MEDICAL COLLEGE OF WISCONSIN

2013-2014 Scholarly PATHWAYS

M-3 Scholarship Forum
June 5, 2014


M1 Reminders
EVERYONE
The Hmong Language Program
Stop SMOKING
Visually Best
Pictures of Bad Lungs
Charts of Financial Costs
Aural
Testimonial from
Pamphlet

PATHWAYS M-3 SCHOLARSHIP FORUM—JUNE 5, 2014
CLASS OF 2015

1:00 **Convene & Welcome** Linda Meurer MD, MPH, Director of UCH Pathway
Special Remarks John Raymond, MD, President and CEO, MCW

1:15 **Podium Presentations—Part I in the KERRIGAN AUDITORIUM**

1. Kim, Hyun Hee — Bioethics … page 5
Student-led Research Review Panel: An Alternative

2. Doxey, Richmond — Clinician Educator … page 6
Evaluating the Efficacy of a Peer Taught FAST Exam US Course

3. Griffin, Alexander — Global Health … page 10
Fluoroscopic Analysis of Hind -foot Kinematics of Barefoot and Shod Motion

4. Dahlgren, Alison and Kalluri, Deepti — Master Clinician … page 15
Role of Prematurity in Neonatal Cholesterol Response to TPN

5. Bernau, Lauren — Physician Scientist … page 32
Do Kids Prefer the Novel " PAIN Tool" for Pain Assessment?

6. Fox, Kristen — Urban & Community Health … page 51
Specifics why Pregnant Women Decline Influenza Vaccination

2:25 **Break - Poster Viewing & Refreshments in the ALUMNI CENTER**

3:25 Reconvene David Brousseau, MD, MS, Director of PS Pathway

3:30 **Podium Presentations—Part II in the KERRIGAN AUDITORIUM**

7. **Hughes, Patrick** — Urban & Community Health … page 52
Implementation of Personal Health Records with Homeless Men

8. Hwang, David — Physician Scientist … page 37
Role of RIP2 Kinase in the CD-137 Mediated Activation of NK Cells

9. Hughes, Jordan—Quality Improvement & Patient Safety … page 49
Improved Obstetrical Care after a Medicaid Pilot Project

10. Lin, Jonathan— Master Clinician … page 23
Do All RS/CSL Diagnosed on CNB Need to Undergo Surgical Excision?

11. Ravikumar, Sitara — Global Health … page 12
ESS with Vemurafenib

12. Lee, Jasmine - Clinician Educator … page 7
Trial of a Self-Care Educational Module to Reduce Medical Student Stress

4:30 **Pathway Summary Remarks** Jose Franco, MD, Director, Discovery Curriculum
4:45 **Evaluations**

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The **MCW Scholarly Pathways** program is a required component of the medical school curriculum. Students selected one of seven areas of concentration through which they enrich and individualize their medical training, while exploring a career path of interest.

The **Scholarly Pathways** are:

Bioethics (page 5) **Clinician Educator (pages 5-8)** **Global Health (pages 9-13)**
Master Clinician (pages 14-30) **Physician Scientist (pages 31-48)**
Quality Improvement & Patient Safety (page 49) **Urban & Community Health (pages 50-58)**

Each of the **Scholarly Pathways** features a structured curriculum with core content delivered through monthly didactic and small group sessions, and an experiential component guided by a faculty advisor and Individual Learning Plan (ILP). Students must also complete a project by the end of their M3 year which meets each of Glassick's criteria for scholarship:

1.) Clear Goals, 2) Adequate Preparation, 3) Appropriate Methods, 4) Significant Results;
5) Effective Presentation; 6) Reflective Critique.

The **Scholarly Pathways** culminate with today's **M-3 Scholarship Forum**. The program features a selected number of podium presentations, and poster presentations from students in all seven pathways. Projects include research in the basic, clinical and social sciences, curricular innovations and teaching, quality improvement initiatives, and community engaged projects to address health disparities in Milwaukee and abroad. This book includes abstracts for each student project, those who presented today and those presented as part of the Medical Student Summer Research Program in Fall, 2012.

Congratulations to the class of 2015 for the creativity and innovation evidenced by the scholarship presented today!

SPECIAL THANKS

The Pathway Directors would like to express their sincere gratitude to the Pathway Planning Council members, faculty advisors and project mentors, and community partners who have helped our students succeed. A special thanks also needs to go to the Pathways coordinators, Meaghan Hayes, Hilary Chavez and Jennifer Kraus for their hard work and support.

PATHWAY CONTACT INFORMATION

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Assistance from Heather Walker hewalker@mcw.edu 414 955 4124

http://www.mcw.edu/Scholarly-Pathways.htm

Bioethics

Ryan Spellecy, PhD & Cynthiane Morgenweck, MD, MA

Enables medical students to integrate the knowledge and tools of bioethics as an essential part of his or her career as a physician. Provides medical students the opportunity to develop their ethics skills in a variety of areas, including but not limited to clinical ethics consultation, research ethics, and participation and leadership in institutional ethics committees.

Kim, Hyun Hee - **PODIUM**

Student-led Research Review Panel: An Alternative

Authors: Kim H, Brousseau D, Spellecy R.
Project Mentor: Ryan Spellecy, PhD

Increasing numbers of medical schools require a scholarly project prior to graduation, which are often bench or clinical research; however, many projects, such as community-outreach or education projects, fall outside the traditional scope of the IRB. Sending all projects to the IRB in order to provide ethical oversight would unnecessarily burden the IRB but the failure to provide ethical oversight for these student projects is also problematic. As a solution, we devised a novel system separate from the IRB to prospectively screen and provide ethical oversight to such projects. Our solution is a student-run research review panel which consists of medical students and a faculty mentor working collaboratively with the IRB office. The student-run panel also provides the students with a unique opportunity to engage in an ongoing discussion about research ethics. This process ensures faculty mentors and students seek IRB approval only when appropriate, but also that proposals that do not require IRB review still receive ethical guidance.

Clinician Educator

Karen Marcdante, MD

Students gain skills in teaching in the clinical setting, learn how to apply educational principles to their teaching and develop a scholarly educational product.

- Teaching in various settings
- Adult learning and learning styles
- Developing instruction for health care practitioners
- Advising/mentoring peers and others
- Evaluation tool design
- Educational leadership

Barbieri, Kathryn - **POSTER**

Geriatric Education Teams (GETs) Improving Care One Specialty at a Time

Authors: Barbieri K, Dreger N, Wagner G, Mac O, Duthie E, Denson K, Simpson D, Brown D, Denson S, Manzi G, Rehm J, Wessel B.
Project Mentor: Edmund Duthie, MD

As the elderly population increases, the number of geriatricians falls short of the need. Our goal was to improve the geriatric education in existing residency/fellowship programs to fill this need. The needs assessment, a faculty and resident/fellow survey and a thorough review of literature determined the areas of need for the intervention. Fast Facts—one page resource guides— and a curricular intervention—an OSCE or Grand Rounds presentation—were created to fill in the gaps in the residents/fellows' training. We compared pre and post intervention surveys to assess residents/fellows' comfort and knowledge level in the targeted areas, and faculty's confidence in resident/fellow performance. The curricular interventions were well received by participants, and mean scores rose in all of the target areas. One challenge moving forward is to keep these interventions as a permanent part of the residencies' curricula. Future work will include increasing the number of specialties involved and assessing utilization of the Fast Facts.

Bhat, Sheila- **POSTER**

The Hmong Language Program: Cultural Perspectives on Healthcare

Authors: Wei S, Bhat S, Martinez A.
Project Mentor: Estil Strawn, MD

See Wei, Shuyan, Page 8

Doxey, Richmond - **PODIUM**

Evaluating the Efficacy of a Peer Taught FAST Exam US Course

Authors: Doxey R, Gabet J, Funk RT, Phelan MB, Pace C.
Project Mentor: Caroline Pace, MD

Ultrasound (US) is not often taught to medical students, due to lack of time and faculty. We propose second-year medical students (M2s) can competently perform a Focused Assessment with Sonography in Trauma (FAST) after a peer-taught course. 11 M2s completed didactic sessions on US and FAST. Faculty-trained students led M2s in two hands-on sessions with standardized patients (SPs), a simulator session, periodic student-written quizzes and surveys, and final exam on an SP and simulator. All students who completed the didactic sessions finished the course. Confidence in identifying structures increased from 2.5 to 6.5/7 ($p<0.001$), and satisfaction also increased. Final SP exam: 54% correct depth, 100% correct gain, 99% structures identified; average time: 3m 56s. Time of physician experts to teach US is limited. By training students who teach their peers, faculty can extend their influence without a big time commitment. After peer instruction, most M2s can obtain an adequate image and identify relevant anatomy in a FAST in under 3 min.

Dreger, Nicholas - **POSTER**

Geriatric Education Teams (GETs) Improving Care One Specialty at a Time

Authors: Barbieri K, Dreger N, Wagner G, Mac O, Duthie E, Denson K, Simpson D, Brown D, Denson S, Manzi G, Rehm J, Wessel B.
Project Mentor: Edmund Duthie, MD

See Barbieri, Kathryn, Page 5

Kirsten, Daniel - **POSTER**

Improving Nutritional Education Among Medical Students

Authors: Kirsten, D.
Project Mentor: Mary Ann Gilligan, MD

Survey studies of both patient and physicians have uncovered deficits in nutritional knowledge as well as in diet and exercise counseling skills among primary care physicians. To examine the usefulness of formally addressing nutrition and counseling of overweight patients early in medical school, 1st year medical student volunteers were shown a short podcast. The podcast focused on the basics of counseling overweight patients on diet and exercise. The effectiveness of the podcast was assessed via a survey that participants completed after watching. Among the participants (n=18), all rated the content of the podcast useful and the majority reported an increase of confidence in their ability to talk with patients about weight issues. Introducing 1st year medical students to the basics of how to encounter an overweight patient provided them with a useful framework that can be built upon going forward in their medical careers.

Lee, Jasmine - **PODIUM**

Trial of a Self-Care Educational Module to Reduce Medical Student Stress

Authors: Lee J, Blust LS, Bragg DS, Chan CH, Webb TP, Lynch JR, Tully MT, Treat RW, Helms AK.
Project Mentor: Ann Helms, MD, MS

Burnout in medical students may be attributed to higher stress levels, particularly during the clinical years. This study aims to assess the level of stress in medical students and observe if early education on coping mechanisms will reduce these levels. Third-year medical students completed a survey at the transition to clinical rotations, halfway through and at the end of the third year. 23 students from the Class of 2015 participated in an educational module on emotional self-care. Data obtained showed that the amount of responsibilities, ability to control situations, feelings of nervousness or hopefulness, and balance of work and personal lives, were independently associated with overall stress levels. Although a wide variety of factors influence stress and burnout, topics related to control appear to be prominent. Further analysis to determine the effects of the module is currently being performed. More research directed towards preventative stress management in medical students may improve well-being and decrease burnout.

Leist, Benjamín - **POSTER**

Reflective Writing: Contemplative Skills in Contemporary Medicine

Authors: Leist B.
Project Mentor: Nancy Havas, MD

Reflective writing is an integrated educational tool to facilitate growth. Entries are usually evaluated by professionals in the same field. Yet, unique perspectives and comments from outside the medical field may more closely represent the patient population being served. This project examines the question by recruitment of a Clinical Nurse (CLI), Psychiatrist (PSY) and Business Owner (BUS) to evaluate and provide feedback on 6 longitudinal entries from a medical student. Professionals used a modified REFLECT rubric to evaluate. Results were analyzed with the Mann-Whitney U-test. Comments were evaluated for unique content. Results indicate no difference between CLI and the other professionals. A significant difference exists between PSY and BUS (P=0.02). CLI and BUS shared unique comments. Lastly, a discussion examines the advantages and specific challenges to this approach for reflective writing. Future investigations could provide specific examples of feedback to professionals.

Lurie, Jeffrey - **POSTER**

Assessing Efficacy of Concussion Education for Middle School Athletes

Authors: Schwarzkopf Z, Lurie J, Morris J.
Project Mentor: Kevin Walter, MD

See Schwarzkopf, Zacary, Page 8

Martinez, Amalia - **POSTER**

The Hmong Language Program: Cultural Perspectives on Healthcare

Authors: Wei S, Bhat S, Martinez A.
Project Mentor: Estil Strawn, MD

See Wei, Shuyan, Page 8

Orgill, Britlyn – **POSTER**

Use of Objective Structured Video Examination in Large Group Setting

Authors: Orgill BD, Simpson D, Havas N.
Project Mentor: Nancy Havas, MD

Introduction: Objective Structured Clinical Examinations (OSCEs) assess clinical ability, but are time consuming and costly. Objective Structured Video Examinations (OSVEs) provide a video clip followed by assessment items, allowing the same standardized patient experience to be delivered to a class. Methods: Competencies from M1 Foundations of Clinical Medicine (FCM) course objectives were incorporated into scripts, and videos were filmed. Yes/no checklists were developed as assessment tools. OSVEs were piloted with M2/M3 students and revised before delivering to FCM. Results: 8-10 students completed the pilot. They supported the assessment method and confirmed content. FCM results showed majority of M1s answered assessment items correctly (difficulty index 0-0.24). Conclusion: Students responded positively to OSVEs. Assessment questions should be improved to better reveal knowledge gaps. OSVE application in a large group setting has potential to revolutionize early clinical training through better cost-effectiveness.

Schwarzkopf, Zacary - **POSTER**

Assessing Efficacy of Concussion Education for Middle School Athletes

Authors: Schwarzkopf Z, Lurie J, Morris J
Community Partner: Joe Cieszynski, Milwaukee Area Youth Lacrosse Association
Project Mentor: Kevin Walter, MD

Sports concussions have garnered increased attention due to high-profile cases in professional sports and advances in research and diagnostics. Education has proven to be the most effective intervention to combat this issue. New Wisconsin law mandates high-school athletes receive concussion education. However, younger athletes have no such requirement. To address this gap, a middle-school athlete curriculum was developed to educate about concussion etiology, recognition, and management. Program evaluation will assess the current level of concussion knowledge among youth athletes and their attitudes regarding concussion reporting. Students will complete paper surveys before, immediately after, and two weeks following the lesson, to measure their acquisition and retention of the information, and any changes in attitude towards reporting head injuries. The goal is for students to become better capable of recognizing concussion symptoms and management guidelines, and to endorse greater willingness to report suspected concussions.

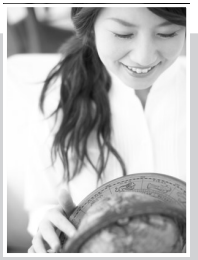
Wei, Shuyan - **POSTER**

The Hmong Language Program: Cultural Perspectives on Healthcare

Authors: Wei S, Bhat S, Martinez A.
Project Mentor: Estil Strawn, MD

Wisconsin has the 3rd largest Hmong-American population in the U.S. This community has unique cultural perspectives on illness and medical decision making. The goal of the Hmong Language Program (HLP) was to introduce Medical College of Wisconsin students to Hmong culture and language. The HLP curriculum used didactic sessions based on the principles of the VARK (visual, aural, read/write, kinesthetic) learning model. Native Hmong speakers taught each session and participants were assessed using interactive activities and quizzes. Professional Hmong interpreters presented on Hmong patient-physician relations. Sessions had consistent attendance and participants were actively engaged in all activities. Out of 36 total evaluations, 87% were positive. Although we were unable to quantitatively assess the amount of Hmong language retained, overall students left with a better understanding of Hmong culture that we hope will influence their medical practice.

Global Health



Stephen Hargarten, MD, MPH

Designed for students seeking to understand the causes and in finding the means to provide solutions, to the challenges and disparities in health status of people worldwide—from Milwaukee to Moscow to Marrakech. Examples of topics include:

- **Disaster management and injury control**
- **Clinical tropical medicine, infectious diseases and parasitology**
- **Healthcare delivery systems, medical anthropology and cultural sensitivity**
- **Non-communicable diseases and global disease epidemiology**

Ashcraft, Joan - **POSTER**

A review of Tuberculosis treatment prior to antibiotic therapy

Authors: Ashcraft JA, Robinson R, Miller H, Fohtung, J.
Project Mentor: Richard Robinson, PhD

The standard treatment of Tuberculosis today is an aggressive antibiotic regimen. Since the advent of antibiotic therapy in the mid-twentieth century, Mycobacterium tuberculosis has evolved mechanisms to resist eradication. The dawn of multidrug-resistant strains of Tuberculosis poses a significant threat to our ability to successfully prevent and treat this devastating disease, which claims over a million lives around the globe each year. In this review of literature published in the first decade of the journal Tubercle between 1919 and 1929, we examine various therapies. These fall into the main categories of surgical procedures, chemical and immunogenic treatments, and physical therapies such as the prototypical sanatoria. We hope that by shedding light on its historical treatment, modern readers might better comprehend the vicissitudes of Tuberculosis and incorporate this insight into research and development of therapies for use both in developed nations and in the poorly resourced developing regions most affected by the disease.

Carron, Benjamin - **POSTER**

Warrior Partnership

Authors: Carron BR, Stout MA, Myers JW, McBride MF.
Community Partner: Michael Orban, Clement J. Zablocki V A Medical Center
Project Mentor: Michael McBride, MD, MS

Purpose: Warrior Partnership creates an outlet for OIF/OEF Veterans to share their life stories and provides medical students an opportunity to work on interpersonal skills, empathy, and become comfortable with the military population. Methods: Students attend a training session and three subsequent sessions with Veterans. Small groups of students and OIF/OEF Veterans led by Vietnam Veteran facilitators meet each session to discuss pre-military life, deployment, and return to civilian life/ the future. Results: Qualitative feedback from the students indicated the project enhanced their ability to communicate with Veterans. Veterans found their comfort level and understanding of medical students improved. They also reported validation of the Veteran experience through recognition as subject matter experts. Conclusion: Warrior Partnership prepares medical students to interact with Veterans in future clerkships and careers. It validates the Veteran experience and allows Veterans to shape future physicians' perspectives on Veterans' issues.

Gentile, Rachel - **POSTER**

FNAC vs CNB in the Diagnosis of Breast Cancer in Low Resource Settings

Authors: Gentile RK.
Project Mentor: Samantha L. Wilson, PhD

Worldwide, cancer kills more individuals than HIV/AIDS, malaria, and tuberculosis combined. Breast cancer is the most common cancer in women and its mortality is greatest in the developing world with 5-year survival as low at 30-40%. Accurate pathology diagnosis is an essential part of a successful cancer treatment program. A panel of experts at the 2005 Breast Global Health Initiative summit recommended pathology diagnosis by fine needle aspiration cytology (FNAC) at the basic resource level and the addition of core needle biopsy (CNB) at the limited resource level. However, the accuracy, acceptability, and cost effectiveness of FNAC versus CNB in these low resource settings has not been clearly defined. This paper is a review of 14 studies that evaluate FNAC and/or CNB in low, low-middle, and upper-middle income countries. Overall, these studies support the recommendation of using FNAC to diagnose breast cancer in the lowest resource settings, as it is an accurate, acceptable, and cost-effective procedure.

Griffin, Alexander - **PODIUM**

Fluoroscopic Analysis of Hindfoot Kinematics of Barefoot and Shod Motion

Authors: Griffin AB, McHenry B, Harris G.
Community Partners: Gerald Harris, MD—Marquette University and Shriners Hospitals for Children, Chicago
Project Mentor: Gerald Harris, PhD

INTRODUCTION: Current gait analysis uses external markers to quantify foot motion, which limits accuracy. Fluoroscopic analysis utilizes images of in vivo bony geometry to create coordinate systems accurately. METHODS: Subjects walked through the fluoroscopic system barefoot and shod. The images were used to define a coordinate system for the calcaneus, talus and tibia. Angle changes about the talocrural and subtalar joints were assessed using a modified Milwaukee Foot Model. RESULTS: The analysis was done using the four Perry phases of gait. All comparison is barefoot to shod. Talocrural joint minimum angles were reduced during loading response. Maximum talocrural angles were increased during all 4 phases. All subtalar joint minimum angles were increased. Maximum subtalar angles were greater except for pre-swing. Ranges of motion expanded during pre-swing. DISCUSSION: The data from barefoot walking compares well to bone pin motion studies and motion while shod is consistent with shoe contours. This provides validation for the system.

Haberman, Kathryn

ALT Flap: Better Alternative for Groin and Lower Abdominal Defects

Authors: LoGiudice JA, Haberman BS, Sanger JR .
Project Mentor: John LoGiudice, MD

Historically, the mainstay of soft tissue reconstruction in the groin and lower abdomen has been rectus abdominis (RA) flap. However, donor site morbidity is problematic and insetting the flap requires the creation of an abdominal wall defect. Our department prefers the pedicled anterolateral thigh (ALT) flap for such defects, although currently its use as a pedicled flap in the groin and lower abdomen has been described only on a limited basis. A retrospective records review was conducted on 38 patients who underwent ALT or RA flap procedures. ALT flap patients had shorter time to healing, with lower rates of delayed (>30 days) postoperative complications. Six of ten RA flap patients developed delayed abdominal incisional hernias; no ALT flap patients developed further donor site complications after 90 days postop. Thus, we recommend pedicled ALT flap as the preferred choice for reconstruction of wounds in the groin and lower abdomen.

Hansen, Dustin

Factors Associated with Retention in Care of HIV Patients in El Salvador

Authors: Hansen D, Petroll A, Dickson-Gomez J.
Project Mentor: Andrew Petroll, MD, MS

Since 2010 the Ministry of Health has provided free anti-retroviral therapy (ART) to 8,786 patients in San Salvador, El Salvador. However, it is still common for patients to enter treatment late or abandon treatment altogether, especially among high-risk populations like active crack users. The purpose of this study is to determine what demographic, social, or personal factors are associated with poor adherence to medications and retention in care. We examined the medical records of 292 HIV-positive patients at Hospital Nacional Zacamil in San Salvador during July 2012 to extract data regarding viral load, CD4 counts, information about substance use, and sociodemographic factors. We compiled this data and are analyzing it using univariate and multivariate analyses in order to determine which factors are associated with retention in care, poor ART adherence, and poor clinical outcomes. These results will then be used to direct future interventions aimed at improving retention in care.

Helm, Cole - **POSTER**

Phone vs In-person Spanish Interpretation and Family Satisfaction

Authors: Shah, BP, Helm, C, Levas, M.
Project Mentor: Michael Levas, MD

Objective: To investigate whether in-person or telephone interpretation provided greater parent satisfaction in a pediatric ED. Methods: Spanish-speaking families in the ED were randomized to in-person or phone interpretation. Eligible patients were non-emergent visits, aged 12 and under. They rated their satisfaction after their encounters using a 5-point Likert scale. Satisfaction differences were measured against the institution's clinical excellence benchmark. Results: 218 patients completed the study. 114 and 104 were randomized to the in-person and telephone arms respectively. Patients in the in-person arm reported higher levels of satisfaction and ability to express concerns than the telephone arm (4.7 vs 4.3 p=.0001 and 4.7 vs 4.4 p=.0002). The in-person arm surpassed the excellence benchmark, while the telephone arm did not (73.7% vs 50% p=.005 and 77.2% vs 53.8% p=.001). Conclusion: Spanish-speaking families in a pediatric ED report higher levels of satisfaction with in-person rather than telephone interpretation services.

Hur, Steven - **POSTER**

Hepatitis B Screening and Awareness in the Milwaukee Hmong Community

Authors: Johnson CC, Leung AA, Hur SI, Saeian K.
Community Partners: Duachy Vang—Grace Hmong Alliance Church, Loneng Kiatoukaysy - Hmong American Friendship Association , May See Yang - UWM Hmong Student Association, Paoi Lor - Hmong ABC Radio, Dr. Cha Lee - Lee Medical Clinic, Pai Yang - Pai Phongsavan Market, Ann Fitzgerald - Hmong American Peace Academy
Project Mentor: Kia Saeian, MD

See Johnson, Christopher, Page 11 (below)

Johnson, Christopher - **POSTER**

Hepatitis B Screening and Awareness in the Milwaukee Hmong Community

Authors: Johnson CC, Leung AA, Hur SI, Saeian K.
Community Partners: Duachy Vang—Grace Hmong Alliance Church, Loneng Kiatoukaysy - Hmong American Friendship Association , May See Yang - UWM Hmong Student Association, Paoi Lor - Hmong ABC Radio, Dr. Cha Lee - Lee Medical Clinic, Pai Yang - Pai Phongsavan Market, Ann Fitzgerald - Hmong American Peace Academy
Project Mentor: Kia Saeian, MD

Hepatitis B is a prevalent disease in the Hmong community. Although Wisconsin has the third largest Hmong population in the US, it lacks prevalence data and awareness about this disease. By targeting these two areas, we hope to better understand this disease and how to address it. Three education/screening events were held in Milwaukee in 2013. Pre- and post-event surveys regarding hepatitis B prevalence, risk factors, symptoms, and treatment were administered to assess knowledge/awareness, and blood testing for hepatitis B was done to assess prevalence. Among 148 subjects, 15 (10.1%) were positive for hepatitis B surface antigen, 86 (58.1%) immune, 42 (28.4%) susceptible, and 5 (3.4%) indeterminate. These results verify the higher prevalence of hepatitis B among the Hmong population compared to the general population, highlighting the need for immunization and treatment. In addition to providing education, screening, and resources, we hope to use this information to educate and prevent hepatitis B in the Milwaukee Hmong community.

Kashtan, Mark - **POSTER (June 26)**

Age-Related Disparities in Treatment of Retroperitoneal Rhabdomyosarcoma

Authors: Kashtan M, Turaga K, Jayakrishnan T.
Project Mentor: Jacquelyn Kuzminski, MD

Adult patients suffering from retroperitoneal rhabdomyosarcomas (RRMS) carry a considerably poorer prognosis than their child and adolescent counterparts, in whom this tumor is more common. While in recent years some theories as to the reason for this discrepancy have been proposed, thus far the root cause has yet to be satisfactorily elucidated. We queried the National Cancer Data Base for all patients diagnosed with RRMS since 1998 and reviewed patient demographics, tumor characteristics, treatment modalities and survival outcomes. We found trends suggesting that older patients are more likely to receive conservative treatment and less likely to receive systemic chemotherapy, are more likely to receive treatment at community-based cancer programs and less likely to receive treatment at academic centers, and are more likely to have aggressive tumors with worse survival outcomes. These results indicate that the way in which we treat older patients with RRMS could be a factor in the age-based prognostic disparity seen in this cancer.

Klager, Abigail- **POSTER**

Teaching Health Literacy to Refugee ESL Students and Teachers

Authors: Klager AJ.
Community Partner: Cynthia Zarazua, Neighborhood House —International learning Center
Project Mentor: Sumana Koduri, MD

Over 250,000 refugees live in the US. They come from varying backgrounds and have overcome incredible obstacles to come to the US. Upon arrival they are faced with another daunting task- learning to navigate American society, especially the healthcare system. The ILC is one of many organizations functioning to help refugees learn skills, such as English, math, and computers, so they can better their lives. I have partnered with the ILC to teach health topics to help refugees understand national perspectives on health and healthcare in the US. Throughout this project, I worked closely with ESL teachers to better understand the needs of refugee populations. Results of this project include producing teaching materials that are culturally and linguistically appropriate for adult, refugee students that can be utilized by future teachers. There remains need for continuing partnership to further cross-cultural understandings of health.

Lee, Jessica - **POSTER**

In-Person Interpreter Availability Effects on PED Use by LEP Patients

Authors: Lee JR, Pacheco-Shah B, Zei M, Levas MN.
Project Mentor: Michael Levas, MD

Introduction: Patients with limited English proficiency (LEP) presenting to the pediatric emergency department (PED) are more likely to be admitted to the hospital when compared to English proficient patients. We aim to investigate whether reduced in-person interpretation hours affect patterns of PED use by Spanish-speaking patients with LEP. Methods: A retrospective analysis of 8,085 interpreted visits collected by CHW. Proportions of Latinos requiring a Spanish interpreter to the total Latino visits were compared pre- and post- the 2010 change in interpreter coverage using $\chi 2$. The data was further sub-analyzed into 0000-0600 to 0600-2400. Results: Use of the PED by LEP Latinos between 0000-0600 was 6.5% pre-interpreter coverage change compared to 6.1% post- ($p=0.502$). Similarly, use of the PED by LEP Latinos between 0600-2400 was 70% before the coverage change and 69% afterward ($p=0.108$). Conclusion: The decrease in interpreter coverage hours from 24h to 19h displayed no significant change in PED utilization by LEP patients.

Moore, Tami - **POSTER**

The Global Health Initiative

Authors: Moore T, Rader B, Ssempijja S, Lee L, Wilson S.
Community Partner: Ben Rader, PhD, Sebastian Ssempijja, PhD, The Sebastian Family Psychology Practice
Project Mentor: Jacquelyn Kuzminski, MD

Refugee resettlement is a global concern and there are many challenges this population faces during resettlement within the US, i.e., chronic disease, psychological trauma, adjustment distress, role disruption, loss of community, limited healthcare access, and confusion within the US healthcare system. This paper will summarize the collective narratives gathered from interviews with refugees who immigrated from diverse countries (i.e., Iraq, Laos, Congo, and Pakistan) regarding their US health care experiences. Many interviewees experienced debilitating disease such as diabetes, heart failure, chronic pain, as well as psychosocial conditions, mainly PTSD; these physical and mental health complications have hindered participants from reaching their full potential in society. In terms of healthcare services and access, many identified the lack of financial means and language as the most important barriers experienced. Despite these barriers, many refugees expressed gratitude for the medical care they receive here in the US.

Nadkarni, Ketan - **POSTER**

Milwaukee Initiative for Growing Healthy Teens

Authors: Nadkarni K, Rostami V, Petersen C, Phillippi L, Eniasivam A.
Community Partners: Cherise Meyers and Roy Cambronero, Journey House and South Division High School
Project Mentor: Jacquelyn Kuzminski, MD

Milwaukee's poorest residents continue to have the poorest health. Based on an identified need by leadership at Journey House (JH) a neighborhood organization in Milwaukee, Wisconsin, a partnership to provide health education to the teenage population was formed between JH and a team of Medical College of Wisconsin (MCW) pediatric residents and medical students. JH identified several goals for their adolescent programs: promoting healthy choices, developing a mentorship program, and providing guidance on education and career pathways in healthcare. Our team is addressing these goals through a project held at South Division High School. Following a pilot year during which we created and implemented a health education curriculum, we are now hoping to expand our efforts to include a mentorship program, career guidance, and programs at other youth centers. Determining if this intervention will have lasting impact will be the long-term goal of our partnership with JH.

Ravikumar, Sitara - **PODIUM**

ESS with Vemurafenib

Authors: Ravikumar S, JiaDe Yu.
Project Mentor: Parag Patel, MD

Cutaneous T- cell Lymphoma, a Non-Hodgkins Lymphoma, treatment in India is considered to be cutting edge. Some of the treatment modalities include chemotherapy such as Mustargen, Psoralen combined with UVA light, High dose IFN alpha (Roferon-A) and electron beam radiation to name a few. However, one of their more recent drugs used in Apollo Hospital in Chennai with successful outcomes is ,Vemurafenib, a BRAF enzyme inhibitor. The side effect profile of this drug ranges from joint pain, hair loss, photosensitivity, nausea, itching and warts. Of interest is a new lesion that is noted as a side effect of this drug. This case report will aim to describe this novel lesion from a histological and pathological standpoint with the hope of determining if this cutaneous finding is a novel precancerous lesion or a relatively benign epidermal growth.

Simon, Eric - **POSTER**

A Demonstration of Regional Anesthesia Prior to a Field Limb Amputation

Authors: Simon E.
Project Mentor: M. Riccardo Colella, DO, MPH

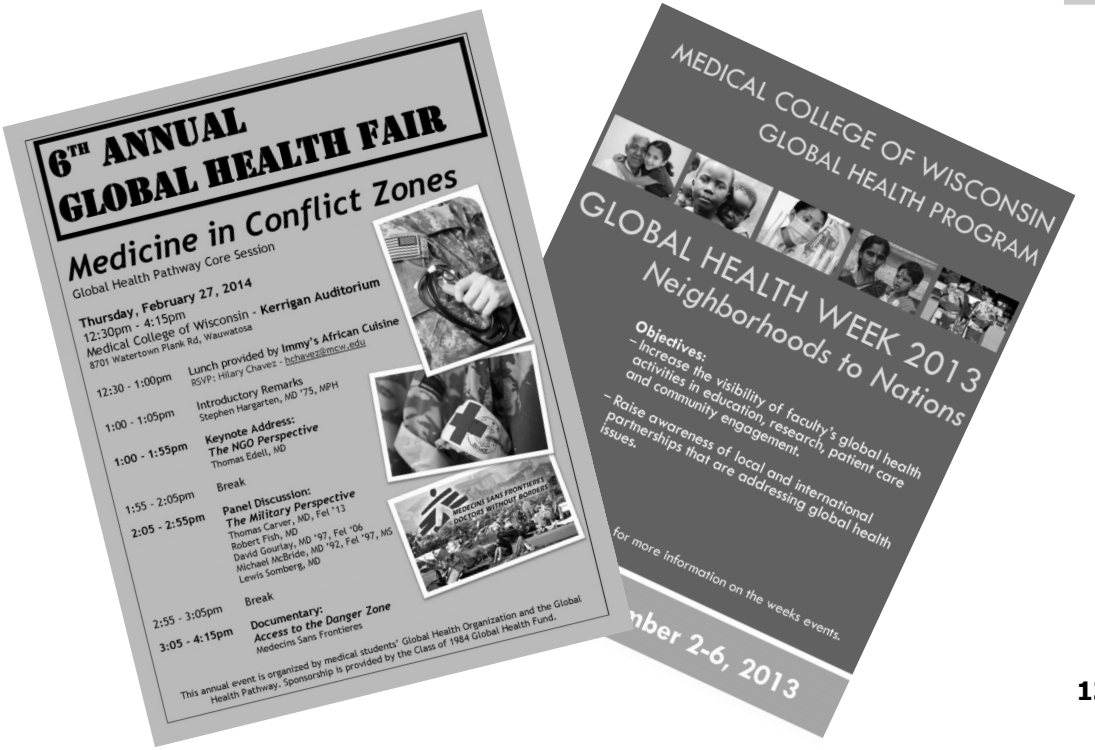
Research indicates that the incidence of field limb amputations is lacking but severely underreported. While training videos exist for performing the amputations, it is likely that many of those volunteering after disasters are not sufficiently trained in providing anesthesia. The purpose of this project is to assist those volunteers in providing regional anesthesia to a patient prior to an amputation. This project consists of two videos demonstrating nerve blocks for both an upper and a lower extremity amputation, and our hypothesis is that the videos will increase the level of comfort in performing the demonstrated nerve blocks in those who view them. To understand the need and effectiveness of the videos, surveys were administered to emergency medicine physicians at the Medical College of Wisconsin. Results are pending. These videos can then be used as a brief training for those volunteering so that disaster victims can have the best possible outcomes.

Willenbring, Brian

Operationalizing a Consensus-Based Definition of Trauma Center Need

Authors: Willenbring BD, Lerner EB, Brasel KJ, Cushman JT, Guse C, Shah MN, Swor RA.
Project Mentor: E. Brooke Lerner, PhD

Prehospital providers utilize field triage to determine appropriate destinations for injured patients. Retrospective outcome measures indicating trauma center need vary widely between studies. A treatment-based gold standard (GS) was recently developed for trauma center need. Objective: To determine if the GS could be obtained by record review and to compare patients identified by the GS with Injury Severity Score (ISS). Methods: A sub-analysis of a prospective cohort study of 4,528 adult trauma patients. The GS was operationalized and assigned to each case. Results: The GS was able to be determined for 98.7% of cases. Using an ISS>15 to indicate trauma center need identified 8.9% of cases with 48.2% meeting the GS. Of those with an ISS<15, 5.0% met the GS with the majority requiring time-sensitive surgery. Conclusions: It is feasible to use the GS. Use of the GS changes the number and types of patients identified when compared to ISS.



Master Clinician

Edmund Duthie, MD

Dedicated to significantly raising performance level in student-selected clinical areas, further developing skills as Reporters, Interpreters, Managers and Educators.

- **Enhancing communication skills with the patient, family and heath care team**
- **Demonstrating excellence in technical skills, including the physical examination**
- **Solving complex clinical problems**
- **Teamwork skills: situational awareness, ability to assess selves and others, task management, leadership**
- **Using primary sources of literature in patient care and to identify clinical research questions**

Bondow, Benjamin - **POSTER**

Hepatitis C Education at M&S Clinical Services, Inc.

Authors: Bondow B, Levin N.
Community Partner: Rev Mark Fossie PhD, M & S Clinical Services Inc.
Project Mentor: Jose Franco, MD

In the United States alone, approximately 3.2 million people have a chronic Hepatitis C viral (HCV) infection; it is the leading infectious cause of chronic liver disease and liver transplantation in the US. Recent studies have indicated that nearly 75% of these individuals are unaware that they are infected. Effective strategies for reducing the spread of HCV among the population include improving the education of Hepatitis C among the general public and improving the recognition of HCV symptoms and screening practices among high-risk populations. At M&S Clinical Services, Inc. (M&S), a high percentage of their clients would be categorized as 'High Risk' for having or contracting HCV. We partnered with M&S to educate clients and increase HCV testing in high-risk individuals. Our partnership with M&S allowed 87 people to be tested for HCV and made a significant impact by educating 790 people in the clinic and community.

Boschuetz, Tyler

Denervation of the Lateral Humeral Epicondyle With Small Skin Incision

Authors: Boschuetz TJ, Shi SM, Daley RA.
Project Mentor: Roger Daley, MD, PhD

Purpose: The aim of this anatomical study was to determine if denervation of the lateral humeral epicondyle was possible using only a single, small skin incision. Past studies have examined the innervation patterns of the lateral epicondyle, however these studies suggest using an incision 4-7 cm in length. We believed that it was possible to denervate the elbow using a much smaller incision. Methods: Four upper limbs from skeletally mature fresh-frozen cadavers were used for dissection of the posterior cutaneous branch of the radial nerve. Results: The branching and innervation pattern of past studies was confirmed. We were able to successfully denervate the LHE using a single small incision. Conclusion: Denervation of LHE using a small skin incision allows for relief of pain with a reduction in the complications caused by traditional approaches. A smaller incision leads to less time in the operating room, a quicker recovery, and a reduction in the chance of infection and blood loss.

Ceranske, Andrew - **POSTER**

Assessment: Brainstem Infarcts

Authors: Ceranske AJ, Klein AP.
Project Mentor: Andrew Klein, MD

Purpose: Stroke is the 4th leading cause of death in the US and a leading cause of disability resulting in billions of dollars of lost productivity per year. Advances in medical imaging have made brainstem strokes easier to recognize however, brainstem anatomy remains an area many clinicians do not regularly encounter. Our intent is to help familiarize clinicians with the anatomy of this important part of the CNS. Methods: De-identified images were collected and cases were reviewed with insight into some common presentations of stroke. Research focused on pertinent brainstem nuclei and paths congruent with the clinical presentation of infarctions in a particular area and level of the brainstem. Results: Models were constructed with graphical imaging programs to highlight areas which can be difficult to visualize on medical imaging. Additionally, a series of case studies with subsequent imaging and models is provided to aid in comprehension. Conclusion: This educational module was found to be an effective tool in clinical education.

Chau, Andy

Clinical Significance of CAD in Stress Induced Cardiomyopathy

Authors: Chau A, Krumenacher P, Anderson D, Ahn K, Siegel R, Muirhead Y, Park S, Kim H, Park S, Kim D.
Project Mentor: Byung-Il Choi, MD

Background: Stress induced cardiomyopathy (SIC) is characterized by left ventricular apical ballooning and manifests as acute coronary syndrome. A psychosomatic mechanism is hypothesized that emotional stress can compromise coronary circulation, but the role of coronary artery disease has not been well characterized. Method: 34 patients with SIC were divided into two groups by absence or presence of coronary atherosclerosis (CA) and were examined for risk factors. Results: 14 patients without CA (Group A) were younger and had less incidence of HTN than 20 patients with CA (Group B). CK, CK-MB, Trop, TG, HDL, LDL, T wave abnormality, ST abnormality, prolonged QT, transmural infarct, acute MI, and ejection fraction were not different between the two groups. Discussion: There was no significant difference in risk factors between the two groups except for age and hypertension. More than half of patients had coronary artery disease, albeit hemodynamically insignificant, suggesting patients with SIC may have ongoing atherosclerosis.

Coleman, Papa-Ekow - **POSTER**

Functional Mullerian Remnants in Androgen Insensitivity: A Case Report

Authors: Coleman P, Strawn, E.
Project Mentor: Estil Strawn, Jr, MD

Background: Androgen Insensitivity Syndrome is a condition caused by an X-linked recessive mutation in the androgen receptor gene. In the complete variant, the individual has a normal female external phenotype, but has a blind ended vagina and intra-abdominal testes. In the partial variant, the individual may have ambiguous genitalia. Case: Our patient presented with a known diagnosis of Androgen Insensitivity Syndrome. She underwent a laparotomy with bilateral orchiectomy with histologic confirmation of testes and a mullerian remnant and was subsequently treated with Premarin. She then presented to our service with cyclical pelvic pain and underwent a operative laparoscopy with histological confirmation of a rudimentary uterus. Conclusion: Persistent mullerian structures in Androgen Insensitivity Syndrome are highly atypical and functional remnants have never previously been described.

Connolly, Michael

Validation of a VR-based robotic surgical skills curriculum

Authors: Connolly M, Seligman J, Kastenmeier A, Goldblatt M, Gould JC.
Project Mentor: Jon C. Gould, MD, FACS

The da Vinci Surgical System™ is currently the only commercial RAS system. Skills necessary to perform robotic surgery are unique compared to open and laparoscopic surgery. A validated laparoscopic skills curriculum (FLS) has transformed laparoscopic training. There is a similar need for robotic surgery. Using previously published data and expert opinion, we developed a robotic skills curriculum. Our study evaluated this curriculum for construct validity. Four expert surgeons (>20 RAS) and 20 novice surgeons (medical students with no surgical experience) were evaluated. The curriculum comprised five tasks utilizing the da Vinci™ Skills Simulator. All subjects completed three consecutive repetitions of each task. Skill was evaluated using computer-derived performance metrics. Experienced surgeons significantly outperformed novice surgeons in most metrics. Significant differences were in mean overall scores and mean time. Our curriculum is a valid method of assessing robotic surgical skill levels on the da Vinci Si™ Surgical System.

Dahlgren, Allison- **PODIUM**

Role of Prematurity in Neonatal Cholesterol Response to TPN

Authors: Dahlgren A, Kalluri D, Nghiem-Rao T.
Project Mentor: T Hang Nghiem-Rao, MD

Total parenteral nutrition (TPN) is an essential lifesaving intervention in neonates unable to tolerate enteral feeds; however, intravenous lipids can induce elevated cholesterol levels, which may be a risk factor for cardiovascular disease in adulthood. Further, neonates with the inability to process plant sterols are at increased risk for lipid derangements; we hypothesize that neonatal gestational age affects cholesterol response to TPN. We studied 30 neonates on TPN with median gestational age (GA) 32.1 weeks and median birth weight 1.46kg. Median baseline cholesterol level prior to TPN was 51.4mg/dL and median cholesterol levels reached a maximum of 106.9mg/dL in the first week. Infants with > 100% in baseline cholesterol were found to have a mean GA of 28.8 weeks while infants with <100% change had a mean GA of 35.6 weeks (p=0.03.) Prematurity appears to be an important factor contributing to lipid derangement and may be a risk factor for future cardiovascular disease.

Denney, Derek - **POSTER**

Comparing Retinal Changes using OCT in Patients Treated for ROP

Authors: Denney D, Goldberg M, Zakka F, Dubis AM, Carroll J, Costakos DM.
Project Mentor: Deborah Costakos, MD

Purpose: Examine and compare the effects of ROP treatments on cystoid macular edema using handheld OCT. Methods: 20 patients were treated for ROP. 6 were treated with Bevacizumab, 13 were treated with laser and 1 was treated with both. OCT images of the macular region were acquired using the Bioptigen Hand-Held SD-OCT. Results: 6 patients were treated with bevacizumab, 2 had CME before treatment. CME persisted in 3 patients for 5-7 weeks after treatment. 13 patients were treated with laser, 5 had CME prior to treatment. One was treated 6 weeks prior to imaging and had CME upon imaging. 1 had CME that resolved prior to treatment. 1 patient received both treatments and had no CME. Discussion: The use of laser and bevacizumab are both effective for the treatment of ROP. CME occurs in ROP and it is unclear whether the type of treatment can affect the persistence of CME and ultimately the visual outcome. Given this small sample, the formation or persistence of CME in premature infants does not seem to correlate with treatment.

Doan, Joseph - **POSTER**

Chondromyxoid Fibroma: What the Radiologist Needs to Know

Authors: Mautz AP, DuBois MS, Cerniglia RM, Baynes KE, Carrera GF, Doan J, Scott R.
Project Mentor: Keith Baynes, MD

Chondromyxoid fibroma comprises a small segment of primary lytic osseous neoplasms, but remains a relevant diagnostic consideration for the diagnostic radiologist evaluating a lytic bone lesion. A sound knowledge of the imaging characteristics, patient presentation, clinical management, and potential for recurrence after treatment of chondromyxoid fibroma can be useful for the practicing diagnostic radiologist who may be involved in the initial diagnosis of this lesion or aid in the follow-up of patients who have undergone treatment for chondromyxoid fi broma. The intent of this presentation is to review the imaging characteristics of chondromyxoid fi broma, its epidemiology, and possible treatment with appropriate imaging correlation.

Egodage, Sonya - **POSTER**

Mechanical Circulatory Support for Pediatric Heart Transplantation

Authors: Egodage S, Niebler RA, Stendahl G, Mitchell M, Tweddell J, Shah T, Berger S, Woods R, Zangwill S.
Project Mentor: Steven Zangwill, MD

Purpose: To describe the outcomes of transplantation following mechanical circulatory support (MCS) in children. Methods: A retrospective chart review of all patients listed for heart transplantation from 1/1/2002 to 5/1/2012 was done. For listed/transplanted patients, pre-transplant mortality, MCS post-transplant, survival to discharge, 1- and 3 year survivals were compared between those with and without MCS prior to transplant. Results: In patients listed for transplant 86 of 94 (0.92) without MCS survived to transplant or recovered without the need for transplant compared to 31 of 43 (0.72, p=0.007) of patients who required MCS prior to transplant. Patients supported on ECMO had a lower survival to transplant or recovery (14/23, 0.61; p=0.001). Patients supported on a ventricular assist device (VAD) did not differ in rates of survival or recovery (17/20, 0.85; p=0.405). Conclusion: ECMO at listing significantly increases mortality, while VAD support has similar outcomes to those without pre-transplant MCS.

Ferda, Nathan - **POSTER**

Survey of Wisconsin Medical Students about the Affordable Care Act (ACA)

Authors: Ferda N, Meurer J, Jo Y, Chelius T, Cassidy L, Corden T, Seibert C, Schapiro R, Keuler Cain M.
Project Mentor: John Meurer, MD, MBA

Current medical students will enter the medical field in the midst of one of the biggest healthcare policy transformations in American history. This project describes Wisconsin medical students' opinions, perceptions, and understanding of healthcare reform and the Patient Protection & Affordable Care Act (ACA), as well as their sense of responsibility and demographic characteristics, including political affiliation. We hypothesize that students have strong opinions about the ACA, along with some misperceptions of the law associated with their demographics. We created an anonymous online survey that will be emailed to all students currently enrolled in Wisconsin medical schools. We will perform univariate analysis and report frequency distributions of responses to each item, as well as bivariate analyses of responses to questions about knowledge and attitudes by demographic characteristics. Our objective is to describe student knowledge and attitudes about the ACA, and to use this information to guide medical education curriculum.

File, Danielle - **POSTER**

Impact of Pretreatment Variables on OS of Patients with Stage IV NSCLC

Authors: File DM, Whittle JC, Arce-Lara CE, Santana-Davila R.
Project Mentor: Rafael Santana-Davila, MD

This study aimed to identify prognostic factors that influence survival of stage IV NSCLC. Patients who received chemotherapy within 4 months of diagnosis were identified using the VA Central Cancer Registry from 2001 to 2008. Multivariate analysis was performed on 4,352 patients. The median overall survival (OS) was 8.1 months with 32% alive at one year and 11% alive at two years, mirroring findings from the ECOG 1594 study. Prior hospitalizations, higher % weight loss, CKD, anemia, thrombocytopenia and hypoalbuminemia were all independently associated with decreased survival. The OS with pretreatment Hgb <12g/dl was 6.5 vs 9.2 months when >12. OS with albumin <3.5g/dl was 6 vs 10.2 months when >3.5. OS with GFR <60ml/hr was 7.7 vs 8.0 months when >60. OS with platelet count <100,000 was 3.7 vs 8.0 months when >100,000. The outcomes of patients treated with a platinum doublet within the VA mirror those of clinical trials. Several pretreatment factors present at the time of initial treatment can be used to determine prognosis of NSCLC.

Flanagan, Brett

Development of a Trauma Quality of Life Assessment

Authors: Flanagan, B. Brasel k. deRoon Cassini T.
Project Mentor: Karen Brasel MD, MPH, Terri deRoon-Cassini PhD

Quality of life is frequently becoming the assessment of choice in large hospital systems for defining patient outcomes, future recommendations, and in analyzing cost-benefit of treatments. Trauma encompasses a subset of patients with unique functional, social, and mental issues. There has yet to be an inclusive quality of life assessment used for care and patient satisfaction in the trauma population. Henceforth, the Trauma Quality of Life assessment was created by Dr. Karen Brasel and Dr. deRoon-Cassini to assess the quality of life for their trauma patients. The purpose of the assessment is to create an alternative to current assessments and to ensure the outcomes measured are trauma specific. This will aid hospitals in quantifying and promote better patient care. Currently, the assessment is being cross-analyzed with the SF-36 and PCL-C quality of life tools, being explored for trending factors via EFA, and being shortened both for usability and to eliminate repetition.

Florence, Nicholas

Phrenic Nerve Injury in the Single Ventricle Population

Authors: Florence NR, Pelech AN, Dreger ND, Krolikowski MM, Fedderly R, Simpson P, Cao Y.
Project Mentor: Andrew Pelech, MD

Single ventricle patients who have undergone Fontan palliation are at risk for hemodynamic failure, often of unclear etiology. The purpose of this study is to evaluate the association of phrenic nerve injury with indices of poor clinical outcome and to determine the incidence of phrenic nerve injury and its chronological relationship to the multiple stages of palliation. This study retrospectively identified patients who underwent staged single ventricle palliation at our institution from January 1999 to May 2012. The overall incidence of phrenic nerve injury in a consecutive series of single ventricle patients was 7.76% over a period of 12 years. Single ventricle patients who suffer phrenic nerve injury are diagnosed most frequently after the Norwood procedure (73.7%). Phrenic nerve injury was found to be significantly associated with listing for transplant, which at our institution is done only in cases of severe hemodynamic failure despite multiple other medical and surgical measures.

Franz, Casandra - **POSTER**

Systematic Review: Outcomes of Pre-hospital Cooling After Cardiac Arrest

Authors: Franz C.
Project Mentor: Tom Aufderheide, MD, FACEP, FACC, FAHA

Background: In-hospital therapeutic hypothermia (TH) has been shown to improve survival and neurological outcomes after out-of-hospital cardiac arrest (OHCA). It is unknown if earlier, pre-hospital cooling may further improve outcomes. Methods and Results: Six randomized controlled trials (2,112 patients) comparing pre-hospital cooling to in-hospital TH in OHCA patients were reviewed. Publications were sought through electronic searches of PubMed and Cochrane databases, as well as references of key studies. All trials determined pre-hospital cooling to be safe and feasible, with a decrease in core temperature achieved by hospital arrival. Four trials showed no significant difference in survival or neurological outcome when compared to in-hospital TH. Two studies suggesting improvement were insufficiently powered to reach statistical significance. Conclusions: Pre-hospital therapeutic cooling of cardiac arrest patients is safe and feasible, but does not appear to affect survival or neurological outcome compared to in-hospital TH.

Gashkoff, Drake - **POSTER**

Effect of anesthetic technique on surgical field visualization

Authors: Gollapudy S, Gashkoff D, Riess M.
Project Mentor: Matthias Reiss, MD, PhD

Background: It remains unclear if total intravenous anesthesia (TIVA) is superior to inhaled anesthetics to control bleeding during Functional Endoscopy Sinus Surgery (FESS). In this IRB-approved study we aim to assess if the type of general anesthetic affects bleeding and surgical field visualization during FESS. Methods: Patients are randomized to receive one of three general anesthetic regimens: 1) TIVA with propofol and remifentanil; 2) Desflurane with remifentanil; or, 3) a combination of propofol, desflurane, and remifentanil. Surgical bleeding scores are recorded along with overall blood loss and hemodynamic parameters. Results: First results from 16 preliminary patients suggest a positive correlation between bleeding score and TIVA when compared to alternate regimens (R^2=0.40). Conclusion: Propofol use appears to be associated with increased bleeding, i.e. decreased surgical field visualization. However, due to insufficient power definite conclusions cannot be made at this point and further enrollment is necessary.

Glocka, Padden

Relationship between CPR Compression Rate, Depth, and Incomplete Recoil

Authors: Rosewicz LR, Glocka P, Aufderheide TP.
Project Mentor: Thomas Aufderheide, MD

See Rosewicz, Lara, Page 44

Godshaw, Brian

Hyperglycemia-Induced Reactive Oxygen Species in Cardiomyocytes

Authors: Godshaw B, Canfield S, Bosnjak Z.
Project Mentor: Zeljko Bosnjak, PhD

Anesthetic Preconditioning (APC) protects the myocardium from ischemia reperfusion injury but is reduced with hyperglycemia. Hyperglycemia causes excessive reactive oxygen species (ROS) generation and alterations to the mitochondrial membrane potential (ΔΨm). We investigated the effects of hyperglycemia on ROS generation and alterations in ΔΨm in cardiomyocytes differentiated from induced pluripotent stem cells. Cardiomyocytes were exposed to acute (30 min) or chronic (24 or 48 h) high glucose (25 mM) or control conditions (5 mM). Using confocal microscopy we measured cytosolic superoxide levels, mitochondria-generated ROS, and ΔΨm. APC provided protection from oxidative stress under control conditions, but not high glucose levels. Acute and chronic exposure to elevated glucose levels led to a significant increase in ROS levels and mitochondrial generation. ΔΨm showed greater variability between acute and chronic exposure. Thus, exposure to high glucose levels significantly increases ROS levels in cardiomyocytes and alters the ΔΨm.

Greene, Amanda

Family Impact of Bronchopulmonary Dysplasia after NICU Discharge

Authors: Greene A.
Project Mentor: Joanne Lagatta, MD, MS

Bronchopulmonary dysplasia (BPD) is a major cause of prolonged neonatal intensive care unit (NICU) length of stay and post-NICU healthcare utilization. No current data describe how post-NICU healthcare utilization required for infants with BPD affects parents' health-related quality of life (HRQL). Potential barriers to the collection of this data include difficulty in accessing comprehensive data in a fragmented healthcare environment and collecting data from families of children with special health care needs. 20 infants with moderate-severe BPD approaching discharge were enrolled in this pilot study and provided a care notebook to tract their infants healthcare needs. Phone interviews post-NICU discharge included the Pediatric Quality of Life-Family Impact Inventory and open ended questions. Results of this pilot research will be used toward a larger study comparing post-discharge outcomes and family HRQL for infants with BPD discharged with and without specific home medical needs; as well as refining a data collection protocol.

Gronseth, Aaron

Growing Your Future

Authors: Gronseth A, Nelson D, Leininger M, Pien A, McDowell K
Project Mentor: David Nelson, PhD, MS

Childhood obesity rates have increased over the last several decades causing many negative health outcomes. Youth's environment plays a crucial role in their health practices. A multilevel comprehensive approach will be necessary to combat this obesity epidemic. In this study a community garden centered summer curriculum was implemented for Milwaukee teenagers during the summers of 2012-2013. The study assessed impacts on health practices, job skills, and future orientation using three pre/post survey measures. After participating in the pilot curriculum youth showed self-reported increases in fruit and vegetable consumption, decreased sedentary behavior, improved job readiness and business skills, and an increased orientation to the future. This study demonstrates the impact of targeting interventions at the community level. Experiences from this program have many implications for how clinicians impact their patient's weight status through awareness of barriers to healthy eating and active living and knowledge of community resources.

Hasan, Haytham

Characteristics of Injection Drug Users who Overdose.

Authors: Westergaard R, Fangman J, Hasan H.
Project Mentor: John Fangman, MD

Purpose: To identify factors that distinguish injection drug users who are higher risk for overdose from those who are lower risk for overdose. Methods: This 2 month study will involve recruitment of adults who access services at ARCW prevention sites in Madison or Milwaukee. This population is predominantly of low socio-economic status and has a high prevalence of drug abuse. Clients will be given the opportunity to complete a brief, anonymous, computer-based survey about their previous experiences and behaviors related to injecting drugs. After being informed about the purpose of the study and screened for eligibility, subjects will be handed a tablet computer to complete the survey. Conclusion: Risk factors identified: age of first drug use, being Hepatitis C positive, being from an urban/suburban area, and tendency of drug user to pool money with others to buy drugs. For example, drug users who started using drugs as minors are twice as likely to overdose compared to drug users who started using drugs as adults (32% vs 15%).

Henning, Peter

Sesamoid Position After Chevron Osteotomy: Correlation With Outcome?

Authors: Shi, G, Henning PR, Marks RM.
Project Mentor: Richard M Marks, MD

Introduction: It is not known whether the postoperative sesamoid position is a risk factor in hallux valgus correction via Chevron bunionectomy with or without first dorsal webspace release. Methods: Preoperative and postoperative weight-bearing radiographs of 169 patients were evaluated for hallux valgus angle (HVA), intermetarsal angle (IMA) and tibial sesamoid position (TSP). TSP of Grade V or more (Hardy Clapham method) was considered displaced. Results: Average HVA preoperatively was 26 degrees. At 12 months, feet with sustained sesamoid reductions had HVA of 12.5 degrees compared to those with loss of sesamoid reduction at 14.5 degrees. No significant relationships were found between postoperative sesamoid position and rate of recurrence whether the subjects had a first dorsal webspace release or not. Overall complication rate was low with recurrence in this group at 6.8%. Conclusion: Postoperative tibial sesamoid position after a Chevron bunionectomy is not an accurate predictor of hallux valgus recurrence.

Ho, Abigail - **POSTER**

Overtraining Syndrome in Patient-Athletes

Authors: Ho A, Pugh Z.
Project Mentor: Craig Young, MD

Overtraining syndrome is a multisystem condition describing the maladaptive responses and underperformance in athletes experiencing chronic imbalance between training stress and recovery. It is a complex, multifactorial etiology that takes into account the physical stress of training as well as psychological, social, nutritional, and environmental stressors of individual athletes. As many as 20-60% of athletes will experience OTS at some point during their careers, and if not properly treated, it can lead to injury, illness, burnout, and other undesirable effects, and may last for weeks to years. Despite its prevalence and potentially devastating consequences, OTS remains difficult to diagnose and often goes unrecognized, untreated and even ignored by athletes, coaches, and medical professionals. In this review, we discuss the definition, risk factors, pathophysiology, signs and symptoms, treatment, and prevention of overtraining syndrome in order to help athletes, coaches, and physicians recognize and prevent OTS and its consequences.

Iverson, Ayuko - **POSTER**

Evaluation of Genetic Counseling Referrals for Ovarian Cancer

Authors: McMaster J, Iverson A, Grzybowski J, Geurts J, and Uyar D.
Project Mentor: Denise Uyar, MD

Mutations in BRCA1 and BRCA2 are associated with increased risks of breast, ovarian, fallopian tube, and peritoneal cancers in women. Risk assessment and appropriate testing of these genes can help to stratify patients and guide further screening and treatment options. We sought to examine the frequency and outcomes of genetic counseling referrals at Froedtert Health (FH) by conducting a retrospective data analysis of patients within the FH Cancer Registry and Genetic Counseling Referral Database who were diagnosed with ovarian or fallopian tube cancer between January 2008 and January 2013. The study population consisted of 239 women with ovarian cancer, 81 (33.9%) of who were referred for genetic counseling. Of those referred, 56 (69.1%) completed counseling and 46 (56.8%) underwent BRCA testing. Testing identified 7 BRCA1/2 mutation carriers (2.9%). Since 10-15% of women with ovarian cancer are BRCA carriers, our data suggests an under-identification of these individuals.

Jenson, Ross—POSTER

Diagnosing Diarrhea by Upper Endoscopy

Authors: Jenson R.
Project Mentor: Edmund Duthie, MD

A 60 year old female with a past medical history of sickle cell anemia is admitted with hypomagnesemia and hypocalcemia found on routine labs and complains of 2 months of chronic diarrhea. She states that she has watery, non-bloody diarrhea approximately two times per day with associated abdominal pain and facial flushing. A complete diarrhea workup including testing for C. difficile and other infectious causes including parasites all come back negative. An upper endoscopy is performed to evaluate for celiac sprue and incidentally shows a tumor in the patient's duodenum which later was found to be a carcinoid tumor. Carcinoid tumors are well differentiated neuroendocrine tumors that arise from enterochromaffin cells of the digestive tract. Carcinoid tumors may secrete bioactive substrates such as serotonin and histamine directly into the circulation which are responsible for the characteristic diarrhea and flushing associated with carcinoid syndrome.

Joerger, Torsten

Diagnosis of VIP Secreting Tumor in a Toddler

Authors: Joerger T, Dobrozsi S, Jogal S.
Project Mentor: Sachin S. Jogal, MD

Vasoactive Intestinal Peptide (VIP)-secreting neuroblastomas are rare tumors of neural origin occurring primarily in infants and children. We present a 2-year-old male with a 16-month history of diarrhea and hypokalemia ultimately diagnosed as a VIP-secreting ganglioneuroblastoma. The case demonstrates the difficulties in diagnosis and supports the need for a high index of suspicion for VIP-secreting neuroblastoma when confronted by chronic diarrhea not responding to conventional treatments or without test results demonstrating a definitive cause.

Kalluri, Deepti - **PODIUM**

Role of Prematurity in Neonatal Cholesterol Response to TPN

Authors: Kalluri D, Dahlgren A, Nghiem-Rao T.
Project Mentor: T Hang Nghiem-Rao, MD

See Dahlgren, Allison Page 15

Kang, Xuan

fMRI Activation Patterns in Stroke Before and After Rehabilitation

Authors: Johnson MJ, Kang,X, Tchkenov G, Strachota E, Zhao S, Tarima S, Deyoe E.
Project Mentor: Michelle J. Johnson, PhD

Purpose: Stroke is the 3rd leading cause of death in the United States. Many studies investigated correlations between brain activation change and functional recovery post stroke therapy, but no definite conclusions have been reached. Methods: 11 healthy subjects, 4 stroke patients under OT and 4 patients receiving robotic therapy (RT) were included in our study. fMRI was applied as patients and control subjects perform specific task in the scanner. 26 ROI were analyzed using AFNI. Recovery score is calculated from 7 hand function measures using PCA. Results: SPSS analysis showed smaller difference between post therapy fMRI measures and control subjects comparing to pre therapy fMRI measures. Recovery reflects the change of fMRI measurements. Conclusion: The study have suggested the relationship of hand function recovery post stroke and the fMRI signal change in stroke patients. Further analyses are required on investigating the differences between OT and RT interventions.

Kimura, Brad

A Comparison of Various Online Radiation Therapies on Pancreatic Cancer

Authors: Kimura B, Ahunbay E, Liu F, Erickson B and Li XA
Project Mentor: Ergun Ahunbay, PhD

Introduction: Current cancer radiation treatment is online repositioning based on rigid-body alignment (IGRT). IGRT doesn't consider inter-fractional changes (changes in organ alignment). The goal is to compare IGRT treatment to other adaptive online strategies. Methods: Retrospective study of 249 daily CTs (10 pancreatic cancer patients). Contours were generated by auto-contouring tool and manually edited. Plans were generated by Prowess Panther program. Plans included current IGRT methods, reoptimization of plan for each daily CT, SAM an optimization only requiring target tissue contours, and SWO (reoptimization of SAM). Plans were normalized so target tissue received 95% of dose with certainty. Results: Most effective plans were by reoptimization plans then SWO plans then SAM plans and lastly IGRT plans. Conclusion: Online adaptive replanning reoptimizations are ideal. Currently they require extensive planning time that is unfeasible. SAM is an alternative as it requires significantly less time and was almost equal dosimetrically.

Koenig, Kevin—**POSTER**

Role of CD4 TIM-1 in Ischemia and Reperfusion Injury following mouse OLT

Authors: Zhang Y, Ji H, Shen X, Cai J, Gao F, Koenig KM, Batikian CM, Busuttil RW, Kupiec-Weglinski JW
Project Mentor:

Ischemia and reperfusion injury (IRI) following cold storage constitutes a major mechanism of hepatic primary graft failure and late rejection in orthotopic liver transplantion (OLT). It has been previously shown that CD4 T cells play a critical role in mediating inflammation caused secondary to IR, and that blockade of CD4 TIM1 reduces such inflammation in a setting of "warm" ischemia. The present study investigates the role of CD4 T cell TIM1 signaling in IRI damage following the more clinical scenario of OLT after prolonged cold storage. Livers from C57Bl/6 mice were stored at 4°C in UW for 20hrs and transplanted into syngeneic recipients. We found that activate TIM1+ CD4 T cells rapidly accumulated in livers as early as 1h post OLT. Additionally, blockade of TIM1 signaling with anti-TIM1 mAb ameliorated hepatocellular damage following OLT, inhibited IR induced apoptosis/necrosis, suppressed macrophage and neutrophil recruitment, decreased levels of Tbet/IFN-y/IL17/TNFa/IL1B and IL6 while increasing levels IL-4/IL-10/IL-22 and FoxP3.

Kossyreva, Elena - **POSTER**

Is faster better? Helicopter vs Ground EMS transport

Authors: Kossyreva EA, Hansen JD, Schmitt S, Colella MR.
Project Mentor: M. Riccardo Colella, DO, MPH, FACEP

Research suggests that there is a reduction in mortality rate among trauma patients transported by Helicopter Emergency Medical Service (HEMS) due to it being faster than ambulance and its ability to provide patients with advanced medical management capabilities. Others have argued that these benefits are unclear, especially in an urban setting. Lastly, the role of time in trauma survival is unclear with limited objective support for the concept of the "Golden Hour." In this retrospective chart review of all 2012 Flight for Life scene trauma calls taken to FMLH, we set out to determine whether HEMS provides time savings over ground transport and applied this time difference to the resuscitation records in order to assess the clinical implications of the difference in transport times. According to our preliminary results, HEMS is faster than ground transport in most cases. These time savings allowed for earlier ATLS assessment and interventions, however, further research is needed in order to link these findings to patient outcomes.

Kraus, Amanda - **POSTER**

PRN: Positive Relationships Networking

Authors: Martin CE, Kraus A.
Community Partner: John Rakowski, Violence Prevention Initiative
Project Mentor: Kelly Curran, MD

See Martin, Christina—Page 53

Krause, William

Review of SBO Treatment and Outcomes: Geriatric vs. a Younger Cohort

Authors: Krause WK.
Project Mentor: Travis P. Webb, MD

Background: Little is known about small bowel obstruction (SBO) management and outcomes in geriatric patients. Methods: A retrospective review was performed comparing geriatric (>65 years of age) and non-geriatric patients admitted with SBO. Admission characteristics, treatment, and outcomes were compared. Data analysis included Student's t test and chi-square test or Fisher exact test. Results: Among 80 geriatric and 136 non-geriatric patients no difference was observed between admission characteristics, treatment, time to or type of surgery, length of post-op stay, or overall complications. Cardiac complications (15% vs 0%, p=0.0082) and sub-acute care facility discharge (29% vs 5%, p<0.001) were more common for geriatric patients. Conclusions: Compared to younger adults, elderly patients with SBO have similar presentations and overall outcomes with the exception of cardiac morbidity and discharge disposition. Pre-operative attention to cardiac risk profile and discharge disposition discussion should be encouraged.

Krumenacher, Perry

Significance of Coronary Anatomy in Stress Induced Cardiomyopathy

Authors: Krumenacher P, Chau A, Matel-Anderson D, Siegel R, Ahn K, Muirhead Y, Park S, Kim S, Park S, Kim D, Choi B.
Project Mentor: Byung-il Choi, MD

Background: Stress induced cardiomyopathy (SIC) manifests as acute coronary syndrome in patients without coronary artery disease during a stressful event. Our aim is to correlate coronary anatomy and other risk factors in SIC. Methods: We investigated 36 SIC patients (28F, 8M) to examine the risk factor profiles. Results: 14 patients had no CAD (0% stenosis) while 22 patients had CAD (mean 35.2±15.0% stenosis), with CAD of the LAD (37.3±19.0%), LCX (32.0±17.8%), and RCA (35.7±12.7%). Non-CAD patients were more likely to have a wrap-around LAD (11/14) than patients with CAD (8/22) (P = 0.0134). Patients without CAD, mean age of 49±9.7 years, were younger than patients with CAD, mean age of 64±14 years (p= 0.0015), and were less likely to have HTN (4/14 vs. 16/22) (P: 0.0073). TG, HDL, LDL were not significant. Conclusions: The data suggests many patients with SIC have ongoing atherosclerosis, associated with HTN and older age. More wrap around LAD in non-CAD group suggests this may play a role in developing SIC in patients without CAD.

Lancaster, Jessica - **POSTER**

Disaster Medical Education & Simulated Crisis Events

Authors: Hayes AJ, Franco Z, Lancaster J, Kissack A.
Project Mentor: Zeno Franco, PhD

Purpose: To address efforts in DME in the United States and propose a training modality which better addresses the needs and limits of DME. Background: There are many barriers to quality DME. It must ensure retention of key points over disaster-free periods, utilize objective metrics, and approaches must offer greater fidelity to the disaster environment. Methods: Specific cases were analyzed for the fidelity of the training to disaster preparedness, their cost effectiveness, and with a focus on specific, recurrent problems seen in disaster responses. Conclusion: DME research must move toward a translational science model that integrates advances in basic information science into applications that improve clinical performance of frontline medical staff. Mid-fidelity simulations may improve DME by exposing students to scenarios that fundamentally challenge their assumptions in real-time. This can be accomplished with lower costs and greater scalability than live exercise or mock-up training approaches.

Levin, Nicole - **POSTER**

Hepatitis C Education at M&S Clinical Services, Inc.

Authors: Bondow B, Levin N.
Community Partner: Rev Mark Fossie PhD, M&S Clinical Services Inc.
Project Mentor: Jose Franco, MD

See Bondow, Benjamin—Page 14

Lin, Jonathan - **PODIUM**

Do All RS/CSL Diagnosed on CNB Need to Undergo Surgical Excision?

Authors: Lin JH, Basir Z, Termuhlen PM, Kong, AL.
Project Mentor: Amanda L. Kong, MD,

Background: Radial Scars (RS) or complex sclerosing lesions (CSL) are rare benign breast lesions. The purpose of this study was to examine the management and outcomes of women diagnosed with a RS/CSL on core needle biopsy (CNB). Methods: A retrospective review was conducted of 55 patients with 66 RS/CSLs diagnosed on CNB. Patients were evaluated for the presence of an undiagnosed carcinoma or high risk lesion upon excision. Results: Of the 21 excised RS/CSLs with atypia, there was one case of invasive carcinoma (4.76%) and seven cases of atypical ductal hyperplasia (ADH) (33.3%). There was only one case of in situ carcinoma (3.45%) found on excision of the 29 RS/CSLs without atypia. RS/CSLs with atypia on CNB were more likely to have cancer or a high risk lesion upon excision (P= 0.002). Conclusions: All RS/CSL with atypia diagnosed on CNB should be excised. However, if there is no atypia observed on CNB, they may be followed by serial imaging.

MacKinney, Erin - **POSTER**

Factors Influencing Publication of Research Presentations from the ASPO

Authors: MacKinney E, Chun R, Cassidy L, Roxanne Link T, Sulman C, Kerschner JE.
Project Mentor: Joseph E. Kerschner, MD

The objective of this investigation was to analyze what factors might influence successful progression of an original scientific presentation at the American Society of Pediatric Otolaryngology (ASPO) Annual Meeting to publication in a peer-reviewed journal. In addition, this investigation was conducted to develop a data-set of presenters to follow prospectively. Methods: Prior to the Annual ASPO meeting in 2013, a survey of 10 questions was sent by e-mail to all presenters. Results: 46 of 59 (78%) presenters responded to the survey prior to their presentation being given. Of these, 34 agreed to participate in a long-term follow-up. Conclusion: The responses to the survey suggest a strong desire and expectation of moving ASPO presentations to publication. More experienced publishers and presenters expected to move through the publishing process more quickly than those who had less experience. There was not a clear distinction between groups of people according with regard to barriers to publishing.

Maike, Andrew - **POSTER**

Case Presentation of a Rare Form of Small Bowel Carcinoma

Authors: Maike, A Pfeifer, K.
Project Mentor: Kurt Pfeifer, MD

Small bowel carcinoma is a rare disease and requires a high index of suspicion and clinical knowledge for prompt diagnosis and treatment. Small bowel cancers account for only 3% of gastrointestinal (GI) malignancies but are responsible for worse outcomes then colorectal cancer. In this case a 65-year-old man with a past medical history of hypertension, diabetes, hyperlipidemia, and gastroesophageal reflux disease presented with intermittent chest pain, dyspnea, abdominal pain and black stools for two weeks. He was diagnosed with anaplastic carcinoma of the small bowel, a rare form of small bowel malignancy, which has only been reported 20 times in current literature. The patient underwent surgical resection and reanastomosis of his small bowel, but was subsequently placed into palliative care due to positive surgical margins and multiple distant metastases.

Matel-Anderson, Dustin - **POSTER**

Coronary Anatomy and Comorbidities in Stress Induced Cardiomyopathy

Authors: Matel-Anderson D, Chau A, Krumenacher P, Park SC, Ahn KW, Siegel R, Choi B.
Project Mentor: Byung-il Choi, MD

Stress induced cardiomyopathy (SIC) has been linked with increased catecholamine response, and a psychosomatic mechanism has been proposed to explain how myocardial distress can be caused by coronary vasospasm or microvascular disease due to adrenaline surge. In 2008, the Mayo Clinic suggested four criteria for diagnosis, including the absence of obstructive coronary artery disease. Retrospective EMR review was undertaken on 30 patients with SIC admitted to Froedtert from 2006 to 2012, and catheterization data, angiographic analysis, and other variables were analyzed. Patients were divided into those with no structural coronary disease and those with minimal, or insignificant coronary artery disease. More than half had insignificant coronary artery disease, which suggests that normal coronary arteries may not be a prerequisite for diagnosis of SIC. Further studies are needed to elucidate the pathogenesis of SIC by evaluating endothelial function and early phase of atherogenesis in conjunction with beta receptor response to adrenaline.

Miles, Luke - **POSTER**

Per-Oral Endoscopic Myotomy (POEM): A New Approach to Achalasia

Authors: Kastenmeier A, Miles L, Frelich M, Dua K, Gould J C.
Project Mentor: Andrew Kastenmeier, MD

Per-oral endoscopic myotomy (POEM) is a newly developed approach to the treatment of esophageal achalasia. Our research aim was to evaluate the feasibility of utilizing POEM as a revisional procedure in the setting of prior Heller myotomy, using a porcine model. Four pigs underwent laparoscopic Heller myotomy followed by the POEM procedure and two served as controls, undergoing only the POEM procedure. Complications, length of procedure, and procedural difficulty were several of the primary endpoints used in assessing feasibility. All procedures and myotomies were completed successfully, without perioperative complications and infection. The revisional POEM procedure demonstrated a significantly lower workload score compared to laparoscopic Heller myotomy. The revisonal POEM did not demonstrate a statistically significant increased operative duration compared to primary POEM. This research, demonstrates the feasibility utilizing the POEM procedure as a revisional approach to recurrent or persistent achalasia after Heller myotomy.

Morris, Jason - **POSTER**

Assessing Efficacy of Concussion Education for Middle School Athletes

Authors: Schwarzkopf Z, Lurie J, Morris J.
Community Partner: Joe Cieszynski , Milwaukee Area Youth Lacrosse Association (MATLA)
Project Mentor: Kevin Walter, MD

See Schwarzkopf, Zacary, Page 8

Nandkeolyar, Shuktika - **POSTER**

Novel SNPs Improve Prediction of CAC in Healthy Elderly Subjects

Authors: Nandkeolyar S, Salfati E, Assimes T.
Project Mentor: Catherine Malmsten, MD

Coronary artery calcification (CAC) is a marker of subclinical coronary atherosclerosis disease (CAD) and a strong independent predictor of clinical complications of CAD. We investigated whether novel high risk SNPs from the CARDIoGRAMplusCD4 consortium predict the presence/extent of CAC in the ADVANCE study. Genotype data was imputed with 1000 genomes. Genetic risk score (GRS) was calculated as an unweighted sum of the number of high risk alleles. “Cases” were designated if CAC scores were >75th percentile for their sex (cases =159, controls =474). Logistic regression with CAC determined case/control status. Odds ratio (OR) of GRS for the top 34, 49, 152 SNPs respectively were 1.34 ($p<0.005$), 1.34 ($p<0.005$), 1.55 ($p<0.00001$). Thus, patients with higher GRS were up to 55% more likely to have a CAC score > 75th percentile, suggesting high risk alleles for clinical CAD promote subclinical CAD. The larger OR for the third GRS (includes SNPs without genome wide significance) suggests that many of these SNPs will be validated in the future.

Nguyen, Giang

Assessment on Road Safety Beliefs In Road Traffic Injury Victims

Authors: Nguyen G, Layde P.
Project Mentor: Pater Layde, MD

Road traffic accidents (RTA) kill an estimated of 1.3 million people annually worldwide. Of more than 3000 people die each day due to RTA, 500 are children . Vietnamese law on helmet usage: Decree 34 legislated in 2007, had led to an exponentially increase in helmet wearing in both adults and children. With children carry the highest risks for severe injuries that can cause lifelong disabilities, the Asia Injury Prevention (AIP) Foundation has developed and implemented various education programs, events and strategies in Vietnam targeted at school-aged children to increase the compliance rate for child helmet use. The purpose of this intervention development project is to capture stories of Southern Vietnamese children, parents and family members that are affected by road traffic injury (RTI) to form a qualitative assessment on road safety beliefs, attitude and behaviors of children, parents, and families that are affected by road traffic injury .

Omesiete-Adejare, Nkechinye

Microsurgical Breast Reconstruction in the Obese: Is it a Better Option?

Authors: Hudak KA, Alghoul M, LoGiudice JA, Omesiete-Adejare NP, Hijjawi JB.
Project Mentor: John Hijjawi, MD

OBJECTIVE This study directly compares prosthetic and autologous reconstruction in obese population by evaluating surgical outcomes and patient's satisfaction METHOD A retrospective chart review was conducted on 96 Pts. with BMI ≥ 30.0 who underwent 141 breast recons with either free tissue transfer from the abdomen or Prosthetic recons over a 3 yr. period. Demographics, intra/post-op variables were collected. BREAST-Q questionnaire was used to study the impact and effectiveness of breast surgery from the Pt.'s perspective RESULT Prosthetic grp had increased breast complications, mastectomy skin flap necrosis p=.009 infection P=.006 and overall reconstructive failure p<.0001 compared to autologous grp. Breast-Q studies showed improved satisfaction with breasts p<.0001, psychosocial well-being p=0.007 and sexual well-being p=0.006 in autologous grp CONCLUSION In the obese pop, reconstruction with autologous tissue resulted in decreased complications and improved Pt.'s satisfaction with outcomes when compared to prosthetic recons.

Nosavan, Nina

Free Clinic Program for Milwaukee's Uninsured Hmong Population

Authors: Nosavan NP, Degmetich SK
Community Partner: Lo Neng Kiatoukaysy, Hmong American Friendship Association, and MayTong Chang, Hmong American Women's Association
Project Mentor: James Sanders, MD, MPH

Milwaukee is home to nearly 50,000 Hmong residents, the third largest Hmong population in the country. Medical mistrust, low English proficiency, and socioeconomic status are barriers to health care for many Hmong Americans. We established a free clinic program for uninsured Hmong patients to address these barriers and improve access to healthcare. Volunteer Hmong interpreters were recruited from local universities. We publicized the program by distributing flyers in Hmong at Pai Phongsavan Hmong market, advertising on Hmong ABC Radio, tabling at the Milwaukee Hmong New Year celebration, and partnering with Hmong community organizations. Since the establishment of this program in August 2012, we have recruited five patients. The patients seen have demonstrated high compliance with treatment and follow-up care suggesting that despite low patient numbers, this program has much potential to affect the health of Milwaukee's uninsured Hmong population.

O'Keefe, Justin - **POSTER**

Peer to Peer Support Handbook

Authors: O'Keefe J, Glasscock A.
Project Mentor: Carlyle Chan, MD

Stress is an expected part of being a medical student, most students adapt. Those who struggle or deal with special situations like parenting or depression can find it devastating to their well-being and performance. Our project started with a search of available resources. We found former students who participated in programs that connected peers, people who went through the same struggles and made it. Unfortunately this program had no way to maintain itself, no continuity between years. We decided to create a handbook. In creating the handbook, many factors needed to be considered; training, boundaries for both the supporters and those seeking help, safety, confidentiality, oversight, a framework for organization and a milieu of details related to running and maintaining the program. A handbook addressing these needs will be a stepping stone to the creation of a safe and effective program to better the mental health of MCW students.

Palla, Misbah

Gastrostomy Tube Outcomes Based on Tube Characteristics

Authors: Denning N, Leranth D, Palla M, Densmore J.
Project Mentor: John Densmore, MD

Nearly 11,000 gastrostomy tubes are placed in children in the United States each year. This is a retrospective chart review of 420 patients who have had gastrostomy tube placements at prior to one year of age. Tubes were classified according to type of tip, material composition, and surgical placement methods. Patient charts were reviewed and evaluated to assess for any of eighteen possible complications within a two-year post procedure period. Statistical comparisons were made using the Mantel-Haenszel chi-square trend as well as Poisson regression with scale deviance.

Patel, Hemal - **POSTER**

Susceptibility of Mitochondrial Permeability Transition Pore

Authors: Patel H, Gastonguay C, Meyers J, Canfield S, Strande J.
Project Mentor: Jennifer Strande MD, PhD

The objective of the study is to develop a protocol using NIH3T3 cells where we could manipulate the Nitric oxide pathway and measure its effects on the mitochondrial permeability transition pore, which during cell injury opens leading to apoptosis. Cells were treated with sildenafil either before or after loading with TMRE; control cells had no treatment. Next they were analyzed by confocal microscopy: multiple regions of fluorescent mitochondria were stimulated with the laser and then fluorescent intensity was recorded. Data was graphed to obtain the change in fluorescence over time; accepted values for mPTP opening time = 50% of fluorescence lost. A decrease in baseline fluorescence observed when sildenafil was added to the cells after TMRE loading suggests that sildenafil results in mitochondrial depolarization. Adding sildenafil prior to loading the cells with TMRE lead to increased baseline fluorescence suggesting that the mitochondria were able to recover adequately and the TMRE was able to remain sequestered in the mitochondria.

Plesh, Lauren

Role of AGS3 in Folic Acid Induced Acute Kidney Injury Repair

Authors: Regner KR, Park F, White SM, Plesh LP.
Project Mentor: Kevin Regner, MD

Acute kidney injury (AKI) has high rates of in-hospital mortality. Renal tubular epithelial cell (RTEC) proliferation is crucial in kidney regeneration. Heterotrimeric G proteins regulate epithelial cell biology. We demonstrated Activator of G protein signaling 3 modulated renal tubular regeneration in mice with ischemia-reperfusion injury. We hypothesized non-ischemic AKI would induce AGS3 expression during kidney regeneration. Male given mice folic acid (FA) (250mg/kg ip) or vehicle ($NaHCO_3$) were euthanized. Plasma creatinine assessed kidney function, H&E for tubular injury, and proliferating cell nuclear antigen (PCNA) IHC for RTEC proliferation. Western blot analysis of AGS3, PCNA, and NGAL was performed. Folic acid induced reversible AKI depicted by transient rise in creatinine. Tubular injury, AGS3 and PCNA expression peaked 3 days after folic acid administration. AGS3 expression increases during kidney regeneration following folic acid administration suggesting a role for AGS3 in modulating tubular repair in non-ischemic AKI.

Prince, Morgan

Enhancing Deflux® for Vesicoureteral Reflux with Adjunctive Therapies

Authors: Prince MK, Balcom A.
Project Mentor: Anthony Balcom, MD

Objective: We postulated that pyridium hydrochloride and treating urethral stenosis would enhance the success rate of subureteric injection of Deflux® for treatment of vesicoureteral reflux (VUR). Methods: 90 girls with primary VUR were identified in a retrospective cohort study. Urethral dilatation was undertaken in 27 of these 90, and pyridium hydrochloride was employed in 14 patients. Success after injection was defined as absence of VUR by VCUG. Results: Urethral dilation in 27/90 girls resulted in an 82% success rate, compared to 52% for the 63/90 girls who were not dilated; $p < 0.05$. The 14/90 girls who received post-operative pyridium hydrochloride had a success rate of 86% compared to the 57% in 76/90 girls who did not, $p < 0.05$. Conclusion: This study suggests that when Deflux® is used for treatment of VUR, both urethral dilatation and pyridium hydrochloride improve success rate. Consider incorporating urethral dilatation and pyridium hydrochloride into the algorithm for treatment of VUR.

Pugh, Zachary - **POSTER**

Overtraining Syndrome in Patient-Athletes

Authors: Ho A, Pugh Z.
Project Mentor: Craig Young, MD

See Ho, Abigail, Page 19

Roberts, Bryan - **POSTER**

Peer-Led/Group Education: An Underutilized Resource of Chronic Disease

Authors: Roberts B.
Project Mentor: Jeffrey Whittle, MD, MPH

Research shows that peer-led chronic disease self-management programs (CDSMP) improve healthcare outcomes, but are underused. Therefore, we examined factors influencing successful adoption of Wisconsin's "Living Well" program. We identified ten large healthcare systems participating in the Wisconsin Collaborative for Healthcare Quality. We used websites maintained by Living Well and/or these systems to identify individuals familiar with the conduct of the system's self-management programs. We conducted semi-structured interviews with individuals from the systems and representatives of the Living Well program to identify factors influencing implementation success. Nine systems had at least one CDSMP; however, utilization within each system was limited. Factors that facilitated successful programs included healthcare system endorsement of programs as well as healthcare providers recommending programs directly to patients. These programs show a promising cost-to-benefit ratio and physicians should be aware of them.

Sahheed, Sarah - **POSTER (June 26)**

Preventing Sudden Cardiac Death in Children & Adolescents: A case report

Authors: Sahheed S, Berger S
Project Mentor: Stuart Berger, MD

Sudden cardiac death (SCD) in children and adolescents is relatively rare, with an incidence between 1 and 6 in 100,000. Despite the lower incidence compared to the adult population (1 in 1000), its devastation is indisputable. The etiology is complex including CHD, primary electrical causes, cardiomyopathies, coronary artery anomalies, and other etiologies. The following case report explores the presentation of a 15-year-old African American male with a history of syncope who presented after sudden cardiac arrest. Diagnostic studies showed an anomalous origin of the left MCA from the right sinus of Valsalva with an intramural course, and he was placed on ECMO after failed intra-aortic balloon pump (EF<15%). He underwent successful operative repair, and after a complicated hospital course was discharged 24 days after admission. A detailed report of this case and the relevance of Project ADAM, an education and training initiative developed to prevent SCD will be discussed here.

Schneck, Kaitlyn - **POSTER**

The Dirty Laundry Project

Authors: Schneck KS
Community Partner: Timothy McAvoy, MD - Five Star Living Complexes—Brookfield Rehabilitation
Project Mentor: Mark Beilke, MD

Clostridium difficile is a gram-positive, edosporic anaerobe with increasing prevalence and consequences in our hospitals and sub-acute care settings. When examining protocols utilized in hospitals and rehabilitation centers concerning the reduction of ID and C. diff in particular, much attention was paid to implementing contact isolation and use of personal protective wear. However, there was inconsistent attention paid to the laundering practices of sub-acute care facilities regarding patients with suspected/confirmed infectious diseases. Focusing in on the inter-facility spread of AAD and C. difficile, I toured rehabilitation facilities and skilled nursing homes throughout WI to examine laundering practices and their handling of potentially infectious laundry. After receiving a grant through the WMS last year, I set a goal of creating brochures detailing the consequences of C. diff infection and correct laundering protocols. In April, we will be distributing finalized brochures to our first community site in Brookfield.

Seligman, John

Emergent vs. Elective Paraesophageal Hernia Repair

Authors: Jassim H, Seligman JT, Frelich, M, Goldblatt MI, Kastenmeier A, Wallace J, Zhao HS, Szabo A, Gould J.
Project Mentor: Jon Gould, MD

Background: The outcomes of paraesophageal hernia (PEH) repair have improved largely due to the proliferation of laparoscopic surgery; there is still a defined rate of morbidity and mortality. We sought to characterize the outcomes of elective and emergent PEH repair. Methods: The NIS was queried for ICD-9 codes associated with PEH repair (years 2006-2008). Multivariate analysis was performed to determine the complications and mortality following elective and emergent repair. Results: 41,723 patients in the U.S. undergoing PEH repair were identified (74.2% elective, 42.4% laparoscopic). Overall complication and mortality rates were 20.8% and 1.1%. Emergent repair was associated with a higher rate of morbidity (33.4% vs. 16.5%) and mortality (3.2% vs. 0.37%) than elective. Conclusions: Patients undergoing emergent PEH repair in the U.S. are older, more likely from a racial minority, and less likely to undergo laparoscopic repair. We recommend patients consider elective repair with a surgeon experienced in the laparoscopic approach.

Simon, Jacqueline - **POSTER**

Behavioral Screening in Young Children with Congenital Heart Disease

Authors: Simon J, Bear L, Brosig C, Chin A, Tweddell J, Mussatto K.
Project Mentor: Laurel Bear, MD

Background: Children with congenital heart disease (CHD) are at risk for behavioral problems with unknown age at onset. Screening is recommended to facilitate early detection. This study summarizes screening results in this population. Methods: Standardized behavioral screening tools included Child Behavior Checklist (CBCL), Modified Checklist for Autism in Toddlers (M-CHAT), and Infant/Toddler Sensory Profile (ITSP). IRB approval and parent informed consent obtained. Results: Ninety-six children underwent behavioral screening: 61 completed CBCL at mean age 31 mos, 81 completed M-CHAT at mean age 25 mos, and 30 completed ITSP at mean age 26 mos. A small percentage of children demonstrated behavioral problems; for all instruments, scores were within expected range. Conclusions: Despite known risk for behavioral problems in this population, they were not detected in this sample of young children with CHD. Longitudinal surveillance is important to delineate timing of emergence of behavioral problems and risk factors associated with them

Squires, Caroline - **POSTER**

Shoulder Dysfunction after Surgery for Breast Cancer

Authors: Squires, CS.
Project Mentor: Steven Grindel, MD

Over the past few decades there has been an increase in breast cancer survivors due to the advances in medical and surgical therapies. There has also been an increase in post-operative complications that affect the physical function and quality of life of the patients, particularly in the upper extremity. The patient presented underwent several breast procedures, the most upper extremity morbidity was found after her initial surgery, a bilateral modified radical mastectomy with left axillary lymph node dissection and immediate reconstruction with tissue expanders. After that procedure she was diagnosed with left adhesive capsulitis, for which she underwent lysis of adhesions. Her case is representative of the outcomes found throughout the literature; the side of the more invasive procedure had the complications of pain, decreased range of motion and strength. Future research could take an in depth look at a standardized physical therapy program to prevent upper extremity dysfunction after surgery for breast cancer.

Thorsen, Julia - **POSTER**

Utility of Anti-Xa Lvels in Pregnant Women on Prophylactic Lovenox

Authors: Allred E, Quinn K, Thorsen J, Pradarelli J, Baker L, Szabo A, Zhao S, Wassenaar T, Kuhlmann R .
Project Mentor: Kristen Quinn, MD

Objective: Evaluate the utility of anti-factor Xa levels in pregnant women with coagulation defects on LMWH prophylaxis by assessing the frequency of dose changes required to achieve prophylactic levels and to correlate to body mass index and gestational age. Study Design: 279 patients were monitored with monthly peak plasma anti-factor Xa levels and noted frequency of required dose changes and the gestational age(s) when the dose change(s) was made. Patient's BMI and diagnosis of coagulation defect were noted. Results: 42.29% of participants required a LMWH dose change, and 8.24% required >1 dose change. Increasing BMI was positively correlated with requiring a dose change. Conclusion: A significant number of women required a LMWH dose change to achieve an anti-factor Xa level in prophylactic range, suggesting utility in obtaining anti-factor Xa levels to ensure appropriate prophylaxis. Increasing BMI was positively correlated with dose change requirements, suggesting close monitoring of obese patients.

Veenstra, Josh

Factors that Influence Pediatric Concussion

Authors: Veenstra J, Fehr S.
Project Mentor: Shayne Fehr, MD

The principal objective of my chart review was to evaluate the clinical presentation of pediatric concussion and the factors involved that influence outcomes. The most common symptoms of concussion in descending order were headache, poor concentration, fatigue, sensitivity to light, and dizziness. Female subjects showed a higher total symptom score at presentation with a mean of 26.1 compared to 18.4 for males (p-value 0.0061) and a longer duration of recovery with median of 38 days compared to 24 days in males (p-value 0.0011). Nearly 81% of concussions seen in clinic were sports-related. Football was responsible for 32% of these injuries, followed by basketball and soccer at 16% and 15%, respectively. The study identifies the need for timely patient evaluation and management of pediatric concussion. On the basis of this chart review, females between 10-18 years old may be at higher risk for increased symptom severity and duration.

Wachi, Blake

Arthroscopic Reconstruction of the Ligamentum Teres

Authors: Birmingham P, Wang M, Wachi B
Project Mentor: Patrick Birmingham, MD

Reconstructive surgery has been proposed as a therapeutic possibility of ligamentum teres rupture. Cadaveric specimens of hemi-pelvis with proximal femur were obtained. The ligament was reconstructed using a quadriceps tendon graft with bone plug. Each specimen was mounted in a set of special jigs and tested in tensile-to-failure on a servo-hydraulic material testing machine. The mean tensile strength was 135.6±135.6 N for the native ligament and 329.9±90.8 N for the reconstructed ligament. The reconstructed ligament was significantly stronger than the native ligament ($p<0.03$). The normalized tensile strength against the cross-sectional area was 0.80±0.23 N/mm2 for the native group, and 1.05±0.29 N/mm2 for the reconstructed group. The difference became marginally significant ($p<0.07$). We further tested the correlation between the strength and the cross-sectional area of the native group and found the strong association ($R2=0.94$).This study provides support for a ligamentum teres reconstructive procedure from a biomechanical perspective.

Whalen, Chris

Le Fort I maxillary distraction osteogenesis using an internal device

Authors: Whalen, CJ, Hettinger, PC, Hanson, PR, Jensen, JN.
Project Mentor: John N. Jensen, MD

Le Fort I distraction is utilized in the treatment of maxillary hypoplasia with internal devices increasingly used for improved patient comfort. This study reviews our early experience with an internal device. Five patients with maxillary hypoplasia and class III malocclusion underwent Le Fort I osteotomy and placement of internal distractors. The protocol consisted of a 4-5 day latency, 1 mm per day activation, and 8-11 weeks consolidation. Orthodontic treatment was employed throughout and radiographs were obtained pre- and post-distraction. Mean activation was 12.6 days, mean advancement was 11.64 mm, and SNA changed from 70.7 to 79.8°. Class III occlusion was corrected and bone deposition was evident by CT in all cases. One patient required revision surgery and there was one minor infection. Challenges included difficulty in adaptation of devices, interference of mandibular excursion, and difficulty in vector control. This study supports the efficacy of Le Fort I internal distraction in the treatment of midface hypoplasia.

Zhang, Christina - **POSTER**

Evaluating Effectiveness of the Hmong Health Mentorship Program

Authors: Zhang C, Jogal S, Simpson P.
Project Mentor: Sachin Jogal, MD

There are many Hmong refugees in Wisconsin with lack of direction on how to obtain career goals. To help Hmong high school students learn more about medicine as a career, in 2011, M1 and M2 volunteers at the Medical College of Wisconsin created the Hmong Health Mentorship Program (HHMP). To help future leaders of HHMP improve the program, a survey was given to Hmong high school students after the program's first semester. According to the survey, HHMP was effective in increasing students' level of interest in and knowledge of medicine as a career, the tour of the anatomy lab was rated most helpful, and students want to learn about different medical specialties. In the future, HHMP leaders should plan for more time in the anatomy lab and add sessions about medical specialties.

Zhang, Phillip - **POSTER**

Impact of Macroeconomic Factors in HCT for ALL

Authors: Zhang P.
Project Mentor: Marcelo Pasquini, MD,

Purpose: To examine the relationship between macroeconomic indicators and patient-, disease-, and transplant-related variables, and how these factors influence post-transplant survival in patients with ALL. Hypothesis: Overall survival after allogeneic HCT is different according to macroeconomic factors, with patients from countries with higher macroeconomic indexes experiencing better outcomes. Method: CIBMTR database and publicly available sources were utilized. Results: Significant differences in distribution according to macroeconomic factors included: age at transplant, disease status at transplant, use of peripheral blood stem cells, and unrelated donor HCT. Overall survival also varied significantly depending on macroeconomic status. Conclusion: Transplant practices for a single disease vary according to macroeconomic status worldwide. Macroeconomic factors also have an impact on post-transplant survival, even among patients with similar disease status who received HLA-match sibling donor grafts.

Thanks for your many dedicated years of service to the Master Clinician Pathway.

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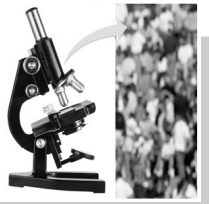
With special thanks to **Edmund Duthie, M**D for his leadership of the Master Clinician Pathway.

Physician Scientist

David Brousseau, MD, MS

Uses a hypothesis driven research project to provide the student an individualized research experience allowing for the development of broad research skills.



- Basic epidemiologic and statistical principles
- Scientific writing and presentations
- Ethics of research
- An individualized, mentored research project

Adams, Katherine

Role of 35kDa Antigen in M. Tuberculosis Cell Envelope Stress Resistance

Authors: Adams K, Zahrt T.

Project Mentor: Thomas Zahrt, PhD

An estimated one-third of the world's population is latently infected with Mycobacterium tuberculosis. A key aspect of the M. tuberculosis lifecycle is the ability to persist for decades within host-generated granulomas. Rv2744c is an uncharacterized 35-kDa protein that is thought to contribute to persistent infection by mediating resistance to cell envelope stress. Orthologs of this protein (PspA) in other organisms are known to oligomerize and create scaffold structures to maintain cell membrane homeostasis during stress. To determine if Rv2744c also formed a multimeric complex, Rv2744c was purified in vitro and subjected to sucrose gradient centrifugation to determine its size relative to protein standards. Results from these studies indicate that Rv2744c homo-oligomerizes into a multimeric complex of at least 700kDa, suggesting that this protein may form a scaffold structure similar to PspA. Further experiments utilizing truncated versions of Rv2744c will serve to elucidate the segments of the protein required for oligomerization.

Allred, Jeremy

Sall4 Regulates Hematopoiesis in a Dose-Dependent Manner

Authors: Milanovich S, Peterson J, Allred J, Stelloh C, Fisher J, Duncan S, Rao S.

Project Mentor: Sridhar Rao, MD, PhD

Sall4 exists in two splice isoforms – Sall4a and Sall4b – and regulates gene transcription in a wide range of cellular processes. However, distinct roles for how individual Sall4 isoforms regulate lineage commitment remain undefined. Here we show that Sall4b is the predominant isoform in murine hematopoietic stem cells and progenitors. Overexpression of Sall4 impairs hematopoietic colony formation and impairs short-term engraftment after transplantation. Sall4 overexpression impairs hematopoiesis in part through repression of the Polycomb Repressive Complex One gene Bmi1. We identified Arid5b, Klf2 and Ezh2 as additional novel target genes of Sall4. Lastly, we found that Sall4 expression is variable in AML. These results show that Sall4b is the predominant Sall4 isoform in murine hematopoiesis, plays a role in a subset of acute myeloid leukemia, and that overexpression of Sall4 isoforms is detrimental to hematopoiesis. Together these data demonstrate the sensitivity of normal hematopoiesis to appropriately Sall4 expression.

Amos, Jonathan

HMGB1 Enhances Effects of Bacillus Calmette-Guérin via Paracrine Action

Authors: Zhang G, Chen F, Cao Y, Amos JV, Shah G, See WA

Project Mentor: William Seem, MD

This study investigated the effects of HMGB1 on the in vitro response of urothelial carcinoma cells (UCC) to bacillus Calmette-Guérin (BCG). METHODS: Human UCC lines were exposed to exogenous HMGB1 alone and combined with BCG, with and without antibody blockade of HMGB1 receptors to determine HMGB1's paracrine effects. End points included the activation of signaling pathways, gene transactivation and cytotoxicity. RESULTS: RAGE receptor blockade confirmed HMGB1 signaling through RAGE function. Exogenous HMGB1 activated cell signaling pathways for NFκB, NRF2 and CEBP. BCG responsive genes revealed peak expression from the combination of BCG and HMGB1. Blockade of HMGB1 released in response to BCG showed a decrease in gene expression. HMGB1 potentiated BCG's cytotoxic effects. CONCLUSIONS: HMGB1 released by UCC after BCG treatment functions as a paracrine factor to potentiate the UCC response to BCG, which likely contributes to the dependence of an in vivo tumor response on HMGB1 release.

Aranda, Patrick

Adhesive Properties of Leptospiral Proteins to ECM and Human Cells

Authors: Aranda P, Coburn J.
Project Mentor: Jenifer Coburn, PhD

Leptospira interrogans is a spirochete spread through water contaminated with urine from infected animals. Symptoms include fever, hepatosplenomegaly, jaundice, renal failure, and hemorrhage. Adhesion to mammalian cell surface receptors is likely to be critical. To understand the pathogenicity of the bacterium this research focused on three possible adhesins: LenA, P31 and LipL48. LenA is known to bind laminin and plasminogen whereas P31 and LipL48 are less well studied. These genes were PCR amplified and cloned into a pMAL-c2 expression vector. Vectors were transformed into a bacterial strain and LenA, P31 and LipL48 produced. Genes were sequenced to ensure correct open reading frames were generated. Adhesive properties of the recombinant proteins to extracellular matrix and to human cells were analyzed by colorimetric immunoassay and compared to controls. LenA demonstrated increased binding to the isolated proteins fibronectin and laminin, as well as Hep2 cells suggesting LenA may be an important virulence factor.

Bernau, Lauren—**PODIUM**

Do kids Prefer the Novel "PAIN Tool" for Pain Assessment?

Authors: Bernau L, Drendel A.
Project Mentor: Amy Drendel, DO

At-home treatment of pain is inadequate and this may be due to lack of assessment. We hypothesize a novel pain scale may be preferred by children and may improve pain treatment. Our objective was to determine the preference of children and their parents for the PAIN (Pain Assessment INtervention) Tool, a novel, 3-face pain scale with a stoplight model, versus the gold standard Faces Pain Scale–revised. This was a prospective observational study of children ages 3-18 in the ED. Pain severity was reported with both scales and preferences were analyzed using Chi square. 250 children participated; 47.1% of children and 52.9% of parents preferred the PAIN Tool. There was no difference based on gender ($p=0.40$), race ($p=0.24$), chief complaint ($p=0.45$), or pain severity ($p=0.77$). Children ages 5 years and younger and their parents both preferred the PAIN tool ($p<0.001$ for both). Therefore, it may be best suited for this group. Further studies are needed to test its effectiveness in improving the at-home pain experience.

Biesterveld, Ben - **POSTER**

Alkaline Phosphatase Activity in Necrotizing Enterocolitis

Authors: Biesterveld BE, Rentea RM, Heinzerling NP, Welak SR, Fredrich KM, Gourlay DM.
Project Mentor: David Gourlay, MD

INTRODUCTION: In a neonatal rat model of necrotizing enterocolitis (NEC), alkaline phosphatase (AP) activity is attenuated. Contributions of two forms of AP, intestinal alkaline phosphatase (IAP) and tissue-nonspecific alkaline phosphatase (TNAP) are unknown. L-phenylalanine (Phe) and CID-2931238 inhibit IAP and TNAP respectively. METHODS: Small intestinal tissue was harvested and analyzed for AP activity using a colorimetric assay, with and without Phe and CID-2931238. RESULTS: Total small intestinal AP activity was significantly decreased in NEC pups compared to controls ($p<0.001$). 50 mM Phe nearly completely inhibited control AP activity ($p<0.001$). CID-2931238 provided no inhibition in control. NEC samples were inhibited by Phe ($p<0.001$) and CID-2931238 ($p<0.01$). CONCLUSION: IAP is the predominant AP isoform in neonatal rat small intestine. Additionally, IAP activity is decreased in this model of NEC. Further research is needed to determine if the inhibition of IAP and TNAP in vivo contributes to the onset or severity of NEC.

Boisvert, Joanne

Pathophysiologic Characterization of Chemokine Ligand Gene Deletion

Authors: Boisvert JP, Hillmer R, Joksimovic M, Dwinell MB.
Project Mentor: Michael Dwinell, PhD

The ubiquitously expressed chemokine CXCL12/SDF-1 has been implicated in angiogenesis, brain development, hematopoiesis and myelopoiesis, lymphocyte recirculation and tumor metastasis. A conditional loxP-CXCL12 (LC) knockout mouse was designed. When it is crossed with a Cre recombinase expressing mouse, the CXCL12 gene is eliminated in those tissues expressing the Cre transgene. The LC line was first crossed with beta-actin-Cre mice expressing Cre recombinase in all tissues. These Cre-positive ubiquitous-conditional knockout offspring showed disrupted cerebellar architecture previously characterized for the conventionally designed CXCL12 knockout mouse, implying the LC mouse's molecular design is valid. Additionally, the pontine nuclei showed abnormal migration previously only characterized in the knockout mouse of the CXCL12 receptor, CXCR4. A second cross was performed of LC mice with mice that express Cre only in the intestinal epithelium. These studies show the LC mouse is a valid tool for tissue-specific studies of CXCL12.

Cain, Michael

Transposition of the Great Arteries-Outcomes and Time of Neonatal Repair

Authors: Cain MT, Cao Y, Ghanayem NS, Simpson PM, Trapp K, Mitchell ME, Tweddell JS, Woods RK.
Project Mentor: Ronald K Woods, MD, PhD

Background: This study evaluates the relationship of morbidity and resource utilization with timing of neonatal repair of transposition of the great arteries and intact ventricular septum (d-TGA/IVS). Methods: Patients with d-TGA/IVS who underwent repair at ≤14 days of life between January 2000 and May 2011 were reviewed. Patients undergoing repair at ≤ 4 days were categorized as Group I; 5-7 days as Group II; and 8-14 days as Group III. Outcomes included mortality, morbidity, and resource utilization. Results: Length of stay (LOS) and total charges were lowest in Group I and highest in Group III (p=0.005 for LOS, p=0.0006 for charges). Using regression analysis, age at surgery was associated with LOS (p=0.029), hospital charges (p=0.029) and ICU charges (p=0.002). Younger age at repair was not associated with increased morbidity. Conclusions: Earlier repair of d-TGA/IVS was associated with decreased resource utilization without increased morbidity. These results are important for improving value of care.

Challener, Doug

Stimulation of Aldosterone Secretion by Endothelial Cells

Authors: Challener D, Kopf P, Campbell W.
Project Mentor: William Campbell, PhD

Aldosterone is an adrenal steroid that acts on the kidney to promote sodium reabsorption and potassium excretion and is elevated in some forms of hypertension and heart failure. Adrenal capillary endothelial cells produce a novel steroidogenic peptide yet to be identified. This peptide stimulates aldosterone secretion from bovine zona glomerulosa (ZG) cells. It was named endothelium-derived steroidogenic factor (EDSF). The purpose of this research is to identify and characterize the EDSF. Media was conditioned with bovine endothelial cells grown on microcarrier beads. It was then extracted and separated via HPLC into multiple samples that were tested for activity on ZG cells. LC-MS was used to analyze the active fractions for peptides. The BMEC conditioned media demonstrated steroidogenic properties wheras media conditioned with cell free beads was not steroidogenic. Activity was isolated to a specific fraction of the HPLC separation. Further work is underway to analyze RNA sequence data obtained from the endothelial cells.

Cheng, Brian

COX-2 Inhibition to Treat SCCHN

Authors: Cheng, B.
Project Mentor: Jonathan M. Bock, MD

The survival rate of patients with head and neck squamous cell carcinoma (SCCHN) has not improved despite advances in radiotherapy and surgical methods. Previous studies have shown that an isoform of the Cyclooxygenase enzyme, COX-2, contributes to tumor growth and is up-regulated in SCCHN. We hypothesized that selective COX-2 inhibition with celecoxib would strongly inhibit SCCHN growth and that there would be an increase in potency of Celecoxib after ATM inhibition, as previous studies have shown potential synergy between these two pathways. We tested the effects of Celecoxib in combination with ATM inhibitor on two different cell lines, UM-SCC-1 and UM-SCC-17B. SCC 17B cells express wild type p53 and SCC 1 cells are p53 deficient. SCCHN cell lines were treated with Celecoxib and ATM inhibitor in different concentrations. Cell count results at various time points showed a significant decrease of cells with increasing Celecoxib concentration and increasing time, with synergistic growth inhibition with addition of ATM inhibitor.

Ciriacks, Kevin

Statin efficacy in patients with type 1 diabetes mellitus

Authors: Ciriacks K, Coly G, Krishnaswami S, Patel SB, Kidambi S.
Project Mentor: Srividya Kidambi, MD

INTRODUCTION: Studies comparing the effects of statins and ezetimibe on cholesterol levels among patients with type 1 diabetes (T1DM) are lacking. The purpose of the current study is to compare the effects of statins and ezetimibe among patients with T1DM and T2DM. METHODS: Lipid panels were obtained at baseline and after therapy, and subjects were sequentially assigned to alternating therapy with simvastatin or ezetimibe for 6 weeks. After a four-week washout period, each subject received six weeks of treatment with the remaining study drug. RESULTS: Twenty (45% female) T1DM and 27 (56% female) T2DM completed the study. Among patients with T1DM, there were no statistically significant differences in the effect of the two drugs. Among patients with T2DM, statins were more effective in reducing total cholesterol and LDL and increasing HDL. CONCLUSION: These results suggest that statins are not as effective in T1DM patients as in T2DM patients and ezetimibe should be considered for treatment of hypercholesterolemia in patients with T1DM.

Cziep, Matthew

Idiopathic Intracranial Hypertension. and Transverse Sinus Stenting

Authors: Teleb MS, Cziep ME, Lazzaro MA, Fitzsimmons B, Remler BF, Lynch JR, Zaidat OO.
Project Mentor: Osama Ooz Zaidat MD

Background: Idiopathic intracranial hypertension (IIH) is characterized by symptoms of increased intracranial pressure without a cause seen on conventional imaging. Treatment entails medical management, CSF shunting, or optic nerve fenestration. Recently, dural sinus stenting has been used as a treatment. Objective: We aim to review published cases of dural sinus stenting for IIH, with analysis of presenting symptoms, follow-up, and complications. Methods: Using Medline, 11 studies met criteria of a case report or case series where dural sinus stenting was used to treat IIH, They were reviewed and data extracted. Results: 128 patients were identified. 3 complications were reported. Headaches improved in 77% of patients. Papilledema improved in (92/98) 94%. Sinus pressure decreased to an average 16 mm/Hg (n=46). Stenting had a symptom improvement rate of 87%. Conclusion: Few complications and the symptom improvement rate make sinus subdural stenting a promising future treatment. Randomized patient selection trials are warranted.

Daun, Mitch

Contrast Leakage Affects Visualization of Abnormal Vasculature in Glioma

Authors: LaViolette PS, Daun MK, Paulson ES, Schmainda KM.
Project Mentor: Jennifer Connelly, MD

Abnormal brain tumor vasculature can be highlighted by dynamic susceptibility contrast (DSC) MRI processing, which uses independent component analysis (ICA) to separate arterial and venous perfusion. The overlap of the two, arteriovenous overlap or AVOL, preferentially occurs in brain tumors and predicts response to anti-angiogenic therapy. The effects of contrast agent leakage on the AVOL biomarker have yet to be established. DSC was acquired during two separate contrast boluses in ten patients with brain tumors. ICA was used to model arterial and venous components, as well as a third component to show contrast agent leakage. The percentage of tumor classified as a third component was significantly greater for the first contrast dose compared to the second. The percentage of AVOL within tumor was significantly greater for the second dose compared to the first. Contrast leakage results in signal variance modeled as a separate component by ICA. The use of a second dose mitigates the effect and allows for measurement of AVOL within tumor.

Degmetich, Sean

Combined effect of Amyloid beta and Hypoxia on Mitochondrial Function

Authors: Degmetich S, Tryba A, Harder D.
Project Mentor: David Harder, PhD

Intro: Amyloid-beta is commonly known as one of the main causative agents in the onset and progression of Alzheimer's Disease. Some of the processes affected include: increased production of reactive oxygen species, electron transport chain dysfunction, loss of mitochondrial membrane potential, and mitochondrial fragmentation. In this study we sot to test how mitochondrial function is altered in response to a combined exposure of amyloid beta and hypoxia in rat neonatal hippocampal astrocytes. Methods: Astrocytes were plated on glass coverslips and exposed to mitochondrial membrane binding dye. Immediately following exposure cells were imaged using fluorescent microscope capture and analyzed for fragmentation. Results: Preliminary images show fragmentation with either amyloid beta or hypoxia alone and increased fragmentation with a combined exposure. Discussion: The increased mitochondrial damage observed in the combined exposure group suggests that hypoxia and amyloid beta may possess a synergistic mechanism of action.

Desai, Brinda

Molecular Mechanisms and Functions of Mortalin, a Heat Shock Protein

Authors: Desai B, Park J.
Project Mentor: Jong-In Park, PhD

Mortalin belongs to the Hsp70 family of protein chaperones and is overexpressed in various cancers. Some of the roles of mortalin include: energy generation, and stress response during carcinogenesis. Mortalin can bind to cytoplasmic p53, a tumor suppressor protein. Normally, mortalin binds to p53, and then sequesters p53 to the nucleus in response to stress. The C-terminal domain and the N-terminal domain of mortalin interact with the tumor suppressor protein, p53, during cancer development. The mortalin-p53 interaction negates p53's nuclear transcriptional activation and apoptotic functions in cancer cells. Loss of p53 function is one of the initial events in immortalization of cells in cancer induction. (Gestl, E et. al.). We aimed to purify the N-terminal domain of mortalin (NTD-mortalin), C-terminal domain of mortalin (CTD-mortalin), and full-length mortalin (FL-mortalin). By further studying the molecular mechanisms through which mortalin functions, we will be able to develop new therapeutic targets for cancer treatment.

Fiore, Julie

Fluorescence Patch-Clamp Assay for Astrocytic Mitochondrial Dysfunction

Authors: Fiore JL, Tryba AK, Harder DR.

Project Mentor: David R. Harder, PhD

Mitochondrial dysfunction is an early event in the pathophysiology of many neurodegenerative diseases. Astrocytes contribute to homeostatic control of the central nervous system (CNS). Therefore, astrocytic mitochondria are excellent therapeutic targets for preventing neuronal loss following CNS insults. Critical to the development of such therapies is an understanding of astrocytic responses to disease-related stress. One dysfunctional response is mitochondrial membrane potential (Vmit) depolarization. The fluorescent probe, TMRE, distributes in a membrane-potential sensitive manner, and is used to detect mitochondrial depolarization. Interpretation of Vmit by such methods is challenging because TMRE localization depends on Vmit and plasma membrane potential (Vp). We combine fluorescence microscopy and whole-cell patch clamping to observe real-time changes in Vp and Vmit in cultured rat astrocytes. We test our method by monitoring membrane responses to increased [KCl], yielding new insights into astrocyte-mediated neuroprotection.

Flatter, John

Outer Retinal Structure After Closed Globe Blunt Ocular Trauma

Authors: Flatter JA, Cooper RF, Dubow MJ, Pinhas A, Singh RS, Kapur R, Shah N, Walsh RD, Hong SH, Weinberg DV, Stepien KE, Wirostko WJ, Robison S, Dubra A, Rosen RB, Connor TB, Carroll J.

Project Mentor: Joseph Carroll, PhD

Purpose: To evaluate outer retinal structure in patients with visual complaints after closed globe blunt ocular trauma (cgBOT). Methods: Nine subjects with visual deficits after cgBOT were examined with spectral domain optical coherence tomography (SD-OCT) to assess outer retinal architecture and AOSLO to analyze photoreceptor mosaic integrity. Results: Visual deficits ranged from central scotomas to decreases in visual acuity. SD-OCT revealed variable disruption of the 2 outer retinal bands encompassing the photoreceptor inner segment, outer segment, and interdigitation with the retinal pigmented epithelium. AOSLO revealed disruption of the photoreceptor mosaic in all eyes, variably manifesting as focal foveal discontinuities, perifoveal hyporeflective cones, and paracentral selective cone loss. Conclusions: We observe persistent outer retinal disruption in subjects with visual complaints after cgBOT. AOSLO allows the assessment of photoreceptor structure at a level of detail not resolvable using current clinical imaging tools.

Fullin, Daniel - **POSTER**

Genetic Variants of the HPV16 E6 Open Reading Frame and Clinical Outcome

Authors: Fullin D, Rader JS, Lu Y, Wu Q, Fye S, Iden M.

Project Mentor: Janet S. Rader, MD

Introduction: Persistent infection with high risk human papilloma virus (HPV) causes virtually all cervical cancer. High risk HPV infection is common among sexually active women. It is not well understood why only a fraction of infections persist and progress to invasive cervical cancer (ICC) but intratype genetic variations may be important. Methods: 1028 women with high grade dysplasia or ICC were prospectively enrolled into a cohort study and followed for a median of 4 years. The viral E6 oncoprotein was sequenced in HPV 16 positive patients. Genetic changes in the E6 gene were classified into phylogenetic groups based on geography. Results: There was no significant difference in overall survival (p=0.06) or recurrence free survival (p=0.32) between European, Asian American, Asian, and African variants in ICC patients. Caucasian patients infected with Asian or Asian American variants had a superior overall survival rate compared to other combinations of race and variant (p=0.02).

Fullmer, Tanner

Musical Identification in CI Users: A Study of Acoustic Changes

Authors: Fullmer TM, Crane A, Runge CL, Friedland DR.

Project Mentor: David Friedland, PhD, MD

Cochlear implants (CIs) offer many deaf individuals greater opportunity to interact with their environment, but there are shortcomings in the user's ability to perceive sound, particularly music. This study examined CI users' ability to identify instrument changes absent of temporal cues. Notes from 5 instruments were trimmed to only include the center 500ms, normalized, and pitch shifted. Random combinations of these stimuli were concatenated and subjects were asked to identify the sounds as same or different. Percent correct scores and sensitivity indices (D') were compared between groups. CI subjects had lower scores on all instrument combinations. However, both groups followed similar patterns in terms of which instruments were the easiest or most difficult to differentiate: clarinet-saxophone combinations were most difficult (NH D'=1.70, CI D'=.85), while flute-trumpet was easiest to distinguish. Significant differences were seen comparing NH and CI scores for trumpet-violin, flute-saxophone, and clarinet-saxophone combinations.

Funk, Ryan

Enhanced Dopamine Release by MSCs Reprogrammed by Chemical Genetics

Authors: Funk RT, Alexanian AR.
Project Mentor: Arshak R. Alexanian, VMD, PhD

Aims: Recently, using chemical genetics for cell reprogramming via the combination of small molecule modulators of chromatin modifying enzymes and specific SMAD signaling pathways, we have been able to generate neural-like cells predominantly positive to mature neuronal and dopaminergic markers. This study aimed to further characterize the dopaminergic properties of neurally induced hMSCs (NI-hMSCs) and to determine whether addition of SHH/FGF8 to induction medium could promote further maturation. Methods: Dopaminergic differentiation was evaluated by immunocytochemistry, RT-PCR, western blot and ELISA. Results: Results demonstrated that release of dopamine by NI-hMSCs differentiated with SMAD inhibitor supplementation increased from picogram to nanogram levels with a tendency of further increase when additionally supplemented by SHH/FGF8. Conclusions: Generation of dopaminergic cells from adult hMSCs via chemical genetics may have important implications for understanding the mechanisms underlying cell plasticity.

Gomulka, Jennifer

Dramatic Shift in the Infantile Hemangioma Treatment Paradigm

Authors: Gomulka, J
Project Mentor: Dawn Siegel, MD and Beth Drolet, MD

Infantile hemangiomas (IH) are the most common tumors of infancy. The first line of treatment for IHs has been corticosteroids; however, due to recent discoveries, IH management is dynamically changing to beta-blockers. A retrospective chart review was performed of 468 patients with a diagnosis of IH who were seen between 2007 and 2011 to study treatment trends. Oral corticosteroids was the most common treatment used in 2007 (57%) and topical timolol was the most popular selection in 2011 (53%). Corticosteroid administration dropped from 57% to 10% and propranolol increased from 0% to 32% over five years. This coincides with an increase in the number of patients that were treated over the course of the study. The shift from oral corticosteroids to beta-blockers in the short time period demonstrates the transformation occurring in IH management. Prospective studies are still needed to determine the best approaches in using oral and topical beta-blockers.

Hansen, Michael

Intra/Inter-rater Reliability on DTI of the Cervical Spinal Cord

Authors: Hansen MJ, Kurpad SN.
Project Mentor: Shekar Kurpad, MD, PhD

Diffusion tensor imaging (DTI) is used to assess clinically relevant metrics such as fractional anisotropy (FA) and mean diffusivity (MD). It requires placement of a region of interest (ROI), which has no gold standard. This study's goal is to assess the intra-rater and inter-rater reliability of ROI placement on axial DTI sections of the cervical spinal cord. Two raters traced ROIs on all axial images throughout the cervical spinal cord on 10 patients; one rater traced ROIs on two separate occasions. FA, MD, and total area indices were calculated for each ROI. Two-way random single intraclass correlation coefficient (ICC) was used to assess reliability with a value of 0.8 considered to have strong agreement. Intra-rater ICC was 0.97, 0.97, 0.94 and inter-rater ICC was 0.92, 0.91, 0.83 for FA, MD and ROI area respectively suggesting there are no reliability concerns within or between raters. Therefore, there is high level of repeatability between different raters and within the same rater for relevant values such as FA and MD.

Hayman, William

Cost Comparisons of Mechanical Ventilation Across the Age Span

Authors: Hayman W, Leuthner S, Lagatta, J.
Project Mentor: Joanne Lagatta, MD

Surviving preterm infants had higher median costs of hospital care, from $205k at 23-24 weeks to $22k at term; surviving adults had decreasing median costs of care with increasing age, from $24k at 51-60 years to $19k for adults >90 years. Among non-survivors, median costs of care were lowest at the extremes of age: $11k at 23-24 weeks and $12k for adults >90 years. As a proportion of total costs for patients on MV, newborns 23-36 weeks accounted for 13.2% of costs for survivors, but only 1.4% of costs for non-survivors. In contrast, adults >70 accounted for 13.8% of costs for survivors, but 39.8% of costs for non-survivors. Surviving preterm infants on MV have higher median costs of care than other surviving patients on MV; non-surviving patients on MV at both extremes of age experience the lowest health care costs per patient.

Horn, David

Development of a PD-1 Fusion Protein and the in Vitro Assay to Test It

Authors: Horn D, Weber J, Kearl T, Johnson B.
Project Mentor: Bryon Johnson, PhD

The programmed death receptor-1 (PD-1) pathway is important for maintaining immune tolerance and inhibiting T-cell immune responses to human cancers. We would like to test a PD-1 fusion protein in immunotherapy experiments to treat multiple myeloma. We predict that the PD-1 fusion protein will competitively inhibit PD-1/PD-L1 interactions and, when combined with immune-activating cancer immunotherapy, will elicit more effective anti-tumor immunity than an anti-PD-L1 antibody. We therefore hypothesized that a PD-1 fusion protein would block the anti-proliferative effects of commercial PD-L1 fusion protein in an in vitro assay. Using western blots, we identified a band in one transfected cell sample, which indicated the presence of the PD-1 fusion protein. We also gathered flow cytometry data showing the ability of this PD-1 fusion protein to reinstate cell proliferation in the presence of the anti-proliferative commercial PD-L1 protein in vitro. This work provides proof of concept in advance of future in vivo experiments.

Hwang, David - **PODIUM**

Role of RIP2 Kinase in the CD-137 Mediated Activation of NK Cells

Authors: Kamalakannan R, Hwang D, Schuldt K, Malarkannan S.
Project Mentor: Subramaniam Malarkannan, PhD

To utilize natural killer cells (NK) against cancer we must target their cytotoxicity against malignant cells while neutralizing their production of harmful cytokines. The MAPK pathway is instrumental in the transcription of such cytokines including IFN-γ. In macrophages the RIP family of kinases is crucial in MAPK signaling and cytokine production. This study attempts to elucidate the role of RIP2 in NK cells. In these experiments mouse NK cells were activated with receptor-activating antibodies. The supernatant was assayed for cytokines using Bioplex. Signaling pathways were assayed by similar activation followed by cell lysis. The lysate was subsequently analyzed by Western blot. Our studies show that RIP2 is crucial for cytokine production in NK cells. When activated through the CD137 receptor, RIP2 -/- demonstrated nearly two-fold decrease in IFN-γ ($n=3$, $p<0.05$). Subsequent Western blot analysis showed a marked decrease in the phosphorylation of ERK1/2 molecules of the MAPK pathway.

Hwang, Michael - **POSTER**

Colorectal Liver Resection in the Setting of Extra Hepatic Disease

Authors: Hwang M, Jayakrishnan TT, Green D, George B, Thomas J, Groeschl R, Pappas S, Gamblin TC, Turaga KK.
Project Mentor: Kiran K. Turaga, MD, MPH

Surgical resection for patients with colorectal liver metastases (CRLM) can offer patients significant survival benefit. We hypothesized that patients with CRLM and extrahepatic disease (EHD) undergoing metastasectomy had comparable survival outcomes based on distribution of metastatic disease. A systematic search using a predefined registered protocol was undertaken between January 2003 and June 2012. Primary exposure was hepatic resection for CRLM and primary outcome measure was overall survival. Meta-regression techniques were used to analyze differences between patients with and without EHD. From a pool of 4996 articles, 50 were retained for data extraction. The median, 3-year, and 5-year overall survival were 30.5months, 42.4%, and 28%, respectively. Patients with EHD of the lungs had a median survival of 45months vs. lymph nodes 26months vs. peritoneum 29months. In the evolving landscape of multimodality therapy, selective hepatic resection for CRLM patients with EHD is feasible with potential impact on survival.

Kaleka, Kanwardeep Singh - **POSTER**

Neurogranin Reverses Synaptic Deficits Induced by Amyloid-beta

Authors: Kaleka KS, Florence M, Gerges NZ.
Project Mentor: Nashaat Gerges, PhD

Synaptic plasticity is the ability of synapses to change strength based on activity, and is considered to be the neurochemical foundation of learning and memory. High concentrations of amyloid-β (Aβ), one of the main causative peptides of Alzheimer's disease (AD), has been shown to disrupt synaptic plasticity by blocking long-term potentiation (LTP) and weaken synapses over time. The exact mechanism of these deficits is unclear. Neurogranin (Ng) is a neuron-specific protein shown to play an important role in synaptic plasticity and is also found to be decreased in patients with AD.Here, we explored to the role of Ng and its ability to target calmodulin (CaM)—a calcium sensing protein important for synaptic plasticity—in Aβ-induced synaptic deficits. In this study, we were able to show that Ng is able to restore synaptic strength and LTP in the presence of high concentrations of Aβ, and that Ng is able to do so through its localization of CaM and activation of CaMKII. These results provide important targets for potential treatment of AD.

Knabel, Daniel

Impact of Reducing Sedentary Time on Vascular Endothelial Function

Authors: Suboc TB, Knabel D, Strath SJ, Dharmashankar K, Coulliard A, Malik M, Haak K, Widlansky M.
Project Mentor: Michael E. Widlansky, MD, MPH

Background: Moderate-intensity physical activity (MIPA) improves vascular endothelial function (VEF). Whether reductions in sedentary time (ST) alone contribute to improvements is unknown. Methods: Post hoc analysis of 96 sedentary adults ≥50y enrolled in a randomized control trial evaluating intervention to increase MIPA. MIPA measured pre/post-intervention by step-count, accelerometry. Subjects divided into 3 categories: 1) ≥5% reduction ST, 2) 0-4.99% reduction, 3) increase ST. VEF was measured by brachial artery flow-mediated-dilation (FMD%) pre/post-intervention. Results: ST decreased overall (P=0.001), 101min decrease in category 1 (N=27,P<0.001), 42m decrease in category 2 (N=29,P=0.003), 44m increase in category 3 (N=40,P=0.02). While FMD% increased in entire study population (P=0.008), no differences observed between categories (P=0.73). FMD% improved with concomitant achievement of ≥20min a day MIPA in bouts ≥10min Conclusion: Reductions of ≤100min ST per day without concomitant increase in MIPA may not result in improved VEF.

Kohlenberg, Jacob

LPA Downregulates CD36 Expression by Interrupting FoxO1 Activity

Authors: Kohlenberg J, Chen Y, Ren B, Silverstein R.
Project Mentor: Bin Ren, MD, PhD, and Roy L. Silverstein, MD

Obesity is a serious risk factor for CAD and Cancer. Adipocytes secrete biologically active molecules, including Autotaxin (ATX). In obese individuals, ATX expression is enhanced. ATX catalyzes formation of the signaling molecule Lysophosphatidic Acid (LPA). LPA promotes angiogenesis by suppressing expression of CD36, a membrane receptor and angiogenesis inhibitor. The transcription factor FoxO1 also regulates CD36 expression. We hypothesized that exposing LPA to Tumor Associated Endothelial Cells (TAECs) will interrupt FoxO1 activity, thus decreasing CD36 expression and favoring angiogenesis. TAECs were transfected with a FLAG-FoxO1 vector then treated with LPA. CD36 mRNA was collected and quantified with qPCR. LPA-treated TAECs had a 32% decrease in CD36 mRNA expression. LPA-treated, FLAG-FoxO1 transfected TAECs had a 24% increase in CD36 mRNA expression. Our findings suggest LPA may suppress CD36 transcription by interrupting FoxO1 activity. However, repeat investigation is needed to show significant differences in mRNA expression.

Kung, Evan

Efficacy and Safety of Sclerotherapy Agents for Venous Malformations

Authors: Braun A, Kung E.
Project Mentor: Sarah White, MD

Venous Malformations are the most common vascular malformation in adults, effecting 1-4% of adults. Data regarding treatment options is limited. The purpose of this study is to review safety and efficacy of ethanol and sotradecol in treatment of venous malformations. Retrospective analysis was performed in patients with venous malformations from 1/1/2000-9/1/2012. Venous drainage of the malformation was isolated with a tourniquet and/or direct compression of non venous structures. Sclerosing agent was injected to approximate lesion volume determined on venogram. 186 treatments were performed on 95 patients. Technical success was 95% overall. Follow up was obtained in 88% of patients. Complete, partial, and no symptom relief was seen in 43%, 48%, 9% of ethanol sessions; and 16%, 80%, 4 % of sotradecol sessions. Complications were seen in 3.7% of ethanol and 2% of sotradecol treatments. Percutaneous sclerotherapy of venous malformations is safe and provides improvement for a majority of patients. Both ethanol and sotradecol are effective.

Laine, Jacob - **POSTER**

Rehabilitation after Hematopoietic Transplant and Re-hospitalization

Authors: Laine J, Siddiqui S, Sayko O, Eickmeyer S.
Project Mentor: Sarah Eickmeyer, MD

Hematopoietic stem cell transplantation (HSCT) is associated with significant morbidity. In this two-year retrospective review we analyzed the affect of rehabilitative therapy on 30-day readmission rate in 200 inpatients with a hematologic malignancy that underwent HSCT. Fifty-two patients (26%) had a rehabilitative intervention; the remainder had none. Those given rehabilitative therapy were sicker as measured by average length of stay (28.7 vs 18.3 days; $p < 0.0001$), average number of co-morbid conditions (0.85 vs 0.51, $p < 0.006$), and rate of complications: infection/sepsis (59.6% vs 38.5%, $p < 0.01$), venous thromboembolism (28.9% vs 8.8%, $p < 0.001$) and respiratory failure (7.7% vs. 0.7%, $p < 0.02$). Despite increased acuity, the 30-day readmission rate was similar among those who received rehabilitation therapy compared with those who did not (23.1% vs. 23.6%, p=0.85). This study highlights the continuing high rate of readmission following HSCT and the positive impact of rehabilitation

Larson, Michael - **POSTER**

Washing Blood Causes RBC Membrane Derangement & Hemoglobin Release

Authors: Larson MC, Ratto DS, Burdge AL, Hillery CA, Punzalan RC, Hogg N.
Project Mentor: Neil Hogg, PhD

Background: Washing donor blood removes potentially harmful antibodies & hemolysate. Experiments are underway determining how beneficial washing can be. However, the wash procedure can mechanically weaken RBCs. Our objective was to further characterize the effects of washing blood on RBCs. Approach: Blood was washed & RBC morphology, membrane bilayer, & shed hemoglobin was examined. Results: Washing blood altered RBC morphology & membrane bilayer asymmetery & caused eventual hemoglobin release. Centrifugation alone altered morphology & caused hemoglobin release. In conclusion, while washing donor blood has clear immediate clinical benefits, it is not completely benign & may have delayed disadvantages. Guidelines regarding the wash procedure need revisiting.

Lee, Daniel

A QI Project to Decrease Radiation Exposure in the Pediatric Cath Lab

Authors: Lee D, Cao Y, Simpson, P, Krolikowski M, Bannister M, Mattice J, Gudausky T, Pelech A, Foerster S.
Project Mentor: Susan Foerster, MD

Excessive use of radiation in catheterization procedures can lead to tissue damage or lasting DNA damage, especially in children. Based on results from previous studies and concerns over patient injury, we used a quality improvement process expected to decrease radiation exposure without reducing the quality of patient care for patients undergoing procedures in our pediatric catheterization lab. Changes introduced in the new standard included: frame reductions on cine acquisitions, scatter reduction, using more recorded fluoroscopy, and using single plane when biplane imaging would not be more useful. Data were collected from all cases in 2011 as a baseline and were compared to patients in 2012, when the new measures were implemented. In a retrospective chart review, exposure was significantly reduced from 2011 (N=394) to 2012 (N=463) with respect to the key radiation variables of dose area product and air kerma. These results indicate a promising reduction in radiation exposure for patients at our pediatric catheterization lab.

Leschke, Thomas

Drug Poisoning in Wisconsin: Does Age Matter?

Authors: Leschke T, Guse C, Schlotthauer A, Layde P.
Project Mentor: Peter Layde, MD

Background: Unintentional drug poisonings are an increasing cause of morbidity and mortality in the United States. Hypothesis: Older adults have increased risk of poisonings that result in hospitalization or death. Methods: Wisconsin Hospital Association records and death certificates were used to evaluate medication-related poisonings from 2005-2010. Incidents were categorized by sex, agent (opioid/non-opioid), and intent (unintentional/intentional). Rates per 100,000 person years, hospitalization rates, and fatality rates, were calculated based on age. Results: Opioid poisonings had higher fatality rates than non-opioid poisonings and were more likely to be treated as inpatients in all age groups. Hospitalization rates for opioid poisonings increased with increasing age. Individuals aged 25-64 years had the highest fatality rates for both opioid and non-opioid poisonings (14.8-20.9 and 4.0-7.9). Conclusion: Opioid poisonings are a significant cause of morbidity and mortality for older individuals.

Lew, Daniel - **POSTER**

Red Beetroot Dye: A Novel Treatment for Head and Neck Cancer

Authors: Bock JM, Lew D.
Project Mentor: Jonathan M. Bock, MD

Squamous cell carcinoma of the head and neck (SCCHN) affects over 500,000 new patients annually worldwide. New treatments are needed because current treatments of surgery and chemoradiation have many negative side effects. Red beetroot dye is a possible new agent that contains active anticancer chemical compounds: betanins and betalains. In the present study, we used various functional assays to determine the role of red beetroot dye in SCCHN proliferation, apoptosis, and cell cycle progression. Two immortalized SCCHN cell lines were used: UMSCC-1 and UMSCC-17B. With 0.004% dye concentration, cell proliferation decreased by 99% in UMSCC-1 and 89.5% in UMSCC-17b compared to control. The mechanism was found to be a G1 arrest in the cell cycle. Cell counts also decreased by 88.2% in UMSCC-1 and 67.6% in UMSCC-17B compared to control. An apoptosis assay confirmed that the cells were undergoing apoptosis. The results of our study support the possibility of using red beetroot dye as a new chemopreventive agent to treat SCCHN.

Lindsay, Daniel

Effects of pH and Ca2+ on Mitochondrial ROS Emission in Ischemia

Authors: Lindsay DP, Camara AKS, Stowe DF, Aldakkak M.
Project Mentor: David Stowe, MD, PhD

Mitochondrial emission of reactive oxygen species (ROS) is critical in ischemic injury and is modulated by factors including extra -matrix Ca2+, pH, and substrate availability. We examined the effects of these factors on ROS emission from complexes I and III with conditions designed to simulate early and late ischemia. Guinea pig heart mitochondria were treated with various pHs, concentrations of CaCl¬2, and either complex I substrate/inhibitor (pyruvate/rotenone) or complex II substrate/complex III inhibitor (succinate/antimycin A) with measurements of H2O2 and matrix volume. A large increase in H2O2 release occurred with CaCl¬2 and pyruvate/rotenone at pH 6.9, but not at pH 7.15 or 6.5. Large increases in H2O2 occurred at all pHs with CaCl¬2 and succinate/antimycin A. All conditions with large increases in H2O2 release also showed significant mitochondrial swelling. These results suggest complex I and complex III are the sources of early and late ischemic ROS emission, respectively.

Martin, Nora - **POSTER**

Zebrafish CTGF Promoter Reporter: a Tool for YAP1 Functional Analysis

Authors: Martin, N, Link, B.
Project Mentor: Brian Link, PhD

CTGF (connective tissue growth factor) has been found to play a role in the tumorigenesis of several human cancers. In vitro models have shown that YAP1, a transcription factor, binds to a TEAD protein and stimulates the production of CTGF (connective tissue growth factor). In zebrafish, CTGF increases the proliferation of chondrocytes and is important for notochord and heart development. CTGF is highly expressed in these areas. We hypothesize that the alteration of YAP1 expression will change the CTGF expression levels within the developing zebrafish. We have made a transgenic zebrafish CTGF promoter reporter model that mimics the expression pattern of CTGF as previously described. We plan to use this model to test the CTGF promoter responsiveness to YAP1 overexpression and YAP1 knockdown.

Mathews, Nathan

Foveal Contour Changes Following Surgery for Epiretinal Membrane

Authors: Mathews N, Tarima S, Kim D, Kim J.
Project Mentor: Judy E. Kim, MD

PURPOSE: To evaluate change in foveal contour in eyes with epiretinal membrane (ERM) before and after surgery, and relate this to best corrected visual acuity (BCVA) and optical coherence tomography (OCT) parameters. METHODS: Retrospective study of patients undergoing surgery for ERM. Foveal contour grading based on thickness of the fovea relative to the surrounding macula: Grade 0, foveal depression; Grade 1, flat; Grade 2, foveal elevation. Grades were correlated with BCVA, central retinal thickness (CRT), central subfield thickness (CST), and central subfield volume (CSV). RESULTS: At baseline, no eyes were Grade 0; 7 of 41 were Grade 0 at follow-up. Baseline Grade 1 eyes improved CRT ($P<0.01$), CST ($P<0.01$), CSV ($P<0.01$), and BCVA ($P=0.02$). Grade 2 eyes improved CRT ($P<0.01$), CST ($P<0.01$), and CSV ($P<0.01$), but not BCVA ($P=0.37$). CONCLUSIONS: The majority of eyes with ERM do not regain foveal depression after surgery. Flat contours at baseline were more likely than those with elevated contours to significantly improve BCVA.

McKee, Courtney

Developing a Functional Gold Standard for Mass Casualty Triage

Authors: Lerner EB, McKee CM, Cady CE, Cone DC, Colella MR, Cooper A, Coule PL, Lairet JL, Liu JM, Pirrallo R, Sasser S, Schwartz R, Shepherd G, Swienton RE.
Project Mentor: Brooke E. Lerner, PhD

Introduction: Research on mass casualty triage is inhibited because there is no functional gold standard available. It is not possible compare the accuracy of current systems. Objective: To develop a consensus-based, functional gold standard definition for each mass casualty triage category. Methods: Experts were recruited and key informant interviews were conducted to develop criteria for each category. Participants were interviewed until redundancy of themes was achieved. A modified Delphi survey was created. In the initial rounds of voting, criteria could be added, removed, or modified. Edits were made until at least 80% agreement was achieved. Results: 13 experts were recruited. Six interviews were conducted. Three rounds of voting were performed. In the final round, over 90% agreement was achieved for all but one criterion. A single vote was conducted on edits to that criterion and consensus was achieved. Conclusion: A novel consensus-based, functional gold standard for each mass casual-

Myers, John

Systemic to Pulmonary Artery Shunts in Patients Less Than 3 Kg

Authors: Myers JW, Trapp K, Cao Y, Simpson P, Ghanayem NS, Tweddell JS, Woods RK.
Project Mentor: Ronald Woods, MD, PhD

Objective: Evaluate outcomes of systemic to pulmonary artery shunts (SPS) in patients weighing < 3 kg. Results: Discharge survival was 96% (77/80). Postoperative cardiac arrest or ECMO occurred in 6/80 (7.5%), and shunt reintervention was required in 14/80 (17%). On univariate analysis, shunt reintervention was more common in patients with 3 mm shunts (11/30, 37%) compared to 3.5 mm (2/36, 5%) or 4 mm shunts (1/14, 7%) ($p<0.0001$). There were no statistically significant associations between shunt type, size, or surgical approach and cardiac arrest/ECMO or mortality. Multiple logistic regression demonstrated that shunt size 3mm ($p=0.046$) and extracardiac anomaly ($p=0.048$) were associated with shunt reintervention. Conclusions: In this high-risk group of neonates weighing < 3kg at the time of SPS, survival to discharge and the next planned surgical procedure was high. Outcomes were quite good with 3.5 and 4mm shunts; however, shunt reintervention was common with 3mm shunts.

Ngongang, Marthe

Ellagic Acid Mitigates Radiation Dermatitis in Rats

Authors: Ngongang M, Lazarova Z, Olasz EB, Duncan NE, Schock AM, Lazar J, Neuberg M, Lopez A.
Project Mentor: Zelmira Lazarova, MD

Skin exposure to radiation generates reactive oxygen species (ROS). Our project was based on the hypothesis that progression of radiation-induced skin injuries is driven by oxidative stress which can be mitigated with ellagic acid (EA). We tested the topical application of EA in rat model of radiation-induced skin injury. The dorsal skin of 10 rats was irradiated with an x-ray beam at a dose of 30 Gy. Rats were divided into two groups of 5; one group received a daily dose of 2g of EA ointment while the control group received a control ointment. Skin injury scores were determined weekly. The animals were euthanized 56 days after irradiation. Skin samples were collected for histological evaluation and gene expression. Classification of the genes analyzed revealed that up-regulated genes were the key antioxidant enzymes involved in detoxification of ROS. These results demonstrate the role of oxidative stress in radiation-induced skin injury and the effect of EA in mitigating these injuries.

Otasowie, Itohan

High ED Return Visit Rates within 14 days for Children with SCD

Authors: Otasowie I, Nimmer M, Hoffmann RG, Dasgupta M, Brousseau DC.
Project Mentor: David C. Brousseau, MD

Children with Sickle Cell Disease (SCD) have high Emergency Department (ED) utilization and high rates of rehospitalization, but return visit rates following ED treat-and-release (EDTR) visits are unknown. We hypothesized that children with SCD have high rates of return visits following an EDTR visit and that relatedness of return visits decreases after seven days. We conducted a retrospective cohort study of all EDTR visits with a diagnosis of SCD with crisis from a 2005-2006 Healthcare Cost and Utilization Project eight-state ED cohort and assessed relatedness using a 2008-2010 single Children's ED cohort. Both data sets revealed an approximate 20% 14-day return visit rate. 92% of return visits within seven days were related to the initial visit versus only 25% after seven days. One-fifth of children with SCD have a 14-day return visit after an EDTR visit. Low visit relatedness after seven days should be considered when directing rehospitalization prevention resources.

Patel, Anish - **POSTER**

Weight Gain in Patients with IBD Treated with Anti-TNFα Therapy

Authors: Patel A, Zadvornova Y, Stein D, Naik A, Best K, Idstein, K, Massey, B, Perera, L.
Project Mentor: Lilani Perera, MD

Background: Anti-TNFα agents are effective in the treatment of IBD, but have been linked to many side effects, including weight gain and development of obesity. This has not been previously studied in IBD patients. Methods: A retrospective chart review was conducted on patients >18 years with confirmed diagnosis of IBD treated with anti-TNF agents. Patients were grouped on basis of weight gain, and data analyzed for differences between groups on a number of variables. Results: Patients who gained weight were less likely to be on combined anti-TNFα and IMM therapies, and more likely to have shorter disease duration, be younger, score higher on QOL measures and have lower BMI at initiation. Discussion: Characteristics identified in study as differing between two groups may serve as important predictive factors for weight gain and development of obesity in IBD patients, and therefore guide treatment and preventive measures in this population.

Patel, Sagar

Functional Connectivity during Dual-Task in Aging

Authors: Patel SP, Humphries C, Sabri M.
Project Mentor: Merav Sabri, PhD

Rationale: Older adults have increased difficulty in performing tasks in which their attention is divided compared to younger adults. We seek to determine if functional connectivity between brain regions correlates with dual-task performance with age. Hypothesis: Older adults will have reduced performance and decreased connectivity in dual-tasks compared to younger adults. Methods: 18 older and 18 younger adults were presented blocks of words and pseudowords by low/high pitch voices and asked to identify them. ROIs were defined functionally and AFNI software was used to analyze connectivity during dual-task in the IPL, FEF & Ant. MFG. Results: Overall the positive correlations were greater in the younger group between the majority of brain regions ($p<0.05$). Discussion: There is a higher degree of connectivity between attention regions in younger adults compared to older. This is consistent with previous studies and future studies will look at additional regions.

Peebles, Amy

Effects of Anandamide on Anxiety Behavior in β-arrestin Null Mice

Authors: Hillard CJ, Peebles AB.
Project Mentor: Cecilia Hillard, PhD

URB597 is a compound that increases the amount of the endocannabinoid anandamide, an agonist of the CB1 receptor, like Δ9-tetrahydrocannabinol, in the brain The CB1 receptor is a G-protein coupled receptor (GPCR). β-Arrestin is an intracellular scaffolding protein that binds to phosphorylated GPCRs and affects GPCR signaling. The goal of my study was to determine the role of β-Arrestin in the signaling of anandamide. We used male and female knockout (KO) and wild-type (WT) β-Arrestin mice. Animals were given an injection of URB597 at either a low or high dose, or a vehicle. An hour post-injection, animals were placed on a behavioral assay called the Elevated-Plus Maze (EPM) for 5 minutes. The EPM is a behavioral assay that examines anxiety behaviors. It allows mice to explore open arms or closed arms. Time spent in the closed arms is considered a measure of anxiety, as mice prefer closed spaces. We found no significant difference in the amount of time spent in open vs. closed arms, or the number of entries into open and closed arms.

Peng, Jeffrey

T-cells in Renal Ischemic Reperfusion Injury in CD247 Knockout Rats

Authors: Peng JC, Hankton S, Wade B, Mattson D
Project Mentor: David Mattson, PhD

Ischemic injury to kidneys is associated with mortality. We hypothesize that T-cell infiltration exacerbates the damage in kidneys during the first week of recovery after bilateral ischemic reperfusion (IR) injury to the kidneys. This study uses Dahl SS CD247 rats which lack mature T-cells. Female wildtype (WT) and mutant (MUT) rats were subjected to 30 minutes of bilateral IR injury and control sham surgeries. Body weights were measured for each group. After seven days, body weights decreased significantly for only the WT-IR group. This correlated with a greater increase in T-cell infiltration in WT-IR kidneys compared to the other groups. Histology revealed that the WT-IR kidneys also had more damage. Plasma creatinine increased for both WT-IR and MUT-IR groups. This increase suggests renal damage. However, the amount of increase in the WT-IR group was not different from that of the MUT-IR group. Therefore, the functional index used to assess kidney function did not show more damage in the WT-IR group.

Persons, Rachael - **POSTER**

IL-17 Induces OPCs to Exit the Cell Cycle and Remain Viable

Authors: Rodgers JM, Robinson AP, Persons RE, Goings GE, Miller SD.
Project Mentor: Nicholas Ketchum, MD

Inflammatory cytokines are potent signaling mediators in Multiple Sclerosis pathology. IL-17a is an inflammatory cytokine produced by infiltrating T-helper-17 cells that propagates disease by inducing inflammation in astrocytes, however it is unknown how it affects oligodendrocytes. Oligodendrocyte progenitor cells are the primary source for remyelination of lesions, and OPCs are vulnerable to IL-17 signaling because they express high level of IL17 receptors. To understand how IL-17 affects OPCs, primary OPCs were isolated from postnatal mice and grown in the presence or absence of IL-17. OPCs exited the cell cycle in the presence of IL-17, but did not apoptose. IL-17 also induced OPCs to express inflammatory cytokines and chemokines suggesting that IL-17 is not harmful to the overall viability of OPCs, yet drives OPCs to participate in inflammation. Astrocytes and microglia are well known for participating in CNS inflammation, thus it is a novel result for OPCs to be participants in CNS inflammation.

Priya, Anusha—POSTER

Specificity Protein 4 regulates transcription of NMDA receptor subunits

Authors: Priya A, Johar K, Nair B, Wong-Riley M
Project Mentor: Margaret T. T. Wong-Riley, PHD

N-methyl-d-aspartate (NMDA) receptors are major glutamatergic receptors involved in most excitatory neurotransmission in the brain. The transcriptional regulation of NMDA receptors is not fully understood. Specificity Protein (Sp) is a family of transcription factors that bind to GC-rich regions, with Sp1, Sp3, and Sp4 all binding to the same cis motifs. Sp1 and Sp3 are ubiquitously expressed, whereas Sp4 expression is restricted to neuronal and testicular cells. Recently, we found that the Sp factors regulate all 13 subunits of cytochrome c oxidase (COX), a critical energy generating enzyme. The goal of the present study was to test our hypothesis that the Sp factors also regulate specific subunits of NMDA receptors, thereby coupling neuronal activity and energy metabolism at the transcriptional level. By means of multiple approaches we found that Sp4 functionally regulates GluN1, GluN2A, and GluN2B, but not GluN2C. On the other hand, Sp1 and Sp3 did not regulate these subunits as previously thought.

Radigan, Mark

Development of IBS Symptoms in Quiescent IBD

Authors: Perera LP, Radigan MR, Guilday C, Eastwood D, Massey BT, Stein DJ, Naik AS, Venu N, Skaros S, Best K, Perera LP
Project Mentor: Lilani P Perera, MD

Introduction: Few prevalence studies of IBS in quiescent IBD have used colonoscopy to confirm inactive disease. Aims: To establish the prevalence of IBS in quiescent IBD and determine predictors of risk for developing IBS in this group of IBD patients. Methods: This was a prospective cohort study at a single tertiary care IBD center. 96 pts with colonoscopy-confirmed quiescent disease consented and completed our survey data. Logistic regression models and Fisher's exact test were used for data analysis. Results: 36% (28/77) and 37% (7/19) of quiescent CD and UC pts, respectively, met diagnostic criteria for IBS. Psychiatric diagnosis (OR 3.53 95% CI 1.221-10.204) and earlier onset of IBD (OR 1.056 95% CI 1.015-1.096), were associated with development of IBS. Conclusions: The prevalence of IBS in quiescent IBD was higher than reported rates in the general population and was similar to previous studies. Development of IBS in quiescent IBD was associated with previous psychiatric diagnosis and earlier onset of disease.

Raj, Neehar

Echocardiography as an Indicator of Pulmonary Arterial Hypertension

Authors: Raj N, Zheng S, Teich M, Dwinell M
Project Mentor: Melinda Dwinell, PhD

Pulmonary Arterial Hypertension (PAH) is a rare but serious disease, involving a sustained increase in pulmonary arterial blood pressure to more than 25 mmHg at rest or more than 30 mmHg during exercise. This can be idiopathic or caused by pulmonary artery vasoconstriction resulting from endothelial dysfunction. Patients who suffer from Pulmonary Arterial Hypertension (PAH) often find out they have the disease once its severe complications have manifested. An effective early diagnostic tool is therefore of enormous clinical value to patients afflicted with the disease. One proposed non-invasive method is transthoracic ultrasound echocardiography, in which an image of the heart is used as a proxy to evaluate the structure of the heart. In this study, non-invasive echocardiography was found to be an effective and accurate indicator of pulmonary hypertension when compared to the traditional and invasive dissection method in Rattus Norvegicus rats.

Reddy, Prajwal

Gap Filling and Error Correction on Candidate Region for Hypertension

Authors: Reddy P, Moreno-Quinn C, Stoddard A, Jacob H
Project Mentor: Howard Jacob, PhD

Using congenic studies, a 1.37 Mb region on rat chromosome 13 has been identified as playing a key role in the development of salt-sensitive HTN. Currently, the rat reference genome publicly available contains multiple gaps and errors within the sequence. In order to identify causal sequence variants in this region it is important to have the most accurate sequence possible. The aim is to fill 89 gaps (varying length) in the sequence and to error correct individual base-pairs. Using 3rd gen sequencing technology and analysis - Alignment against the reference rat genome was able to resolve all but 19 gaps in the reference sequence, and we identified 100 individual base-pair sequencing errors in the region for the reference genome. Efforts to close the remaining gaps by de novo/hybrid assembly strategies are underway, which will be followed by sequence comparison with the hypertensive strain, to identify candidate genes/variants for the hypertensive trait.

Rice, Jonathan

Arthroscopic Repair of Massive Rotator Cuff Tears: Clinical Evaluation

Authors: Rice J, Mickschl D, Grindel S.
Project Mentor: Steven Grindel, MD

Introduction: Massive rotator cuff tears (RCT), defined as two complete tendon detachments or a tear greater than four centimeters, are associated with significant pain and disability that severely restrict activities of daily living. Purpose: The purpose of this study was to assess and validate arthroscopic massive RCT repair using clinical outcome scores. Study Methods: A retrospective chart review was conducted on a series of 122 patients that underwent arthroscopic massive RCT repair between 2009-2011. Results were measured using preoperative and end of care shoulder outcomes scores that incorporate range of motion, strength, pain, activities of daily living and satisfaction. Result: End of care scores were excellent (25%), good (52.9%), fair (17.6%) and poor (4.4%). Overall patient satisfaction reached 92.6%. Conclusion: This study demonstrated that arthroscopic repair of massive RCT can significantly improve patient strength, ROM, pain, and activities of daily living, with 78% of patients achieving excellent/good results.

Roddy, John

Metabolic Evaluation of Pediatric Urolithiasis and Obesity

Authors: Roddy JT, Ghousheh AI, Christensen MA, Durkee CT.
Project Mentor: Charles Durkee, MD

PURPOSE: While adult urolithiasis is clearly linked to obesity, pediatric studies are less conclusive, despite pediatric urolithiasis's purported increase in incidence. We hypothesized increased body mass index (BMI) in pediatric urolithiasis patients versus controls and distinct metabolic assessment in obese and non-obese pediatric stone formers. METHODS: We retrospectively reviewed charts of 10-17 year-old upper tract urolithiasis patients treated 2006 to 2011 comparing mean BMI to state data and 24-hour urine of obese versus non-obese stone patients. RESULTS: The obesity rate in 117 urolithiasis patients did not differ from the 2007 NSCH survey's rate (95% CI 0.54-1.95). Comparison of obese versus non-obese 24-hour urine collection was likewise insignificant. CONCLUSIONS: Our results neither confirm obesity as a risk factor for pediatric urolithiasis nor substantial metabolic differences between obese and non-obese stone formers. This supports the majority of published series failing to link pediatric urolithiasis and obesity.

Rosewicz, Lara

Relationship between CPR Compression Rate, Depth, and Incomplete Recoil

Authors: Rosewicz LRI, Glocka PP, Aufderheide TP.
Project Mentor: Thomas Aufderheide, MD

Introduction: Poor CPR quality delivered to cardiac arrest patients may contribute to low survival. However the impact of compression rate on compression depth and incomplete recoil is unknown. Methods: Thirty Milwaukee County EMS providers performed six 3-minute continuous CPR sessions on an electronic mannequin. The first session was without guidance. The next four sessions were at metronome-guided rates of 80, 100, 120, and 140 compressions per minute, in random order. Subjects were then instructed in high-quality CPR. The final session was without guidance. Adequate depth was defined as ≥51mm; adequate recoil as 0mm. Results: No significant differences in depth or incomplete recoil were found between metronome-guided sessions. Baseline performance was significantly better in both categories compared to all metronome-guided sessions while post-education performance was significantly better than baseline. Conclusions: Compression rate did not impact depth or incomplete recoil; however, re-education significantly improved performance.

Sarin, Dhruv

Iliotibial Band Avulsion: A Case Report With Differential Diagnosis

Authors: Sarin D, Baynes K, Mannem R.
Project Mentor: Keith Baynes, MD

Given the large number of muscular, tendinous, and soft tissue insertions surrounding the knee joint, avulsion injuries are a common manifestation of significant trauma. Common avulsion injuries include a capsular avulsion in the setting of a Segond fracture (or reverse Segond fracture) and the Arcuate sign, or fibular head avulsion, as seen in the setting of a posteriolateral corner injury. In addition, a less common injury involves an avulsion injury originating from the anterior lateral corner of the knee which manifests as an avulsion fracture derived from the Iliotibial band insertion. This case report describes both radiographic and MRI findings of a tibial plateau avulsion fracture due to the Illiotibial band. On radiographs, this diagnosis can be challenging due to the multiple ligamentous and capsular attachments in the area and can be misdiagnosed. This injury is often associated with other injuries to the knee as demonstrated in our patient as well.

Schmitt, Erica - **POSTER**

Regulatory T Cells Control Fatal Lung Disease Progression

Authors: Schmitt EG, Haribhai D, Jeschke JC, Co DO, Ziegelbauer J, Yan K, Iwakura Y, Mishra MK, Simpson P, Salzman NH, Williams CB.
Project Mentor: Calvin B. Williams, MD, PhD

In order to study regulatory T (Treg) cell control of chronic autoimmunity, we created a new model of autoimmune lung inflammation. We generated transgenic mice that express a chimeric membrane protein consisting of hen egg lysozyme (mHEL) and a hemoglobin (Hb) epitope tag under the control of the Clara cell secretory protein (CCSP) promoter, which largely limited transgene expression to the respiratory bronchioles. When CCSP-mHEL/Hb transgenic mice were crossed to N3.L2 TCR transgenic mice that recognize the Hb epitope, the bigenic progeny developed dense, pseudo-follicular lymphocytic peribronchiolar infiltrates that resembled the histological pattern of follicular bronchiolitis. A large number of antigen-specific Treg cells accumulated in the lesions and Treg cell-depletion in the affected mice led to an interstitial spread of the disease that ultimately proved fatal. Thus Treg cells act to restrain autoimmune responses, resulting in an organized and controlled chronic pathologi-

Schulte, Brian

Depletion of Macrophages Delays Cutaneous T Cell Lymphoma

Authors: Schulte B, Wu X, Hwang ST.
Project Mentor: Samuel Hwang, MD, PhD

Macrophages play key roles in tumor development and invasion in several human cancers, but little is known about their role in cutaneous T cell lymphoma (CTCL). To demonstrate that macrophages played a role in CTCL tumorigenesis, we xenografted human Hut78 CTCL tumor cells subcutaneously in NOD scid-IL2 receptor gamma chain-deficient mice (NSG) and compared tumor development after 30 days and depleted skin macrophages in one group of mice (n=5) with clodronate- containing liposomes. Mice treated with clodronate-containing liposomes show a decrease in tumor growth compared to a PBS-liposome -treated group (118 mm2 vs. 31 mm2, $p<0.001$). Immunostaining of clodronate-treated tissue revealed almost complete depletion of macrophages. In vitro, clodronate-containing liposomes killed activated murine M2 macrophages, but not Hut78 cells, demonstrating selective ability to induce apoptosis in macrophages. Our data indicate that macrophages play a critical role in tumorigenesis in our model, thus providing a new therapeutic strategy for CTCL.

Setaluri, Madhuri - **POSTER**

Perioperative Outcomes in CHD Patients with and without 22qDS

Authors: Setaluri M, Mahnke D, Clarke S, Tomita-Mitchell A.
Project Mentor: Aoy Tomita-Mitchell, PhD

Commonly associated with 22qDS are congenital conotruncal heart defects: pulmonary atresia with VSD, Tetrology of Fallot, transposition of great arteries, truncus arteriosus and interrupted aortic arch. Studies show that patients with 22qDS are at higher risk for post-operative complications; little literature exists describing the immediate post-surgical and perioperative periods in 22qDS patients as compared to those without the syndrome. We evaluate the perioperative outcomes in congenital heart disease patients both with and without 22qDS, evaluate secondary morbidities related to 22qDS and their effects on perioperative outcomes, and characterize specific perioperative risk factors for patients with 22qDS. We collected data from 53 subjects with 22qDS diagnosed by FISH or other lab tests, as well as 82 control subjects with a similar congenital heart defect and negative FISH. Health information, including all clinical data in the perioperative period during surgical hospital stay, was collected through chart review.

Sobel, Evan

Thoracic and Lumbar Spine Injuries Following Motor Vehicle Collisions

Authors: Sobel E, Yoganandan N, Rao R.
Project Mentor: Raj Rao, MD

Purpose: To investigate the incidence and pattern of thoracic and lumbar spine injuries among the elderly in motor vehicle collisions (MVC). Background: 20-25% of all drivers will be over 65 by 2030. Despite driving less than the young, morbidity and mortality following MVC remains a concern in this age group. Methods: The Crash Injury Research and Engineering Network (CIREN) enrolls occupants of MVC who've sustained moderate to severe injuries. The database was queried for thoracic and lumbar spine injuries in subjects 65 and older. Results: 142 elderly subjects sustained thoracic and/or lumbar spine injuries. Seatbelts predisposed to compression and burst fractures while airbags used alone predisposed to neurologic injury. Conclusions: Thoracic and lumbar spine injuries in the elderly are not uncommon despite restraint use. These results suggest a need to conduct biomechanical studies examining the relationship between occupant variables and restraints in the setting of thoracic and lumbar spine injury following MVC.

Srivastava, Tarang

Finding Candidate Genes for Rare Pediatric Disorders

Authors: Srivastava T, Harris J, Wilk B, Worthey E.
Project Mentor: Elizabeth Worthey, PhD

INTRODUCTION The ability to use biotechnology to find causative disease mutations and alter the clinical approach is a rapidly advancing frontier in genetics. Here we report on PHACE (Posterior fossa malformations, Hemangiomas, Arterial anomalies, Cardiac defects, and Eye abnormalities) syndrome; a rare pediatric disorder. METHODS To understand PHACE we compiled symptoms through literature review. In collaboration with clinicians we undertook whole genome/exome sequencing of PHACE families, and through use of bioinformatic software are finding candidate genes. RESULTS We have identified a number of candidate mutations and will expand on causation with more patient sequencing. Additional genetic pathway analysis leading to disease is ongoing. CONCLUSION Preliminary analyses have identified candidate genes but more analysis is needed to support causation. Genetic investigation is ongoing, and has produced additional candidate genes requiring further exploration. In the future, we will apply this methodology to additional disorders.

Stair, Colin

Use of TALEN Technology to Recapitulate HGPPS in a Zebrafish Model

Authors: Stair C, Schupp M, Vakeel P, Gastonguay A, Cossette S, Li K, Kilari S, Kutty R, Ramchandran R.
Project Mentor: Ramani Ramchandran, PhD

Horizontal gaze palsy with progressive scoliosis (HGPPS) is a rare genetic disorder seen mainly in consanguineous families in Asia and Eastern Europe. It is characterized by the inability to abduct or adduct the eyes, as well as a debilitating scoliosis that tends to worsen with time. It is caused by mutations in the Robo3.2 gene, which is partially responsible for axons crossing the midline in the brainstem. Several specific causative human mutations have been previously identified, and our laboratory is the process of recapitulating these mutations in Zebrafish using transcription activator-like effector nucleases (TALENs). This technology allows researchers to selectively mutate genes at the base pair level, and base pairs of interest can be replaced with any desired sequence. We are currently in the process of developing a stable Zebrafish line harboring these mutations to screen a small molecule compound library in an attempt to rescue the wild type phenotype.

Sung, Michael

Somatostatin Effect on Spiral Ganglion Neurites and Auditory Hair Cells

Authors: Sung M, Wei, E, Brand Y, Bodmer D.
Project Mentor: Charles Harkins, MD

INTRODUCTION: Somatostatin (SST) is a peptide with a variety of target tissues. SST receptors are expressed in the developing cochlea but the role of SST in the inner ear remains unclear. We hypothesize that SST plays a role in spiral ganglion (SG) neurite outgrowth and octreotide (a SST analog) can protect hair cells from aminoglycoside damage. METHODS: SG explants were treated with SST/octreotide and stained with anti-neurofilament antibody. Protection of auditory hair cells from gentamicin-induced toxicity was tested with octreotide. RESULTS: SG neurites treated with 1µM SST were significantly shorter; neurites treated with 10 µM SST were more numerous. There was significantly less hair cell loss in the Organs of Corti pretreated with octreotide. CONCLUSIONS: Decreased hair cell loss in octreotide-treated samples provides evidence for a protective effect of octreotide in vitro. The effect of SST and octreotide on length/number of SG neurites in vitro points to possible involvement of SST in cochlear development.

Teixeira, Robert - **POSTER**

Genotype-to-Phenotype Characterization in the EHR

Authors: Teixeira R, Adamusiak T, Shimoyama M.
Project Mentor: Howard Jacob, PhD

The variant C667T in the methylenetetrahydrofolate reductase (MTHFR) gene has been correlated with an increased risk of elevated blood homocysteine, cardiovascular events, neoplasms, adverse drug reactions to select chemotherapeutics, and various other conditions. In this study, we perform a phenome-wide association study using the clinical data stored in electronic health records to evaluate the risk for various diagnoses in patients genotyped for MTHFR. The study population consisted of seventy-four de-identified records of patients who underwent the MTHFR genetic assay at Froedtert & The Medical College of Wisconsin academic medical center between the years 2004 and 2013. Thirty-seven patients were heterozygous for C667T, five patients were homozygous for C667T, and thirty-two were wild-type. Further analysis is pending.

Udoh, Kenechukwu

Modulation of P66Shc Translocation to Cardiac Mitochondria

Authors: Yang M, Stowe DF, Kenechukwu UB, Heisner JS, Camara AKS.
Project Mentor: Amodou Camara, PhD

Mitochondrial reactive oxygen species (mROS), produced by electron leak from the electron transport chain, play a role in cardiac ischemia reperfusion (IR) injury. P66Shc, a cytosolic protein, enhances mROS production. It is unknown if and when p66Shc is activated during cardiac ischemia and/or reperfusion and if attenuating complex I electron transfer or scavenging mROS alters p66Shc activation during IR. To test this, guinea pig isolated hearts were perfused and subjected to increasing periods of ischemia and reperfusion with or without interventions. Phosphorylation of p66Shc and levels of p66Shc in mitochondria were measured by Western blot and Immunoprecipitation. We found that phosphorylation of p66Shc and its mitochondrial translocation increased during 20 min reperfusion after 20 and 30 min ischemia, but not during ischemia only, or during 5 or 10 min ischemia with 20 min reperfusion. Pre-ischemic administration of amobarbital or resveratrol reduced phosphorylation of p66Shc and its mitochondrial translocation.

Vargas, Andrew

Lipoprotein-Matrix Binding Measured by Biolayer Interferometry

Authors: Vargas A.
Project Mentor: Kirkwood Pritchard, PhD

Interactions that bind matrix proteoglycans and low-density lipoprotein (LDL) molecules initiate atherogenesis by retaining LDL within the arterial wall. Understanding physical interactions between proteoglycans and LDL can offer novel approaches to inhibit atherogenesis. Biolayer interferometry (BLI) can be used to quantitate binding between lipoproteins and matrix. BLI involves loading a sensor with a molecule of interest, then screening this molecule against possible ligands. Measuring the rates of association and dissociation between matrix proteins and LDL, compared to a control, produces a quantitative measure of binding. Binding of LDL to laminin, fibronectin, and rat cardiac matrix protein were measured. LDL showed the lowest binding to laminin and fibronectin and the highest binding to matrix. These results demonstrate a novel use of BLI to study lipoprotein-matrix binding. Future studies will focus on applying BLI to other matrix molecules, as well as oxidized lipoproteins, which have been implicated in atherogenesis.

Weinlander, Matt

Investigating Defects in Sterol Metabolism

Authors: Weinlander M, Cooley B, Zhang D, Zheng X, Patel S.
Project Mentor: Shaliendra Patel, MD, PhD

The investigation of sitosterolemia, an autosomal recessive human disease, is influential in elucidating our understanding of dietary sterol regulation. It is known that two genes, ABCG5 and ABCG8, located at the sitosterolemia locus, encode an integral ABC 'G' family half-transporter, known as sterolin¬-1 and sterolin-2, respectively. Together, these half-transporters selectively pump sterols out of enterocytes and hepatocytes, thereby preventing accumulation of xenosterols in the body. ABCG8 knockout mice exhibit many of the phenotypic features of sitosterolemia. When on a high sterol diet, these mice have a reduced platelet count, increased platelet volume, and females show increased morbidity at 7-8 weeks. We are investigating three features of ABCG8 knockout mice: 1) does the macrothrombocytopenia affect clot formation 2) does accumulation of plant sterols lead to changes in vascular reactivity 3) does the protein expression profile change when the mice are on a high sterol diet compared to a low sterol diet.

White, Stacey - **POSTER**

Incidence of Levodopa-Induced Dyskinesias in PD Patients

Authors: White S, Blindauer K, Spangler K.
Project Mentor: Karen Blindauer, MD

Levodopa has been established as a mainstay of therapy as a result of its proven efficacy in the symptomatic treatment of Parkinson's disease. The development of dyskinesias is a well-known side effect of levodopa therapy. Early reports in scientific literature indicate higher rates of incidence of dyskinesias (up to 80%), while later studies calculate lower rates (as low as 9%.) Because of this extensive range, there is value in calculating an additional rate of incidence. Another objective is to investigate whether or not earlier disease onset correlates with a higher risk of developing dyskinesias. 424 (67% male) patients were included in our study population. 43.63% had documented dyskinesias with levodopa use. There is a statistically significant difference in incidence of dyskinesias between those diagnosed early (ages 37-60) and late (ages 61-74.) This knowledge can be applied to potentially predict clinical outcomes with treatment regimens and guide treatment decisions.

Yong, Holly

Thyroid Follicular Neoplasms In The Elderly

Authors: Yong HM, Yen TW, Hunt B, Wilson SD, Evans DB, Wang TS.
Project Mentor: Tracy S. Wang, MD, MPH

Introduction: Approximately 20% of thyroid fine needle aspiration results will be 'atypical' and require thyroidectomy to rule out cancer. Although there are low rates of mortality with thyroidectomy, studies show the elderly have higher postoperative complication rates. We investigated malignancy rates of thyroid nodules in elderly patients with atypical follicular lesions. Methods: A retrospective chart review was performed of 526 patients who underwent thyroidectomy at MCW in 7/09-5/12. The cohort consisted of 126 patients who had atypical follicular cytology. Results: Overall, 8% of nodules were clinically significant malignancies. The rates of malignancy in nodules by age groups were 10% (≤50 yrs), 7%, (50-65 yrs) and 4% (>65 yrs). Conclusion: The overall malignancy rate for nodules with atypical follicular cytology was 8% and decreased to 4% in patients >65 years. With no difference in postoperative complications by age, thyroidectomy in the elderly may be performed safely.

Zganjar, Andrew

Rotator Cuff Repair in Upper Extremity Ambulators

Authors: Zganjar A, Mickschl D, Grindel S.
Project Mentor: Steven Grindel, MD

Patients who rely on their upper extremities for mobility are prone to rotator cuff injury. After rotator cuff repair, upper extremity ambulators (UEA) are left debilitated and dependent while they heal. Anxiety over lost independence may delay the decision for surgery and influence outcomes. We aim to evaluate the differences in conservative treatment and surgical outcomes between UEA and a control group of normal ambulators. Patients who underwent rotator cuff repair from 2002-2013 were screened for those that met our UEA criteria. A matched control group based on age, sex and procedure was formed. Demographic, preoperative, and postoperative clinical data was extracted. Physical therapy (PT) time preoperatively varied between the groups – 4.3 vs. 2.1 months for the controls (p=0.02). Significant differences in forward flexion and abduction were found postoperatively in favor of the control group. UEA delayed both conservative and aggressive treatment, remained in PT longer and had less gain in range of motion than control patients.

Thank you

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Tom Zahrt, PhD*

*Denotes more than 5 years of service with the Physician Scientist Pathway.

Quality Improvement & Patient Safety

Geoffrey Lamb, MD &
Catherine Ferguson, MD

Provides students with the core principles and skills necessary to understand and analyze the systems-based aspects of patient care, to actively engage in quality improvement work, and to enhance patient safety with the goal of achieving the best possible health outcomes for patients.

- **Optimization of systems of care.**
- **Functioning as a member of the healthcare team.**
- **Principles of safety and medical error.**
- **A mentored quality improvement project.**

Cardon, Brock—**POSTER**

A Four-Item PTSD Screen in Patients with Chronic Psychological Distress

Authors: Cardon B, deRoon-Cassini T, Brasel K.
Project Mentor: Karen Brasel, MD, MPH

Psychiatric disorders after traumatic injury, such as Post-Traumatic Stress Disorder (PTSD), often complicate recovery. Screening tools, such as the Post Traumatic Stress Disorder Checklist – Civilian version (PCLC), a 17-item questionnaire, help identify patients at risk for developing PTSD, both acutely and chronically. The Primary Care PTSD Screen, a shorter, 4 item questionnaire which includes questions from each PTSD symptom category (re-experiencing, avoidance, hyperarousal), is useful in identifying patients at risk for acute PTSD, but has unknown utility in identifying those at risk for chronic symptoms. 195 patients filled out PC-PTSD screens after trauma and returned follow-up screens 6 months later (64% male, median age: 53 years, 11% assaultive trauma). The PC-PTSD was highly specific (95%) but had poor sensitivity (17%). This inexpensive and quick screen may have some real value, as over-identifying PTSD can harm patients. Work continues with this sample to explain difficulties identifying those with delayed PTSD onset.

Hughes, Jordan- **PODIUM**

Improved Obstetrical Care after a Medicaid Pilot Project

Authors: Hughes J, Slawson J, Eldredge C, Damitz B, Payne J, Olsen S, Leininger M.
Project Mentor: James Slawson, MD

Background: To address poor birth outcomes in Milwaukee county, Wisconsin's Medicaid program piloted "OB medical homes" for high-risk pregnant women beginning in January, 2011. The purpose of this study is to evaluate the program's effectiveness. Methods: Three MCW PCMHs were deemed eligible and enrolled in the pilot. For each patient, data was collected for the year before and three years after the start of the pilot program. Results: Preliminary data from one location after the first year of the pilot demonstrate that women initiated care earlier and attended more prenatal visits. Differences in birth outcomes were insignificant. An updated analysis including control charts showed no significant improvements in care or outcomes over time at other locations. Discussion: The pilot program was effective at improving care at one location, though no difference in outcomes was detected. Conclusion: The pilot was only effective at one location according to this preliminary analysis. Further data abstraction and reconciliation is needed.

Urban & Community Health

Linda Meurer, MD, MPH

Links education with community needs and assets to prepare students to effectively care for patients in urban communities, promote community health & reduce health disparities.

- The balance between biologic and non-biologic health determinants
- Medical conditions that affect urban, underserved populations
- Disparities in health and healthcare
- Community-based health educational strategies
- Partnership with public health and community agencies

Crane, Alison

Musical Instrument Identification in Cochlear Implant Users

Authors: Crane A, Fullmer T, Runge C, Friedland D.
Project Mentor: Christina Runge, PhD

Cochlear implant (CI) users are reported to have a near-normal ability to hear temporal musical cues such as rhythm and tone duration. However, they often lack the ability to interpret timbre, a complex spectral and temporal attribute that contributes to each instrument's distinctive sound. In order to determine which elements of timbre provide the most and least information to CI users, ten adult CI users were asked to identify five instruments based upon major scales and modified versions in which attack, decay, or both were removed. Their scores were compared to normal hearing (NH) controls. CI users performed at a level roughly 60% that of NH subjects for each scale. Both CI-user and NH participants performed progressively worse as the amount of information in the notes was decreased. As such, information such as attack and decay are important for instrument identification, but are not excluded by the processor or implant transmission. Instead, the data suggest that an additional spectral element of timbre is not being encoded.

Dang, Aminta - **POSTER**

Raising Awareness of Services for Victims of Sexual Assault

Authors: Dang AA.
Community Partner: Gina Kleist, MS, RN, Sexual Assault Treatment Center
Project Mentor: Fredrik Broekhuizen, MD

While statistics show 1 in 4 women will experience sexual assault within her lifetime, the majority of these cases go unreported. This translates to victims potentially not receiving the medical and mental health services and support they need. The Sexual Assault Treatment Center (SATC) serves the greater Milwaukee area and offer medical care/evidence collection by trained nurses, counseling, and referrals to resources for victims working on recovery. The aim of this study was to gauge general public awareness of SATC, and provide additional information regarding its services. We compiled an informational poster for the public at the Neighborhood House Health Fair, and created a survey regarding: clarity/effectiveness of poster, their general knowledge of sexual assault, and willingness to use SATC resources or refer friends and family members. 75 people attended the health fair; 34 people filled out surveys and provided constructive feedback. Data was analyzed and provided to SATC to incorporate changes for future outreach programs.

deAngeli, Katherine - **POSTER**

Healthy Holton: An After School Health Education Curriculum

Authors: deAngeli K, Desai N.
Community Partner: Katherine Polace, Holton Youth and Family Center
Project Mentor: Staci Young, PhD

Current literature has demonstrated the long term benefits of quality after-school programs to instill healthy choices and habits. The Holton Youth + Family Center provides a safe and supportive environment for children in the Riverwest and Harambee neighborhoods. After assessing the topic interests of the staff and kids at Holton, we created four interactive health presentations about nutrition, health professions, growth and exercise, and mental health. We ran a pilot curriculum in summer 2013 and then a revised curriculum in fall 2013. Although youth centers have variable attendance and unpredictable age ranges, interactive educational presentations can have a positive impact both in the short and long term. As demonstrated by our results and feedback from Holton staff members, it appears that our health education presentations offer an effective and engaging way to educate youth about health topics that are interesting to them and relevant to their daily lives.

Desai, Nina - **POSTER**

Healthy Holton: An After School Health Education Curriculum

Authors: deAngeli K, Desai N.
Community Partner: Katherine Polace, Holton Youth and Family Center
Project Mentor: Staci Young, PhD

See deAngeli, Katherine, Page 50

Fox, Kristen - **PODIUM**

Specifics why pregnant women decline influenza vaccination

Authors: Fox KE, Leppeller C, Szabo A, Visotcky A, Klatt T.
Project Mentor: Timothy Klatt, MD

Introduction: Even though the CDC recommends that, unless contraindicated, all pregnant women receive influenza vaccination, less than half are vaccinated each year. Despite several systems-based interventions that increased MCW Ob-Gyn clinic's vaccination rate, a substantial portion of patients still decline vaccination. We sought to identify the reasons for these decisions. Methods: We compared the survey responses about possible vaccine decision determinants of 224 vaccine acceptors with 75 decliners. Results: Both groups scored their obstetrics provider above friends and family as an important information source. Among other things, education, income, and type of insurance (public vs private) did not affect vaccine acceptance. Women who declined vaccination had more concerns about side effects and safety and were less concerned about risks of infection. Recommendation: Providers should target decliners with a message that specifically emphasizes their risks of influenza infection or addresses safety and side effect concerns.

Glatt, Kevin - **POSTER**

Health Education-Focused Cooking Classes

Authors: Glatt K, Ovide J, Helm R
Community Partner: Jenny Ovide, RN, Wheaton Franciscan Glendale Family Care Center
Project Mentor: Robin Helm, M.D.

Health education-focused cooking classes, wherein attendees learn about health topics and physically help prepare food, have been shown to be more effective at changing eating habits than are purely didactic educational models. Based on the results of a Local Needs Assessment survey, a six-week series of interactive cooking classes was designed and held at a Milwaukee family medicine clinic. In order to maximize attendees' ability to replicate class recipes at home, inexpensive recipes with easily -obtainable ingredients were used. Handouts summarizing educational objectives and recipes were distributed at every session. Patients were overall more interested in learning about healthy variations on commonly consumed foods rather than about unfamiliar recipes. Patients reported satisfaction with the model and the majority attended multiple classes. These encouraging subjective results suggest that further studies should gather analyzable data on the efficacy and feasibility of interactive patient education models.

Hannan, Kathleen - **POSTER**

Implications of Classifying Children with Medical Complexity (CMC)

Authors: Hannan K, Johaningsmeir S, Zhao S, Okun A, Gordon J, McCord M.
Project Mentor: Mary McCord, MD, MPH

Introduction: CMC use resources disproportionately and are increasingly the focus of clinical programs and research yet there is no consensus definition of CMC. Proposed classification schemes include complex chronic conditions (CCC) based on ICD-9 diagnoses, and local Special Needs Program criteria (SNP) based on ICD-9 diagnoses, hospital admissions & sub-specialties seen. Methods: Health care utilization of a cohort discharged from the CHW NICU Jan 1-Dec 31, 2010 (n=587) were analyzed by chart review. Results: Between ages 6-24mo there were large differences in resource utilization depending on CMC definition, though all definitions have been used in the literature to report CMC outcomes. NICU grads satisfying SNP criteria had the highest utilization. Those with ≥3 CCC had higher utilization than those with 1 or 2 CCC. Conclusion: In this analysis, significant differences in utilization were seen depending on the classification scheme used. A robustly-tested consensus definition would benefit both research & clinical program planning.

Hughes, Patrick - **PODIUM**

Implementation of Personal Health Records with Homeless Men

Authors: Wynne B, Hughes P, Diehr S.
Community Partner: Cindy Krahenbuhl, The Guest House of Milwaukee
Project Mentor: Sabina Diehr, MD

Introduction: Previous studies have found that when a homeless individual seeks care, that individual likely has an overall complex general health, and lacks available medical records. We aim to implement the use of free, web-based Personal Health Records (PHR) to assist homeless men in managing a current health history. Methods: We met individually with 5 residents of the Guest House, a homeless shelter in Milwaukee, and assisted these men in the creation of an online PHR. Each participant received a wallet-sized card with directions about how to access the PHR website. Each participant completed an initial survey after making a PHR and will be given surveys at 3-month intervals up to 1 year. Results: 4/5 participants said the setup time for a PHR took less than 30 minutes and they felt comfortable updating the PHR. All participants perceived the PHR as being helpful and reported they would use their card. Conclusion: Participants have a thorough, portable health record that will provide some semblance of continuity of care.

Khan, Mirza - **POSTER**

The Effect of Ramadan Fasting on Birth Outcomes: A Meta-Analysis

Authors: Khan M, Meurer LN.
Project Mentor: Linda Meurer, MD, MPH

Background: Fasting is ordained upon all healthy mature Muslims during the month of Ramadan, which lasts either 29 or 30 days. Ramadan fasting involves abstaining from food and liquids from dawn to sunset. Many pregnant women observe fasting, and there is uncertainty regarding the impact of this practice on pregnancy outcomes. Objective: For a woman who is pregnant during Ramadan, will fasting as compared to not fasting result in poorer fetal outcomes? Methods: Relevant studies were identified through PubMed using pre-defined terms. Cohort studies comparing pregnant women who fasted during Ramadan to those who did not fast, and which assessed birth outcomes were included. Two independent reviewers assessed eligibility and extracted data. Quality was evaluated using the Newcastle-Ottawa scale. Data was analyzed using RevMan software. Results: Preliminary results of meta-analysis suggest no difference in gestational age and birth weight when comparing outcomes between pregnant women who observe Ramadan fasting to those who do not.

Kroencke, Rachel - **POSTER**

Access to Nearby Greenspace is Linked with a Stronger Sense of Place

Authors: Kroencke, R , Beyer, K .
Community Partner: Beth Heller—Urban Ecology Center
Project Mentor: Kirsten Beyer, PhD, MPH

Green space has been linked with positive health outcomes. Some have suggested that a possible health promoting aspect of green space is the cultivation of a sense of place. The purpose of this study is to examine the association between access to neighborhood green space and dimensions of sense of place among a sample of urban, Milwaukee children. Fifth and sixth grade students were surveyed to explore their ability to access nature and their sense of place. Statistical analyses examined differences in sense of place between those who did and did not report access to green space. We found a significant difference in sense of place between students who knew of a green space in their neighborhood versus those who did not. Access to a nearby green space where children can play is linked with a positive sense of place, and could also have implications for health and wellness. It is important that we create more green space in communities and provide programs that strengthen the relationships children have with these natural areas.

Leung, Alina - **POSTER**

Hepatitis B Screening and Awareness in the Milwaukee Hmong Community

Authors: Johnson CC, Leung AA, Hur SI, Saeian K.
Community Partners: Duachy Vang—Grace Hmong Alliance Church, Loneng Kiatoukaysy - Hmong American Friendship Association , May See Yang - UWM Hmong Student Association , Paoi Lor - Hmong ABC Radio, Dr Cha Lee - Lee Medical Clinic, Pai Yang - Pai Phongsavan Market, Ann Fitzgerald - Hmong American Peace Academy

See Johnson, Christopher, Page 11

Lutz, Megan - **POSTER**

MCW Practitioner Knowledge & Resources for Tobacco Cessation

Authors: Lutz MK, Gilbert I.
Project Mentor: Ileen Gilbert, MD

INTRODUCTION: Tobacco use is the leading cause of preventable death in the United States. The Affordable Care Act is designed to ensure access to smoking cessation counseling and pharmacotherapy, but insurance contracts are often unclear to patients and providers. METHODS: To assess Milwaukee community practitioner knowledge, resource needs, and current practices with respect to treating tobacco use disorder, we devised a 25 item short answer and multiple choice survey which was distributed to eight different practice sites. RESULTS: 80% of practitioners reported providing smoking cessation counseling more than once a week. The nicotine patch was the most commonly prescribed therapy (55% of respondents), but 26% did not know if this medication was covered by insurance. 66% reported lack of time as their greatest barrier to providing counseling. CONCLUSIONS: Regardless of specialty or site, practitioners frequently provide tobacco use disorder counseling and would benefit from clearer insurance guidelines and easier access to resources.

Martin, Christina - **POSTER**

PRN: Positive Relationships Networking

Authors: Martin CE, Kraus A.
Community Partner: John Rakowski, Violence Prevention Initiative
Project Mentor: Kelly Curran, MD

In a cross-sectional survey done by Boston University in 2011, it was found that 54.8% of adolescents seen in the ED reported physical and/or sexual victimization in their lifetime. When surveyed, 41.4% of social workers in the Children's Hospital of WI network felt that, when presented with an adolescent patient with a history of dating abuse, they do not have a way to easily access community resources. These statistics demonstrate the need for a central source of information regarding local resources available addressing teen dating abuse that can then be used by health care providers working with this population. Our project aimed to create a Facebook page that focused on providing information on local resources, educational materials, and data regarding teen dating abuse in an interactive way. Through this project, we are able to better connect healthcare workers, community agencies, and adolescents that are at risk for dating abuse.

Mudroch, Steve - **POSTER**

Cuidadores Latinos Unidos: Results from a Program for Latino Caregivers

Authors: Mudroch S, Tan H, Guse C, Villa M, Mejia C, Bonet M, DeNomie M, Castro A, Franco Z.
Community Partner: Al Castro, United Community Center
Project Mentor: Zeno Franco, PhD

In response to calls for a culturally-competent caregiving model for Latino family caregivers of elders with dementia, United Community Center and Medical College of Wisconsin piloted Los Cuidadores Latinos Unidos. This intervention offered a flexible, six-month multi-component program in English and Spanish to forty participants. Program elements included psychoeducational sessions guided by Behavioral Activation and Family Systems Theory; family education meetings; quarterly workshops; and use of technology. Impact on caregiver wellness was assessed using data collected at the baseline, midpoint, and conclusion of the intervention using: Zarit Caregiver Burden Assessment, PHQ-9 Depression Scale, Social Connectedness Scale, and an internally-generated family survey. We will present results from this program, including demographics and intervention effectiveness; and examine cultural adaptations in tailoring Behavioral Activation to Latino family caregivers.

Newman, Ross - **POSTER**

Reach Out and Read Effects on Early Childhood interest in Reading

Authors: Newman, R, Smith, C
Project Mentor: Earnestine Willis MD, MPH

34% of American children entering kindergarten today lack the basic language skills they will need to learn to read. Children living in poverty and in low-income families are at the highest risk. Reach Out and Read (ROR) is the first evidence-based pediatric-strategy to prevent problems of early childhood development and learning. This national program promotes early literacy by providing developmentally appropriate and culturally sensitive books during well-child visits, training healthcare professionals to advise parents and caregivers about the importance of reading aloud, and placing volunteer readers in waiting rooms to model reading habits for families. We recruited participants in eight pediatric clinics to take a modified BABAR survey to determine a dose dependent relationship between time enrolled in ROR-M and interest in reading and reading related activities in parents and children.

Parker, Matthew

Parental Knowledge and Beliefs After Infant Safety Education in the NICU

Authors: Rabbitt A, Bretl D, Parker M.
Project Mentor: Angela Rabbitt, DO

Introduction: Infant safety education, including education about a safe sleep environment and coping with infant crying, is an important part of anticipatory guidance for new parents. This study looks at how mothers' views change after receiving such education in the NICU. Methods: Validated surveys were distributed to mothers before and after receiving education materials. Surveys included scales that assessed Crying Knowledge, SIDS Risk Knowledge, and Confidence Levels. Differences in Pre- and Post-Survey scales were evaluated. Results: Crying Knowledge scale: 2 of 8 questions showed statistically significant improvement. SIDS Risk scale: 6 of 9 showed statistically significant improvement. Confidence scale: 3 of 9 showed statistically significant improvement, with an aggregate Confidence Score significantly improving also. Conclusions: Infant safety education seems to be most effective in changing views on SIDS risk, and is somewhat less effective at changing views on infant crying. Confidence also appears to be positively affected.

Peterson, Jessica - **POSTER**

A Systematic Review of Celiac Disease Screening Standards

Authors: Peterson JL.
Project Mentor: Christina Eldredge, MD

Introduction: Celiac disease is an autoimmune disease that affects an estimated 1% of the US population, 97% of whom are undiagnosed. Untreated, celiac significantly increases the risk of developing additional autoimmune diseases, certain cancers, osteoporosis, neurological problems and other medically significant diseases. The low diagnosis rate for celiac disease is largely due to the difficulty physicians find in recognizing relevant symptoms which span nearly all medical specialties. In fact, fewer than one –third of currently diagnosed celiacs presented with gastroenterological (GI) symptoms. Methods: Searched for cohort studies, case reports, clinical trials, evaluation studies, meta analyses, and systematic reviews that mention celiac disease screening in the following databases: PubMed, Ovid MEDLINE and Cochran. Selection Criteria: Studies must directly relate to either the determination and identification of celiac risk factors or the evaluation of celiac screening. Results and Conclusions: Pending.

Quale, Christina - **POSTER**

MCW / FAM Allies Asthma Management Program at La Causa Charter School

Authors: Quale C, Pawlak E, Grayson M, Lee E, Nitschke J.
Community Partners: Erin Lee, Fight Asthma Milwaukee and Jennifer Nitschke, RN, La Causa Charter School
Project Mentor: Mitchell Grayson, MD

Introduction: Approximately 17% of students at La Causa Charter School in Milwaukee have asthma, which is nearly double the national average. Purpose: The goals of our project are to increase asthma self-efficacy at La Causa and develop lasting community partnerships. Methods: MCW students taught the FAM Allies Asthma Smarts curriculum in small groups to a total of 35 third through eighth grade students at La Causa. Four students were chosen to participate in a peer-teaching program, at the end of which they assisted in teaching to a classroom of 23 of their peers. Three students completed a self-efficacy survey before and after our intervention. Results: No significant difference was found in the three students' overall pre and post survey data. However, there was a positive trend in their answers to: "How sure are you that you can control your asthma so that you will not have to go to the hospital?" Discussion: The programming was well received by all involved. The evaluation is ongoing and will direct the future of the project.

Rivas, Andrea - **POSTER**

Refugee Orientation Module

Authors: Kim GS, Rivas A, Smaglick M, Walch A.
Project Mentor: Nicole St Clair, MD

Background: In order to provide comprehensive and culturally sensitive care to refugees, it is crucial for healthcare providers/ trainees to have a basic understanding of their refugee patients. Our "Refugee Orientation Module" aimed to prepare students for work with refugees by increasing their refugee-related knowledge and comfort level. Methods: Information was gathered through literature research and interviews with local resettlement agency caseworkers. A voiced-over PowerPoint was developed covering refugee definition, backgrounds, resettlement process, and health needs. Pre- and post-module tests assessed effectiveness in increasing students' knowledge. Results: There was a significant difference ($p \leq .05$) in students' pre- and post-module test scores for each module coving refugee definition and backgrounds, resettlement process, and health needs, as well as in overall test scores. Conclusions: The "Refugee Orientation Module" enhances students' refugee knowledge and comfort level in working with refugees.

Robers, Cory

Geriatric Poisonings Called to a Regional Poison Center

Authors: Zosel A, Robers C, Gummin D.
Project Mentor: Amy Zosel, MD

The uniqueness of geriatric poisoning is potentially under-appreciated. The objective of this project was to characterize geriatric toxic exposures (patients >65). The data studied was from the case database of a single regional poison center. All adult human exposure cases called to the center from 2009 through 2011 were included in the analysis. Variables of greatest interest included patient (Pt) age, substance, intent of exposure and medical outcome. Of 39,990 documented human exposures during the study period, 12% occurred in geriatric patients and 2.33% were in the advanced elderly (≥ 85 years). Suspected suicide accounted for 50% of the reported geriatric deaths. 64.4% were women. Significant differences exist between exposures in the geriatric and the general adult population in this center's region, in terms of substance category and reason for exposure. Understanding the unique poisoning profile of the geriatric population could lead to better targeting of educational resources and may better guide prevention efforts.

Roensch, Kristin - **POSTER**

Childhood Nutrition in a Summer Day Camp

Authors: Roensch K, Nelson D, Meurer J.
Project Mentor: David Nelson, PhD, MS

Background: Community centers promote programs for health, but there is a gap in understanding their role to provide healthful nutrition practices. Purpose: This project aims to outline the current status of nutrition practices in a Milwaukee summer camp to understand the food consumed during lunch. Methods: The project utilized a cross-sectional plate waste study of foods consumed at the camp. Eleven data points consisting of entrees, fruits, vegetables and milk were collected. Results: 241.5, 181 and 184 servings of entrees, fruits and vegetables were counted, respectively. Entrée waste per serving averaged 30.11% (SD=24.61). Fruit waste per serving averaged 15.13% (SD=14.15). Vegetable waste per serving averaged 43.66% (SD=27.71). 58 cartons of milk were served. Milk waste per serving averaged 27.58% (SD=13.37). Discussion: We discovered high rates of waste across all food items served and a number of low-cost solutions that could be instituted to increase fruit

Rostami, Vida - **POSTER**

Milwaukee Initiative for Growing Healthy Teens

Authors: Nadkarni K, Rostami V, Petersen C, Phillippi L, Eniasivam A.
Community Partners: Cherise Meyers and Roy Cambronero, Journey House and South Division High School
Project Mentor: Jacquelyn Kuzminski, MD

See Nadkarni, Ketan, Page 12

Scott, Ryan - **POSTER**

Chondromyxoid Fibroma: What the Radiologist Needs to Know

Authors: Mautz AP, Dubois MS, Cerniglia RM, Baynes KE, Carrera GF, Doan J, Scott R.
Project Mentor: Keith Baynes, MD

See Doan, Joseph, Page 16

Siddique, Hinah - **POSTER**

Patient-Provider Interaction: Helping LGBT Youth Navigate Healthcare

Authors: Angove, R; Siddique, H; Tadeo, N; Bradford, L; Petroll, A.
Community Partner: Maureen White— Project Q, Downtown LGBT Community Center
Project Mentor: Andrew Petroll, MD

Introduction: Adolescence is the ideal time to implement preventative healthcare, yet lack of access and knowledge makes this increasingly difficult. LGBT youth face additional challenges, including social stigma, fears of discrimination, and uncomfortable/untrained providers. This curriculum hopes to address these challenges. Methods: An initial qualitative study was done using two focus groups with LGBT youth, and 5 key informant interviews with providers who work with the LGBT population. A set of codes was used to isolate recurrent themes, which were then used to form and implement a 3 part curriculum. Results: Isolated themes included structural and interpersonal challenges, personal connection and respect with a provider, patient education, and communication styles. Pre- to post-test data from sessions showed greater confidence in communication skills and greater knowledge about available resources. Conclusions: The curriculum appears promising, with increasing confidence and self-advocacy amidst the youth that participated.

Stout, Monica - **POSTER**

Warrior Partnership

Authors: Carron BR, Stout MA, Myers JW, McBride MF.
Community Partner: Michael Orban Clement Zablocki VA Medical Center
Project Mentor: Michael McBride, MD, MS

See Carron, Benjamin, page 18

Tadeo, Nicholas - **POSTER**

Patient-Provider Interaction: Helping LGBT Youth Navigate Healthcare

Authors: Angove R, Siddique H, Tadeo N, Bradford L, Petroll A.
Community Partner: Maureen White— Project Q, Downtown LGBT Community Center
Project Mentor: Andrew Petroll, MD

See Siddique, Hinah, above

Trotter, Alana - **POSTER**

Training the Unique Female Athlete

Authors: Trotter A.
Community Partners: Christa Marlowe, Girls on the Run, Milwaukee College Prep
Project Mentor: Roger Daley, MD, PhD

Introduction: Injuries are common in sports; the type and frequency of an injury depends on many factors, including gender. Training programs were originally developed to improve the performance of male athletes; with the growth of female athletics, one might question whether females require gender-specific training. My project aims to implement a training regimen for minority girls involved in Girls on the Run to introduce exercises to support an injury-free athlete. Methods: Through a partnership with Milwaukee College Prep School, I developed a warm-up regimen that implemented basic health concepts. Results: The Girls on the Run organization has a pre-made program used by all participants nationwide; I used the warm-up period to implement my project by taking the athletes through a warm-up regimen that targets joints that female athletes commonly injure. Discussion: Knowledge of common injuries that female athletes succumb to can be used to strengthen exercise programs to further support the growth of female athletics.

Vu, Diana

The Autism Early Diagnosis Initiative in Central City Milwaukee

Authors: Wells A, Kistner A, Sparrow T, Bialek N, Wolff M, Vu D.
Community Partner: Nancy Bialek, MS, Milwaukee Center for Independence
Project Mentor: Alan Wells, PhD, MPH

The goal of the Autism Early Diagnosis Initiative, in collaboration with the Milwaukee Center for Independence, aims to promote earlier diagnosis of autism spectrum disorder in Milwaukee's pre-dominantly African-American central city through the development of a relevant community awareness campaign. Two focus groups were conducted with community members addressing autism awareness, barriers to diagnosis, and child-rearing practices. Analysis of the focus groups revealed that disease stigma and lack of education about autism and developmental milestones were obstacles to diagnosis. Information from the focus groups and a subsequent survey suggested that a campaign should be simple, visually stimulating, and accessible to those without computers. A multimedia campaign adapted from the CDC's "Learn the signs, act early" project, targeted to address focus group concerns, was initiated. The campaign's impact was gauged by a community survey one month afterward, and suggested an increase in autism awareness by those exposed to the campaign.

Walker, Ashley - **POSTER**

Communication Barriers to Breast Health within African-American Families

Authors: Drew, E, Griffie, J, Walker, A, Kong, A.
Community Partner: Phyllis Holder, RN - Milwaukee Sisters Network
Project Mentor: Alonzo Walker, MD

Rationale: Breast cancer is the 2nd leading cause of cancer deaths for women and disproportionately affects African American women. 1.4 times as many African-American women will die from breast cancer compared to Caucasians. This study aims to open up the dialogue between survivors and their relatives while exploring its impact on breast cancer prevention. Methods: 5 African-American breast cancer survivors participated in a documentary exploring communication with family regarding their diagnoses. Subjects were pre or post-menopausal breast cancer survivors or the first degree relatives of survivors. Documentary responses were assessed via post-viewing focus groups. Results/Conclusions. Women were more likely to take action for their breast health when practical information was gleaned from the documentary; "survivorship-years" of the women in the documentary was valued. Viewers reported increased incentive to follow through with breast health care and willingness to talk about prevention.

Weeks, Isaac - **POSTER**

Trends in Racial/Ethnic Health Disparities in Milwaukee and Wisconsin

Authors: Weeks I, Meurer J.
Project Mentor: John Meurer, MD, MBA

Background: In 2011, the US Department of Health and Human Services released an Action Plan to Reduce Racial and Ethnic Health Disparities. The report included 14 key racial/ethnic disparity measures to quantify progress in reducing health disparities. This literature review reports data on a selection of these measures in the years 2000 and 2010 in Milwaukee, Wisconsin and the US. Results: The percentage of low birth weight newborns for black mothers was twice that of whites in all comparisons. Hispanics experienced a lower rate of health insurance coverage in Wisconsin than the US, and blacks in Wisconsin were less likely to have insurance in 2010 than 2000. Native Americans had the highest smoking rates and nearly one-half of blacks in Wisconsin were obese. Conclusion: Racial/ethnic health disparities persist for individuals in Milwaukee and Wisconsin relative to the US. Top priorities include insurance coverage for Hispanics and blacks, healthy birth outcomes and weight for blacks, and tobacco prevention for Native Americans.

Wickes, Jessica - **POSTER**

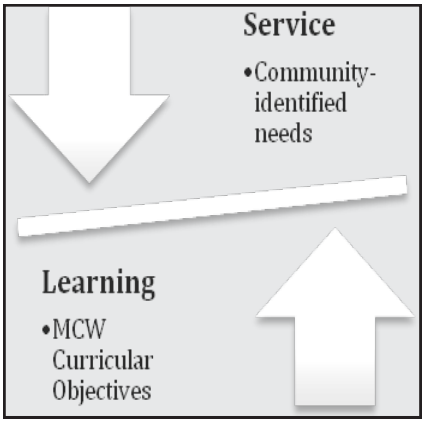
Critical Evaluation of Social Media's Role in Messaging during Disasters

Authors: Wickes JW, Koch H, Sandy MG, Franco Z.
Project Mentor: Zeno Franco, PhD

Social media is becoming an increasingly influential part of disaster response communication. This avenue has been explored in terms of communicating and gathering information. While this technological advancement has proven successful in some instances, there are limitations of this approach in the realm of community-engaged crisis communication for public health and healthcare systems. This effort includes systematic review with supplemental local interviews examining barriers to social media use limiting the effectiveness of these strategies in operations that attempt to integrate resources and needs of diverse communities, public health agencies, and hospital systems to improve the healthcare response to disasters. Barriers include difficulties with organization of data and responders, potential for rumor propagation and overreliance on the technologies despite these barriers. Community Engagement in Research (CEnR) offers one approach to improving the adoption and effectiveness of social media in health systems crisis communication.

Service Learning

for Pathway Students



"a structured learning experience that combines community service with preparation and reflection. Students engaged in service-learning provide community service in response to community-identified concerns and learn about the context in which service is provided, the connection between their service and their academic coursework, and their roles as citizens and professionals."

(LCME IS-14-A)

Service learning assists students' development as medical professionals through experiential learning that stimulates critical thinking, problem analysis and cultural understanding.

Key features :

- **Part of the curriculum and results in academic credit**
- **Places equal value on community-defined service objectives and curricular learning objectives**
- **Planned and implemented in partnership—student, faculty and site-based community staff.**

MCW Pathways staff support Service Learning across all Pathways by facilitating partnership development among students, faculty and community partners.

Service	Service Learning	Learning
Emphasis on meeting a community need Volunteerism Community Service	**Balances community need with learning objectives**	Emphasis on meeting student's learning objectives Field education Clerkships
Primary beneficiary: service recipient	**Both student and service recipient benefit equally**	Primary beneficiary: student
Extra or Co-curricular – no specified structure	**Curricular – Structure includes:** Orientation, Preparation, Service, Reflection	Curricular – structure defined per course requirements

Community-engaged faculty or community agencies who are interested in working with Pathway students can contact Hilary Chavez at hchavez@mcw.edu, or 414-955-2811.

Special Thanks to our 2013/14 Community Partners

Agape Community Center
Alverno College – Medical Interpreter Training Program
Bread of Healing Clinic
Bronze Optical
Center for AIDS Intervention and Research (CAIR)
CHIMC partners
Clara Barton Elementary School
Clement J. Zablocki VA Medical Center
Clinical Navigators, CHW
Downtown Health Center
Dry Hootch
Fight Asthma Milwaukee (FAM) Allies
Five Star Living Complexes - Brookfield Rehab
Girls on the Run
Grace Hmong Alliance Church
Greater Milwaukee Trafficking Task Force
Children's Advocacy Group
Guest House
Hillside Healthcare International, Belize, CA
Hmong ABC Radio
Hmong American Friendship Association
Hmong American Peace Academy
Hmong American Women's Association
Holton Youth + Family Center
International Learning Center
Journey House
La Causa Charter School
Lee Medical Clinic
LGBT Community Center
MATC – Medical Interpreter Training Program
M&S Clinical Services, Inc.
Milwaukee Academy of Science, Lake Valley Camp
Milwaukee Area Health Education Center
Milwaukee Area Youth Lacrosse Association
Milwaukee Center for Independence
Milwaukee College Prep
Milwaukee County EMS
Milwaukee Health Care Partnership
Milwaukee Health Department - Keenan and Zeidler
Milwaukee Sisters Network
Milwaukee Women's Center - Community Advocates
Neighborhood House - International Learning Center
Neulife CLC
Pai Phongsavan Market
Pan African Community Association
Pearls for Teen Girls
Philippine Center Free Medical Clinic
Project Adam
Project Q
Repairers of the Breach
SAUP partners
Sebastian Family Psychology Practice
SET Ministry
Sexual Assault Treatment center
Shriners Hospitals for Children, Chicago
Sixteenth Street Community Health Center
South Division High School
United Community Center
Urban Ecology Center
UWM Hmong Student Association
Violence Prevention Initiative
Walkers Point Shelter
Walnut Way
Wheaton Franciscan Family Care Center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C. Colleen
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