity
				• Instructions were never added
				• Nursing communication order for irrigation teaching done for 2 out 10 applicable patients.
				  • Both patients received teaching from nurses, 3 of 10 patients received teaching in total
				• Residents would like for the text to be integrated into built-in order set in CareConnect for optimized workflow, rather than manual Smartphrase

Action (Adapt, Adopt or Abandon):	**Adapt:** • Due to low reach relative to the patient population, we will expand our teaching implementation to another point of contact at the MP2 Surgery Center PACU • Create written patient instructions handout for home reference	**Adapt:** • Create irrigation video • Develop nursing decision matrix to help/remind our staff to identify applicable patients • Plan second in-service and huddles to re-circulate instructions	**Adapt:** • Adapt written instructions into AVS for home / online reference • Will work with Patient Education to have this built-in to current CareConnect workflow	**Adapt:** • Standardize workflow with new built-in nursing communication order set • Empower nurses to provide reminders to providers to place communication orders and to add patient irrigation instructions in discharge materials

Figure 1. Iterative Plan-Do-Study-Act learning cycles detailing small tests of change, with action from each learning cycle leading to refinement of intervention.

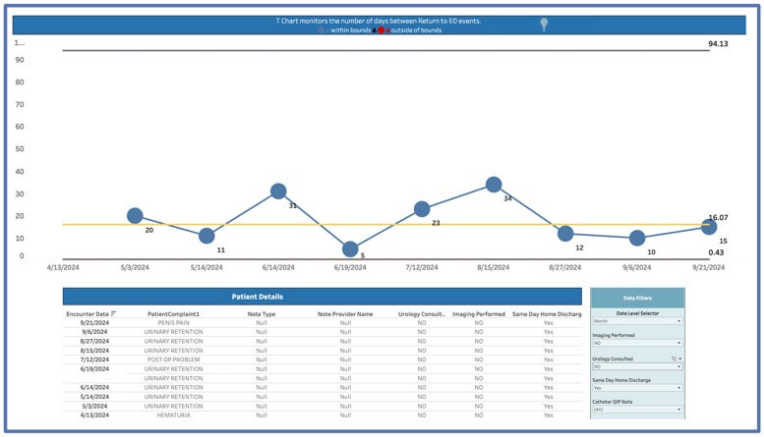


Figure 2. Tableau dashboard that provides real-time measurement of: 1) outcomes in the form of a T-chart measuring days between emergency department visits within 90 days in post-operative urologic patients who underwent surgery for benign prostatic hyperplasia; 2) process in the form of consistency of nursing teaching with the filter of "Catheter QIP Note."

Single-Stage Virtual Surgical Planning Guided Resection and Custom PEEK Implant Reconstruction of Complex Craniofacial Defects

Presenting Author: Brendan J. Cronin, MD
Mentor: Reza Jarrahy, MD
Department: Division of Plastic and Reconstructive Surgery, University of California, Los Angeles

Introduction: Traditional management of composite craniofacial lesions involved staged resection and reconstruction, requiring multiple operations with risks of scalp flap contracture, scarring and anatomic distortion. However, advances in virtual surgical planning (VSP) and intraoperative guided navigation now allow single-stage, multi-disciplinary resection-reconstruction procedures. We report the largest cohort to date of patients undergoing VSP-guided single-stage resection and polyetheretherketone (PEEK) reconstruction for oncologic and dysplastic calvarial defects.

Methods: We retrospectively reviewed patients who underwent single-stage tumor resection and PEEK reconstruction at a tertiary referral center (Sept 2019–Jan 2025). Preoperative VSP was performed collaboratively by plastic and neurosurgery teams to design cutting guides and implants. Data analyzed included demographics, defect location, operative details, hospital stay, blood loss, follow-up, and complications.

Results: Eleven patients (mean age: 51.4 years) underwent single-stage VSP-guided resection and PEEK reconstruction for a variety of calvarial lesions (**Table 1**). The mean implant surface area was 47.5 cm², with a mean surgical duration of 351 minutes and mean estimated blood loss (EBL) of 305 mL. Median hospital length of stay (HLOS) was three days. Extradural fluid collection was the most common non-PEEK related complication (4/11, 2 patients required EVD/VP shunt placement). One patient required PEEK implant removal after they developed ventriculitis from a bedside EVD. **Figure 1** illustrates intraoperative photographs demonstrating the use of patient-specific cutting guides and custom-fabricated PEEK implants, highlighting precise defect reconstruction with excellent anatomical fit.

Conclusions: Our study demonstrates the feasibility and safety of single-stage VSP-guided resection and PEEK reconstruction for complex calvarial defects. This approach offers a novel methodology with excellent outcomes and low complication rates to address complex benign and malignant/dysplastic lesions of the craniofacial skeleton. Single-stage resection and reconstruction offers potential benefits to healthcare system utilization due to minimizing operative time, anesthesia exposures and hospital admission.

Table 1 Details of the case series

Figure 1 Intraoperative photographs

Bicarbonate Receptor SLC4A4 Sensitizes Infiltrating Glioblastoma Cells to Changes in Extracellular pH

Presenting author: Stuart Harper
Mentor: Kunal Patel, MD
Department: Department of Neurosurgery

Introduction: Glioblastoma cells can survive in acidic microenvironments, but the pH regulation strategies of glioblastoma are poorly understood. Cortical astrocytes regulate pH through the bidirectional Na^+/HCO_3^- transporter SLC4A4.

Methods: Contrast-enhancing solid tumor and non-enhancing infiltrating tumor were sampled from patients undergoing surgery for newly diagnosed IDH-wildtype glioblastoma (n=30). SLC4A4 was characterized in both regions using single-cell sequencing (n=17), spatial transcriptomics (n=2) and immunohistochemistry (IHC, n=20). Lentiviral knockdown and overexpression models were developed, and SLC4A4 pharmacologic inhibitor (DIDS) was acquired. Extracellular pH (pH_e) was quantitated using microelectrode recordings. Intracellular pH (pH_i) was quantitated using fluorescent BCECF. An acid challenge assay exposed cells to pH_e changes. Tumor growth was evaluated using a tumor-cortical organoid model.

Results: Solid tumor gliomaspheres had lower pH than infiltrating tumor spheres (p=0.001). SLC4A4 molecular characterization showed higher expression in infiltrating tumor relative to solid tumor (FDR p<0.0001 (Figure 1 and 2) and confirmed with IHC (p=0.039). SLC4A4 knockdown showed minimal changes in solid tumor but infiltrating tumor had significantly increased pH_i, decreased pH_e, and decreased cell death with pH_e challenge (p=0.0105). Similarly, pH_e challenge in SLC4A4 overexpression revealed minimal changes in infiltrating tumor but decreased pH_i, increased pH_e, and increased cell death in solid tumor (p=0.0201) (Figure 3). SLC4A4 knockdown showed increased proliferation (p=0.0041) and overexpression demonstrated decreased proliferation (p=0.0016) in a cortical organoid model. IHC showed increased Ki67 and decreased Cas9 with decreased SLC4A4 (p=0.0001).

Conclusions: Na^+/HCO_3^- transporter SLC4A4 contributes to pH buffering in infiltrating glioblastoma. We propose that reduced SLC4A4 expression in the contrast-enhancing region desensitizes these tumor cells to decreased pH_e, permitting continued growth despite an unfavorable acidic environment. This differs from the non-enhancing infiltrating tumor cells which strongly express SLC4A4 and are sensitive to pH_e changes. Therapeutic approaches to target infiltrating glioblastoma cells through pH regulation may help to reduce tumor recurrence by eliminating glioblastoma cells likely to persist after contrast-enhancing tumor resection.

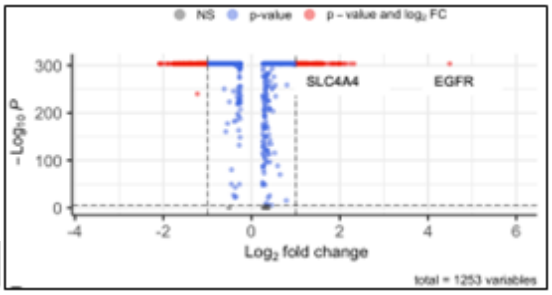


Figure 1

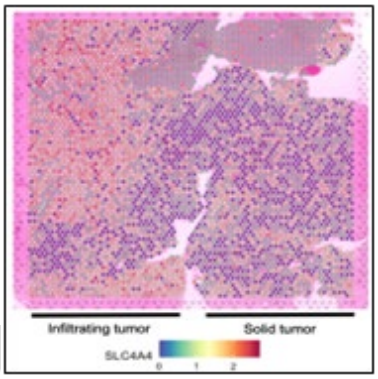


Figure 2

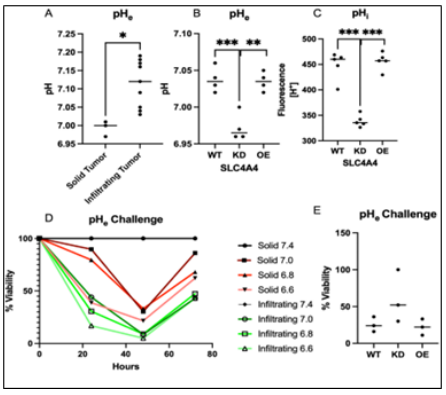


Figure 3

Racial Disparities in Lung Allocation: Comparing Pre and Post Composite Allocation Score Policy Implementation

Author: Stephanie McKay **Presenter:** Joseph Song
Mentor: Abbas Ardehali, MD
Department: Division of Cardiothoracic Surgery

Purpose: The Composite Allocation Score (CAS) policy was implemented in 2023 to promote equity in lung allocation, but its impact on racial disparities remains unclear. This study aims to compare outcomes of racial groups before and after CAS policy implementation.

Methods: All candidates listed for isolated lung transplantation from November 2021 to January 2024 in the United Network for Organ Sharing Database were included. The population was stratified into two categories: white and non-white and analyzed across two eras (Era 1 and Era 2), centered around the policy change on March 9, 2023. Waitlist and post-transplant outcomes, including 6-month survival, were compared.

Results: 6,872 candidates were listed for isolated lung transplantation: 3,309 in Era 1 (29.1% non-white; n=962) 3,563 in Era 2 (30.8% non-white; n=1,099). In Era 1, transplantation rate for non-white candidates was significantly lower than white candidates (SHR=0.76, 95% CI 0.68-0.86, p<0.001); in Era 2, there was no significant difference between the two groups (p=0.80). In Era 1, non-white recipients were significantly more likely to be intubated (37.0% vs 28.6%, p<0.001) and need ECMO within 72 hours (14.2% vs 8.4%, p<0.001). In Era 2, non-white recipients were more likely to be intubated at 72 hours (34.4% vs 26.7%, p<0.001), though there was no significant difference with ECMO rates. In Era 1, non-white candidates had significantly higher waitlist mortality (SHR=1.46, 95% CI 1.02-2.11, p=0.031); there was no significant difference in Era 2 (p=0.17). Waitlist time, in-hospital survival, 30-day survival and 6-month survival did not differ between eras.

Conclusion: The CAS policy has reduced racial disparities in waitlist mortality and transplant rates, underscoring its potential to advance equity. Although some disparities in perioperative outcomes persist, the reduction in pre-transplant inequities reflects meaningful progress. Ongoing attention to waitlist and post-transplant outcomes is crucial to sustain these advancements.

Delayed immunological tolerance in recipients with pre-existing kidney transplants
Presenting author: Lauren Schafrank
Mentor: Nima Nassiri, MD and Jeffrey Veale, MD
Department: Department of Urology, UCLA David Geffen School of Medicine

Introduction: Kidney transplantation effectively treats end-stage renal disease (ESRD) but requires lifelong immunosuppression to prevent rejection. Chronic immunosuppression carries risks, including cardiovascular disease, infection, malignancy, and calcineurin inhibitor (CNI)-induced nephrotoxicity. Hematopoietic stem cell (HPSC) transplantation can induce immunological tolerance, reducing or eliminating the need for immunosuppression, but has been limited to de novo transplants. This study investigates a novel delayed tolerance protocol in stable kidney transplant recipients.

Methods: Four patients with stable kidney allografts (11–58 months post-transplant) enrolled in an IRBapproved delayed tolerance trial (NCT05525507). Donors received granulocyte-stimulating factor and plerixafor for stem cell mobilization. Recipients underwent conditioning with rabbit anti-thymocyte globulin and total lymphoid irradiation, followed by cryopreserved donor stem cell infusion. Immunosuppression tapering was guided by chimerism monitoring. All procedures were performed in an outpatient setting.

Results: All patients achieved durable chimerism without graft-versus-host disease or acute rejection. Two patients successfully discontinued immunosuppression, maintaining stable renal function at 14 months post-induction, with >10% reductions in serum creatinine. The remaining two patients, who recently began the protocol, remain on low-dose tacrolimus with anticipated withdrawal. Serum creatinine improved post-tolerance induction in both weaned patients: from 1.4–1.5 mg/dL to 1.2–1.3 mg/dL (Patient 1) and from 1.8–2.0 mg/dL to 1.6 mg/dL (Patient 2).

Conclusions: Delayed donor stem cell infusion can induce tolerance in stable kidney transplant recipients, expanding immunosuppression-free survival beyond de novo cases. Conducting tolerance induction without hospitalization offers a promising strategy to improve long-term graft survival while avoiding CNI toxicity.
Source of Funding: OneLegacy Foundation Clinical Research Grant

Table 1: Patient Characteristics and Evidence of Chimerism

	Patient 1	Patient 2	Patient 3	Patient 4
Characteristics				
Cause of ESRD	IgA	Unknown	Pkd	Unknown
Baseline Cr prior to study	1.4 -1.5 mg/dL	1.8-2.0 mg/dL	0.9-1.0 mg/dL	0.9-1.0 mg/dL
Maintenance IS prior	Prednisone, tacrolimus	Tacrolimus, mycophenolate mofetil	Belatacept, mycophenolic acid	Tacrolimus, mycophenolate mofetil
Chimerism (unfractionated) 1 month 2 months 3 months 4 months 5 months 7 months 9 months 11 months 14 months 16 months	 26% 43% 36% 32% 26% 16% 4% 3%* 4% 2%	 45% 32% 3% 3% 2% 3% 3% 3% 2%*	 22% 34% 18% 19% 19% 15%	 35%
Months post IS withdrawal	12	5	X	X
Current renal allograft function	1.2 -1.3 mg/dL	1.6 mg/dL	1-1.1 mg/dL	0.9-1.1 mg/dL

*chimerism check 1 month following immunosuppression cessation

Hospital Price Markup and Outcomes of Major Elective Operations in the United States

Presenting Author: Sara Sakowitz
Mentor: Peyman Benharash, MD
Department: Division of Cardiac Surgery, Department of Surgery

Background: Hospital prices are currently not subject to regulation, yet have profound financial implications for patients, taxpayers, and governments. While significant for the contemporary era of value-based care, national variation in hospital price markup has not been delineated. We sought to characterize national variation in the hospital price markup for major elective operations and to assess the association of markup with perioperative outcomes and quality of care.

Methods: All adult hospitalization records entailing elective coronary artery bypass grafting, colectomy, abdominal aortic aneurysm, and hip replacement were tabulated from the 2021 Nationwide Readmissions Database. The markup ratio, defined as the ratio of charges to costs, was calculated across centers. This ratio represents the ratio of what a hospital billed for a care episode, to the actual costs they incurred. Institutions with overall markup ratios in the top decile were considered High Markup Hospitals(HMH), with others grouped as Non-HMH.

Results: Of 1,986 unique institutions, 196 were HMH. The median hospital price markup was 3.0 [IQR 1.9-4.4]. Considering only HMH, the median markup ratio was 8.5 (IQR 7.1-10.8). HMH were more commonly large, investor-owned for-profit hospitals. Notably, of the 307 for-profit institutions, over 70% had a high markup ratio, compared with ~20% of non-for-profit centers.
Of 398,065 patients, 46,499 (11.7%) were treated at HMH. Following risk-adjustment, care at HMH was linked with comparable mortality, but significantly greater odds of major morbidity (AOR 1.28, CI 1.14-1.44) and non-elective readmission within 30-days (AOR 1.18, CI 1.08-1.27).

Conclusions: Considerable variation in price markup exists across hospitals, such that over 20% of hospital charges were 4-times greater than the cost of hospitalization. Moreover, High Markup Hospitals were associated with inferior perioperative outcomes. Our work calls for national discussion surrounding and implementation of policies to promote price transparency and better regulate hospital pricing policies.

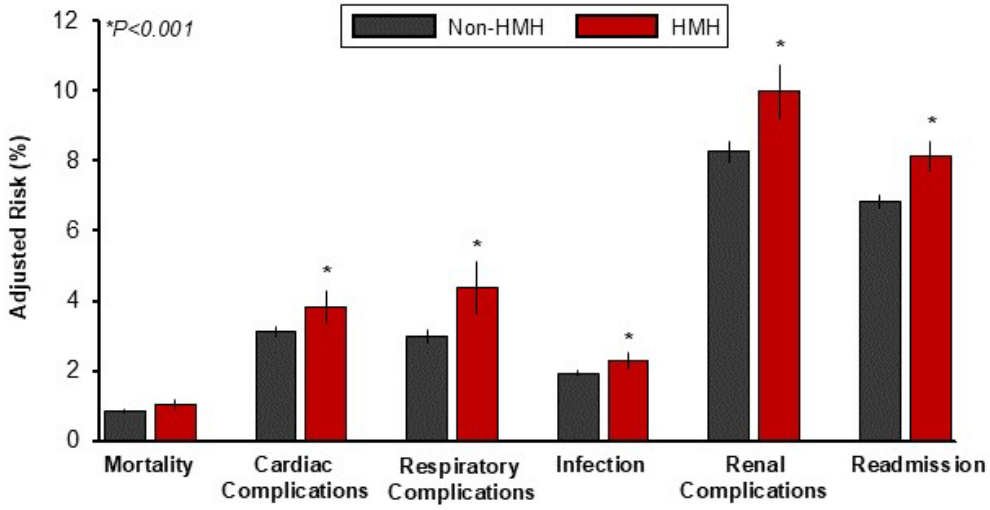


FIGURE 1: Hospital Markup Ratios and Quality of Care. Hospitals in the top decile by markup ratio, representing the ratio of what a hospital billed, to actual costs incurred, were defined as High Markup Hospitals (HMH). Following comprehensive risk adjustment for patient, operative, and hospital factors, care at HMH remained associated with comparable in-hospital mortality, but significantly greater risk of cardiac, respiratory, infectious, and renal complications, as well as non-elective readmission within 30 days of discharge.

Implementation of a Smartphone-Based Ultrasound Program to Improve Timely Diagnosis of Life-Threatening Injuries in Cameroon: Results from a Prospective, Multisite Feasibility Study

Presenting Author: Mark Yost, MD
Mentor: S. Ariane Christie, MD
Department: Department of Surgery, Division of General Surgery

Introduction: Undiagnosed hemorrhage is the leading cause of preventable trauma death in Cameroon, yet only 4% of injured patients receive imaging to diagnose hemorrhage. A smartphone-based ultrasonography (SBU) curriculum was developed to rapidly train Cameroonian providers to perform and interpret the extended focused assessment with sonography for trauma (eFAST). SBU has demonstrated promising educational efficacy, but its clinical feasibility in this technology-constrained setting is unknown. We evaluate the feasibility and acceptability of a SBU pilot at three trauma centers in Cameroon.

Methods: We implemented a six-month feasibility pilot at three Cameroonian hospitals participating in the Cameroon Trauma Registry (CTR). Trauma providers were trained to perform SBU eFAST using a novel 5-hour curriculum, then asked to perform SBU on all injured patients as part of the trauma evaluation. Feasibility was assessed as the proportion of CTR patients with completed eFAST. Acceptability was assessed as the proportion of users rating SBU ≥68 on the previously validated System Usability Scale (SUS).

Results: Trauma care providers completed SBU eFAST on 316 (87.2%) of 360 eligible patients, compared to a diagnostic imaging rate of 3.6% in the pre-study period. Completion was highest at low volume referring centers (100%, n=40) and lower at tertiary referral centers (82%, n=211 p=0.05). Overall, 86% of providers rated the program as highly acceptable (SUS scores ≥68).

Conclusions: Implementation of a SBU program is highly feasible and acceptable in Cameroon, with an associated 81% increase in diagnostic imaging completion among trauma registry patients. A multisite prospective clinical trial is planned to assess the impact of SBU on patients' outcomes, including preventable trauma deaths.

The Robotic Era: 11-Year Review of Cholecystectomy Trends & Outcomes at a Veterans Affairs Hospital

Presenting author: Tess C. Huy
Mentor: Mark D. Girgis
Department: Department of Surgery, General Surgery Division, UCLA

Introduction: Open cholecystectomies are associated with increased morbidity and worse outcomes when compared to minimally invasive cholecystectomies. Robotic-assisted laparoscopy has been proposed as an approach to mitigate the need for open surgery. The objective of this study was to determine the effect on conversion rates and outcomes following the adoption of robotic surgery for benign gallbladder disease in a high-risk population.

Methods: Patients ≥ 18 years of age who underwent cholecystectomy for benign gallbladder disease from January 1, 2013 to December 31, 2023 at a Veterans Affairs hospital were retrospectively identified. Primary outcome was rate of conversion to open surgery. Secondary outcomes included post-operative complications and 30-day re-admissions and emergency department visits. Outcomes were compared between surgical approach eras (pre-robotic, transition, and robotic eras) and between robotic and non-robotic cohorts. Univariate and multivariate analysis were performed adjusting for patient factors, surgical factors, and diagnosis.

Results: 577 patients (median age [IQR], 61 [46, 70] years; 86.1% male) underwent a cholecystectomy at the GLA VA between 2013 to 2023. Acute cholecystitis consisted of 32.2% (n=186) of surgical indications. 38.0% (n=219) of patients underwent surgery during the pre-robotic era, 43.2% (n=249) during the transition era, and 18.9% (n=109) during the robotic era. Conversion rates decreased over the study period (14.6% pre-robotic, 4.0% transition, and 0.0% robotic era; $p<0.001$). No conversions occurred during robotic cholecystectomy. On multivariable analysis odds ratios of composite post-operative complications, 30-day readmissions, and 30-day emergency department visits by era were similar. For patients with acute cholecystitis performed robotically compared to non-robotically, conversion rates were 0.0% vs 23.8% ($p<0.001$).

Conclusions: Following adoption of robotic cholecystectomy for benign gallbladder disease, conversion to open and primary open surgery were eradicated with otherwise equivalent patient outcomes. Use of robotic surgery for patients at highest risk for conversion or with severe disease should be considered.

Understanding Watch-and-Wait Utilization in Rectal Cancer: Surgeon Perspectives and Institutional Practices

Presenting author: Kera Kwan
Mentor: Tara Russell
Department: Department of Surgery, Division of Colorectal Surgery

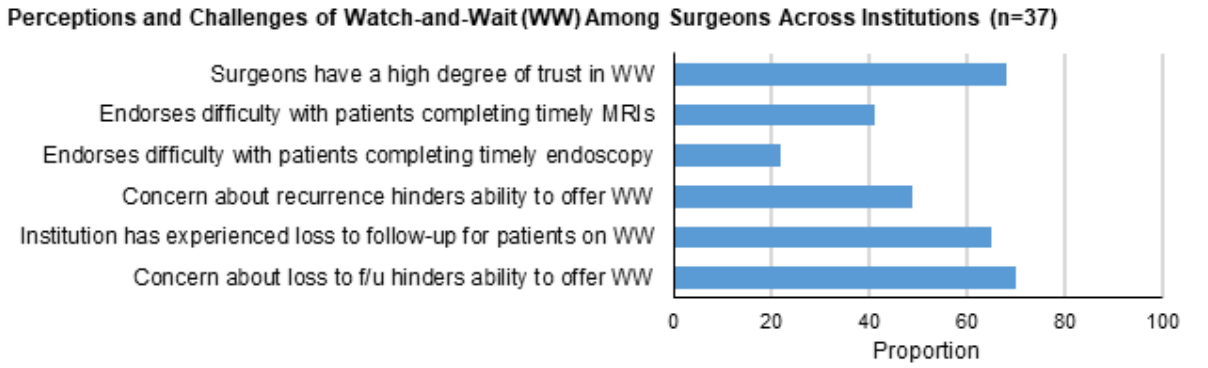
Introduction: Watch-and-Wait (WW) is a non-operative treatment option for patients with rectal cancer who achieve a complete clinical response following neoadjuvant therapy. However, WW may be burdensome to implement due to the need for increased surveillance testing. Our aim was to identify variables influencing the adoption of WW.

Methods: In February 2025, we surveyed surgeons from 49 institutions within the US Rectal Cancer Research Group. The survey was developed using the Consolidated Framework for Implementation Research to assess key domains, including inner/outer setting, characteristics of individuals, and implementation processes. The 143-item survey could be completed by one surgeon per institution with an option to contribute WW rate data (from 2015-2022). Institutions were classified as high- (upper third) or low-utilizers (lower two-thirds) of WW.

Results: Surgeons from 37 institutions participated. Perceptions and challenges of WW are shown in Table 1. Most expressed a high degree of trust in WW, and the following factors were critical to WW: multidisciplinary tumor boards, rectal cancer-specific radiologists, protocolized MRI reports, and adequate endoscopy access. Regarding patients who do undergo WW, one-third of institutions believe that patients have difficulties completing surveillance studies. Two-thirds of all institutions have experienced patient loss to follow-up – a major barrier to offering WW.

One-third of all institutions estimated that up to 25% of eligible patients were not offered WW. Among the 15 institutions with rate data, 304/3,804 (8%) locally advanced rectal cancer patients were treated with WW. High-utilizers (n=5, WW rate 15-42%) were exclusively academic institutions, while low-utilizers (n=10, WW rate 0-11%) were primarily community health systems.

Conclusions: There are variable rates of WW across diverse institutions. Surgeons have a high degree of trust in WW, and there is agreement upon facilitators to this practice. Improving WW uptake will require interventions focused on preventing loss of patients to follow-up.



Artificial Intelligence in Liver Transplant Donor-Recipient Matching - an Application of Offline Reinforcement Learning

Presenting author: Andrew Melehy, MD
Mentor: Vatche Agopian, MD
Department: Department of Surgery, Division of Liver and Pancreas Transplantation

Introduction: While prioritization of cadaveric donor liver allografts is based on waitlist candidates' Model for End-stage Liver Disease (MELD) score, numerous donor and recipient factors are considered by transplant providers to maximize liver transplant (LT) outcomes. Existing models to suggest donor-recipient pairs do not balance the risk of graft failure against the competing risk of waitlist mortality or leverage the dynamics of a patient's trajectory on the waitlist to improve predictions. We hypothesized that an artificial intelligence (AI) approach could identify successful LT donor-recipient pairs and address the shortcomings of previous models.

Methods: We identified LT candidates in the Scientific Registry of Transplant Recipients database from 2017-2022. We constructed longitudinal waitlist trajectories for each patient, capturing all MELD scores from time of listing to outcome (waitlist mortality, waitlist removal, transplant, post-transplant 1-year graft failure or death). Each timepoint was labelled with its date and associated with donor organs that were theoretically available at that time. We used offline reinforcement learning (RL; an AI method that optimizes decisions over time) to decide to wait, delist the candidate, or transplant one of the offered donors at each timepoint.

Results: In our cohort of 46,586 LT candidates, 26,796 (58%) were transplanted, 7,616 (16%) candidates died on the waitlist, and of those transplanted 2,119 (8%) had graft failure or death within 1-year post-transplant. Our algorithm resulted in avoidance of 80% of donor-recipient pairs that led to graft failure or death, preservation of 92% of successful transplants, and suggested donor-recipient pairs that may have avoided 58% of waitlist mortalities.

Conclusions: We demonstrate an AI-based approach to LT donor-recipient matching. Our model has the potential to reduce the number of donor-recipient pairs resulting in graft failure and find suitable donors for more candidates who would otherwise expire on the waitlist, while preserving LTs that were successful.

Anterior Temporal Naming Area: a Patch Near the Anterior Tip of the Fusiform Causally Linked to Reading and Language

Presenting author: Michael Ward
Mentor: Ausaf Bari, MD
Department: UCLA Department of Neurosurgery

Introduction

The role of the ventral anterior temporal lobe (ATL) in language processing remains unclear. Specifically, electrical disruption along the ventral temporal cortex has been shown to variably affect naming. Deficits have been inconsistently reproduced following anterior temporal lobectomy and are often transient. Although a role has been described for ATL regions in processing famous faces and landmarks as unique entities, word specificity is associated with more posterior regions, including the visual word form area (VWFA). We present intracranial electrophysiology, direct cortical stimulation, 7-Tesla fMRI, and neuropsychological results describing a new word sensitive region near the anterior tip of the fusiform.

Methods

Five surgical epilepsy patients undergoing intracranial EEG completed a category localizer, viewing categories of visual stimuli. Two of those patients (P1 & P2) received direct cortical stimulation for language mapping. P1 subsequently underwent left anterior temporal lobectomy and completed a behavioral naming task postoperatively. We additionally conducted 7-Tesla fMRI with ten control participants who viewed words and objects.

Results

Word sensitive electrodes were observed near the left anterior fusiform for all intracranial EEG patients on the category localizer. 7-Tesla fMRI displayed orthographic sensitivity in the same region in six of ten participants. Cortical stimulation of P1's and P2's word sensitive electrodes disrupted word and picture naming, eliciting circumlocution in P1. Three-month postoperative testing with P1 revealed surface dyslexia, a disorder characterized by over-regularization of exception words. To our knowledge, this is the first reported case of surface dyslexia following anterior temporal lobectomy.

Conclusions: Taken together, these results suggest the presence of a word sensitive patch near the anterior tip of the fusiform that is critical for naming and language, which we dub the anterior temporal naming area. We hypothesize that it is essential for reading and processing exception words as unique entities, such as famous faces and landmarks.