Clinical and Translational Science Institute

at the University of California, San Francisco

CTSI

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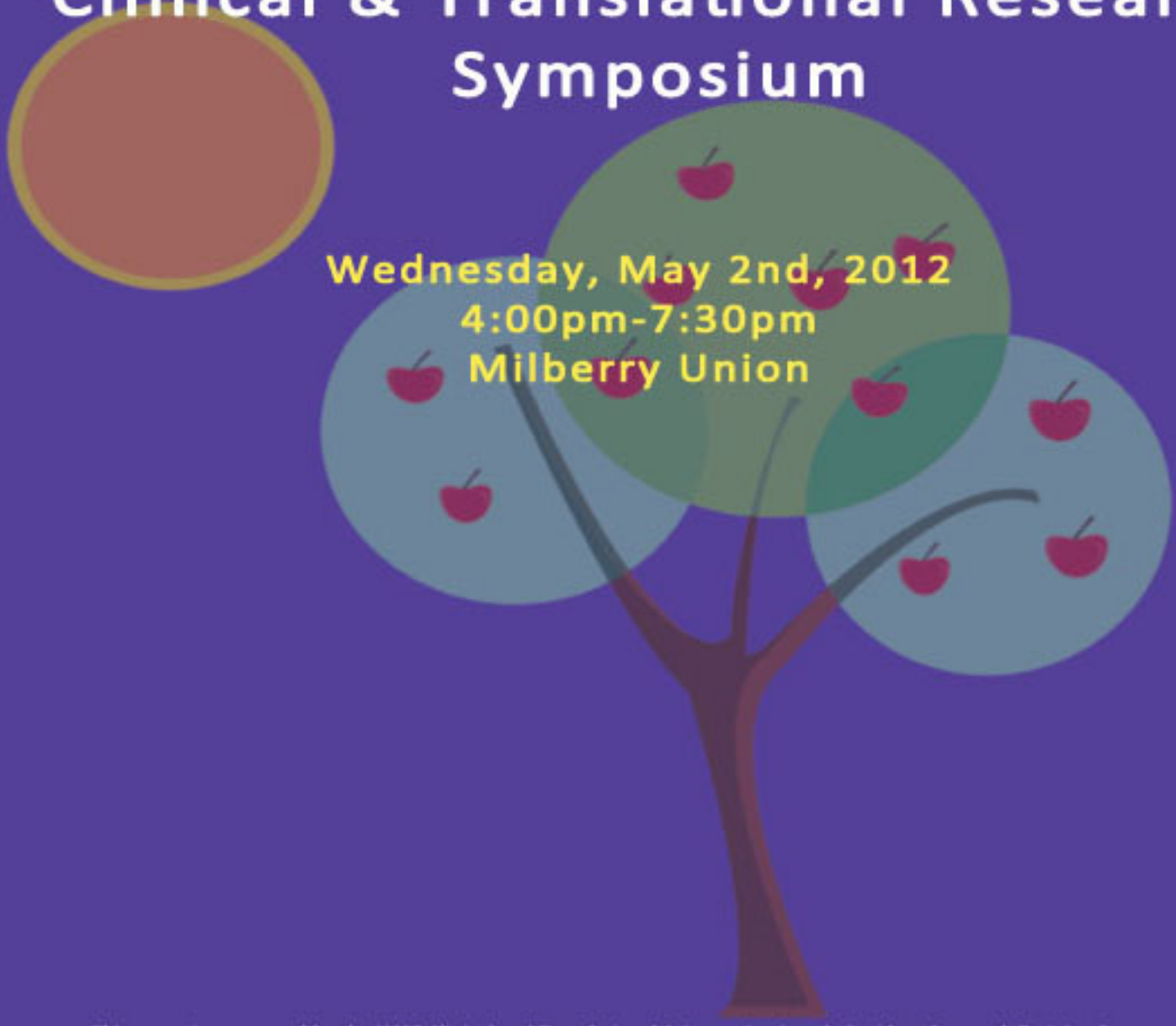
UCSF Resident Clinical & Translational Research Symposium



Wednesday, May 2nd, 2012
4:00pm-7:30pm
Milberry Union

This event is sponsored by the UCSF Clinical and Translational Sciences Institute's Resident Research Training Program

CTSI Resident
Clinical &Translational Research
Symposium

The UCSF Clinical and Translational Science Training (CTST) program is pleased to provide the campus community with the FIFTH Annual Resident Research Symposium (RRSy) dedicated to the work of our residents. The mission of CTST, the training component of the CTSI, is to create a pipeline and training system that enhances the number, quality, and cross-disciplinary skills of clinical and translational researchers at UCSF. The CTST program coordinates numerous didactic courses and mentoring programs for pre-doctoral health science students, residents, fellows, and junior faculty.

The primary goal of the **Resident Research Program** (RRP) is to create opportunities for all residents to gain fundamental knowledge in clinical and translational research methods and evidence-based medicine skills. Additionally, we aim to inspire residents to pursue future opportunities in investigation. CTST sponsors a one month course (**Designing Clinical Research for Residents, EPI 150.03 and EPI 202)** which provides residents with the opportunity to gain fundamental skills and to develop their own research proposal in small group sessions with close guidance from the faculty. CTST also offers two funding opportunities; the **Resident Research Funding (RRF) award,** which provides up to $2000 per academic year to UCSF residents for qualified clinical and translational research expenses not covered by their mentor or other sources; and the **Travel Award (RRT),** which provides $600 matching funds to support travel to present research findings at a scientific meeting. Finally, there is an opportunity for residents interested in completing the **Advance Training in Clinical Research course (ATCR)**, a one year advanced program, to apply for a **Resident Research Scholar Award** to cover the cost of their tuition.

Since the program's inception in 2007 several hundred residents across the UCSF campuses have participated in these programs. We thank you for joining us today to celebrate the accomplishments of this year's participants.

Douglas Bauer, MD
CTSI Associate Director for the Resident Research Training Program

Emily von Scheven, MD, MAS
CTST Resident Research Co-Director

Miriam Kuppermann, PhD, MPH
CTST Resident Research Co-Director

Schedule of Events

4:00 pm **Welcome**
Sam Hawgood, Dean

4:15 pm **Resident Research Program Overview**
Doug Bauer, Director-CTSI Resident Research Program

4:30 pm **Resident Oral Papers**
Moderated by Emily von Scheven, Co-Director-CTSI Resident Research Program

Speaker Name: Seth Cohen, MD
Title: Prophylaxis of Invasive Aspergillosis in Lung Transplant Recipients: Is Inhaled Amphotericin Enough?
Residency Program: Internal Medicine
Research Mentor: Peter Chin-Hong

Speaker Name: Matthew Kutcher, MD
Title: Critical Mediators of Coagulopathy After Trauma
Residency Program: Surgery, Plastic Surgery & East Bay Surgery
Research Mentor: Mitchell Cohen

Speaker Name: Lionel Metz, MD
Title: Acute Kidney Injury After Total Hip or Knee Arthroplasty in a Veteran Population
Residency Program: Orthopaedic Surgery
Research Mentor: Alfred Kuo

Speaker Name: Gene Quinn, MS, MD
Title: Selective Serotonin Reuptake Inhibitors Increase Major Hemorrhage Risk in Patients with Atrial Fibrillation Taking Warfarin
Residency Program: Internal Medicine
Research Mentor: Margaret Fang

Speaker Name: Darcy Wooten, MS, MD
Title: Risk Factors for Methicillin-resistant Staphylococcus aureus (MRSA) in Patients with Community-Onset and Hospital-Onset Pneumonia
Residency Program: Internal Medicine
Research Mentor: Lisa Winston

5:45 pm **Mentor of the Year Award**
Recipient: Lee-May Chen, MD

6:00 pm **Poster Viewing and Reception**
Golden Gate Room

Mentor of the Year Award

It is well recognized that mentoring is a critical factor in academic success. The success of residents embarking on a research project is highly influenced by the quality of their mentorship. Thus, the CTSI would like to recognize the contributions of the many faculty who have assisted with the research endeavors presented today.

Today we are recognizing a faculty mentor for outstanding excellence in mentoring. This year's awardee was selected from many outstanding nominations.

Lee-May Chen, MD

Professor
Edward C. Hill Endowed Chair
Obstetrics, Gynecology and Reproductive Sciences

Nominating Resident Comments:

"Dr. Lee-May Chen has been an invaluable mentor in my path towards gynecologic oncology fellowship. As my research mentor she has encouraged my ideas and helped me develop them into viable clinical research projects. What makes her unique is her unselfish guidance to help me find my research niche. Her only agenda is to foster my clinical curiosity, to gently direct my clinical questions into answerable research hypotheses and to help me develop into a well-rounded, thoughtful physician"

Abstracts:

Oral Presentations

UCSF Resident
Clinical &Translational Research
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Wednesday, May 2nd, 2012

Millberry Union Conference Rooms

Abstract title: Prophylaxis of Invasive Aspergillosis in Lung Transplant Recipients: Is Inhaled Amphotericin Enough?

Resident's name: Seth Cohen, MD

Name of program: Internal Medicine

Purpose: Invasive aspergillosis (IA) is an important cause of morbidity and mortality among lung transplant recipients. It is unclear which agent should be used for the prevention of IA in this population. We evaluated the impact of two prophylactic strategies to prevent IA among lung transplant recipients.

Methods: We reviewed medical records for all lung transplants performed between 2002 and 2010 at UCSF. In 2004, the prophylactic regimen in lung transplant recipients was changed from inhaled amphotericin to one containing systemic prophylaxis (e.g., voriconazole) plus inhaled amphotericin. We examined data from surveillance bronchoscopies and reviewed relevant imaging to diagnose invasive fungal infections. Using multivariable analyses, we explored the individual impact of either prophylactic strategy (inhaled only versus systemic) on incident IA post transplantation.

Results: Between September 2002 and August 2010, 303 patients underwent lung transplantation at UCSF. Of the 267 patients eligible for the study, sixty-one patients received inhaled amphotericin only, while 184 received additional systemic mould prophylaxis. Of those who received inhaled prophylaxis, 18% were diagnosed with IA; 6% of those receiving systemic mould prophylaxis developed IA. The median time to the onset of IA was 7 months. In multivariate analysis, systemic prophylaxis was associated with a lower incidence of IA (OR 0.3, P < 0.010). There was no significant association with indication for transplant, CMV disease or gender.

Conclusions: A voriconazole based strategy as primary prophylaxis was associated with a decline in the overall incidence of IA compared with inhaled amphotericin alone. Time to infection does not appear to be affected by the type of prophylaxis used. Voriconazole may also have a beneficial impact on rates of tracheobronchitis, a subset of invasive aspergillus infections. Continued surveillance over time is needed to determine whether these effects are sustained and whether the burden of disease due to non-aspergillus mould will increase.

Abstract title: Critical Mediators of Coagulopathy After Trauma

Resident's name: Matthew Kutcher, MD

Residency Program: Surgery, Plastic Surgery & East Bay Surgery

Research Mentor: Mitchell Cohen

Purpose: It has been recently identified that 25-30% of critically-injured trauma patients arrive in the Emergency Department with abnormal coagulation, and that this acute traumatic coagulopathy (ATC) portends markedly worse outcomes. ATC is associated with higher transfusion requirements, longer intensive care unit and hospital stays, and a greater incidence of multiorgan failure and mortality. However, the precise clotting factor abnormalities underlying acute traumatic coagulopathy (ATC) remain poorly characterized, making both standard criteria and identification of potential therapeutic targets elusive. We hypothesized that thorough characterization of specific clotting factor abnormalities in coagulopathic trauma patients would identify primary biochemical drivers of ATC.

Methods: From 2/2005 - 11/2011, plasma factor levels were prospectively assayed from 460 highest-level trauma activation patients at 0, 6, 12, 24, 48, and 72h after admission to an urban level I trauma ICU. Coagulopathy was identified by international normalized ratio (INR) and activated partial thromboplastin time (PTT). Clotting factors assayed included the procoagulants prothrombin and Factors V, VII, VIII, IX, and X; the anticoagulants antithrombin III and Protein C (in both activated and zymogen form); and fibrinolytic system components PAI-1, D-dimer, and tPA. Standard laboratory values were analyzed in parallel, and resuscitation and outcomes data were extracted.

Results: Receiver operator characteristic analysis was used to identify optimal INR- and PTT-based definitions of ATC by selecting cut-off values for prediction of transfusion requirements within 6h of admission: an INR =1.3 correctly predicted need for RBC transfusion with sensitivity 41.7%, specificity 86.9%, and positive likelihood ratio 3.19, and a PTT =35 had sensitivity 32.7%, specificity 93.7%, and positive likelihood ratio 5.18. Of the 436 patients with admission clotting factor data, 91 (26.5%) and 80 (18.3%) were coagulopathic by INR- and PTT-based definitions, respectively. Coagulopathy was associated with depletion of all measured procoagulant factors, depletion of antithrombin III and Protein C, and elevation of activated Protein C and D-dimer levels; these relationships remained significant when individually adjusted for age, injury severity score, base deficit, and head injury.

To identify principal mediators of coagulopathy, all measured factors were included in a generalized linear model which was then subjected to information criteria-based backwards selection; this process was then bootstrapped to provide variable importance as a percentage of final models including each measured factor level. Using this approach, elevation of activated Protein C was identified as the single strongest predictor of coagulopathy, remaining included in 99% of bootstrapped stepwise-selected models.

Conclusion: Most measured clotting factor levels differ significantly in coagulopathic patients, making differentiation of critical associations versus collinear variation difficult. We therefore used bootstrapping and information criteria-based backwards selection to determine variable importance, identifying activated Protein C as a primary driver of coagulopathy. Activated Protein C has been shown to mediate cleavage of activated Factors V and VIII, as well as activation of fibrinolysis, providing plausible mechanisms for its association with the factor depletion and hyperfibrinolysis observed in coagulopathic trauma patients. Further study of post-injury coagulopathy may identify critical targets for therapeutic intervention aimed at the Protein C pathway.

Abstract title: Acute Kidney Injury After Total Hip or Knee Arthroplasty in a Veteran Population

Resident's name: Lionel Metz, MD

Name of program: Orthopaedic Surgery

Purpose: Acute kidney injury (AKI) can contribute to long term renal impairment and associated morbidity. Previous studies report a low incidence of AKI after total joint arthroplasty (TJA), but have used insensitive methodologies. The purpose of this study was to ascertain the incidence of AKI after hip or knee arthroplasty and determine associated demographic, co-morbidity, and perioperative risk factors.

Methods: We performed a retrospective database review of 23,149 TJAs completed between 2006 and 2009 at 96 Veterans Affairs (VA) Medical Centers in the United States. We included patients in the Veterans Affairs Surgical Quality Improvement Program (VASQIP) database and identified cases of mild, moderate, and severe acute kidney injury defined by the validated Acute Kidney Injury Network (AKIN) criteria. Patients on preoperative dialysis and those without either pre- or postoperative creatinine (Cr) values were excluded from the analysis. We performed a multiple logistic regression to determine demographic, co-morbidity, and perioperative risk factors associated with AKI with significance set at P: 0.05. Secondary outcomes included need for postoperative dialysis, length of postoperative hospital stay, death within one year of surgery, and re-admission to the hospital within 14 days of discharge.

Results: 18,850 non-dialysis patients met criteria for AKIN screening with documented preoperative and postoperative Cr values. 2880 patients (15.28%) had perioperative acute kidney injury; 12.8%, 1.77% and 0.71% had mild, moderate, and severe AKI, respectively. Risk factors associated with AKI included African American race, age: 65, BMI: 35, ASA score of 4 or 5, diabetes mellitus, history of dyspnea with exercise or at rest, history of COPD, hypertension requiring medication, chronic steroid use, preoperative Hct: 40, albumin: 3.5, operative time: 3hrs, and perioperative transfusion requirement of 4 units in 72 hrs. 19 of 114 severe AKI patients required dialysis. AKI of all severities was associated with increased lengths of hospitalization (P: 0.0001), but only moderate and severe AKI were associated with increased risk of readmission (P: 0.005). Pooled analysis of all AKI patients revealed a 1 year mortality of 21 per 1,000 compared with 2.4 per 1,000 for non-AKI patients (P: 0.0001).

Conclusions: Acute kidney injury diagnosed by the AKIN criteria is more prevalent than previously reported using other screening methods and is associated with increased length of stay, hospital readmission, and death within one year. Modifiable risk factors identified in this study may be incorporated into strategies to prevent AKI after total joint arthroplasty and deserve further study.

Abstract title: Selective Serotonin Reuptake Inhibitors Increase Major Hemorrhage Risk in Patients with Atrial Fibrillation Taking Warfarin

Resident's name: Gene Quinn, MS, MD

Name of program: Internal Medicine

Purpose: Serotonin reuptake inhibitors (SSRIs) are widely prescribed medications in the adult medical population. Several studies suggest that SSRIs may increase bleeding risk and drug information guides warn about a potential interaction between warfarin and SSRIs. However, the actual association between warfarin, SSRI exposure, and bleeding risk has not been well-quantified. In addition, prior studies have not controlled for baseline bleeding risk or warfarin control. In this study we assessed the association between SSRI exposure and major hemorrhage events in patients with nonvalvular atrial fibrillation taking warfarin.

Methods: We used data from the ATRIA Study, a cohort of 13,559 adults with atrial fibrillation receiving care in a large integrated healthcare delivery system. The analysis was restricted to the 9186 patients who contributed follow-up time while taking warfarin. We assessed exposure to SSRIs using dispensing data from pharmacy databases. Additionally, we also searched for exposure to tricyclic antidepressants (TCAs) as a control group. The primary outcome was hospitalization for major hemorrhage on warfarin, defined as fatal, hemorrhage into a critical anatomic space, or requiring transfusion of = 2 units packed red blood cells. Clinical risk factors for hemorrhage were identified using administrative and computerized clinical databases and used to calculate an ATRIA bleeding risk score, a previously-developed measure of anticoagulation-associated bleeding risk. A multivariable Poisson regression model was then used to test the association between hemorrhage and SSRI or TCA exposure, adjusting for bleeding risk and time in an international normalized ratio (INR) range 3.

Results: We identified 461 major hemorrhages during a total of 32,888 person-years of follow-up on warfarin. Of these events, 45 events occurred during SSRI use, 12 events during TCA only use, and 404 events without either medication. Rates of hemorrhage were higher during periods of SSRI exposure compared with periods on no antidepressants (2.32 per 100 person-years vs. 1.35 per 100 person-years, p = 0.001). In contrast, rates of hemorrhage did not differ comparing TCA use to no antidepressants (1.30 per 100 person-years on TCAs, p = 0.93). The mean ATRIA bleeding risk score during SSRI exposure was higher than periods on no antidepressants (2.43 vs. 2.06, 0.001); a higher bleeding risk score was also observed during TCA exposure (2.24 vs. 2.06, 0.001). Exposure time while on SSRIs and TCAs was associated with more time where the INR 3 (12.3% for SSRIs, 11.9% for TCAs, and 10.3% for neither, 0.001). In a multivariable model adjusting for bleeding risk score and time with INRs 3, SSRI exposure was associated with an increased rate of hemorrhage compared with no antidepressants (adjusted relative risk 1.60, 95% CI: 1.18-2.17), whereas TCA exposure was not associated with increased hemorrhage risk (adjusted relative risk 0.88, 95% CI: 0.50-1.57).

Conclusions: The risk of major hemorrhage on warfarin was significantly higher during periods of SSRI therapy, but not TCA therapy, even after adjusting for bleeding risk factors and time in a supratherapeutic INR range. Closer monitoring of patients on SSRIs and anticoagulants should be considered.

Abstract title: Risk Factors for Methicillin-resistant Staphylococcus aureus (MRSA) in Patients with Community-Onset and Hospital-Onset Pneumonia

Resident's name: Darcy Wooten, MS, MD

Name of program: Internal Medicine

Purpose: Methicillin-resistant Staphylococcus aureus (MRSA) is an important cause of both healthcare-associated and community-acquired pneumonia. The risk factors for MRSA pneumonia, however, have not been fully described and are likely to be different depending on whether infection is acquired in the community or in the hospital.

Methods: To determine the risk factors for community-onset and hospital-onset MRSA pneumonia, we conducted a case-control study of 619 adults hospitalized at an urban county hospital between 2005 and 2010 with either MRSA or methicillin-sensitive Staphylococcus aureus (MSSA) pneumonia. Cases were patients with at least 3 of 4 features of pneumonia (fever, leukocytosis, cough, chest x-ray opacity) and a positive MRSA respiratory culture. Controls had these same clinical features but instead, had an MSSA respiratory culture. Patients whose respiratory culture was obtained within 48 hours of hospitalization were classified as having community-onset pneumonia whereas patients with hospital-onset pneumonia had a positive culture at least 48 hours after admission.

Results: Of the 619 patients with S. aureus pneumonia, 273 were infected with MRSA, and 192 had community-onset pneumonia. Among patients with community-onset disease, the risk for MRSA was increased by tobacco use (OR 2.31, CI 1.23-4.31), COPD (OR 3.76, CI 1.74-8.08), and receipt of antibiotics in the past three months (OR 4.87, CI 2.35-10.1). Patients with hospital-onset disease had an increased risk for MRSA pneumonia with tobacco use (OR 2.66, CI 1.38-5.14), illicit drug use (OR 3.52, CI 2.21-5.59), liver disease (OR 3.50, CI 1.51-8.11), and recent receipt of antibiotics (OR 2.04, CI 3.54-13.01). Hospitalization within the prior three months was associated with decreased risk for MRSA (OR 0.64, CI 0.46-0.89).

Conclusions: This study suggests that there are similar but distinct risk factors for community-onset compared to hospital-onset MRSA pneumonia. Tobacco use may be a more important risk for MRSA pneumonia than previously recognized. The decreased risk for MRSA pneumonia associated with recent hospitalization is unexpected. Additional studies are needed to further determine the risk that the healthcare setting confers to patients developing MRSA infections and the impact this should have on empirical antibiotic selection.

Resident Research Training Program
Resident Research Funding Award 2011 Recipients

Name	Program	Mentor
Sanjiv Baxi	Internal Medicine	Grant Dorsey
Heather Bennett	Family Practice	Amy Whittle
Alexandra Channing	Pediatrics	David Teitel
Hangyul Chung-Esaki	Emergency Medicine	Robert Rodriguez
Seth Cohen	Internal Medicine	Peter Chin-Hong
Tina Dasgupta	Radiation Oncology	Daphne Haas-Kogan
Megan Durr	Otolaryngology	Steven Wang
Dario Englot	Neurological Surgery	Edward Chang
Michael Kennedy Hall	Emergency Medicine	Maria Raven
Matthew Kutcher	Surgery, Plastic Surgery & East Bay Surgery	Mitchell Cohen
David Lange	Internal Medicine	Priscilla Hsue
Esther Lee	Pediatrics	Karen Skokal-Gutierrez
Angela Lipshutz	Anesthesiology	Michael Gropper
Jillian Mongelluzzo	Emergency Medicine	Robert Rodriguez
Melissa Morgan	Pediatrics	Theodore Ruel
Rushi Parikh	Internal Medicine	Priscilla Hsue
Tiffany Scharschmidt	Dermatology	Michael Fischbach
Adam Schickedanz	Pediatrics	Thomas Bodenheimer
Jennifer Wilson	Emergency Medicine	Ralph Wang
Robert Wirka	Internal Medicine	Robin Shaw

Abstracts:
Poster Presentations

UCSF Resident
Clinical &Translational Research Symposium

Wednesday, May 2nd 2012

Selected Poster Presentations

Name	Residency Program	Mentor	Abstract Title
Sanjiv Baxi	Internal Medicine	Grant Dorsey	Effect of Indoor Residual Spraying of Insecticides on Malaria Morbidity in an Area of High Transmission Intensity in Uganda.
Ryan Bolonesi	Pharmacy	Hansen Ho	A Single Center Retrospective Analysis of Carboplatin Dosing in Obese and Overweight Gynecology Oncology Patients.
Kristine Breyer	Anesthesiology	Gerald Dubowitz	Identification of Systems Based Improvements for Trauma Care at a Tertiary Hospitak in an African City
Jocelyn Chapman	Obstetrics, Gynecology and RS	Lee-May Chen	Comparing Coordinated Versus Sequential Salpingo-Oophorectomy for BRCA1 & BRCA2 Mutation Carriers with Breast Cancer
Chien Chen	Radiation Oncology	Daphne Haas-Kogan	Quuality Assurance of ICD-9 Diagnosis Coding in Radiation Oncology: UCSF Experience
Michael Chen	Ophthalmology	Jeremy Keenan	Association of Clinical Manifestations with ompA Genotype in Ocular Strains of Chlamydia Trachomatis
Tina Dasgupta	Anatomic Pathology	Daphne Haas-Kogan	Survival advantage with radiation combined with a selective BRAFV600E inhibitor in an orthotopic, intracranial model of BRAFV600E-mutated high-grade gliomas
Jeffrey Dixson	Internal Medicine	Mary Whooley	Are Patients with Ischemic Heart Disease Living Long Enough to Die of Other Causes? Results from the Heart and Soul Study
Atefeh Fahimi	Pharmacy	Young	Does Treatment of Adults with Pegylated-Asparaginase Result in a Greater Incidence of Hepatotoxicity Compared to L-Asparaginase?
Marriane Ghobrial	Internal Medicine	Soe Naing	Prevalence and Associations of Vitamin D Deficiency in Medical Outpatients and Inpatients
Elizabeth Hardin	Internal Medicine	Mary Whooley	Association Between White Blood Cell Count and Heart Failure in "The Heart and Soul Study"
Keith Hermanstyne	Psychiatry	Judith Hahn	The Association Between Use of Non-Injection Drug Implements and Hepatitis C Virus Antibody Status in Homeless and Marginally Housed Persons in San Francisco
Katey Hoffman	Pediatrics	Emily Roth	The Impact of Participation in a School Garden on Health Behaviors and Attitudes of High School Students and their Families
Patrick Horst	Orthopaedic Surgery	Steven Takemoto	Patient Reported Outcomes Is Affected by Environment at Time of Reporting
Joshua Lakin	Internal Medicine	Sumant Ranji	A Resident-Led Incentive Program to Improve Advance Care Planning Documentation
Emily Levy	Pediatrics	Ritu Banerjee	Rates and Appropriateness of Antimicrobial Prescribing at an Academic Children's Hospital, 2007-2010
Carol Lin	Orthopaedic Surgery	Alfred Kuo	Epidemiology and Outcomes in HIV/AIDS Patients Undergoing Primary Total Hip and Knee Arthroplasty
Angela Lipshutz	Anesthesiology	Michael Gropper	Using the University Health Consortium Expected Probability of Mortality to Predict Outcomes in the Critically Ill

Name	Residency Program	Mentor	Abstract Title
Anna Malkina	Internal Medicine	Carmen Peralta	Obesity and Kidney Function Decline in Non-Diabetic Adults
Jillian Mongelluzzo	Emergency Medicine	Robert Rodriguez	Do Physical Exam Findings Correlate with the Presence of Fever in Patients with Skin and Soft Tissue Infections?
Anna Neumeier	Internal Medicine	Urmimala Sarkar	"A Lot of Medicine, Okay?": Gaps in Communication in Outpatient Cardiology Clinic Encounters
Rushi Parikh	Internal Medicine	Priscilla Hsue	Association Between HIV-Specific Factors and ADMA
Rushi Parikh	Internal Medicine	Priscilla Hsue	ADMA and Pulmonary Arterial Hypertension in HIV Infection
Uyen-Khanh Quang-Dang	Psychiatry	Laura Dunn	Influences on Surrogates' Willingness to Enroll Relative with Alzheimer's Disease in Clinical Research
Dhakshin Ramanathan	Anatomic Pathology	Daniel Mathalon	Neural Correlates Associated with Regulation of Emotional Distractions
Gabrielle Rizzuto	Anatomic Pathology	Zoltan Laszik	The Significance of IgG4 Positive Plasma Cells in Renal Transplant Biopsies With Plasma Cell Rich Acute Cellular Rejection
Jennifer Ross	Internal Medicine	Luke Davis	Geographic Analysis and Barriers to TB Evaluation in Uganda
Tami Rowen	Obstetrics, Gynecology and RS	Alan Shindel	Condom Usage Patterns in Medical Students from the United States and Canada
Tiffany Scharschmidt	Dermatology	Michael Fischbach	S. Aureus Skin Colonization: Tools to Study the Frontline of the Battlefield
Adam Schickedanz	Pediatrics	Amy Whittle	Money Matters: A Medical-Financial Partnership to Reduce Financial Hardship and Improve Patient Health
Sunil Sheth	Neurology	Steven Hetts	Angiographic Features Help Predict Outcome After Gamma Knife Radiosurgery for the Treatment of Pediatric Arteriovenous Malformations
Anne Warren Peled	Surgery, Plastic Surgery & East Bay Surgery	Laura Esserman	Outcomes After Total Skin-Sparing Mastectomy and Immediate Reconstruction
Anne Warren Peled	Surgery, Plastic Surgery & East Bay Surgery	Ed Kim	Validation of a Novel Model for Improving Microsurgical Training
Yvette Wild	Pediatrics	Melvin Heyman	Dietary Intake, Not Oral Hygiene, Is Associated With Location of Dental Erosion in Children with Gastroesophageal Reflux
Jennifer Wilson and Kristin Berona	Emergency Medicine	Ralph Wang	Evaluation of the Oblique View for Ultrasound Guided Central Venous Catheter Placement
Geoffrey Wool	Laboratory Medicine (Clinical Path)	Enrique Terrazas	Web-Based System for Resident Hand-offs in Clinical Pathology
Xing Yang	Occupational and Environmental Medicine	David Rempel	Change in Work Hours and Upper Extremity Pain Among Dental Hygienists

Abstract title: Effect of Indoor Residual Spraying of Insecticides on Malaria Morbidity in an Area of High Transmission Intensity in Uganda.

Resident's name: Sanjiv Baxi, MS, MD

Name of program: Internal Medicine

Background and Purpose: To understand the association between indoor residual spraying (IRS) of insecticide and malaria slide positivity rate (SPR) in an area of high malaria transmission intensity in Uganda. We specifically sought to evaluate the association of IRS on SPR after multiple rounds of IRS and also to evaluate this association with various different insecticides.

Methods: This study includes prospective longitudinal cross-sectional malaria surveillance data from a level IV government health facility located in North-Central Uganda, where the entomological inoculation rate (EIR) was estimated to be 1586 in 2001. Data were collected on demographic information, basic clinical information, blood smear results, diagnoses and treatments. Data from March 2007 through October 2011 (a 56 month study period) with 5 rounds of IRS completed, round 1: from March-May of 2008 with dichlorodiphenyltrichloroethane (DDT); round 2: March-April of 2010 with alpha-cypermethrin and rounds 3-5 with a carbamate, Bendiocarb, with round 3: August of 2010, round 4: January 2011 and round 5: June 2011. Logistic regression was applied to the dataset and odds ratios were calculated adjusting for seasonal trends and autocorrelation stratified by age. Deviations from the baseline were significant if they differed sufficiently from the secular trend to be considered greater than chance at a two tailed alpha of 0.05.

Results: Overall, the integrity of the data improved over the 56 month study period and the proportion of patients with suspected malaria increased over the course of the study. The vast majority of patients lived within the studied district and county. There was a significant increase in age among patients with suspected malaria, with the proportion of patients over 3 years of age increasing from 51% during the 1st half of the study to 67% over the 2nd half of the study. In the 6 month period following the 1st round of IRS with DDT was associated with a significant, but modest reduction in SPR for only patients 23 years of age (p: 0.005). The 4 month period following the 2nd round of IRS with alpha-cypermethrin was associated with a significant, but modest reduction in SPR for only patients 3 years of age (p: 0.05). The 4 month periods following each of the three rounds of IRS with Bendiocarb was associated with a significant and more dramatic reduction in SPR for patients of all ages (p: 0.01); however, reductions in SPR were most dramatic among the younger age groups.

Conclusion: The IRS of insecticide was associated with a decrease in malaria morbidity in an area of high transmission intensity in Uganda as measured by a reduction in SPR. In addition, IRS of insecticide appeared to be associated with a change in the epidemiology of malaria with an increase in the age of patients presenting with suspected malaria.

Abstract title: A Single Center Retrospective Analysis of Carboplatin Dosing in Obese and Overweight Gynecology Oncology Patients.

Resident's name: Ryan Bolonesi, PharmD

Name of program: Pharmacy

Purpose: This is a single center retrospective chart review of gynecologic oncology patients who received adjuvant carboplatin and paclitaxel between 2007 and 2011. The primary objective of this study is to examine the incidence of treatment delays, secondary to hematological toxicities, in obese and overweight patients who receive carboplatin based on actual vs. adjusted body weight. The combination of carboplatin and paclitaxel is standard of care for adjuvant treatment in resected ovarian cancer. However, there is no standard approach to estimate GFR using adjusted versus actual body weight for carboplatin dosing.

Methods: IRB approved retrospective pharmacy chart review inclusion criteria: Obese (BMI =25) gynecologic oncology patients who received carboplatin and paclitaxel from 2007 to 2011. Exclusion criteria: patients who were enrolled in other clinical trials during the study period. Patients who received three or more disease modifying therapies. Patients who had an incomplete medical record. Statistical methods: baseline laboratory values, weights, mean AUC, and mean mg/m2 calculated with two-tailed t-test, diagnosis calculated with Fisher's exact test, median AUC and mg/m2 calculated with Mann-Whitney test.

Results: 1.There was a statistically significant difference in weights, platelets and diagnosis between the two arms. Final results with single-variate and multi-variate regression analysis are still pending. The initial odds ratio on preliminary data reveals patients dosed on actual body weight in comparison to adjusted body weight have the same probability to have a treatment delay. The only difference between the two patients arms when assessing dose intensity was the body weight used for the carboplatin. There was no statistical difference in the mean or median AUC of carboplatin, age, or serum creatinine, as well as the mean and median dose used for mg/m2 of paclitaxel the two arms.

Conclusion: From current preliminary results dosing patients on adjusted body weight had similar dose delays as those dosed on actual body weights. Although toxicity would be less in those patients dosed on adjusted body weight in comparison to actual, efficacy and survival between the two dosing weights remains to be determined.

Abstract title: Identification of Systems Based Improvements for Trauma Care at a Tertiary Hospital in an African City

Resident's name: Kristine Breyer, MD

Name of program: Anesthesiology

Purpose: Injury is increasingly recognized as a leading cause of morbidity and mortality in low and middle income countries (LMICs)1. According to WHO data over 90% of all deaths due to injury occur LMICs. We also know that interventions aimed at early hospital care are essential. Better organization and utilization of current resources can provide a sustainable cost-effective model for improved injury care in a resource-limited environment2-3. However, little objective evidence documenting the existing process of trauma care hindering the identification of specific targets for improvements. We performed a prospective observational study to characterize the injured population, triage process and initial trauma management at Mulago Hospital, Kampala, Uganda.

Methods: During one month injured patients evaluated in the emergency department (ED) were observed. Data was collected from time of arrival until transfer or discharge from ED. Data collected included demographics, injuries, timing of assessments and interventions

Results: Our study sample demographics correlated with prior records from Mulago Hospital4-6. Male to female ratio was approximately 3:1, the most injured age group were 19 to 29 year olds (47.4%) and road traffic accidents were the most common presenting mode of injury (53.2%). There was inconsistent availability of triage staff. However, the time from arrival to first encounter with casualty physician did not vary significantly between day and evening nor weekday and weekend. Very few patients had vital signs recorded with only 2.9% of patients having both blood pressure and respiratory rate recorded.

Conclusions: The time from presentation to encounter with the casualty physician was usually within an hour and did not vary despite inconsistent availability of support staff. This shows remarkable adaptability of the physicians who are working in a resource limited environment. In spite of working equipment we found inadequate recording of objective data with regards to severity of injury. Although time in the emergency department is relatively efficient we observed some patients would likely have benefited from additional interventions or evaluation prior to transfer to the ward. Locally driven sustainable interventions, for instance, a protocol for measuring vital signs and scoring patients may allow for a more effective distribution of resources, such as disposition of patients to a high dependency unit. We plan to use this baseline data to compare the efficacy and impact of such interventions. We expect to be able to make objective improvements to casualty care and ultimately impact the morbidity and mortality associated with injury in Uganda.

Abstract title: Comparing coordinated versus sequential salpingo-oophorectomy for BRCA1 & BRCA2 mutation carriers with breast cancer

Resident's name: Jocelyn Chapman, MD

Name of program: Obstetrics, Gynecology and RS

Purpose: Women with breast cancer who carry BRCA1 or BRCA2 (BRCA1/2) mutations must also consider risk reducing salpingo-oophorectomy (RRSO) and whether to coordinate that surgery with their breast cancer surgery. This retrospective study investigates the factors that may contribute to a patient's decision to have coordinated versus sequential surgery and compares the surgical outcomes of each.

Methods: We queried our Cancer Risk Program database of BRCA1/2 mutation carriers for all women diagnosed with breast cancer who knew their BRCA1/2 status prior to undergoing breast surgery.

Results: There were 47 patients who knew their mutation carrier status prior to undergoing breast cancer surgery. 27 (57%) chose coordinated surgeries, 12 (26%) underwent sequential surgeries, and 8 (17%) elected against RRSO. Coordinated surgery patients were 4.4 years older than their sequential peers, and 10 years older than their non-RRSO peers (p=0.016).

Women in the coordinated groups were more likely to have co-morbid conditions than those in the sequential and non-RRSO groups (16% vs. 48% and 50%, p=0.015). Neoadjuvant chemotherapy was more common among the coordinated versus sequential and non-RRSO groups (33% vs. 74% and 63%, p=0.012).

Total operating time was significantly different in each of the groups; sequential surgery patients had the longest operating times (M=8.43 hrs) followed by combined surgery patients (M=7.42 hrs) and patients who declined RRSO (M=3.97hrs), (p=0.003). Estimated blood loss and total length of hospital stay were not significantly different among groups. There were 8 minor post-operative complications in the coordinated group and no complications in the sequential group (p=0.05).

Conclusions: Coordinating RRSO with breast surgery is feasible and is associated with decreased total operating room and recovery time. Age, co-morbidities, neoadjuvant chemotherapy and operating times are significantly different in BRCA 1/2 mutation carriers who choose coordinated, sequential or no RRSO surgery and are factors to consider in counseling this unique group of patients.

Abstract title: Quality Assurance of Icd-9 Diagnosis Coding in Radiation Oncology: UCSF Experience

Resident's name: Chien (Peter) Chen, MD, PhD

Name of program: Radiation Oncology

Purpose: The recent increased scrutiny on radiotherapy (RT) patient safety necessitates improved quality assurance (QA). One critical aspect of QA is accurate documentation. An important component of this is the ICD9 diagnosis code, which is critical for patient care, billing purposes, and research endeavors. However, no current baseline data is available for radiation oncology. In this single institution study, we define the baseline ICD-9 diagnosis coding accuracy, identify the principle errors contributing to inaccurate coding, and implement a multi-modality strategy to improve coding.

Methods: As part of a graduate medical education QA project, we undertook a prospective study to improve ICD9 coding accuracy in our electronic medical record system (EMR). To identify the baseline ICD-9 coding accuracy, a chart review of all patients treated at UCSF between March and June of 2010 was performed. The ICD-9 code in our EMR was compared to that described in the patient's consultation note, which served as the gold-standard. Our strategy for improving documentation involved performing a departmental in-service that highlighted common coding errors, developing a user-friendly software tool for coding radiation oncology specific diagnoses, and acquiring funding to incentivize project participation. We then prospectively analyzed ICD-9 coding accuracy for all patients treated from July 2010 to June 2011. Our goal was to maintain 80% or higher coding accuracy for at least 9 of 12 months.

Results: Baseline coding accuracy for physicians was 70% for 661 total cases. Only 46% of physicians had coding accuracy above 80%. The most common errors involved metastatic cases, whereby primary and/or secondary site ICD-9 codes were either incorrect or missing, and special procedures, such as stereotactic radiosurgery cases. After instituting our project, we achieved our goal for all months. Overall coding accuracy was 92% (range 86% - 96%) for 1961 total cases. The median accuracy for all physicians was 93% (range 77% - 100%) with only one attending having accuracy below 80%. Statistically significant improvement of coding accuracy (p < 0.05) was seen for 6/14 attendings. Significant improvement in all types of coding errors was observed. Incorrect primary and secondary ICD9 codes in metastatic cases showed the most significant improvement (incorrect rate ~10% before to only ~2% after intervention). Significant ICD-9 coding improvement was also noted for stereotactic RT cases (38% accuracy before to 85% after project implementation). All tumor sites showed improvement in ICD-9 coding accuracy with most well above 90%.

Conclusions: ICD-9 diagnosis code documentation in EMRs can be poor if performed by physicians. After implementation of our QA initiative, we were successful in significantly improving our coding accuracy in all metrics. This QA project highlights the potential problem of ICD9 coding accuracy by physicians and offers an approach to effectively address this shortcoming.

Abstract title: Association of Clinical Manifestations with ompA Genotype in Ocular Strains of Chlamydia Trachomatis

Resident's name: Michael Chen, MD

Name of program: Ophthalmology

Purpose: To determine if the clinical manifestations of blinding trachoma are associated with ompA genotype in ocular chlamydia.

Methods: This study utilizes conjunctival swabs that were previously obtained from a clinical trial conducted in the Gurage Zone of southern Ethiopia. In the trial, all children aged 1-5 years from 26 different villages underwent conjunctival examination and swabbing at baseline, and at 2 and 6 months after a mass azithromycin treatment. Conjunctival examination was performed according to the WHO's simplified trachoma grading system, and classified as: No trachoma; TF (follicular trachomatous inflammation); or TI (intense trachomatous inflammation).

Samples positive for chlamydial DNA from 26 villages were selected at random to be tested for this study. Samples analyzed included those from baseline (n=122), 2 months after mass azithromycin treatment (n=122), and 6 months after mass azithromycin treatment (n=112).

DNA was extracted from each sample with the QIAamp DNA Micro Kit (Qiagen, Valencia, CA). A nested PCR was then performed to amplify the ompA region. Aliquots of purified PCR products were then sent for sequencing by Sequetech (Mountain View, CA). Samples were sequenced in both directions using the inner primers of the nested PCR. ompA genotypes were assigned after sequences were trimmed, edited, and aligned using Sequencher (Gene Codes Corporation, Ann Arbor, MI).

Logistic regression was performed to analyze the association of clinical grade and ompA genotype using Stata 10 (StataCorp, College Station, TX).

Results: We detected 10 different genotype sequences, which were broadly grouped into type A and type B. Compared to ompA type A, ompA type B was more likely to be associated with the clinical grade TF (follicular trachomatous inflammation) (OR 2.64, 95%CI 1.08 to 6.44) (p=0.03). Compared with ompA type A, ompA type B was more likely to be associated with clinical grade TI (intense trachomatous inflammation), although this was not statistically significant (OR 1.39, 95%CI 0.76 to 2.54) (p=0.29).

Conclusions: Clinical manifestations of ocular Chlamydia trachomatous may be associated with certain ompA genotypes.

Abstract title: Survival advantage with radiation combined with a selective BRAFV600E inhibitor in an orthotopic, intracranial model of BRAFV600E-mutated high-grade gliomas

Resident's name: Tina Dasgupta, MD, PhD

Name of program: Anatomic Pathology

Purpose: Treatment for high-grade gliomas (HGGs) involves maximal safe surgical resection followed by post-operative radiation (RT) and chemotherapy, but produces dismal survival results in both adults and children. BRAF and its downstream effector pMAPK are critical to the pathogenesis of HGGs: 3-6% of adult HGGs and 15-20% of pediatric HGGs harbor the BRAF mutation V600E. Mutations in RAF kinases have a known association with radioresistance. In this study, we aimed to determine whether the specific BRAFV600E inhibitor, PLX4720, enhances the efficacy of RT in HGGs in vitro and in vivo.

Methods: In vitro luminescent cell viability studies and clonogenic assays were performed with varying concentrations of PLX4720 using eight HGG cell lines, four with BRAFV600E mutations and four with wild type BRAF (BRAFWT). Expression of mediators of the MAPK and DNA damage response pathways were determined by Western blot, and cell cycle effects were determined using flow cytometry. Orthotopic intracranial xenografts of the BRAFV600E HGG cell line AM38 were treated with vehicle alone, PLX4720 alone, RT alone or combination of PLX4720 + RT. Brain tumor tissues were sectioned, paraffin embedded and characterized for tumor markers by immunohistochemistry (IHC).

Results: PLX4720 demonstrated anti-proliferative activity against HGG cell lines expressing BRAFV600E, but not those with BRAFWT. Treatment with PLX4720 decreased pMAPK and pMEK, and increased cleaved PARP and p95 (a protein critical to homologous recombination and the repair of damaged DNA). These effects were pronounced with the addition of RT. Cell cycle analyses demonstrated that PLX4720 caused G1 arrest in BRAFV600E cell lines, an effect that was also more pronounced by the addition of RT. In murine orthotopic xenografts, treatment with PLX4720 + RT led to a statistically significant survival advantage, when compared to treatment with vehicle (p: 0.0001), PLX4720 (p=0.0098) or radiation (p=0.0059). IHC of intracranial tumors demonstrated that PLX4720 + RT significantly reduced pMAPK and increased cleaved caspase 3.

Conclusions: The postoperative wound complication rate of 11.7% for patients who had prophylactic coverage of infrainguinal grafts is lower than the 20-40% rates documented without flap coverage. Therefore, selected vascular patients may benefit from prophylactic muscle flap closure of groin anastomoses. Further prospective studies to confirm this benefit are warranted.

Abstract title: Are Patients with Ischemic Heart Disease Living Long Enough to Die of Other Causes? Results from the Heart and Soul Study

Resident's name: Jeffrey Dixson, MD

Name of program: Internal Medicine

Purpose: Cardiovascular disease is the leading cause of death in the world and has always been considered the leading cause of death in patients with chronic ischemic heart disease (IHD). However, cardiovascular mortality has fallen markedly due to recent therapeutic advances. Whether patients with IHD may be living long enough to die of other causes has not been evaluated.

Methods: We determined causes of death in a contemporary cohort of 927 patients with chronic IHD. Participants with stable IHD enrolled in the Heart and Soul Study in 2000-02 and were followed for an average of 7.12 (SD 2.67) years, with 1% loss to follow-up per year. Causes of death were determined based on detailed review of medical records, death certificates and coroner reports by two blinded adjudicators. In the event of disagreement, a third blinded adjudicator was consulted.

Results: During 6587 81 person years of follow-up, a total of 297 participants (32%) died. Of the 297 deaths, 124 (42%) were due to cardiovascular causes, and 173 (58%) were attributable to non-cardiovascular causes (Table). Myocardial infarction, stroke, and sudden death accounted for 73% of the cardiovascular deaths. Cancer, pneumonia, and sepsis accounted for 71% of the non-cardiovascular deaths.

Conclusion: In a contemporary cohort of 927 patients with chronic IHD, the majority died from non-cardiovascular causes. These findings suggest that IHD therapies have improved to the point where patients with IHD may be living long enough to die of other causes.

Abstract title: Does Treatment of Adults with Pegylated-Asparaginase Result in a Greater Incidence of Hepatotoxicity Compared to L-Asparaginase?

Resident's name: Atefeh Fahimi, PharmD

Name of program: Pharmacy

Purpose: Hematological malignancies represent a major disease state contributing to both morbidity and mortality. Acute lymphoid leukemia (ALL) is an unregulated proliferation of lymphoid cells, which involves a very rapid process and can result in death if left untreated. In adults complete remission rates range from 80-90%, with 5 year event free survival rates of 35-40%. Asparaginase is an integral part of the therapy for treating patients with ALL, as well as NK T-cell lymphomas. Asparaginase is currently available in two different forms: L-asparaginase (derived from E. coli or Erwinia) or pegylated-asparaginase (PEG). PEG provides an alternative to L-asparaginase (ASP) in patients who are not able to tolerate the native form. Remission therapy for treating ALL utilizes either ASP or PEG, in conjunction with vincristine, steroids, doxorubicin, and cyclophosphamide. The pegylated form has a longer half-life of elimination, allowing for one-time dosing, and making it a much more appealing alternative to standard therapy. However, current literature is somewhat controversial in regards to the expected side-effect profiles of the two agents, specifically in regards to the hepatotoxic effects of the medication. Adult pharmacokinetics and adverse effects have not been as thoroughly studied. However, small studies have shown that adults have higher rates of hepatotoxicity and hyperbilirubinemia (51% and 24%, respectively) due to the pegylated form compared to children. This study will identify which formulation of asparaginase has greater hepatotoxicity in adult patients being treated at UCSF. The implications of these findings may be important in selecting the appropriate regimen for patients being treated for malignancies and reducing the incidence of hepatotoxicity in these patients.

Methods: This was a retrospective cohort study, evaluating patients 18 years and older admitted inpatient to UCSF Medical Center for ALL induction between January 2005 to November 2011 who received E.coli ASP or PEG. Data collection was limited to available electronic charting records for admitted patients. Patient selection was limited to those who were receiving an asparaginase product for the first time (no relapse or consolidation patients). Patients who received ASP and PEG in the same visit were excluded. Liver function tests were recorded at baseline, Day 2, Day 7, Day 30, and Day 60 following first dose of asparaginase. Peak values were identified at any point during between Day 0 and Day 60. Finally, based on peak values, toxicity grading was classified using the National Cancer Institute's Toxicity and Complications Criteria (v4.03). Statistical analysis was done using Graph Pad Prism statistical program. The average percentage change in LFT was analyzed with two-way ANOVA, with a Bonferroni post hoc analysis. The average percentage peak and time to peaks over the 60 day period was analyzed using a t-test. Statistical significance was defined as $p = 0.05$.

Results: Of the 2509 subjects that were enrolled, 1943 (77.4%) had a CXR alone and 566 (22.6%) had both a CXR and chest CT. 10.7% (265/2509) of all subjects were determined to have SITI: 26.4% were detected on CXR alone, 44.5% by both CXR and CT, and 29.1% on CT alone (where CXR missed the injury). In 13.6% (77/566) of patients who had a chest CT, SITI was missed on the CXR. 42.8% (33/77) of the missed injuries were from multiple rib fractures, of which 25.9% (20/77) were from pulmonary contusion. Of those patients with missed injuries on CXR and seen on CT, 31/77 (40%) patients had injuries that qualified as a management changing chest injury (MCCI). Of 33 missed multiple rib fractures, 24 led to MCCI.

Conclusions: This study was the first of its kind to quantify the change in liver function tests following the administration of either L-asparaginase or pegylated asparaginase in patients with ALL or NK/T-cell lymphomas. Longitudinal comparison did not show a difference in liver function tests over 60 days, but there was an overall trend towards increasing LFTs beginning at around Day 30, which may correspond with etoposide and cytarabine or methotrexate used in consolidation therapy. Significant differences were seen in peak values for ALT and total bilirubin. Preliminary comparison suggests that patients receiving intravenous PEG are more likely to develop Grade 3 hyperbilirubinemia, however this warrants further investigation. Finally, further studies will need to be conducted to evaluate differences in cost for both patients and providers.

Abstract title: Prevalence and Associations of Vitamin D Deficiency in Medical Outpatients and Inpatients

Residents name: Marriane Ghobrial, MD

Name of Program: Internal Medicine

Purpose: To determine the prevalence of vitamin D deficiency (VDD) and associations between VDD and clinical parameters in medical outpatients (OP) and inpatients (IP)

Methods: This retrospective study was conducted at a community hospital in Fresno, California. The medical OP and IP, who had serum 25 hydroxyvitamin D [25(OH)D] measured from July 2009 to June 2011 for any reason, were included in the study.

Results: We studied a total of 1548 patients: 536 OP (mean age 55years, 62% female, 55% Hispanics, mean 25(OH)D 19.4mg/dl) and 862 IP (mean age 59years, 49% female, 41% Hispanics, mean 25(OH)D 16.3mg/dl). 16.4% of OP and 30.4% of IP had severe VDD (10mg/dl) whereas 56.6% OP and 70.1% IP had VDD (20). In both groups, those with VDD were younger (OP 54 vs 57years;IP 58 vs 63), had higher body weight (OP 188 vs 181lbs;IP 175 vs 162), lower total calcium (OP 9.3 vs 9.5mg/dl;IP 8.5 vs 8.8), higher HbA1c (OP 7.2 vs 6.6%;IP 6.8 vs 6.0), lower hemoglobin (Hb) (OP 12.2 vs 12.8mg/dl;IP 10.3 vs 10.8), higher triglyceride (OP 170 vs 135mg/dl;IP 139 vs 121), higher LDL (OP 103 vs 93mg/dl;IP 82 vs 75), higher TSH (OP 5.5 vs 2.1mU/L;IP 4.4 vs 3.8), higher PTH (OP 129 vs 113mg/dl;IP 219 vs 141), than those without VDD. In multivariate regression analysis, the presence of DM (OR 4.25; 95% CI 1.46-12.39), higher LDL (OR 1.025; 95% CI 1.00-1.04) and lower Hb (OR 0.61; 95% CI 0.44-0.85) levels in OP and younger age (OR 0.969; 95% CI 0.945-0.994), lower albumin (OR 0.374; CI 0.198-0.708) and higher PTH (OR 1.003; CI 1.000-1.006) levels in IP were independently associated with VDD.

Conclusions: Prevalence of VDD is surprisingly high though there is abundant sunlight in Fresno at Central California (36.7 N latitude and 267 total days with sun). Old age is considered to be one of the major risk factors for VDD in general population. However, in our study, those with VDD were significantly younger than those without. The prevalence of VDD was much higher and mean 25(OH)D level was significantly lower in IP than in OP, that may suggest that acute medical conditions or exacerbation of chronic diseases may associate with higher risk of VDD.
The presence of DM, elevated LDL and low Hb levels were significantly associated with VDD in OP whereas younger age, lower albumin and higher PTH levels were independently correlated with VDD in IP.

Abstract title: Association between white blood cell count and heart failure in The Heart and Soul Study

Resident's name: Elizabeth Hardin, MD

Name of program: Internal Medicine

Purpose: Higher white blood cell (WBC) levels, even within the normal range, have been associated with an increased risk of heart failure. However, the mechanisms underlying this association are incompletely understood.

Methods: We measured baseline WBC levels in a prospective cohort study of 999 outpatients with stable coronary artery disease (CAD) who were recruited between September 2000-December 2002. During 7 years of follow-up, heart failure hospitalizations were determined by review of medical records. We used Cox proportional hazards models to determine the association between baseline WBC and subsequent heart failure, with sequential adjustment for traditional risk factors, ventricular function and cytokine levels (C-reactive protein [CRP] and Interleukin-6 [IL-6]).

Results: During an average of 7.1 years follow-up, 173 participants were hospitalized for HF. The proportion of participants hospitalized for HF ranged from 10.6% (27/255) among patients with WBC levels in the lowest quartile (5.3 K/cmm) to 27.8% (68/245) among those with WBC levels in the highest quartile (7.5 K/cmm) (HR 3.1, 95% CI, 1.96-4.79; 0.001). After adjustment for demographic factors, comorbid conditions, and other cardiovascular risk factors, increased WBC (quartile IV vs. I) remained associated with a 2-fold greater risk of heart failure (HR 2.05, 1.26 - 3.33; p=0.003). This association was partly attenuated after adjustment for systolic and diastolic function (HR 1.61, 95% CI, 0.92 - 2.83; p=0.10) and eliminated after further adjustment for cytokine levels (log CRP, log IL-6) (HR 1.33, 95% CI, 0.74-2.4; p=0.34).

Conclusions: We found that a higher WBC level predicts heart failure among patients with existing CAD. This association appeared to be explained by worse baseline ventricular function and elevated cytokines levels. These findings suggest that elevated WBC is a marker of worse cardiac disease severity among patients with existing CAD.

Abstract title: The Association Between Use of Non-Injection Drug Implements and Hepatitis C Virus Antibody Status in Homeless and Marginally Housed Persons in San Francisco

Resident's name: Keith Hermanstyne, MD, MPH

Name of program: Psychiatry

Purpose: Up to 17,000 persons in the US became infected with hepatitis C virus (HCV) in 2007, and many cases have unknown transmission routes. Research to date on transmission of HCV via shared implements used to snort or smoke non-injection drugs has been inconclusive.

Methods: We tested stored sera for HCV antibodies (anti-HCV) in a large population-based study of homeless and marginally housed persons in San Francisco. We examined the association between sharing implements used for snorting and smoking drugs and anti-HCV while controlling for sociodemographic variables in those who denied ever injecting drugs (N=430). We also examined the association of anti-HCV status with history of incarceration, tattoo and piercing history, sexual history, and alcohol consumption.

Results: Seventeen (17%) percent of our sample was anti-HCV positive. We found no statistically significant associations with sharing implements used to smoke or snort drugs with anti-HCV status in our various multivariate models. There was a statistically significant negative association between ever snorting cocaine and anti-HCV status (AOR: 0.39; 95% CI: 0.21-0.73). There were no other statistically significant associations with any other measured covariates in multivariate analyses.

Conclusion: Our findings suggest that sharing implements to snort or smoke drugs is not a significant risk factor for anti-HCV positive status.

Abstract title: The Impact of Participation in a School Garden on Health Behaviors and Attitudes of High School Students and their Families

Resident's name: Katey Hoffman, MD

Name of program: Pediatrics

Purpose: Background & Purpose: Childhood obesity is a national epidemic. The prevalence of obesity in San Francisco's Western Addition has increased to almost 30% of children. In response, Primary Care Track pediatrics residents have collaborated with a local high school to build and maintain a school garden as the basis for engaging youth in conversations around nutrition and healthy lifestyles. This study aims to examine the impact of high school student participation in the Gateway High School-based garden club on health behaviors and attitudes of student participants and their families.

Methods: Methods: This study is designed as a controlled prospective assessment utilizing pre- and post-intervention health behavior surveys. The intervention group consists of self-selected Gateway Garden Club student members in grades 9 through 12 (n=6), and the control group consists of 10th grade biology students (n = 19). The study intervention is voluntary membership in the Garden Club, including participation in weekly club meetings, periodic field trips, and school / community events during the 2011-2012 school year. Both groups completed IRB-approved health behavior surveys at the start of the school year (September 2011), and will complete the same surveys at the end of the school year (May 2012). The surveys contain validated Likert scale-type and open-ended questions about nutrition and health behaviors. The surveys are coded so that individual participants can be compared pre- and post-intervention. Data presented here represent only pre-survey information gathered in September 2011 as this project is a work in progress. Descriptive statistics were completed using Student's t-test and Fisher's exact test.

Results: Results: The pre-intervention survey data measure self-reported consumption of fresh produce, sugar-sweetened beverages and foods, physical activity level, participation in family food shopping, and family meal preparation among other topics. The preliminary data indicate that both intervention and control groups self-report similar pre-intervention consumption of fresh produce, sugar-sweetened beverages and high sugar foods, activity level, and participation in family food shopping and meal preparation. The majority of students in both groups report similar sentiment about receiving proper nutrition at home but not at school. Subjectively from open-ended response questions, many students in both groups report feeling that pediatricians could play a greater role in education around healthy eating and lifestyle using specific guidelines.

Conclusions: Conclusions: Pre-intervention data demonstrate similarities in the baseline health behaviors and attitudes of surveyed high school students. When our post-intervention data is collected, we hope to demonstrate that participation in the school-based garden club has a positive impact on health behaviors and knowledge among student club members and their families. If successful, this study may serve as a model for using a simple survey evaluation tool to assess impact of other school-based child health interventions on student and family behaviors. The information gained from this assessment will also provide insight into specific community health needs and desired initiatives, which will inform the future objectives and direction of this resident and community collaboration. The data in this project are limited due to the small sample size, selection bias, imperfectly matched intervention and control groups, and difficulty with standardizing the intervention across participants.

Abstract title: Patient reported outcomes is affected by environment at time of reporting.

Resident's name: Patrick Horst, MD

Name of program: Orthopaedic Surgery

Purpose: Clinical outcomes research including patient centered and patient reported outcomes is an increasingly important consideration in evaluating the efficacy of medical interventions. Previously, patient driven outcomes were collected during clinic visits. With technology it is now possible to collect these data through a number of ways including web-based home input and mobile applications. It is not known to what extent the mechanism by which data is collected and the environment that patients are in affects patient reported outcomes, i.e. could the stresses involved in a doctors visit cause patients to over-report or overestimate functional difficulties and pain? Our hypothesis is that web-based reporting at home would provide a more accurate reporting of patient centered outcomes compared to input during a clinical encounter.

Methods: Since 1997 the UCSF arthroplasty service has recorded validated patient reported outcomes on patients undergoing total knee and hip arthroplasty (TJA). In 2009, we offered patients the ability to fill outcome scores out at home, via a web based input system. To determine the effect of format entry, we compared the preoperative outcomes scores of patients that entered their information at home by the web-based system to the scores entered by patients during their clinic visit. We included six separate validated patient reported outcomes scores in our analysis: SF12, WOMAC, KSS, KOOS, Harris hip score, HOOS.

Results: The preoperative patient reported outcomes were statistically higher for patients that entered their outcome data at home in four of six of the categories we examined.

Conclusion: The environment in which one enters outcome data significantly impacted the results of patient reported outcomes in our study. The results of this study show that patients who enter their outcomes scores at home via a web-based input system have better scores that those who enter during a clinic visit. Further research is needed to better elucidate the casual reasons for this. We are continuing to investigate our series of outcomes to this end.

Abstract title: A Resident-Led Incentive Program to Improve Advance Care Planning Documentation

Resident's name: Joshua Lakin, MD

Name of program: Internal Medicine

Purpose: While documentation of Advance Care Planning (ACP) is often driven by outpatient providers, in-patient hospitalization presents a unique opportunity to build upon goals of care conversations. Based on a review of the current literature, we believed that increasing rates of specific types of ACP documentation would benefit patients by better aligning care delivery with patient wishes at transitions in care setting. We describe here the assessment of a resident-led incentive program to improve both the rates and quality of ACP documentation in the inpatient setting at UCSF.

Methods: A group of residents at a 600 bed academic medical center designed this project as a submission to a medical center sponsored financial incentive program for house-staff guided quality improvement projects. We designed a template integrated into the hospital's electronic discharge summary, chosen for its easy accessibility to primary care providers (PCPs) and emergency room physicians. The template prompts inclusion of 1) expressed wishes for end-of-life care, 2) mode of communication of the wishes, 3) whether the wishes represented a change from prior, 4) the name and contact information for a Durable Power of Attorney for Healthcare or Emergency Contact and 5) PCP notification of changes in ACP. The incentive program is based on completion of questions 1 and 4 within 48 hours of discharge for patients admitted to the medicine teaching service. The program was launched on July 1, 2011; to meet the incentive goal, residents were required to achieve a 75% completion rate in at least 3 of 4 quarters during the 2011-2012 academic year. If residents achieve this goal they each will receive a $400 bonus at the end of the academic year. Several cycles of continuous improvement focused on simplifying the template for easier use, providing useful forms of real time feedback to residents about their individual rates of completion, and increasing education about the location and benefits of the template to inpatient, emergency room, and outpatient providers. We have measured the above data now for over 6 months on the resident teaching service and, for comparison purposes, two separate non-resident hospitalist services.

Results: To date, over 1500 charts have been reviewed in total by the two resident champions. Rates of ACP documentation of expressed wishes and presence of a proxy decision maker for patients admitted to the teaching service have increased from 21% in July to above 89% for 5 consecutive months. In comparison, documentation of surrogate decision makers has remained at 21% on the non-resident services. More recent work has focused on improving the quality of data and over the last 178 charts reviewed, 70% of resident completed charts had the phone number completed for the surrogate decision maker for discharged patients. The remainder of work will focus on enhancing the quality of ACP discussions and working on more deeply evaluating the impact of this work on patient care in order to distribute to the scientific community.

Conclusions: Our trainee-run program aimed at increasing rates of ACP documentation has been highly successful, increasing targeted documentation rates from below 20% to over 90%. The success has been driven by a combination of a simple design, frequent team feedback, open data sharing among participants, and a small financial incentive. Importantly, this work is encouraged by an academic environment that nurtures quality improvement projects. The project team will be continuing work on assessing the impact to patient care as the program continues.

Abstract title: Rates and Appropriateness of Antimicrobial Prescribing at an Academic Children's Hospital, 2007-2010

Resident's name: Emily Levy, MD

Name of program: Pediatrics

Purpose: Antimicrobial use in hospitalized children has not been well described. To identify targets for antimicrobial stewardship interventions, we retrospectively examined pediatric utilization rates for 48 antimicrobials from 2007 to 2010 as well as appropriateness of vancomycin and cefepime use in 2010.

Methods: This study included all children hospitalized between 2007 and 2010 at the Mayo Clinic Children's Hospital, a 120-bed facility within a larger adult hospital in Rochester, Minnesota. We calculated antimicrobial utilization rates in days of therapy per 1,000 patient-days. Details of vancomycin and cefepime use in 2010 were abstracted by chart review. Two pediatric infectious disease physicians independently assessed appropriateness of antibiotic use.

Results: From 2007 to 2010, 9880 of 17,242 (57%) hospitalized children received one or more antimicrobials. Antimicrobials (days of therapy per 1,000 patient-days) used most frequently in 2010 were cefazolin (97.8), vancomycin (97.1), fluconazole (76.4), piperacillin-tazobactam (70.7), and cefepime (67.6). Utilization rates increased significantly from 2007 to 2010 for 10 antimicrobials, including vancomycin, fluconazole, piperacillin-tazobactam, cefepime, trimethoprim-sulfamethoxazole, caspofungin, and cefotaxime. In 2010, inappropriate use of of vancomycin and cefepime was greater in the pediatric intensive care unit than ward (vancomycin: 17.8% vs. 6.4%, $p = 0.001$; cefepime: 9.2 vs. 3.9%, $p = 0.142$) and on surgical vs. medical services (vancomycin: 20.5% vs. 8.0%, $p = 0.001$; cefepime: 19.4% vs. 3.4%, $p = 0.001$). The most common reasons for inappropriate antibiotic use were failure to discontinue or deescalate therapy.

Conclusions: In this children's hospital, use of 10 antimicrobials increased during the study period. Inappropriate use of vancomycin and cefepime was greatest on the critical care and surgical services, largely as a result of failure to de-escalate therapy, suggesting targets for future antimicrobial stewardship interventions.

Abstract title: Epidemiology and Outcomes in Hiv/Aids Patients Undergoing Primary Total Hip and Knee Arthroplasty

Resident's name: Carol Lin, MA, MD

Name of program: Orthopaedic Surgery

Purpose: We hypothesized that undergoing primary total hip (THA) and total knee arthroplasty (TKA) are becoming more common in HIV positive patients and that HIV infection in patients undergoing THA and in the post-HAART era would not be an independent risk factor for postoperative complications. Our goal was to assess independent risk factors for perioperative complications in HIV-positive and negative patients undergoing primary total joint arthroplasty.

Methods: The Nationwide Inpatient Sample (NIS) from 2000 - 2008 was queried to identify patients undergoing primary THA or TKA. HIV, preoperative comorbidities, and postoperative complications were identified by ICD9-CM codes. Data was analyzed using linear regression analysis, multivariate logistic regression analysis, and pearson chi-squared tests.

Results: A total of 1,225,616 primary THA and TKA were performed and 1,847 (1.5%) of these admissions had a diagnoses of HIV or AIDS. The rate of primary THA and TKA in HIV positive patients increased significantly during the period studied (R2=0.8). Patients with HIV were younger, more likely to be male, and more likely to have a diagnosis of osteonecrosis. They were more likely to have renal, liver, and pulmonary disease, as well as have a diagnosis of coagulopathy and drug use. Patients with HIV had a higher statistically but not clinically significant risk for immediate postoperative complications (13% v 11%, 0.001) and had a higher rate of staying longer than 6 days in the acute care setting. HIV was not a significant risk factor for postoperative complications on regression analysis. Peripheral circulatory disease, coagulopathy, and inflammatory arthropathy were the most significant risk factors for immediate postoperative complications.

Conclusions: Patients with HIV have a slightly higher risk of immediate postoperative complications because of a higher rate of comorbidities. HIV infection does not appear to be an independent risk factor for perioperative complications. Additional long-term clinical data is needed to assess the independent effect of HIV on outcomes in THA and TKA.

Abstract title: Using the University Health Consortium Expected Probability of Mortality to Predict Outcomes in the Critically Ill

Resident's name: Angela Lipshutz, MD, MPH

Name of program: Anesthesiology

Purpose: Quality benchmarks are increasingly being used to compare the delivery of healthcare on the individual and systems levels, and may affect reimbursement in the future. The University Health Consortium (UHC) expected probability of mortality (EPM) is one such quality benchmark. The UHC EPM is calculated at the patient level, based on a complex algorithm that includes diagnosis and comorbidities. Although the UPC EPM is used to compare quality across UHC institution members, it has not been prospectively validated in the critically ill. We compared characteristics of the UHC EPM and the Mortality Prediction Model III (MPM-III), a prospectively validated model for estimating intensive care unit (ICU) mortality, in our ICU population.

Methods: The study period ranged from January 1, 2009 to September 30, 2011. The first 100 consecutive adult patients discharged from the hospital (including deaths) each quarter that had an ICU stay were included. Repeat admissions were excluded. MPM-III score was calculated using data derived retrospectively from the clinical record. The UHC EPM was obtained from administrative data. The predicted mortalities were compared using the paired t-test and the Wilcoxon sign rank test. Overall model performance was assessed via Brier scores. Each model's receiver operator characteristic was determined and tested for goodness of fit. The UHC EPM and MPM-III were compared using Pearson's correlation coefficient and Bland Altman plots.

Results: A total of 891 patients were included in the analysis. The UHC and MPM-III mean predicted mortalities were 8.22% (95% CI 7.17-9.28) and 14.29% (95% CI 13.16-15.44), respectively (paired t-test p < 0.0001). Median predicted mortalities for UHC and MPM-III were 1.90% (IQR 0.36-7.78) and 7.40% (IQR 3.21-17.34), respectively (Wilcoxon sign rank p < 0.0001). Both the UHC model and the MPM-III model had excellent overall performance (Brier score 0.05 and 0.06, respectively). The area under the receiver operating characteristic curve was good for both models (UHC 0.90, 95% CI 0.86-0.93; MPM-III 0.87, 95% CI 0.83-0.91; p = 0.28). The Hosmer-Lemeshow goodness-of-fit test was statistically significant for both models (UHC p = 0.002, MPM-III p = 0.0003). The R-squared for the two models was 0.23. The Bland Altman plot showed good agreement at low predicted mortality, but as predicted mortality increased, the models diverged.

Conclusions: Both the UHC model and the MPM-III model exhibited excellent overall performance and discrimination in predicting ICU mortality in our population. However, both models were poorly calibrated. Correlation between the two models was poor due to divergence of the models at high predicted mortality. Thus, use of the UHC EPM for comparison of ICU quality across institutions should be done with caution, and its inclusion in a pay for performance scheme is premature.

Abstract title: Obesity and Kidney Function Decline in Non-Diabetic Adults

Resident's name: Anna Malkina, MD

Name of program: Internal Medicine

Purpose: Obesity is a rising epidemic in the United States, and it is a known risk factor for adverse health outcomes. Obesity is associated with higher incidence of end-stage renal disease (ESRD), but whether there is an independent association between obesity and earlier forms of kidney disease is less well established.

Methods: We examined the association between body mass index (BMI), waist circumference (WC), and waist-to-hip ratio (WHR) with rapid kidney function decline and incident chronic kidney disease (CKD) in a multi-ethnic cohort of 4,573 non-diabetic adults with eGFRCr = 60ml/min/1.73m2 at study baseline. Kidney function was measured using creatinine and cystatin C. Rapid decline was defined as eGFR decline of 5% ml/min/year during the follow up period. Incident CKD was defined as development of eGFRCys 60 ml/min/1.73m2 and decline in eGFRCys of 1 ml/min/year at follow up. We used logistic regression (for rapid decline) and Poisson (for incident CKD) with serial adjustments for age, baseline eGFR, race, and hypertension.

Results: Among 4,573 non-diabetic adults in MESA, mean age was 60 (10) years old, 48% were men, 12% were Chinese, 27% were Black, and 22% were Hispanic. Mean BMI was 22.6 (1.8) kg/m2. Mean baseline eGFRCr was 82-13 and eGFRCys was 95-16 ml/min/1.73m2. Among the participants in this study 25% (N=1,161) had rapid decline by eGFRCr, and 22% (N=988) by eGFRCys. BMI was associated with rapid kidney function decline, but the strength and shape of association varied by the filtration marker used. When using eGFRCr, we found that overweight persons had the lowest risk of rapid decline, odds ratio (OR) 0.84, 95% confidence interval (CI) 0.71 to 0.99, compared with persons with normal BMI. In contrast, when using eGFRCys, only the most obese persons with BMI = 35 kg/m2 were at increased risk with OR 1.87 and CI 1.41 to 2.48. High WC and WHR were associated with increased risk of rapid kidney function decline in cystatin C (1.38 (1.12 to 1.69) and 1.16 (0.97 to 1.39)) but not creatinine models (1.01 (0.84 to 1.21) and 0.94 (0.80 to 1.11)) respectively. During follow-up, 3.3% (N=150) of participants developed incident CKD. Increasing BMI categories, and high WC and WHR were associated with a stepwise increase in the age-adjusted rates of incident CKD, but these associations were attenuated after full adjustment. The incidence rate ratios (IRR) with confidence intervals (CI) for highest BMI, WC, and WHR categories for incident CKD were 0.85 (0.48, 1.49), 1.28 (0.82, 2.01), and 1.12 (0.71, 1.74) respectively.

Conclusions: Obesity may be a risk factor for rapid kidney function decline and incident CKD. Future studies are required to elucidate mechanisms to explain observed associations.

Abstract title: Do Physical Exam Findings Correlate with the Presence of Fever in Patients with Skin and Soft Tissue Infections?

Resident's name: Jillian Mongelluzzo, MD

Name of program: Emergency Medicine

Purpose: Skin and soft tissue infections (SSTI), primarily cellulitis and abscesses, are common reasons for presentation to acute care facilities and admission to inpatient hospital facilities. Few investigations have actually been conducted to understand the relationship between clinical examination findings and the occurrence of fever. Given the impact the presence of fever has on the decision to admit versus discharge, the objective of our study was to determine which physical exam findings, such as area of erythema or location of infection are associated with the presence of fever.

Methods: We conducted a prospective observational study at an urban county trauma center, from June 2007 till October 2011. We enrolled adults 18 years who presented to the ED for evaluation of suspected skin or soft tissue infections. Treating providers prospectively completed a data sheet (with an attached tape measure for accuracy) recording area of erythema (cm2), presence of adenopathy, streaking, and joint involvement. Any fever (temperature 38- C) within the first 6 hours of presentation, per nursing records, was collected. Enrolled subjects were followed through the hospital stay to determine laboratory, microbiology, and admission data.

Results: 734 patients were enrolled. Fever was present in 96 (13%) of patients. Febrile patients were found to have a significantly larger area of erythema compared to those patients who were afebrile (Kruskal-Wallis test p=0.0001). Patients with facial infections were found to not be more likely to be febrile when compared to patients with infections in other locations (X2= 2.12, p = 0.146); however patients with upper extremity infections were more likely to be febrile when compared to patients with infections in other locations (X2 = 12.8, 0.0001). A leukocytosis was significantly more common in patients who were febrile than in afebrile patients (X2=27.2, 0.0001).

Conclusions: The presence of fever is not a common finding in patients presenting to the ED for evaluation of suspected SSTI. Our study finds that area of erythema, location of infection, and leukocytosis are correlated with the presence of a fever. This may further help to create a decision rule for patients with skin and soft tissue infections to aid in decisions regarding disposition.

Abstract title: "A Lot of Medicine, Okay?": Gaps in Communication in Outpatient Cardiology Clinic Encounters

Resident's name: Anna Neumeier, MD

Name of program: Internal Medicine

Purpose: To examine the adequacy of communication needed for self-management in outpatient visits to a cardiology clinic within a safety-net health care system

Methods: We reviewed 10 audiotaped clinical encounters obtained as part of a larger observational communication study of patients cared for in an outpatient county-based cardiology clinic. Data analysis is ongoing. The encounters were audiotaped, transcribed verbatim, de-identified, and translated (English, n=12; Spanish, n=14). One investigator read all transcripts, listened to all recordings and assembled a coding scheme which was collaboratively revised by the entire team. Then two investigators reviewed and applied codes to the transcripts. Differences were resolved by discussion. Thematic saturation was obtained after review of 10 interviews. All analyses were done using Atlas.ti software. For this analysis, we report on themes relating to medication use, diagnosis, and symptom assessment, which are core aspects of ambulatory chronic disease care. We calculated the Medication Communication Index (MCI), a validated measure of medication communication adequacy, for each visit.

Results: 10 interviews have been analyzed to date. Nearly half of the interview content was medication-related (118/256). The majority of these themes related to medication reconciliation (87/118). There was usually an approach to obtain a comprehensive patient medication list (7/10) with frequent discussion of the medication names (33/87) but often not the directions (13/87), dose (9/87) or medication indication (9/87). When new medications were introduced, the name, directions and indications were mentioned (5/5). Anticipated duration and side effects were omitted. The average MCI score was 2/5.

Symptom assessment was variable, with an average of 2 symptoms per visit, but ranging from no symptom discussion (2/10) to 11 symptoms (3/10) discussed. The most commonly discussed symptoms included palpitations (5/10) and shortness of breath (5/10). In 4/10 interviews an assessment of the patient's functional status/New York Heart Association (NYHA) class was obtained.

During an encounter, 1-4 patient diagnoses were discussed either explicitly or implied. "The problem is you have a weak heart now due to the heart attack." The most common diagnoses were hypertension and heart failure. Investigators were unable to deduce the diagnosis from the transcript in 4 cases.

Conclusions: In the outpatient cardiology setting, discussion of medication-related topics occupies the majority of the clinical encounter, yet falls short of recommended communications standards. Symptom assessment and determination of functional status, although critical for provision of anticipatory guidance, is variable and at times absent. Similarly, communication about specific diagnoses was less frequent than expected and may impact patients' understanding of their illness. Overall, our findings imply that communication in outpatient visits does not adequately support patient self-management for cardiac diseases.

Abstract Title: Association Between HIV-Specific Factors and ADMA

Resident's Name: Rushi Parikh, MD

Name of Program: Internal Medicine

Purpose: HIV-infected individuals have higher rates of atherosclerosis in comparison to uninfected individuals. Endothelial dysfunction has been proposed as a possible mechanism underlying this increased cardiovascular (CV) risk. Asymmetric dimethylarginine (ADMA) is an endogenous inhibitor of endothelial nitric oxide synthase. Among uninfected individuals, higher ADMA levels predict CV events and mortality. The association between HIV-related factors and ADMA has not been described.

Methods: We measured ADMA levels in 212 HIV-infected men and 50 controls using HPLC. We compared baseline ADMA levels between these two groups using robust linear regression models. Follow-up ADMA levels were available for 45 HIV-infected participants and were incorporated into the analysis using linear mixed models. We performed multivariable analysis using traditional and HIV-specific risk factors as covariates to identify factors associated with ADMA in all HIV-infected participants.

Results: HIV-infected men were older (median age 49 vs. 42), less often Caucasian (67% vs. 78%), and had higher rates of hypertension and dyslipidemia compared with uninfected men. The median duration of HIV infection was 6 years (IQR 3-10), median CD4+ T-cell count was 592 cells/mm3 (372-775), and two-thirds were treated with antiretroviral therapy with HIV RNA level <75. ADMA levels were higher in HIV-infected patients compared to controls (mean SD: 0.47 0.09 vs. 0.44 0.07 uM, p=0.019), but the association weakened after controlling for traditional CV and HIV-specific risk factors (+0.028, 95%CI: -0.0005 to 0.057, p=0.054). Lower current CD4+ T-cell counts, detectable HIV RNA levels, and smoking were independently associated with higher ADMA.

Conclusions: HIV-infected men have modestly increased ADMA levels in comparison to controls. Notably, lower CD4+ T cell counts and elevated HIV RNA levels are independently associated with higher ADMA. Our findings suggest that HIV infection impairs endothelial function and predisposes to atherosclerosis via an increase in ADMA levels. Future studies will be needed to determine if these elevated ADMA levels are associated with cardiovascular outcomes.

Abstract Title: ADMA and Pulmonary Arterial Hypertension in HIV Infection

Resident's Name: Rushi Parikh, MD

Name of Program: Internal Medicine

Purpose: HIV infection is an independent risk factor for pulmonary arterial hypertension (PAH), but the underlying mechanisms remain unknown. Asymmetric dimethylarginine (ADMA) is an endogenous inhibitor of endothelial nitric oxide (NO) synthase. As NO inhibits thrombosis, inflammation, and smooth muscle proliferation, key mechanisms in PAH, loss of NO due to elevated ADMA might lead to PAH. The purpose of this study was to evaluate the association between ADMA and PAH in the setting of HIV infection.

Methods: We measured ADMA using high-performance liquid chromatography in HIV-infected individuals. Pulmonary artery systolic pressure (PASP) was assessed in all subjects with Doppler echocardiography and confirmed by right heart catheterization in individuals with PASP 30 mmHg. We used Poisson regression with a robust variance estimator to determine the relative risk for factors associated with PAH (PASP 30 mmHg or mean PAP 25 mmHg).

Results: We studied 162 HIV-infected individuals; with median age 50 years, 84% male, 73% on antiretroviral therapy, 75% with undetectable HIV RNA levels, and median CD4+ count 576 cells/mm3. The median ADMA was 0.48 181;mol/l (IQR 0.43-0.54). The unadjusted rank correlation between ADMA and PASP was r=0.14 (p=0.074). In unadjusted analysis, ADMA was associated with higher prevalence of PASP 30 mmHg [prevalence ratio (PR) = 1.23, 95% CI 1.01-1.51, p=0.044]. The association was slightly attenuated after multivariable adjustment for traditional pulmonary hypertension and HIV-specific risk factors (PR=1.22, 95% CI 0.99-1.51, p=0.063). Sixty seven patients underwent right heart catheterization, and the unadjusted rank correlation between ADMA and PAP was r=0.21 (p=0.096). In unadjusted analysis, ADMA was associated with PAP 25 mmHg (PR=1.30, 95% CI 1.03-1.63, p=0.026). The association remained significant after multivariable adjustment (PR=1.28, 95% CI 1.00-1.64, p=0.046).

Conclusions: High ADMA levels are associated with PAH among HIV-infected individuals. Our findings suggest that endothelial dysfunction secondary to elevated ADMA leading to a loss of nitric oxide may represent a novel mechanism for HIV-associated PAH.

Abstract Title: Influences on Surrogates' Willingness to Enroll Relative with Alzheimer's Disease in Clinical Research

Resident's Name: Uyen-Khanh Quang-Dang, MS, MD

Name of Program: Psychiatry

Purpose: Investigators generally address the ethical dilemma of patients' decisional impairment in Alzheimer's disease (AD) research by obtaining consent from alternative decision makers (surrogates) as well as assent from patients. Prior research on Influences on these surrogates' decisions have focused primarily on their assessment of research risks and benefits. Given the ethical principle of substituted judgment, it is also important to ascertain whether surrogates are trying to make a decision based on how their relative would decide. This study examined multiple potential influences on surrogates' willingness to enroll their relative with AD in clinical research.

Methods: Surrogate decision makers (n=142; primarily spouses and adult children) of people with AD were interviewed in-depth regarding their perceptions, including willingness to enroll their relative, regarding one of four hypothetical clinical trials for an investigational drug for AD. The four protocols were varied systematically, with two levels of described potential benefit (low and high), and two levels of described potential risk (low and high). Open-ended and rating-scaled items assessed willingness to enroll one's relative in the hypothetical research protocol, ratings of the described research protocol's risks and benefits, a range of potential influences on decision making, and willingness to override a relative's preferences regarding research participation. Caregiver burden and depressive symptoms were assessed with the Zarit Burden Inventory and Quick Inventory of Depressive Symptoms, respectively. Overall attitudes toward research were assessed with the 9-item Research Attitudes Questionnaire. Information regarding AD patients (age, living situation, illness severity as assessed by the Global Deterioration Scale, and neuropsychiatric symptoms) was obtained from surrogates. The surrogate was also asked to rate their relative's overall quality of life (QOL) from their own and from the patient's perspective.

Results: Surrogates had overall positive attitudes toward biomedical research. Surrogates' willingness to enroll their relative was positively correlated with their expectation that the study would benefit their relative (r=.420, .001), their perception that the study's benefits outweighed the risks (r=.676, .001), their perception of their relative's willingness to enroll in the described study (r=.612, .001), their rating of their relative's interest in participating in medical research (r=.430, .001) and in AD research (0.419, .001), their personal interest in enrolling in research (r=.248, p=.002), their personal interest in participating in AD research (r=.362, p=.001), their interest in enrolling their relative in research in general (r=.301, .001), and their overall attitudes toward biomedical research (r=.182, p=.015). In contrast, surrogates' willingness to enroll their relative was negatively correlated with the perceived level of risk of the hypothetical protocol (r=-.641, .001). Willingness to enroll was not associated with the patient's quality of life, caregiver burden, caregiver depression, or the patient's neuropsychiatric symptoms. In stepwise regression, the predictors that remained significant were perceived level of risk, perceived level of benefit, and the surrogate's rating of the patient's willingness to enroll. Approximately half of the surrogates indicated that they agreed or strongly agreed that they would be willing to override their relative's research participation preferences. Greater willingness to override their relative's preferences was associated with the view that their relative was unable to make their own decisions regarding research participation.

Conclusions: Surrogate decision making for AD research (using hypothetical clinical trials as the "stimulus" protocol) was primarily influenced by the surrogates' perceptions of the described protocol's risks and benefits, as well as by their perceptions of the patient's willingness to enroll in the described protocol. These findings suggest that surrogates are using both substituted judgment and best interests standards in reaching decisions about research participation for their relatives with AD--consistent with previous literature on this topic. Further work is needed to understand how surrogates balance these decision making standards in reaching research participation decisions for their ill relative.

Abstract Title: Neural Correlates Associated with Regulation of Emotional Distractions

Resident's Name: Dhakshin Ramanathan, MD, PhD

Name of Program: Anatomic Pathology

Purpose: Affect regulation denotes "top-down" mechanisms of control over affective processes (mood state, anxiety) in order to minimize disruption of normal cognition (ie attention and memory), behavior and social conduct. Different models have been used to study affect regulation, including active suppression of internal emotional states (ie studies of cognitive reappraisal or affect labeling); as well as more implicit regulation of emotionally distracting stimuli presented during other cognitive tasks. An example of the latter, prior studies using fMRI to investigate visual "emotional" distractors during working memory tasks have demonstrated that these distractors greatly interfere with the maintenance of working memory, and that such impairments are associated with an increased BOLD activation in "affective" circuitry such as the amygdala, insula and certain parts of the prefrontal cortex; with a concomitant decrease in BOLD activity in a dorsolateral prefrontal-parietal network associated with working memory. Importantly, however, such studies have not measured whether such behavioral-neural correlations are a a fixed feature or trait of the individual (i.e. consistent over time), or rather represent neural activity associated with task performance on a particular day. In addition, prior studies have not adequately explored how changes in prefrontal connectivity to other cortical and subcortical areas may relate to individual differences in managing emotional distractions. To explore these two questions, we took advantage of data that had been collected previously as part of a larger multi-site functional neuroimaging validation study conducted by the Functional Biomedical Informatics Research Network. In this experiment, subjects underwent functional neuroimaging scanning five different times over a two week period while engaged on an emotional distraction-working memory task (described below), thus providing a way to investigate neural-behavioral correlations over time and that therefore more likely represent a characteristic or trait of the individual; as well as to explore in more depth than had previously been done functional connectivity between different brain regions we postulate may be playing a role in regulation of emotional distractors.

Methods: This experiment was conducted as part of a larger multi-site functional neuroimaging validation study, via the Function Biomedical Informatics Research Network (fBIRN). Thus, 9 male and 9 female, healthy, right-handed volunteers were recruited and studied at one of 4 different sites, using the same experimental paradigm, with multiple quality control measures to attempt as reliable as possible multi-site comparison of the fMRI data. A prior publication has already documented the reliability across multiple sites/days for these subjects. For the purposes of this analysis, imaging data was averaged across all sites for each subject, thus obviating any issues regarding site differences. At each site, subjects underwent an emotional distraction working memory task, as well as a breath holding task, a rest period and an anatomic scan. The emotional distaction task involved subjects "encoding" a set of 8 objects, followed by a period during which they were instructed to maintain a memory of those objects while being exposed to distracting emotional or neutral images, followed by a "probe" period during which they were tested on their memory of the encoded memoranda. To ensure attention to the visual distracting images, subjects were asked to make a simple discrimination about the distracting information presented. This paradigm was conducted while subjects scanned in a 3Tesla magnet, though the specifics of imaging protocol varied slightly by site and magnet type. Imaging analysis was conducted using SPM5, and involved a pipeline of steps for motion, slice time correction, filtered, smoothed and realigned/normalized to standard space for comparison across subjects and magnets.

Results: Although we were expecting Emotional Distraction Trials to be associated with poorer memory performance and slower reaction times than Neutral Distraction Trials in response to the Forced Choice Probes, there were no significant differences in memory accuracy (mean sd percent correct for Emotional Trials = 95.2 5.5%, for Neutral Trials =94.1 7.9%, t(17)=-1.01, p=.33) or reaction time (mean for Emotional Trials = 925.8 1.3 msec, for Neutral Trials =935.3 1.3 msec, t(17)=1.31, p=.21) across these task conditions. Interestingly, despite no differences in behavioral performance, the task conditions still produced the expected effects on ventral affective processing systems, with significantly increased activity in amygdala, insula, hippocampus and insula, lateral prefrontal cortices, and parts of occipitotemporal/fusiform gyrus when comparing emotional with neutral distractions. Our interpretation of these observations is that the effects of emotional distraction on the neural circuitry were sufficiently compensated for by the circuitry's reserve function that there was no measureable compromise in behavioral task performance. In a sense, this provides a clearer view of the effects of emotional distractors on dorsal executive system function without the confound of significantly different behavior accompanying the brain activation changes. Importantly, there were significant individual differences in susceptibility to working memory interference that was extremely consistent over time, therefore providing a template upon which to study interindividual neural differences associated with the ability to regulate emotional vs. non-emotional distractors.

Conclusions: Emotional distractors during a working memory paradigm result in widespread activation across the brain when compared to neutral distractors. While such distractions in this paradigm did not affect behavioral performance on a working memory task, individual differences in susceptibility to this behavioral interference were marked and consistent over multiple time points, therefore likely representing a trait of an individual for distractor regulation. By studying neural correlates of this trait, we are thus developing a deeper understanding of the neural basis underlying emotional and non-emotional distraction regulation, with much relevance for understanding risk factors for the development of psychiatric illnesses.

Abstract Title: The Significance of IgG4 Positive Plasma Cells in Renal Transplant Biopsies With Plasma Cell Rich Acute Cellular Rejection

Resident's Name: Gabrielle Rizzuto, MD, PhD

Name of Program: Anatomic Pathology

Purpose: IgG4-related systemic disease (IgG4-RSD) is a recently recognized fibroinflammatory disorder with probable autoimmune etiology. The role of IgG4 in IgG4-RSD pathogenesis is not known, but histologic features of IgG4-RSD include lymphoplasmacytic inflammation, stromal fibrosis, and a high proportion of IgG4-bearing plasma cells. Morphologic criteria have recently been established for diagnosing IgG4-related tubulointerestitial nephritis in native kidneys. However, no data are available about the potential existence and significance of IgG4-positive plasma cells following renal transplantation. Plasma cell rich acute cellular rejection (ACR) has a less favorable outcome than conventional ACR, the reasons for which are unclear. Here, we assess the total IgG4-bearing plasma cell load, the proportion of IgG4-bearing plasma cells, the burden of other inflammatory cells (T cells, B cells, macrophages), and the extent of fibrosis (Collagen-III) in transplant kidney biopsies with plasma cell rich ACR alone, as well as cases with concurrent antibody-mediated rejection (ACR/AMR). We also correlate these findings with clinical, laboratory, and outcome data.

Methods: Renal transplant biopsies were selected from computerized departmental files for the following study groups: plasma cell rich ACR (n=21), plasma cell rich ACR/AMR (n=8), control ACR (n=8), and control ACR/AMR (n=4). Only cases without concurrent glomerular or tubulointerstitial disease, other than acute rejection, were considered for the study. Immunofluorescent staining for IG4, MUM1 (plasma cells), CD20 (B cells), CD3 (T cells), CD8 (T cells), CD68 (macrophages), and Collagen-III (fibrosis) were performed on formalin-fixed and paraffin-embedded tissues and cell density quantitatively assessed using computer-assisted morphometric analysis.

Results: Varying proportions of IgG4-bearing plasma cells were observed in plasma cell rich rejection biopsies. Compared to controls, the combined plasma cell rich rejection biopsies demonstrated a significantly higher MUM1+ plasma cell population (p=0.0003) and IgG4-bearing plasma cell population (p=0.004). Notably, total plasma cell load and the proportion of IgG4-bearing plasma cells were increased in biopsy specimens with less favorable clinical outcome (dialysis or Creatinine 2.0), and the total IgG4-bearing plasma cell load was statistically significantly increased in biopsy specimens with less favorable clinical outcome (p=0.02).

No trend was observed between the presence of IgG4+ plasma cells and the other parameters measured. B cell (CD20+), T cell (CD3+, CD8+), macrophage cell (CD68+) infiltrates, and the extent of fibrosis (Collagen-III) were similar among all groups. No was trend observed between clinical outcome and the burden of these other inflammatory cells, nor between clinical failure and fibrosis (Collagen-III).

Conclusions: IgG4-bearing plasma cells are present in many, but not all, cases of plasma cell rich ACR. These data suggests correlation between presence of IgG4-bearing plasma cells and poor clinical outcome. This finding warrants further investigation of and consideration for the establishment of the IgG4-bearing plasma cell rich subset of ACR as a distinct clinical entity.

Abstract Title: Geographic Analysis and Barriers to TB Evaluation in Uganda

Resident's Name: Jennifer Ross, MD, PhD

Name of Program: Internal Medicine

Purpose: Identifying and treating cases of active tuberculosis (TB) represents a major challenge for international TB control, particularly in high-burden countries like Uganda, where only 61% of TB patients currently receive a diagnosis. In these settings, patients must travel to specialized health centers to complete the multi-day sputum collection and examination process, in spite of the country's poor transportation infrastructure and the patients' limited financial resources. We sought to understand the impact of such geographic barriers on TB suspect evaluation in primary health centers in sub-Saharan Africa.

Methods: We collected data on TB evaluation services provided to all adults presenting with cough for = 2 weeks at six primary health centers in six districts of rural Uganda from January, 2009 to March, 2011. We calculated the distance from the geographic center of the patients' home parish to the health center using Euclidean distance in ArcMap 10 (ESRI, Redlands, CA). We measured the association between distance traveled and likelihood of completing a sputum evaluation (=1 positive, or =2 negative sputum exams) for TB using logistic regression with a random effect to adjust for clustering of data across health centers. The Makerere University Faculty of Medicine Research Ethics Committee approved the protocol.

Results: Out of 182,657 patient encounters, 3528 adults (1.9%) were classified as TB suspects (cough = two weeks). Sputum smear microscopy for AFB was ordered in 1916 (54.3%) of TB suspects. 1470 (76.7%) of the TB suspects in whom sputum examination was ordered completed sputum evaluation. Median distance from health center to parish was 7.5 km (interquartile range 3.4 km-20.2 km). The distance from health center to home parish did not differ between those who completed TB evaluation and those who did not (OR 1.00, 95% CI 0.99-1.01), after clustering by clinic site.

Conclusions: Distance from home to clinic does not predict completion of TB suspect evaluation in rural Uganda, suggesting that distance may be a less important barrier than other factors in improving TB diagnosis. Additional geographic studies should evaluate the influence of additional geographic factors, such as land cover or transportation networks, on access to TB diagnostic services.

Abstract title: Condom Usage Patterns in Medical Students from the United States and Canada

Resident's name: Tami Rowen, MS, MD

Name of program: Obstetrics, Gynecology and RS

Purpose: The sexual beliefs and practices of medical students may influence their capacity to care for patients' sexuality and safer sex issues. Students represent a large sample of reproductive age individuals. In this study we examined condom usage patterns in United States and Canadian medical students.

Methods: Students enrolled in allopathic and osteopathic medical schools in the United States and Canada were invited to participate via email and published announcements in an internet based survey assessing ethnodemographic factors, sexual history, contraception and condom usage. Descriptive statistics and logistic regression were utilized to analyze responses.

Results: Among our 1,991 sexually active participants, condoms were utilized by 1,011 respondents. Men were more likely than women to report using condoms. On multivariate analysis, higher rates of condom use were associated with being Hispanic, younger than 35, unmarried, higher number of recent sexual partners and self report of erectile dysfunction. There appear to be differences in rates of condom usage between the general US and Canadian population and our participants.

Conclusions: There are significant differences in condom use based on demographics, even at the highest education levels. Safer sex practices are not universal even in a medically sophisticated population.

Abstract title: S. Aureus Skin Colonization: Tools to Study the Frontline of the Battlefield

Resident's name: Tiffany Scharschmidt, MD

Name of program: Dermatology

Purpose: Skin colonization by Staphylococcus aureus is a key factor for subsequent skin and soft tissue infections involving this pathogen. The aim of this study was to develop an organotypic keratinocyte culture system in which to screen S. aureus USA300 mutants for deficiencies in growth or adhesion to human skin.

Methods: Keratinocytes were isolated from donated human foreskin, cultured first in monolayers and then lifted to the air-media interface in 15 mm hanging inserts within a 12-well plate. By day 11, the cultures had formed a stratified epithelium and an intact stratum corneum with a lipid and protein profile analogous to human skin. 10^5 colony-forming units (CFUs) of S. aureus USA300 were then applied in PBS to the culture surface. One hour after inoculation, the surface was washed with PBS to remove non-adherent bacteria. Cultures were homogenized and CFUs counted at time intervals up to 24 hours.

Results: S. aureus USA300 demonstrated robust growth on this skin model, with an initial doubling time of just under an hour and a 3-log increase in total CFUs by 24 hours. Histology demonstrated that most bacteria remain in the stratum corneum but that some are able to penetrate into deeper viable cell layers. A preliminary screen of mutant strains on the S. aureus USA300 background suggests that an agrA-deficient mutant is growth deficient, while a srtA-deficient mutant is adhesion deficient in this skin model.

Conclusions: The environment on skin is much different from better characterized in vitro and in vivo growth conditions - it is extremely dry, rich in sphingolipids, and harbors a unique profile of nutrients including an abundance of the basic amino acids histidine and arginine. We have shown that S. aureus USA300 can thrive in an organotypic skin culture that replicates these conditions. Using this model to identify and characterize the genes important for growth and adhesion of S. aureus USA300 on skin represents an important first step in finding targets to prevent and treat colonization by this pathogen. Future experiments will include a fuller screen of mutant strains using both a candidate gene approach and Tn-seq as well as transcriptional profiling of S. aureus by microarray.

Abstract title: Money Matters: A Medical-Financial Partnership to Reduce Financial Hardship and Improve Patient Health

Resident's name: Adam Schickedanz, MD

Name of program: Pediatrics

Purpose: Despite widespread knowledge that economic disparities are determinants of health inequity, clinical strategies to address financial barriers to health are lacking. Medical-financial partnerships may be a viable model for addressing such social needs in clinical settings. The Financial Fitness Clinic (FFC) was established in February of 2011 through a partnership between professional financial planners and clinicians with financial expertise to promote patients' financial stability. The clinic meets monthly to provide patients access to money-saving public services and resources, financial education, and personal financial consultations. Our primary purpose was to evaluate the patient-rated effectiveness and satisfaction of the pilot FFC at a county hospital in San Francisco.

Methods: We used a cross-sectional questionnaire study of a convenience sample of patients and families from a county hospital whose financial hardships present barriers to optimal health. Our scaled questionnaire assessed domains of patient satisfaction and asked whether the FFC met participant needs. A subset of patients were sampled with an expanded questionnaire assessing income, household size, credit score, self-rated health, and demographic characteristics.

Results: Among the 51 patients surveyed, when asked how helpful the FFC session was on a scale of 0-10 (0 meaning not helpful and 10 meaning very helpful), our patients rated the FFC's helpfulness as an 8.2/10 on average. Seventy-three percent of patients reported that they learned what they had hoped to from the FFC session, and 94 percent reported that they would come to the FFC again and 94 percent would recommend the FFC to a friend. Of the subset sampled with the expanded survey, 68 percent had income below the Federal Poverty Level (FPL), and 81 percent had incomes below 200 percent of the FPL.

Conclusions: Medical-financial partnerships represent a promising clinical strategy with high satisfaction and engagement among patients with financial hardship.

Abstract title: Angiographic Features Help Predict Outcome After Gamma Knife Radiosurgery for the Treatment of Pediatric Arteriovenous Malformations

Resident's name: Sunil Sheth, MD

Name of program: Neurology

Purpose: Gamma Knife radiosurgery (GKRS) is an option in the treatment of pediatric arteriovenous malformations (AVMs), especially for AVMs in eloquent locations or patients with good functional status. Prior studies have indicated that lower target volumes and higher prescription doses are associated with improved obliteration rates. Certain angiographic features including maximal diameter, diffuse border, and venous drainage patterns have also been shown to have n influence on rate of obliteration after GKRS.1,2,3 1.Chang et al. J Neurosurg (Suppl 3) 93:96-101, 2000. 2.Kano et al. J Neurosurg Pediatrics 9:1-10, 2012. 3.Yeon et al. Childs Nerv Syst (2011) 27:1109-1119.

Methods: We retrospectively reviewed all pediatric patients age = 18 treated with GKRS for an AVM between 2000 and 2010 at our institution. Angiographic features based on pre-treatment angiography were prospectively recorded in a standardized manner and scored by experienced neuroradiologists.

Results: Between 2000 and 2010, 41 children (23 boys and 18 girls) underwent GKRS for an AVM. Follow-up information was available for 39 patients with three-year angiographic follow-up in 22. Mean age at time of treatment was 13.5; 3.5y. Two patients had a Spetzler-Martin grade (SMG) II, 23 had grade III, 12 had grade IV, and 4 had grade V. The mean target volume for GKRS was 9.2; 10.2cm3 while the median prescription dose of radiation was 18Gy (range 16-20Gy). Thirteen patients underwent staged GKRS. Among the 22 patients with three-year angiographic follow-up, complete obliteration was observed in 9 (40.9%), while 12 (54.5%) showed a partial response. Only one patient had no response. Prescription dose was significantly correlated to angiographic response ($p=0.046$, logistic regression), with a dose =18Gy being associated with a 75% complete obliteration rate compared to 27.2% in patients treated with 18Gy. Smaller AVMs were more likely to have complete response to treatment, though this finding did not achieve statistical significance. Presenting with hemorrhage, versus seizure and headache, correlated with improved response rate with 8/9 complete responders presenting with hemorrhage versus 5/12 of the partial or non responders. Age and SMG were not associated with response rate. We then examined the influence of angioarchitectural features on the rate of response to GKRS. Factors found to significantly increase the chance of complete obliteration included smaller maximal diameter (mean of 2.2 cm in obliterated group versus 3.5 cm in group with residual AVM), fewer draining veins (1 vs. 1), and fewer draining veins reaching a sinus (1 vs. 1). Factors that did not have an influence on response rate included diffuse borders of AVM, having only deep venous drainage, venous ectasia, venous reflux, presence of any aneurysm, embolization prior to GKRS, and arterial inflow through anterior vs. posterior circulation.

Conclusion: There is a growing literature that GKRS is an effective treatment for pediatric AVMs. Our study finds that in addition to AVM volume and prescription dose, certain angioarchitectural features play a role in the rate of obliteration after treatment with GKRS. Smaller AVMs with fewer draining veins and fewer draining veins reaching a sinus had favorable outcomes.

Abstract title: Outcomes after total skin-sparing mastectomy and immediate reconstruction

Resident's name: Anne Warren Peled, MD

Name of program: Surgery, Plastic Surgery & East Bay Surgery

Purpose: Total skin-sparing mastectomy (TSSM), a technique comprising removal of all breast and nipple tissue while preserving the entire skin envelope, is increasingly offered to women for therapeutic and prophylactic indications. However, standard use of the procedure remains controversial due to concerns regarding oncologic safety and risk of complications.

Methods: Outcomes from a prospectively maintained database of patients undergoing TSSM and immediate breast reconstruction from 2001 to 2010 were reviewed. Outcome measures included post-operative complications, tumor involvement of the nipple-areolar complex (NAC) on pathologic analysis, and cancer recurrence.

Results: TSSM was performed on 657 breasts in 428 patients. Indications included in situ cancer [111 breasts (16.9%)], invasive cancer [301 breasts (45.8%)], and prophylactic risk-reduction [245 breasts (37.3%)]. 210 patients (49%) had neoadjuvant chemotherapy, 78 (18.2%) had adjuvant chemotherapy, and 114 (26.7%) had post-mastectomy radiation therapy. Nipple tissue contained in situ cancer in 11 breasts (1.7%) and invasive cancer in 9 breasts (1.4%); management included re-excision (7 cases), NAC removal (9 cases), or radiation therapy without further excision (4 cases). Ischemic complications included 13 cases (2%) of partial nipple loss, 10 cases (1.5%) of complete nipple loss, and 78 cases (11.9%) of skin flap necrosis. Overall local-regional recurrence rate was 2% (median follow-up 28 months), with a 2.4% rate observed in the subset of patients with at least 3 years' follow-up (median 45 months). No nipple-areolar complex skin recurrences were observed.

Conclusions: In this large, high-risk cohort, TSSM was associated with low rates of NAC complications, nipple involvement, and local-regional recurrence.

Abstract title: Validation of a novel model for improving microsurgical training

Resident's name: Anne Warren Peled, MD

Name of program: Surgery, Plastic Surgery & East Bay Surgery

Purpose: Traditional microsurgical training models involving synthetic materials present several disadvantages that may lead to inadequate preparation for intra-operative performance of microvascular anastomoses. Alternatively, in vivo practice in anesthetized animals allows for a much-improved learning environment, but is often impractical and expensive. The purpose of this study is to show that use of the chicken thigh as a model for microvascular anastomoses can improve trainees' microsurgical technique and thus serve as a simple, inexpensive means of enhancing intra-operative microsurgical performance and ability.

Methods: Fifteen plastic surgery residents and fourth-year medical students were randomized to microsurgical skills teaching sessions on either a silastic tubing model or a chicken thigh model involving anastomosis of the ischiatic artery. A following session involved independent performance of a microvascular anastomosis in an anesthetized rat. Participants were scored on steadiness, instrument handling, speed, and knot-tying technique on a scoring system assigning zero to five points for each of five outcomes. Difference in total scores between the two sessions were compared between groups.

Results: Both groups had an improvement in mean total score from the first session to the second, with the chicken thigh model group demonstrating a three-fold greater improvement than the silastic tubing group (mean total score difference of 3.4 vs. 1.1).

Conclusions: Use of a chicken thigh model in a microsurgical skills training curriculum is an effective and practical way to teach performance of microvascular anastomoses to plastic surgery trainees.

Abstract title: Dietary Intake, not Oral Hygiene, is Associated With Location of Dental Erosion in Children With Gastroesophageal Reflux

Resident's name: Yvette Wild, MD, MS, MAS, MPH

Name of program: Pediatrics

Purpose: In children with and without GER symptoms, to study the association between dietary intake and oral hygiene with dental erosion.

Methods: Subjects (9-17 yrs) with or without GER symptoms completed a self-administered questionnaire on dietary intake and oral hygiene (Table 1). Teeth were examined for erosion, erosion location, and affected tooth surface. Data were analyzed using Fisher's Exact test and Kruskal-Wallis analysis.

Results: 79 children were studied - 59 with and 20 without GER symptoms (Table 2). Drinking grape juice (p=.03), eating sour/tart candy (p=.03), chocolate (p=.03) or cookies (p=.008) and having tooth pain (p=.02) were correlated with GER. Subjects who chewed gum (p=.001), expressed satisfaction with their teeth (p=.004) and gums (p=.03) or used fluoride mouthwash (p=.01) had less GER. Overall and posterior dental erosion were increased in those drinking sport drinks (p=.03). Eating chocolate was associated with anterior erosion (p=.02). Cold milk was associated with decreased overall (p=.03) and anterior (p=.01) tooth erosion. Mints increased upper tooth erosion (p=.04), whereas drinking sport drinks (p=.03) or bottled water (p=.03) or dissatisfaction with mouth (p=.04), gum (p=.04) or tooth color (p=.05) displayed increased lower tooth erosion. Facial or lingual tooth surface erosion had no relation to diet or hygiene. Occlusal surface erosion was increased in children who drank diet soda (p=.04), sports drinks (p=.02), cold milk (p=.02) or chocolate (p=.05), or ate sour/tart candies (p=.03) or chocolate (p=.01).

Conclusion: Sour/tart candy or chocolate and oral dissatisfaction were associated with GER and dental erosion. Beverage intake and hygiene were unrelated to both outcomes. Injurious or protective effects of diet on GER-associated dental erosion require further study.

Abstract title: Evaluation of the Oblique View for Ultrasound Guided Central Venous Catheter Placement

Residents' names: Jennifer Wilson, MS, MD and Kristin Berona, MD

Name of program: Emergency Medicine

Purpose: Ultrasound guidance during central venous catheter (CVC) placement has been demonstrated to reduce complications and improve success rates compared to landmark-guided techniques. There are limitations, however, to the benefits offered by the standard short-axis view usually utilized during ultrasound guided central line placement. A novel "oblique view" approach (probe held at approximately 45-degrees with respect to the vessel) has been suggested to be superior to the short-axis view, by allowing the operator to visualize needle-tip position with respect to the target vessel in real time without sacrificing the ability to see the artery and the vein in the same view. The purpose of this study was to compare the rates of posterior vessel wall puncture (PVWP) in the short-axis view versus the oblique view in ultrasound guided CVC placement. PVWP is considered a proxy for complications from CVC placement, as going through the back wall of the vein may lead to hematoma formation or insertion of the needle into an underlying artery.

Methods: We conducted a prospective observational trial with residents and attending physicians in an urban emergency medicine residency program, using gelatin models to simulate CVC placement. Participants were blinded to the primary outcome (PVWP). After a short teaching session on the oblique view, participants were asked to access a vessel via ultrasound guidance in a tissue phantom model, first utilizing the short-axis view and then the oblique view. Data collected included year in training/practice, self-reported number of central lines placed, time to successful "flash" of simulated blood in the syringe, and self-reported confidence of needle position within the lumen of the vein using a Likert scale. Models were deconstructed and inspected for PVWP, as evidenced by through and through punctures of vessels. Based on prior reported frequency of 34% PVWP in a prior study, we estimated a sample size of 27 to detect a difference of 10% in the main outcome of PVWP based on an alpha of 0.05 and a beta of 0.8.

Results: 35 participants were enrolled in this study. The rate of PVWP was 17% in the short-axis vs 5% in the oblique group (p=0.25). The difference was not statistically significant. Mean time to flash was 15.4 seconds in the short-axis group and 16.7 in the oblique axis group (p=0.76). Confidence in needle location within lumen of vessel was 3.59 in short-axis vs 4.54 in oblique axis (p 0.001).

Conclusions: Though the difference was not statistically significant, there was a trend towards decreased PVWP in the oblique view, and participants felt more confident in their needle location with the oblique view compared to the short-axis view. The overall rate of PVWP was much lower in our series than previously described. This may be due to the fact that we only studied needle insertion and time to first "flash," rather than fully simulating Seldinger-technique CVC placement by asking participants to thread a wire and catheter. It is also possible that our participants were more proficient in ultrasound use than previously studied populations. Based on our findings, further research is needed to investigate the potential benefits of the oblique view, including studies of higher fidelity simulation of complete CVC placement in anatomic models.

Abstract title: Web-Based System for Resident Hand-offs in Clinical Pathology

Resident's name: Geoffrey Wool, MD, PhD

Name of program: Laboratory Medicine (Clinical Path)

Purpose: We developed a web-based, automated tracking system to facilitate patient handoffs in a multi-site, multi-rotation, academic clinical pathology training program. Transfer of patient care responsibility from one provider to another over weekends carries risks for introducing error, delay, or suboptimal quality of care. Both ACGME and JCAHO have recently mandated hospitals to enact patient care transfer procedures that incorporate both verbal and written communication between the transferring and the receiving physician. We will discuss the process of implementation, the successes, and remaining areas of improvement for hand-offs after developing a web-based hand-off system for clinical pathology residents.

Methods: The system is a HIPPA compliant web-based Handoff Portal that allows entry of patient information every Friday from three hospitals, including a tertiary care academic medical center, a county hospital, and a Veteran's Administration hospital. Residents from the various clinical pathology services enter patient identification and information useful to the weekend on-call resident. The on-call resident is also notified by a phone call (or email if a phone call is not possible) in addition to being able to review the hand-off online. Compliance with online hand-offs is tracked by the percentage of total residents who completed a handoff at the end of each week.

Results: From July 22, 2011 through January 23, 2012, the system has been used to track 67 hand-offs by 10 residents. While clinical pathology residents cover 10 core rotations at three hospitals on any given month, only seven services have had any cases to hand-off in the last six months. Over the initial six months the compliance rate was 94%. Non-compliance tended to be among the more senior trainees. A mid-year survey of the clinical pathology residents revealed support for the system and a desire that it be continued.

Conclusion: In conclusion, a web-based tracking system can be used to facilitate transfer of patient care between residents at the various rotations and the weekend on-call resident. The handoff portal facilitates hand-offs but may not optimize the quality of those hand-offs. Further study into improving quality of hand-offs is needed.

Abstract title: Change in work hours and upper extremity pain among dental hygienists

Resident's name: Xing Yang, MSPH, MD, PhD

Name of program: Occupational and Environmental Medicine

Purpose: Upper extremity musculoskeletal disorders are a common occupational health problem among dental hygienists. The objective of this study was to examine the relationships between changes in hours of periodontal scaling per week and upper extremity pain.

Methods: Study subjects were 93 dental hygienists who participated in a 5 month randomized intervention study to evaluate the effect of new scaler handle design right upper extremity pain. Participants completed weekly questionnaires that collected data on scaling hours, and right upper extremities pain scores (scale 0-10 VAS). General linear models comparing change in weekly scaling hours to change in pain scores controlled for age, gender, race and intervention group.

Results: Mean weekly hours of scaling were 15.98 (SD=0.33). Mean weekly right wrist, elbow and shoulder pain scores were 1.98 (SD=0.03), 1.68 (SD=0.03), and 1.94 (SD=0.03) respectively. The adjusted change of weekly scaling hours was positively associated with the change in weekly wrist pain (223=0.03, 0.001, R2=0.08) in the same week. This association disappeared (R2=0.01) when comparing the prior week's change in weekly scaling hours to the current week's change of pain scores. The findings were similar for the elbow and shoulder.

Conclusion: The findings suggest that, from week to week, increasing hours of periodontal scaling may pose a small but important occupational risk for increased upper extremity pain in dental hygienists. The inverse is also supported that reducing hours of scaling is associated with decreased upper extremity pain.

NOTES

Interested in Clinical Research During Residency?

Designing Clinical Research leads Residents through the essential components of writing a clinical research protocol, developed around their own clinical research question. Residents learn the fundamental principles of study design, subject selection, strategies for reducing bias and controlling for confounding, and how to perform a sample size calculation. The tangible product of the course is a 5-page clinical research protocol.

Residents may choose from two course options:

1) Traditional in-person version, August 2012

- Monday and Wednesday from 9am-12 noon
- Four weeks
- Each session includes a 1 ½ hour lecture followed by a 1 ½ hour small group seminar lead by UCSF faculty
- Residents must have 50% protected time to allow adequate time to attend classes, complete reading and homework assignments, and write their research project protocol
- The August course application is available in mid-April of each year. Please go to http://www.epibiostat.ucsf.edu/courses/schedule/clin_research_predocs.html for more information

2) Online version, October 2012

- This format provides a flexible schedule. Students must listen to pre-recorded lectures, complete homework, and participate in online discussions weekly
- Four weeks
- Residents must have sufficient protected time to allow adequate time to listen to lectures, complete reading and homework assignments, and write their research project protocol
- The October course application is available in mid-June of each year. Please go to http://accelerate.ucsf.edu/training/designing-clinical-research-residents for more information.

Sponsored by the UCSF Resident Research Training Program, in collaboration with the Department of Epidemiology and Biostatistics, and the Clinical and Translational Science Institute at the University of California, San Francisco

CTSI at UCSF

For questions contact Christian Leiva: cleiva@psg.ucsf.edu

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3rd Annual Inter-School Research and Scholarly Activity Festival
April 30-May 3, 2012

Monday, April 30	**Kick-Off Event**
12-1pm Location: Millberry Union	**David Relman, MD** *Thomas C. and Joan M. Merigan Professor* *Department of Medicine, Microbiology & Immunology* *Stanford University* "Unrest at Home: Stability and Resilience in the Human Microbiome"
Tuesday, May 1	
2-5pm Location: Millberry Union	**Department of Clinical Pharmacy's** **14th Annual Spring Research Seminar**
5-7pm Location: HSW 303	**Clinical & Translational Inter-School Journal Club** Topic: Can Vaccination Protect Us Against Sexually Transmissible Infections?: The Curious Tales of HPV and HSV Vaccines
Wednesday, May 2	
9am-3:30pm Location: Millberry Union	**Clinical & Translational Research Fellowship Symposium** Oral presentations
4pm-7:30pm Location: Millberry Union	**CTSI Resident Research Training Program Symposium** Oral presentations & Posters
Thursday, May 3	
11:30am-1:00pm Location: Millberry Union	**School of Medicine Dean's Award Presentations**
1:30pm-3pm Location: Millberry Union	**Pathways to Discovery Symposium**
3:30pm-4:30pm Location: MU Gymnasium	**Posterpalooza** Session 1
4:30pm-5pm	**Break**
5-6pm Location: MU Gymnasium	**Posterpalooza** Session 2

These events are sponsored by the UCSF Clinical & Translational Science Institute, the Doris Duke Charitable Foundation, Pathways to Discovery, the UCSF School of Medicine and the UCSF School of Pharmacy.