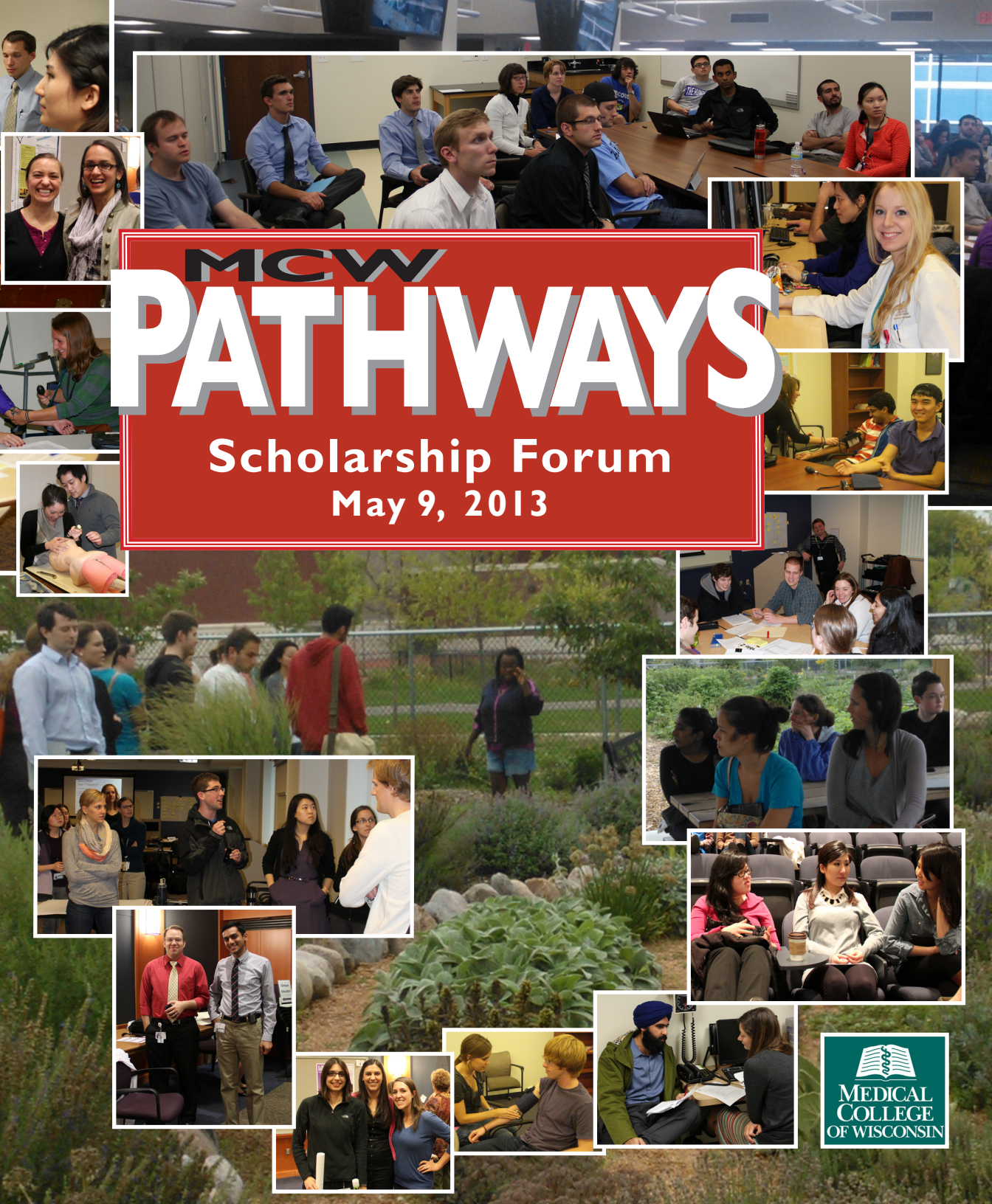

MCW

PATHWAYS

Scholarship Forum

May 9, 2013

MEDICAL COLLEGE OF WISCONSIN


MCW
PATHWAYS
Scholarship Forum
May 9, 2013

Class of 2014- Pathways Scholarship Forum Agenda

1:00	**Convene & Welcome**	**Linda Meurer, MD, MPH**	
	Special Remarks	**Richard Holloway, PhD, Associate Dean for Student Affairs**	
1:15	**Platform Presentations - Part I (Kerrigan Auditorium)**		**Page**
	1. Jennifer Lippitt— Clinician Educator Pathway Title: *Resolution Writing and Advocacy for Medical Students*		**5**
	2. Amy Yam — Global Health Pathway Title: *Improving Community Health in Rural Guatemala Through Youth Empowerment*		**13**
	3. Kimberly Kripps — Master Clinician Pathway Title: *Mucolipidosis Type IV: A Unique Lysosomal Storage Disorder*		**22**
	4. Ruben Chanmugathas — Physician Scientist Pathway Title: *Caregiver Low Health Literacy is Associated with Non-Urgent Emergency Department Visits*		**32**
	5. Juyeon Lee — Quality Improvement & Patient Safety Pathway Title: *Effect of Follow-up Calls on Reducing Sickle Cell Disease Readmissions*		**45**
	6. Steven Daniels — Urban & Community Health Pathway Title: *Group Cohesion in a Formal Exercise Program Composed Predominately of Older Men*		**49**
2:30	**Break - Poster Viewing & Refreshments (Alumni Center)**		
3:25	**Reconvene & Introduction**	**David Brousseau, MD, MS**	
	Special remarks	**John Raymond, MD, President and CEO, MCW**	
3:35	**Platform Presentations - Part II (Kerrigan Auditorium)**		**Page**
	7. MacKenzie Faddis — Urban & Community Health Pathway Title: *Early Developmental Screening for Children in Foster Care*		**50**
	8. Sven Olson — Quality Improvement & Patient Safety Pathway Title: *Evaluation of Whiteboard Use in a Pediatric Intensive Care Unit*		**46**
	9. Kevin Sullivan— Physician Scientist Pathway Title: *Neutrophil-to-Lymphocyte Ratio as a Predictor of Outcome for Patients with Hepatocellular Carcinoma: A Western Perspective*		**41**
	10. Haley Robinson — Master Clinician Pathway Title: *Long-term Single Center DLI Outcomes Show a Role for Durable Response*		**26**
	11. Tuong Van Nguyen — Global Health Pathway Title: *Hepatitis B Screening & Awareness Campaign in the Milwaukee Hmong Community*		**10**
	12. Albert Yen & Alexandra Rzepka — Clinician Educator Pathway Title: *The Pathos Project: The Development of a Humanities Curriculum in Medical School*		**8**
4:50	**Pathway Summary Remarks**	**Jose Franco, MD, Director, Discovery Curriculum**	
4:55	**Session evaluations on iPads**		
5:00	**Adjourn**		

MCW PATHWAYS

Scholarship Forum
May 9, 2013

Contents

Contact Pathways

www.mcw.edu/medicalschool/Curriculum/ScholarlyPathways.htm

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Hilary Chavez ,MS, hchavez@mcw.edu, 414-955-2811

Master Clinician, Quality Improvement & Patient Safety
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(formerly Amy Palka)

The **MCW Scholarly Pathways** is a required component of the M1-M3 medical school curriculum. Students select one of six areas of concentration through which they enrich and individualize their medical training, while exploring a career path of interest.

The **Scholarly Pathways** are:

- Clinician Educator
- Global Health
- Master Clinician
- Physician Scientist
- Quality Improvement & Patient Safety
- Urban & Community Health

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 scholarly 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, and 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 six 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 booklet includes abstracts for each of these projects, as well as for scholarly projects completed and presented as part of the Medical Student Summer Research Program in Fall 2011.

We thank the class of 2014 for their creativity and innovation as the new **Pathways** evolved. Their excellent work has built a foundation for scholarship for future MCW students.

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

POSTER

Daniel Cieslak

Determining FAST Exam Competency Guidelines for M2's

Trevor Gessel (2014), Richmond Doxey (2015), Caroline Pace, MD

See Trevor Gessel, Page 5 (Below)

POSTER

Trevor Gessel

Determining FAST Exam Competency Guidelines for M2's

Daniel Cieslak (2014), Richmond Doxey (2015), Caroline Pace, MD

Given the growing use of ultrasound (US) in medical practice, along with the expressed desire of medical students to develop US skills, medical schools will likely be expected to incorporate US into the curriculum in the near future. To effectively incorporate US, medical schools need information on how much training is needed for undergraduate medical students to be deemed competent in US; however, there is paucity in the literature regarding this matter. The current study will serve as a starting point to define competence in US for undergraduate medical education. We hypothesize that a group of second-year medical students will be able to competently perform a basic Focused Assessment with Sonography in Trauma (FAST) exam after completing online modules reviewing basic principles of US, attending a two hour didactic session about FAST exams, and performing at least five live FAST exams.

PODIUM

Jennifer Lippitt

Resolution Writing & Advocacy for Medical Students

Medical students across the country are offered the unique opportunity to participate in the development of healthcare policy at the local, state, and national level through various medical societies and associations. Writing and advocating for resolutions are some of the first steps medical students can take towards effecting policy change through organizations like the Wisconsin Medical Society and the American Medical Association. In an effort to aid students in the process, I developed two podcasts on the topics of resolution writing and preparing to defend a resolution. The podcasts are compilations of both student and physician legislative experience. Over the past three years, students have advocated for, authored, or co-authored at least 14 WMS policies using methods presented in the podcasts. The goal of the podcasts is to make resolution writing and advocacy strategies accessible to students year-round by ultimately publishing them to MCW's AMA-MSS student website.

POSTER

Amanda Martin

The Use of Educational Technology Tutorials to Promote Active Learning

Anil Sharma (2014), Mary Cronin, MD Veronica Flood, MD Deborah Simpson, PhD

See Anil Sharma, page 6 (below)

PODIUM

Alexandra Rzepka

Project Pathos: The Development of a Humanities Curriculum in Medical School

Albert Yen (2014), Antonio Salud, II, MD , MA Nancy Havas , MD

See Albert Yen, page 8

POSTER

Anil Sharma

The Use of Educational Technology Tutorials to Promote Active Learning

Amanda Martin (2014), Mary Cronin, MD Veronica Flood, MD Deborah Simpson, PhD

Technology Tutors is a student-organized program developed to promote active and integrative learning, interaction between students and faculty, and faculty technology knowledge by providing faculty with individualized educational technology training sessions. The first educational technology selected was Smart Podium, an interactive pen display that allows faculty to annotate and draw on presentations; however faculty infrequently utilized the newly attained Smart Podiums in the Medical College of Wisconsin lecture halls. Medical students developed a Smart Podium training session and provided faculty and course coordinators with individual training sessions on the use and best practices of the Smart Podium. Sessions for additional educational technologies will be developed to meet the future needs of the institution.

POSTER

Yana Thaker

Point of Care Geriatric Fast Facts for Just-In-Time Residency Training

C Tsufis C. (2014), K Barbieri (2015), N Dreger (2015), J Petronovich (2013), C Anderson (2013), E Duthie, MD, K Denson, MD, D Simpson PhD, N Havas MD, J Rehm & D Brown, MS

An interdisciplinary collaborative identified gaps in geriatrics training across residency programs and developed a series of concise evidence-based, easily accessible, just-in-time resources known as Geriatric Fast Facts (GFF). GFF's are accessible online (e.g., mobile-friendly) resources that can be used at the point-of-care. Currently 23 GFF have been developed by the collaborative, which includes medical students as co-authors. Following an Ophthalmology educational session, residents rated the GFFs = 6.8 (overall value) and 6.3 (the underlying basic science) (7-point Likert scale; 1= Poor; 7 = excellent). Emergency Medicine residents reported that the GFFs were resources repeatedly accessed at the point of care. Using a self-assessment, medical students reported overall competency levels increased from 2.3 to 3.3 pre/post GET participation. Independent of specialty choice, medical students experiences in GETs increases competence in clinical geriatrics and helps improve elder care.

Laura Tisch

Early Breastfeeding Rates at a Low-income Family Medicine Residency Practice

Jennifer Griffiths, MD

Introduction: Breastfeeding improves maternal and infant health outcomes. Milwaukee breastfeeding rates are below average. This study aims to evaluate the current state of breastfeeding in a low-income family medicine residency practice and identify specific barriers within this population in order to generate targeted initiatives. **Methods:** Quantitative and qualitative survey data were obtained by the primary researcher via in-person interviews and phone follow up at 4 weeks with mothers who received prenatal care at the Columbia St. Mary's Family Health Center and delivered a live baby between June 1, 2011 and July 29, 2011. **Results:** We found a 50 breastfeeding initiation rate (n=24). Factors associated with initiation include Hispanic ethnicity and vaginal delivery, while African American ethnicity and C-section are associated with non-initiation. **Discussion:** The 50% initiation rate is well below national and statewide averages and goals. Qualitative data suggest women are aware of breastfeeding benefits and resources but have social and logistical concerns, thus future initiatives should focus upon improving access to and utilization of these resources in addition to working to change social perspectives and attitudes about breastfeeding.

Many thanks to the CE Pathway Advisory Council for all the expertise, hard work, and dedication this year. Your time, creativity, and passion are greatly appreciated!

Joseph Budovec, MD
Candice Johnstone, MD, MPH
Alex Okun, MD
Libby Ellinas, MD
Beth Krippendorf, PhD
Carrie Pace, MD
Ann Helms, MD
Pat Lye, MD
Travis Webb, MD

POSTER

Catherine Tsufis

Advancing Graduate Medical Education: Resident Attitudes Towards Innovative Geriatric Curricula

Y Thaker (2014), K Barbieri (2015), N Dreger (2015), J Petronovich (2013), C Anderson (2013), E Duthie, MD, K Denson, MD, D Simpson, PhD, J Rehm & D Brown, MS

MCW's multidisciplinary Geriatric Education Teams (GETs) aim to improve residency education in geriatric medicine. The goal of this scholarly project is to evaluate attitudes of residents towards innovative educational curricula that enhance geriatric education in residency programs. After performing focused needs assessments, the GET curriculum sessions were created. Among these sessions were interactive discussions, panel discussions, OSCEs, and simulations. After the sessions, residents completed Likert-scale evaluations. The results of the evaluations were compiled and analyzed for this scholarly project. The overall rating of the GET curriculum sessions (from Ophthalmology, Cardiology, PM&R, and Emergency Medicine residents) averaged 6.2 out of 7.

POSTER

David Wang

The EBM OSCE: Search & Applying a Clinical Question

Joan Bedinghaus, MD
James Sebastian, MD

Clinical educators need validated methods to evaluate the medical student's ability to search and apply evidence based medicine (EBM). Exam questions can assess single dimensions of EBM competency such as search strategies or critical appraisal skills. Alternative methods are necessary to assess the ability to translate evidence into knowledge useful to the practitioner and ultimately the patient. An Objective Structured Clinical Examination (OSCE) was developed to evaluate whether a student can effectively perform a literature review and effectively communicate the findings in a clinical setting. This EBM OSCE is a 30 minute station within a regular OSCE exam. The first portion requires the formulation of a PICO question and literature appraisal that is graded against a rubric adapted from the validated Fresno test. The second portion is a standardized patient encounter to measure whether the student can clinically apply the search results.

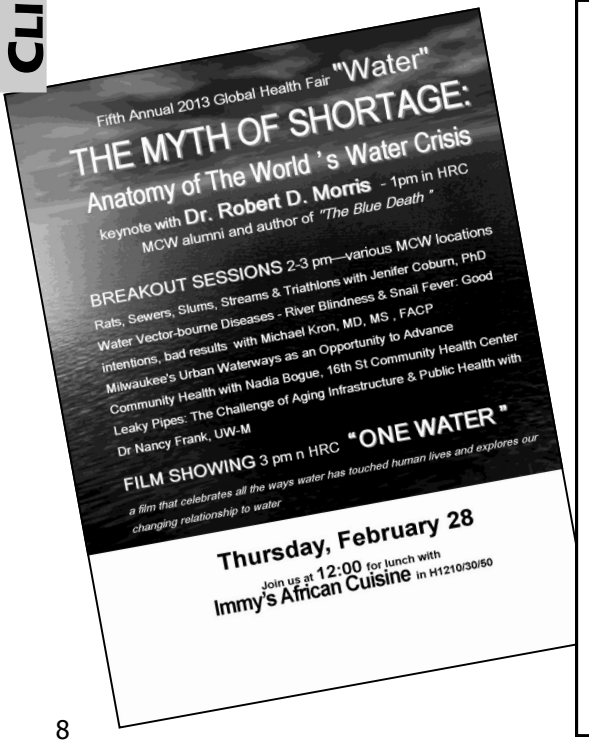
PODIUM

Albert Yen

The Pathos Project: The Development of a Humanities Curriculum in Medical School

Alexandra Rzepka , (2014)
Antonio Salud II MD , MA
Nancy Havas , MD

Medical education consists of an overview of the form, function, and breakdown of the human body, but does not include discussion on humanistic principles intrinsic to the practice of medicine. The Pathos Project develops medical students' perspectives on these topics via literature review, peer discussions, and interactions with patients and other medical professionals. Ten students went through five sessions - Pain/ Suffering, Spirituality, Virtue Ethics, Patient-Physician Expectations, and the Medical Carnilesque. Evaluation was accomplished via pre/post-course surveys. Themes emerged from reviewing and processing, with qualitative software, the surveys. Data showed students' viewpoints fundamentally did not change, however their depth and conviction deepened. Pre-test responses demonstrated abstract concepts of "physicians" helping "people", whereas post-test responses discussed more concrete patterns i.e. "listening," and focusing on patient's "loss." The results showed an increased focus on humanistic themes, demonstrating growing perspective on critical issues. This data suggests that The Pathos project will enhance students' ability to interact with their patients as they continue through their medical career.



Congratulations to
Dr Michael Kron, MD, MS, FACP
proud recipient of the
Jefferson Science Fellowship.

Thank you for your leadership and vision for the Global Health Pathway. All the best in your future endeavors.

Global Health

Michael Kron, MD, MS

Designed for students interested in understanding the special healthcare needs of patients in/from developing countries and the challenges of working in areas of the world with limited resources.

- Research methods for U.S. and international projects
- 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

POSTER

Heather Annis

Barriers to Disaster Preparedness

FEMA defines emergency preparedness as stocking three days of food and water, along with medications and a few other necessities. A review of the literature, and published experiences from recent disasters reaffirm how inadequate current disaster preparation is. This project explores the barriers to preparedness. A survey was distributed internationally using Internet discussion groups and forums. The data suggest that poverty is the single most important deterrent. It also appears that the lack of education in how, and what, adequate preparedness entails, is the major stumbling block in non-impoverished regions. The survey suggests that persons' perception of preparedness did not relate to their actual state of preparedness, even amongst those who had actually suffered a prior disaster. However, those people who had somewhere to shelter, were far more likely to have adequately planned for a disaster than those who did not.

POSTER

Zara Khan

A Characterization of Refugee Resettlement in Wisconsin: Implications for Health Care Providers

James Sanders, MD, MPH
Laura Miller, MSc (2014)
Austin Stuckert, (2014)

Published in 2003, "*The New Face of Refugee Resettlement*" characterized refugee resettlement and health in Wisconsin. Ten years later, this project aims to update previous data and reflect upon Wisconsin's status as a safe refuge. Data collected from the Department of Health and Human Services and the Wisconsin Department of Workforce Development was used to describe refugee resettlement trends. Health indicators for refugees' home countries were obtained from World Health Organization and used to extrapolate conditions likely to be seen by local physicians. Our findings indicate that the refugee population resettled to Wisconsin continues to increase and diversify in distinct patterns of emigration. Since 2002, refugees from six countries have constituted the majority of the resettled population and have varied health risks. This changing refugee population resettled in Wisconsin has implications for policy and calls for adaptation by both physicians and the health care system.

See Abby Walch, Page 12

POSTER

Suejung Kim

Refugee Orientation Module

Abby Walch, (2014)
Andrea Rivas, (2015)
Mike Smaglick, (2014)

POSTER

Adam Ludvigson

Cultural Communication in a Healthcare Setting

INTRODUCTION: Few challenges are more formidable in the field of medicine than communicating effectively across a cultural divide. It is an area of clinical practice that is vitally important, yet all too often, physicians struggle to make themselves understood to patients (and vice versa). This study examines different strategies to overcome this critical barrier and provide the best possible care to patients. METHODS: Existing studies were reviewed to identify evidence-based communication modalities, and were compared to personal and anecdotal experiences. RESULTS: The issue of doctor-patient communication is well-studied, and much careful scholarship has been applied. However, the value of clinical experience cannot be overstated, and the most rewarding encounters result when clinicians use scholarly resources to enhance their own existing strategies. CONCLUSION: To succeed as a global physician, physicians must use a combination of personal experience and scholarly rigor to ensure effective healthcare communication.

See Zara Khan, Page 9

POSTER

Laura Miller

A Characterization of Refugee Resettlement in Wisconsin: Implications for Health Care Providers

James Sanders, MD, MPH
Zara Khan, (2014)
Austin Stuckert, (2014)

PODIUM

Tuong Van Nguyen

Hepatitis B Screening & Awareness Campaign in the Milwaukee Hmong Community

Sindalana Hean, (UCH, 2014)
Kia Saelen, MD

Hepatitis B is a major world-wide health issue, with 2 billion infected and 600,000 dying each year from its consequences, despite an effective vaccine being available since 1982. In the U.S. the Hmong ethnic group is disproportionately affected, with rates reported as 1 in 5. However, little research and outreach has been done within the Milwaukee Hmong community, one of the largest in the nation. This project aims to promote awareness and education through outreach efforts at Hmong community gatherings, radio shows, and direct community partnerships. Additionally, students organized a free screening event with grant support from the National Task Force on Hepatitis B. Preliminary results for 70 patients show 9 with active infection, 17 susceptible, and 4 requiring additional testing. Results further support that chronic hepatitis B infection disproportionally affects the Hmong community and that more outreach is needed to help prevent possible liver cancer/cirrhosis in those chronically infected.

POSTER

Khoa Nguyen

Healthcare Differences & Similarities in the USA & Vietnam

Byung-il Choi, MD

Problem statement: In 2010, the total expenditure on health as % of GDP was 6.8 and 17.9 and the total expenditure on health per capita (Intl $) was 215 and 8,362 in Vietnam and USA, respectively. Motivation: The significance of the disparity in the amount spent on the health in the two countries on access to healthcare and availability of various treatment options will be revealed in this project. Approach: Information regarding treatment of various diseases and access to health services for people in underserved communities was gathered from Bach Mai Hospital and Sunny Korea Clinic in Vietnam and Columbia St. Mary Clinic in USA. Results: Clinics and hospitals in both countries use similar treatments, diagnostic imaging modalities, and provide health services to those in underserved communities. Conclusions: People in both countries have access to health services despite disparities in money spent for these services.

POSTER

Claire Petersen

Implementing a Sustainable Health Education Curriculum at Milwaukee's Journey House

Milwaukee's poorest residents continue to have the poorest health. Health disparities must be approached from multiple angles. Community infrastructures, such as the South side's Journey House, are one avenue to strengthen families of a lower socioeconomic class and their neighborhoods. Journey House identified several goals for their adolescent programs: promoting healthy choices, developing a mentorship program, and providing guidance on education and career pathways in healthcare. In a pilot year program, two MCW pediatric residents and five fellow medical students addressed these goals through a service-learning project. We conducted a needs assessment prior to creating and implementing a health education curriculum. Review of the intervention suggests this is a worthwhile, sustainable collaboration that could be expanded to include a mentorship program, career guidance, and programs at other youth centers. Determining if this intervention will have lasting health impacts may also be a long-term goal of the partnership with Journey House.

POSTER

Ashish Shah

Hypertension at the Hindu Temple: Blood Pressure Screening Project

Utpala Das, MD

Background: Hypertension is one of the most prevalent diseases in the Asian Indian population. According to a 2010 study on the prevalence of coronary heart disease in Asian Indians done by Texas A&M University, first generation Asian Indians have a 36% prevalence of hypertension as compared to 32% in the Caucasian population.
Barriers: Education about blood pressure control need to be different for different subgroups. A study by Northwestern University in 2009 of 270 South Asians showed that 89% of the South Asians had little to no knowledge of coronary heart disease, with 11% mentioning controlling blood pressure as a preventative measure.
Methods: Pre-medical students were trained to use an automatic blood pressure cuff and were placed at the Hindu Temple of Wisconsin where they provided free blood pressure measurements to the patrons. If found to be hypertensive, patrons were given educational information and clinics to follow-up with a physician

POSTER

Satbir Singh

Inpatient Refuge: Transatlantic Adoption, Asylum, and the Medical Clinique

This case study of the hospital course and outpatient treatment of a 15 year old Ethiopian adoptee, investigates bodily productions in psychiatric and medical pathology. Attentive to work on the medical gaze, the study will consider multiple approaches toward 'auscultating' patient's psychiatric symptoms, including biomedicine, phenomenological trauma studies, Foucauldian genealogical analysis, as well as transcultural psychiatry. The methods are compared in relation to the patient's autobiography for their explanatory power, and for their ability to hear meaning in the patient's "mute" speech. The results shed light on why hospitals and clinics are the spaces where seemingly "non-medical" problems of globalized and local life present. In addition, the ethical and social implications of contemporary hegemonic responses to symptomatic bodies will be discussed.

See Abby Walch, page 12

POSTER

Michael Smaglick

Refugee Orientation Module

Abby Walch, (2014)
Andrea Rivas, (2015)
Suejung Kim, (2014)

POSTER

Austin Stuckert

A Characterization of Refugee Resettlement in Wisconsin: Implications for Health Care Providers

James Sanders, MD, MPH
Zara Khan, (2014)
Laura Miller, (2014)

See Zara Khan, Page 9

POSTER

Whitney Vann

Filling the gap: Establishing a Teledermatology Project in Rural Belize

Michelle Bayer, MD
Jacquelyn Kuzminski, MD
Barbara Wilson, MD
Tifany Frazer, MPH
Steven Humphrey, MD

In a country with no dermatologists of its own, an opportunity was discovered to use the skills of dermatologists in Milwaukee to diagnose dermatologic diseases of patients in rural Belize. Thus, the Teledermatology Project was established between Hillside Healthcare International (HHI), Froedtert Hospital and Children's Hospital of Wisconsin to enhance the quality of medical care in southern Belize through remote dermatologic diagnosing. The initial comprehensive chart review at HHI revealed thousands of unique visits with the complaint of a dermatologic problem. The five most common diagnoses were: scabies (28%), tinea infections (13%), unspecified rashes (11%), impetigo (8%), and non-specific dermatitis (7%). These results have enabled HHI to develop an appropriate medication formulary for its most common dermatologic diseases. Following the implementation of the Teledermatology Project, we will complete a second chart review to determine if the utilization of trained dermatologists affects the distribution and variety of diagnoses.

POSTER

Abby Walch

Refugee Orientation Module

Andrea Rivas, (2015)
Mike Smaglick, (2014)
Suejung Kim, (2014)

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*" aims to prepare students for work with refugees by increasing their refugee-related knowledge and comfort level, thereby concurrently decreasing the burden on resettlement agencies to educate new volunteers. **Methods:** A voiced-over PowerPoint was developed covering refugee definition, backgrounds, resettlement process, and health needs. Information was gathered through literature research and interviews with local resettlement agency caseworkers. A pilot session provided feedback on module effectiveness, and edits were made based on this feedback. Pre- and post-module questionnaires assessed effectiveness in increasing students' knowledge. The module was then presented to a larger group (# students). **Results:** In Process. **Conclusions:** The *"Refugee Orientation Module"* enhances students' refugee knowledge and comfort level in working with refugees. It also provides information on conducting culturally sensitive interviews.

POSTER

Eliot Walters

Improving Health Literacy In Low Resource Settings

Sumana Koduri, MD

Recent studies have shown that culturally appropriate teaching and take-home reference material will increase health literacy leading to improved outcomes and fewer complications for mother and child. In low resource settings many women of child bearing years are missed by local public efforts to improve health literacy which are mainly concentrated in schools and urban centers. We seek to remedy this gap by developing culturally relevant educational pamphlets for medical staff to teach their patients. ACOG recommendations are appropriately modified to align with the cultural context provided by native Tanzanian volunteers. Once in circulation we will obtain feedback from Tanzanian physicians on effectiveness, comprehension, ease of use, and discrepancies of medical best practice. We have developed 12 pamphlets covering a broad range of maternal and infant health topics. We anticipate this project will also lead to improved infant and maternal mortality and foster greater trust in healthcare professionals.

POSTER

Margaret Ward

Pisando Fuerte: A Fall Prevention Program for Latino Seniors

Lauren Goetsch, (UCH-2014)
Rachel Wiche, (2014)
Erin Hanlin, (2015)
Stephen Hargarten, MD, MPH
Angelica Delgado-Redon, (United Community Center)

See Lauren Goetsch (UCH), page 50

See Lauren Goetsch (UCH), page 50

POSTER

Rachel Wiche

Pisando Fuerte: A Fall Prevention Program for Latino Seniors

Lauren Goetsch, (UCH-2014)
Margaret Ward, (2014)
Erin Hanlin, (2015)
Stephen Hargarten, MD, MPH
Angelica Delgado-Redon, (United Community Center)

POSTER

Ting Wu

Complementary & Alternative Medicine for Diabetes: A Summary

Byung-Il Choi, MD

According to the CDC, diabetes affects 25.8 million people roughly 8% of the population in the US, with 1.9 million newly diagnosed in 2010 alone. Complications of diabetes are severe, including cardiovascular mortality, kidney failure, and peripheral neuropathy. In 2007 the financial burden of diabetes was $174 billion, accounting for roughly 14% of the US health expenditure. In addition to conventional regiments such as insulin, and various oral hypoglycemic, aimed at controlling blood glucose, 40% to 60% have employed complementary and alternative medicine such as prayer, herbal remedies and vitamins, chiropractic and acupuncture, to help in the management of diabetes and its associated complications. Contributing factors for complementary and alternative medicine usage include, dissatisfaction with conventional therapy, interest in taking control of their own health condition, familiarity with alternative therapies, and health beliefs. The prevalence rate is concerning in light of limited research on safety of complementary and alternative medicine.

PODIUM

Amy Yam

Improving Community Health in Rural Guatemala Through Youth Empowerment

Michael Bakal,
Josh Hoerger,
Jessica Nicholas
Daniel Ezrol,
Ileen Gilbert, MD

Introduction: In developing nations, limited access to education locks rural communities in a vicious cycle of poverty. The purpose of this project is to build the skills and capacities of high-school students from a small agricultural town in Guatemala, so that they may develop and implement their own innovative solutions to community health and development challenges. **Methods:** A group of students receive in-depth leadership training from local and U.S. mentors. Students then determine pressing health issues afflicting their communities and design appropriate health projects. Upon project completion, students attend college to become professional community leaders. **Results:** 31 Guatemalan students have attended college and 5 community projects have been implemented. Students formed a Youth Leadership Association to continue leading and organizing community health projects. **Discussion:** Education of youth has shown to be a powerful means through which communities can overcome poverty, improve health conditions, and achieve a greater degree of self-determination.

Master Clinician

Edmund Duthie, MD
& Matthew Tews, DO

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**

POSTER

Michael Aleksandrowicz

Acute Kidney Injury with Myeloma Cast Nephropathy – a case report

Aaron T Dall, MD

Multiple Myeloma (MM) is the most common plasma cell dyscrasia. The clinical presentation of MM is diverse and the diagnosis depends on the physical exam, laboratory results, and imaging. Tissue biopsy is required for confirmation of the diagnosis. We present a 64 year old African-American male who was admitted for altered mental status and found to be in acute kidney injury requiring emergent dialysis. Resulting kidney biopsy showed tubular necrosis and infiltration with kappa light chains. Immunoglobins (Igs) were all decreased and bone marrow demonstrated kappa restricted plasma cells. Chemotherapy was initiated with cyclophosphamide, bortezomib, and dexamethasone (CyBorDex). He has achieved a very good partial response (VGPR) after five treatment cycles and peripheral blood stem cells (PBSC) have been collected for a potential transplant. A detailed report of this case and a review of MM is presented here.

POSTER

Craig Anderson

Quality of Care Conferences Involving Palliative Care at CHW

John Humphrey, MD

Family care conferences serve an important role in the care of seriously ill children. They offer opportunities for a patient's care team to communicate with a patient's family members and with one another. Conferences are often attended by multiple care team members from a variety of specialties and while this time is intended to be helpful, it could easily prove to be overwhelming or confusing for people outside of the medical field. We aim to evaluate patient family and care provider perspectives on the family conferences conducted at Children's Hospital of Wisconsin (CHW) that involve the Pediatric Palliative Care service using a simple self-designed survey. With the results, we hope to establish the value of the family care conferences and the benefit of involving Pediatric Palliative Care.

POSTER

Mark Baldeshwiler

Case-based discussion - Patient Presenting with ASM Secondary to Opioid Poisoning

Amy Zosel, MD

Altered mental status is a common presentation to the emergency department. There are many different etiologies of altered mental status. It is important to recognize and distinguish these different etiologies as treatment may vary depending on cause. An already common but increasing clinical problem is the opioid-poisoned patient. It is crucial to recognize the patient with opioid poisoning and initiate supportive therapy, including high flow oxygen, fluids for borderline/low blood pressure, and potentially administer the antidote, naloxone (Narcan (R)), when clinically indicated. Keeping in mind the incresased frequency and relatively straight forward treatment of opioid poisoning, as well as the possibility of fatality without fast action, my project aims to teach rising M3 students about an approach to the patient with altered mental status prior to starting their M3 clerkship.

POSTER

Sean Batson

Assessing Photoreceptor Structure Following Macular Hole Closure

Sean Hansen , Peter Karth, Robert Cooper, Drew Scoles, David Weinberg, MD Alfredo Dubra, PhD Judy Kim, MD Joseph Carroll, PhD William Wirostko, MD

PURPOSE: To assess foveal photoreceptor structure in eyes after vitrectomy surgery for macular hole (MH) closure using spectral-domain optical coherence tomography (SD-OCT) and adaptive optics scanning light ophthalmoscopy (AOSLO). **METHODS:** In a prospective case series, eyes of patients were imaged with SD-OCT on an average 4.5 months (range, 2-6) after undergoing pars plana vitrectomy, internal limiting membrane peeling, and gas injection for closure of idiopathic MH. A subset of eyes also underwent simultaneous imaging with AO-SLO, with one of these eyes imaged a second time 12 months after surgery. **CONCLUSIONS:** Abnormalities of the ISe can be seen with SD-OCT following surgical closure of MH. These changes correspond with hyporeflective areas of cone mosaic disruption on AOSLO. Areas of hyporeflective cone mosaic disruption on AOSLO may decrease in size over time. SD-OCT and AOSLO imaging may be useful to detect and monitor recovery of photoreceptor structure in eyes undergoing surgical closure of MH.

Brian Beerbower

Altered Mitochondrial Bioenergetics in Fetal Lamb Pulmonary Artery Endothelial Cells

Girija G. Konduri, MD

A rapid decrease in vascular pulmonary resistance occurs at the transition from fetal to postnatal life. Release of endothelium derived nitric oxide (NO) via endothelial nitric oxide synthase (eNOS) typically mediates this vasodilation. Failure for this to occur results in persistent pulmonary hypertension of newborn (PPHN). Using cell culture techniques and an extracellular flux analyzer, we have investigated the link between mitochondrial function and eNOS function in fetal lamb pulmonary artery endothelial cells (PAEC) and visualized the effects of reactive treatments on the oxygen consumption rate (OCR) and extracellular acidification rate (ECAR). While the hypertensive cells had increased variability in OCR, there were phenotypes of primary line hypertensive cells that showed a marked decrease in the OCR and a subsequent increase in ECAR. These cells also had no depression in their maximal OCR upon treatment of NO donors suggesting exogenous NO is being quenched through increased mitochondrial superoxide.

POSTER

Mark Bollman

Vascular Air Embolism as a Complication of Posterior Cervical Laminectomy

Germana Silva, MD Mursel Antapli, MD

Introduction: Venous air embolism (VAE) is a potentially fatal complication of sitting craniotomies, but there is also evidence that prone laminectomies carry moderate risk. No prospective studies are available, so this risk is poorly understood, but case reports help identify both common and unique features of these adverse events. **Methods:** Retrospective study of an adult sustaining signs of VAE during repeat posterior cervical laminectomy. Case features are discussed in the context of comparable reports from literature review. **Results:** Adult female underwent attempted prone-positioned cervical laminectomy. Perioperatively, a decrease in end-tidal CO2 preceded a precipitous drop in blood pressure. Both parameters normalized after standard therapy for VAE, and the patient recovered with no short-term sequelae. **Discussion:** VAE may be a serious complication of prone-positioned surgery, and the risk factors we propose are consistent with prior cases. We recommend a prospective study to improve risk stratification,

Scott Brunson

Interaction of Dual Specificity Phosphatase-5 (DUSP-5) with Small Molecules

Srividya Suryanarayana, PhD Ramani Ramchandran, PhD

Vascular anomalies (VAs) are categorized as hemangiomas and vascular malformations. Hemangiomas consist of clusters of endothelial cells surrounding vascular lumens. Hemangiomas and vascular malformations can be life threatening and present clinical challenges in diagnosis and treatment. Current therapies are limited and have significant complications. Therefore, it is important to identify targets leading to the pathogenesis of VAs. We have previously identified a serine to proline mutation at 147th residue in dual specificity phosphatase-5 (DUSP-5) protein in patients with VAs. Our objective is to understand the effect of small molecule 1842 on DUSP-5 levels in tumor (brain endothelioma cells, bEnd.3) and non-tumor (HUVEC) endothelial cells. bEnd.3 cells have previously been characterized as a murine model of hemangioma. SM1842 targets DUSP-5 differently in endothelial tumor and non-tumor cells. SM1842 causes an increase of DUSP-5 and a decrease in p-ERK in stimulated bEnd.3 cells. SM1842 causes a decrease in DUSP-5 in HUVEC cells.

POSTER

Andrea Cavey

Special Olympics Sports Physicals Project

Karen Hulbert, MD
Sarah Otten (2014)
Ting Ting Chang (2014)
Laura Hepokoski (2014)
Carlyn Hoeppner (2014)
Jessica Hubbard (2014)

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POSTER

Ting Ting Chang

Special Olympics Sports Physicals Project

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Sarah Otten (2014)
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POSTER

Geoffry de Gennaro

Challenging Osseous Biopsies: The Sclerotic & Invisible

Keith Baynes, MD
Alan Mautz, MD
Melissa DuBois, MD

Percutaneous biopsy of soft tissue and osseous lesions has been described as a safe and efficient alternative to operative biopsy. Lesions that are densely sclerotic are challenging as a large enough sample of the tissue is difficult to obtain to confidently make the diagnosis. Also, many lesions show up on an MRI or PET/CT scan and are not visible on a traditional CT scan. This makes biopsy difficult using CT since they are 'invisible' and must be biopsied using anatomical landmarks. Over the last 1.5 years we have performed approximately 35 biopsies using large bone marrow biopsy needles (8 and 11 gauge; T-Lok bone marrow recovery system) with excellent results. The use of a larger needle provides a higher quality sample and increases the likelihood that the targeted lesion will be obtained, especially in cases of 'invisible' lesions.

POSTER

David Denson

Jungian Psychological Types and Medical Specialty Choice

Bob Treat, PhD
Matthew Tews, DO

Introduction: Choosing a medical specialty can be an arduous task for medical students' undecided on a career path. It is thought that personality plays a role in determining specialty choice. **Methods:** A free, online 72 question personality-type indicator test (Jung Typology Test™) was administered to fourth year medical students at the Medical College of Wisconsin who already had chosen their specialty. The test assessed preferences in four categories measuring the personality types of Extraversion/Introversion, Sensing/Intuition, Thinking/Feeling, and Judging/Perceiving. A four letter score was provided to students at test completion. **Results:** Students were given an anonymous survey in which they provided their four letter score and medical specialty choice. Sixty six students completed the survey. Medical specialties were correlated to the personality test scores as a whole and as individual components. **Discussion:** The Jung Typology Test™ can help undecided students identify potential specialty choices based on personality types.

POSTER

Grace Dippo

Bacterial Antibiotic Susceptibility by MALDI-TOF Mass Spectrometry

Blake Buchan, PhD
Doug Kasper,
Neil Anderson,
Nathan Ledeboer, PhD

The potential of MALDI-TOF mass spectrometry as a test of bacterial antibiotic susceptibility was explored using clinical samples. Bacterial susceptibility to ertapenem and ampicillin were tested using the current standard of care culture-based methods. These samples were also separately incubated with ertapenem or ampicillin, and culture supernatant was evaluated spectroscopically for the presence of hydrolyzed antibiotic as an indicator of beta-lactamase mediated resistance. Results were analyzed using a ratio of native to hydrolyzed antibiotic to predict antibiotic resistance. Results of this method were then compared to the gold standard. The ampicillin assay was consistently 100% specific, but only up to 50% sensitive, which may be the result of resistance mechanisms other than beta-lactamase in these strains. The ertapenem assay was 100% specific, however the sample size was too limited to adequately determine sensitivity, given the low prevalence of ertapenem resistance in clinical isolates.

POSTER

Andrew Discolo

Bevacizumab Therapy for the Treatment of Recurrent Meningiomas: 3 cases

Jennifer Connelly, MD

The current therapy options for recurrent meningiomas are inadequate despite meningiomas being the most common primary brain tumors in adults. While many meningiomas are adequately treated with surgery and radiation therapy, some patients experience tumor recurrence. Menigiomas express vascular endothelial growth factor (VEGF) and bevacizumab is a VEGF inhibitor which suggests there is a theoretical benefit of the drug in the treatment of menigiomas. We retrospectively reviewed the cases of three patients who were treated with bevacizumab for recurrent meningiomas that had previously been treated with local resection and radiation therapy. Based on the response of our patients to bevacizumab we propose that bevacizumab may be a treatment option for recurrent meningiomas. However, further investigation is necessary before any definitive statements can be made about the efficacy of bevacizumab in the treatment of meningiomas.

Colby Duncan

Painful Nerve Injury Decreases Sarco-endoplasmic Calcium ATPase Activity

Samantha Mueller,
Eric Simon (2015)
J. J. Renger ,
V. N. Uebele,
Quinn Hogan, MD
Hsiang-En Wu, MD

The sarco-endoplasmic reticulum Ca2+-ATPase (SERCA) is a critical pathway by which sensory neurons sequester cytosolic Ca2+ and thereby maintain intracellular Ca2+ homeostasis. We have previously demonstrated decreased intraluminal endoplasmic reticulum Ca2+ concentration in traumatized sensory neurons. Here we examine SERCA function in dissociated sensory neurons using Fura-2 fluorometry. Blocking SERCA increased resting [Ca2+]c and prolonged recovery (s) from transients induced by neuronal activation. This demonstrates that SERCA contributes to control of resting [Ca2+]c and recovery from transient [Ca2+]c elevation. To isolate SERCA, plasma membrane Ca2+ ATPase was blocked with pH 8.8 bath solution and mitochondrial buffering was avoided by keeping transients small (6400 nM). Neurons axotomized by spinal nerve ligation (SNL) showed a slowed rate of transient recovery compared to control neurons, representing diminished SERCA function. These findings suggest that injury-induced loss of SERCA function in small sensory neurons may contribute to the generation of pain following peripheral nerve injury.

Berry Fairchild

Sarcopenia & Frailty in Elderly Trauma Patients

Travis Webb, MD
Qun Xiang
Karen Brasel, MD

INTRODUCTION: Sarcopenia describes a loss of muscle mass and resultant decrease in strength, mobility and function that can be quantified by CT. We hypothesized that sarcopenia and related frailty characteristics are related to discharge disposition after blunt traumatic injury in the elderly. **METHODS:** We reviewed the charts of 252 elderly patients, who sustained blunt trauma and underwent abdominal CT as part of their pre-admission evaluation. Data for 7 frailty risk factors were abstracted. Sarcopenia was measured by obtaining the skeletal muscle CSA from each patient's psoas major muscle using Slice-O-Matic® software. Discharge destinations were grouped as independent vs. dependent. **RESULTS:** Each 1 cm2 increase in psoas CSA is associated with a 20% decrease in the odds of dependent living ($p<0.0001$). Other variables significantly associated with outcome are gender, weakness, complications and cognition. **CONCLUSION:** Lower psoas CSA is related to loss of independence upon hospital discharge in the elderly trauma patients.

Joel Fleischmann

Muscle Activation During Gait in Patients with FAI

Melissa Lueder, (2014)
Alexandra Rzepka, (2014)
Gerald Harris, PhD
Patrick Birmingham, MD
Jessica Fritz MS

Femoroacetabular impingement (FAI), a condition characterized by an abnormal abutment between the femoral head or femoral head-neck junction and acetabulum, is now recognized as a precursor to osteoarthritis of the hip. As a source of chronic pain in affected indivuals, gait is surely affected. The goal of this study was to characterize bilateral muscle activation patterns of the rectus femoris, adductor longus, and gluteus medius throughout the gait cycle of FAI patients. Subjects underwent gait analysis in a motion analysis lab where a 15-camera system was used to capture movement data and surface EMG electrodes were used to record muscle activity. Testing showed that rectus femoris activation was absent in late stance and early swing phase, the gluteus medius had a bimodal firing pattern, and that adductor longus activation was consistently out of phase. These findings are suggestive of an altered gait pattern in FAI patients with likely quadriceps avoidance.

POSTER

Alexandra Glasscock

Peer to Peer Handbook

Justin O'Keefe (2015)

The stressors of medical school take a toll on many medical students' well-being. To help create healthier doctors for our future we used this project to create a handbook that would be the foundation of a peer counseling program at MCW. When thinking about creating a peer counseling program there are many factors to be addressed before being able to move forward with the program itself. You need to establish boundaries for the clients and counselors involved, you need to have safety plans, you need to have a plan that allows for proper oversight, you need to have training plans for the counselors, and you need to have the framework and daily running plans that will allow for the program to continue over the years. By creating a handbook we address each of these needs and thus allow for the future creation and implementation of a safe and effective program.

Kristoph Haak

Tailored Step-Count Feedback & Vascular Homeostasis

Michael Widlansky, MD, MPH

Background: For adults between the ages of 50-80, the American College of Sports Medicine (ACSM) and the American Heart Association (AHA) suggest at least thirty minutes of aerobic exercise or 10,000 steps most days of the week. The extent of cardiovascular benefits from a 10,000 step per day intervention are currently unknown. Past studies lack outcome data or correlation to established surrogates of cardiovascular risk such as measurement of vascular stiffness and endothelial function. Study Aims: We will determine whether a pedometer monitored walking regiment with online motivation tools and a goal of 10,000 steps per day as suggested by US public health guidelines will result in increased endothelial function as well as decreased vascular stiffness. Conclusions: Our early results supports our hypothesis that increasing the physical activity levels of previously sedentary individuals to currently promulgated public health amounts using a 10,000 steps/day goal results in improved vascular homeostasis.

Alexander Harrison

Evaluation of an Expandable Implant in Pediatric Pesplanus

X-C Liu, MD , PhD
Scott Van Valin, MD
Robert Rizza, PhD
Mei Wang, PhD

Pediatric Flatfoot is caused by loss of the medial longitudinal arch. Arthroereisis limits talocalcaneal joint motion with an implant in the sinus tarsi, neutralizing the abnormal pronation associated with pesplanus. However, there are still many cases of inadequate results from the procedure. There is need for a new subtalar arthrereisis device due to the current implant complications. The aims of this study were to compare kinematic differences of the foot bony segments between prototype expandable screw and no implant using a motion tracking system, and to determine pressure distribution changes following the use of a prototype expandable screw in a cadaver foot and ankle model measured by the plantar pressure system. The expandable device changed static and dynamic bone alignment, moving the center of pressure laterally, especially in the hindfoot. This lateral shift of the COP and augmentation of the medial longitudinal arch may result in improvement of pediatric pesplanus.

POSTER

Laura Hepokoski

Special Olympics Sports Physicals Project

Karen Hulbert, MD
Sarah Otten (2014)
Ting Ting Chang (2014)
Andrea Cavey (2014)
Carlyn Hoeppner (2014)
Jessica Hubbard (2014)

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This study compared three surgical techniques for repair of partial thickness rotator cuff tears. Arthroscopic take down and repair (ATD), mini open take down and repair (MOTD), and arthroscopic transtendon repair (ATT). The patients' pre and post-operative range of motion, strength, and shoulder improvement score where evaluated. Improvement was 63.33% for ATD, 56.67% for MOTD, and 30.3% for the ATT. ERS/ROM comparison between ATD and ATT showed greater improvement (CI of 3.30 to 17.44) for ATD. ERS/ROM comparison between MOTD and ATT showed greater improvement (CI of 4.97 to 21.19) for MOTD. FE/ROM comparison showed MOTD to have greater improvement (CI of 4.89 t 25.01) when compared to ATT. ERS, subscapularis, and supraspinatus strength all showed no difference. The ATD and the MOTD where superior to the ATT, but there is no significant difference between the ATD and the MOTD in improvement score, ROM, and strength.

POSTER

Nicholas Hernandez

Treatment of Partial Rotator Cuff Tears

Steven Grindel, MD

POSTER

Matthew Hevey

Steroid Myopathy Incidence in Patients with Newly Diagnosed Gliobastoma Multiforme

Jennifer Connelly, MD

Corticosteroids are a staple of treatment for primary glioblastoma multiforme to battle the effects of vasogenic edema and its consequences. While very effective in this manner, the use of steroids is not without its own morbidities. Steroid-induced myopathy is a well-documented example. Previous studies have listed the incidence of myopathy from 18% to as high as 60%. The purpose of this study is to determine the incidence and predisposing risk factors of steroid-induced myopathy in primary glioblastoma multiforme patients between 7/1/2009-7/1/2012 at FMLH. The goal is also to determine an optimal regimen to maximize the clinical benefits of corticosteroids while reducing the rate of morbidities such as myopathy. Preliminary results from 119 patients indicate an incidence close to 20%. Results also show a dose-related effect as well as previously unrecorded predisposing risk factors such as length of steroid use and method of chemotherapy.

POSTER

Carlyn Hoeppner

Special Olympics Sports Physicals Project

Karen Hulbert , MD
Sarah Otten,(2014)
Ting Ting Chang, (2014)
Andrea Cavey, (2014)
Laura Hepokoski, (2014)
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POSTER

Jessica Hubbard

Special Olympics Sports Physicals Project

Karen Hulbert, MD
Sarah Otten (2014)
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POSTER

Jonathan Hwee

Perimenopausal Stress Fracture in context of Subclinical Cushing's Syndrome

Laura Gottschlich, DO

The pathogenesis of osteoporosis in the context of hypercortisolism is a well documented process often presenting as a fracture. While the risk of these fractures in Cushingoid patients and patients with exogenous glucocorticoid use can be assessed and therefore reduced, there exists a group of subclinical patients who remain at risk. Described is a case of ACTH-Independent macronodular adrenal hyperplasia (AIMAH) which presented as an oblique tibial stress fracture. AIMAH is a rare form of Cushing's syndrome which most commonly presents in the 5th and 6th decades of life as bilateral adrenal incidentalomas and subclinical cortisol production. We will discuss the course, work-up and treatment of the patient's disease and review its pathophysiology. In doing so, we hope to gain a better appreciation and recognition for this presentation and explore different approaches to its management.

The Pathway Directors and Staff would like to thank

Matthew Tews, DO

for his commitment to the
Master Clinician Pathway
and enthusiasm he demonstrated throughout
his service to the program.

Bartlomiej Imielski

Fonten Fenestration Closure & Event Free Survival

Ronald Woods, MD, PhD
Kathleen Mussatto, PhD, RN
Yumei Cao, PhD
Pippa Simpson, PhD
James Tweddell, MD

Objectives: To evaluate the association of open and closed Fontan fenestration status with event-free survival. **Methods:** Fenestrated patients were assigned to two study groups, Open (161) vs Closed (51), based on their most recent fenestration status. Clinically relevant morbid events were tabulated and Kaplan-Meier event analysis used to create event-free probability curves with log-rank comparisons. **Results:** Median time to event was 1.5 (0.1,4.6) years in the Closed group and 1.1 (0.1,3.3) years in the Open group. Event-free probability analysis revealed no significant difference between groups (P=0.15). Follow-up median arterial oxygen saturation was higher in the Closed group – 96.0 (94.0,97.0)%, compared to the Open group – 91.0 (86.0,95.0)% (P<0.0001). **Conclusions:** Fenestration closure was associated with higher arterial oxygen saturation, but not higher event-free survival. Time to event was slightly less than time to fenestration closure, suggesting potential merit in the evaluation of earlier fenestration closure.

POSTER

Heather Jackson

Comparison of Beclomethasone, Salmeterol, Tiotropium & Azithromycin for Uncontrolled Asthma

David Hahn (2014)
Jonathan Temte (2014)
Dean Medical Center, UW-Madison

Background: Azithromycin is a novel treatment for patients with uncontrolled asthma, but no cost-effectiveness analysis of asthma treatments has been performed including azithromycin. **Methods:** We performed an incremental cost-effectiveness analysis from the patient perspective. As the effectiveness measure we used Juniper Asthma Quality of Life (AQL) results from controlled clinical trials that added a double-dose of beclomethasone, salmeterol, tiotropium or azithromycin to existing treatment for adults with uncontrolled asthma. We calculated cost effectiveness as dollars per AQL unit increase after 1-year of treatment ($/AQLY). **Results:** Cost-effectiveness for 1-year of treatment with a double-dose of beclomethasone, salmeterol or tiotropium were $22,928 (95% CI, $7,643 to ∞), $7,933 ($5,846 to $12,341) and $19,136 ($11,040 to $95,680) per AQLY, respectively. Cost-effectiveness for a 3-month treatment with azithromycin was $450 ($261 to $1,624) per AQLY. **Conclusion:** These preliminary results suggest azithromycin may be a cost-effective alternative compared to conventional treatments in patients with uncontrolled asthma.

POSTER

Benjamin Kamin

Emergency DKA Treatment & Triage Pathway

Dan Mielnicki, MD

BACKGROUND: Diabetic emergencies, like diabetic ketoacidosis (DKA), account for roughly 11.5 million emergency room (ER) visits annually. Of the patients admitted with DKA, many go to the ICU based on existing triage pathways, even though many do not require that level of care. Our aim is to establish new triage criteria for patients presenting to the ER with DKA to minimize ICU utilization. **METHODS:** A comprehensive literature review was performed to analyze existing DKA treatment models and triage criteria to create a new DKA treatment and triage pathway. Collaboration was obtained from the departments of Emergency Medicine, Internal Medicine, Endocrinology, and Pharmacology at Froedtert Hospital. **RESULTS:** A new DKA treatment and triage pathway was created for the ER that reduced ICU use by changing clinical criteria such as: etiology, evidence of ACS, ability to maintain PO, and ER stabilization. **CONCLUSION:** ICU admissions for DKA can be reduced with this pathway.

Surgical Skills Workshop Aug 23, 2012

Deborah Karm

Benign Arterial Calcification on Screening Mammogram: A marker for coronary artery disease?

David Marks, MD
Melissa Wein, MD
Amanda Kong, MD

Introduction: The purpose of this study was to determine if there is a correlation between benign arterial calcifications (BACs) on digital screening mammograms and the presence of coronary artery disease (CAD) diagnosed by cardiac catheterization. **Methods:** A retrospective chart review was performed on women age ≥ 40 years who had undergone a digital screening mammogram within two years of also having a cardiac catheterization from 1999 to 2010. Mammograms were reviewed by a single blinded radiologist and catheterization reports were reviewed. **Results:** Of the 198 patients identified, approximately 50% had clinically significant CAD. On multivariate analysis, history of smoking, hypercholesterolemia and BACs were found to be significant predictors of CAD. **Conclusions:** BACs present on digital screening mammography, history of smoking and hypercholesterolemia were all significant predictors of CAD. The presence of BACs on digital screening mammography may serve as a screening tool to identify women at high risk for CAD.

Leah Koetje

Oxidation of PTEN Modulates Myogenic Tone in Rat Middle Cerebral Arteries

Maia Terashvili
David R Harder, PhD

Many organs, including the brain, rely on intrinsic mechanisms within blood vessels to maintain uniform blood flow over broad blood pressure ranges. One of these mechanisms is via reactive oxygen species (ROS) which are by-products of oxidative metabolism. However, modulation of myogenic tone by ROS is not well understood. PTEN is a known common mediator of ROS generation and cell death. Therefore, we investigated the effect of PTEN on the modulation of cerebral vascular tone via activation of the PI3K-Akt-eNOS pathway. Increased intraluminal pressure (IP) enhanced superoxide formation. Vessels pretreated with the free radical scavengers did not demonstrate IP-induced constriction of rat middle cerebral arteries, suggesting that IP enhances superoxide anion formation. Increased IP also produced oxidation of PTEN phosphatase which in-turn increased phosphorylation of AKT suggesting that increased IP induced-free radical formation may interfere with pressure-induced myogenic tone through intracellular 2nd messengers like PTEN and alter blood flow autoregulation.

PODIUM

Kimberly Kripps

Mucolipidosis Type IV: A Unique Lysosomal Storage Disorder

M Lawlor, MD, PhD
J Southern, MD, PhD
LM Carey,
Esperanza Font-Montgomery, MD

Mucolipidosis Type IV (MLIV) is a slowly progressive recessive condition that presents in infancy with global developmental delay, hypotonia, corneal clouding, and strabismus. Although grouped with the lysosomal storage disorders (LSD), MLIV is a challenging diagnosis. MLIV patients do not display the typical features of LSDs such as coarse facies, organomegally, skeletal deformities, and rapidly progressive neurodegeneration, nor are oligosaccharides and mucopolysaccharides elevated in urine. We illustrate the elusive nature of this disease with a case of a male child of Mexican ancestry who went undiagnosed for six years despite undergoing an extensive genetic evaluation. A molecular diagnosis was finally achieved following EM findings on muscle biopsy. We hope to increase awareness of this disease and thereby facilitate earlier diagnoses of patients afflicted with this condition. Although there is currently no treatment for MLIV, a definitive diagnosis can better guide management and counseling as well as decrease morbidity to patients.

Seth Kutik

Long Term Effects of Pediatric Pain Management

Amy Drendel, DO

We hypothesize that children will underestimate their pain recall and report decreased activity participation since the injury regardless of age, years since injury, or pain medication used. 340 families from a previous study were contacted with families completing a questionnaire. Years since injury and age were associated with underestimation of pain recall. Males accurately recalled pain 40.0%; females accurately recalled 21.4%. The ibuprofen group accurately recalled 41.2% and underestimated 47.1%, while in the acetaminophen group 83.3% underestimated. 52.6% of the ibuprofen group had increased or similar degree of participation, while the acetaminophen group was 30.8%. This study suggests pain recall is associated with a child's sex and pain medication. However, pain recall is not affected by years since injury or age at time of injury with pain typically underestimated. Additionally, pain medication used is associated with continued participation in the injury causing activity.

Bilikisu Lawal

The Study of Teenage Motor Vehicle Crashes in Southeastern Wisconsin

Timothy Corden, MD
Andrea Winthrop, MD
Wisconsin Medical Society

(MVC's) are the number one cause of death in teenagers ages 15-19. The aim of this study was to evaluate the relationship between drivers and occupants involved in MVC and their compliance with Graduated Drivers License (GDL) guidelines. A retrospective analysis of teenagers involved in crashes in 2007-2009 admitted to Emergency Department at Children's Hospital of Wisconsin from seven southeastern Wisconsin counties was performed. Of the 459 patients admitted to CHW, 76% of patients resided in Milwaukee County, with the mean age of the total CHW population being 17. More occupants were admitted to CHW than drivers. African-Americans (45%) and Caucasians (44%) were predominately involved in crashes. 60% of teenagers involved in a crash had some form of restraint. There was no significant relationship between non-compliance with GDL guidelines and drivers and occupants involved in MVCs.

Melissa Lueder

Kinematics of Gait in Patients Treated for Femoroacetabular Impingement

Gerald Harris, PhD
Patrick Birmingham, MD

Femoroacetabular impingement (FAI) is an abnormal contact of the femoral head and acetabulum. Patients present with decreased range of motion in hip flexion and internal rotation. The historical treatment is an open surgical dislocation; however, research shows a newly developed arthroscopic approach is equivalent to open surgical technique. Our goal was to characterize gait kinematics, creating a focused and effective post-operative rehabilitative program for patients. Five subjects were tested using a Vicon motion analysis system and a Biodex strength assessment system. We found that all subjects had a consistent posterior pelvic tilt during the gait cycle compared to normals. Additionally, hips and knees exhibited an extensor shift in the sagittal plane. This variation could be compensation to avoid the anterosuperior point of contact typical of FAI. The results also suggest that the subjects could be morphologically bilateral but symptomatically unilateral based on no difference in their affected and unaffected legs

POSTER

Alexander MacBriar

Overview of PHACE Syndrome & Case Report

Beth Ann Drolet, MD

Some infants exhibit an association of congenital defects: posterior fossa abnormalities, hemangiomas, arterial abnormalities, cardiac defects, and eye pathology. This association, first described in 1996, has been termed 'PHACE syndrome'. The incidence of PHACE syndrome is unknown, but affected patients are mostly female and about 20% of infants with segmental hemangiomas >5cm in diameter meet criteria for diagnosis. The prognosis of affected patients varies from severe neurocognitive delay to normal development. Here, the current body of knowledge on PHACE syndrome is reviewed and explored through a case report on an infant who presented at age 36 days with a large segmental hemangioma. Her presentation was distinctive for vision-threatening expansion of a hemangioma into her right orbit. Propranolol treatment induced regression of her hemangioma. This case demonstrates the need to test infants with large hemangiomas for PHACE syndrome pathology and to weigh the risks and benefits of treatment carefully.

POSTER

Alison Marciniak

Patient Education and its Impact on Ureteroscopy Experience

Nathan Grunewald, MD
Carley Davis, MD

Introduction: A ureteral stent is placed post-ureteroscopy to manage edema but may cause discomfort, dysuria, hematuria and anxiety leading to phone calls, emergency department and clinic visits. Our goal was to provide patient education in the form of a new handout and counseling regarding expectations to decrease these phone calls and visits. Methods: A retrospective chart review of patients who underwent ureteroscopy by a single surgeon was performed. For a three-month period patients received our handout and counseling regarding known procedural effects. Then the number and context of post-procedural contacts were compared to the three months prior. Results: Our preliminary results demonstrate a decrease in the number of phone calls received. No change was found in the number of emergency department or clinic visits. Discussion: Our results suggest that patient education is beneficial in decreasing the number of post-procedure calls. Sub-group analysis with a wider patient population is underway.

Carlos Meheux

Dynamic Wrist Kinematic Model

Benjamin LaHood (2014)
Roger Daley MD, PhD
Gerald Harris, PhD
Patrick Roscher,
Jessica Fritz,
Barbara Haines

Currently, dynamic carpal pathology is diagnosed with static tools such as planar x-rays, CT scans or MR images. Successful diagnosis of injuries, interpretation of radiographic images, and treatment depend on accurate information about the anatomic location of the carpal bones as well as their orientation during forearm rotation and hand positioning. A quantitative assessment of the position, orientation and movement of the carpal bones during a set of standardized hand motions, and a quantitative measurement of wrist function are lacking, making it difficult to not only diagnose some wrist disorders, but also difficult to demonstrate surgical and/or rehabilitative effectiveness. A dynamic biomechanical kinematic model of the wrist was developed to analyze workspace and recreational activities, including opening a jar, turning a door knob, to increase our understanding of carpal dynamics in real-time, while also providing a means to quantitatively assess longer-term wrist function in healthy and post-surgical volunteers.

The Pathway Directors and Staff would like to thank

Amy Palka, MBA

for her dedication to the

Master Clinician Pathway.

POSTER

Sarah Otten

Special Olympics Sports Physicals Project

Karen Hulbert, MD
Ting Ting Chang (2014)
Andrea Cavey (2014)
Laura Hepokoski (2014)
Carlyn Hoeppner (2014)
Jessica Hubbard (2014)

Statistics demonstrate that individuals with intellectual disabilities experience specific health disparities and lack of training in medical school leaves many physicians unprepared to provide care to this population. Our project provided a service learning opportunity to first and second year medical students by participating in a "Sports Physical Day" for high school athletes in Special Olympics. This Family Medicine learning community event was a chance for both students and faculty to learn about the care of individuals with intellectual disabilities, from developmental medicine to exam tips and communication "pearls". Students then had active roles in pre-participation physicals in our primary care clinic. In addition, a quality improvement project was integrated into the "Sports Physical Day" to assess and improve the experience of the Special Olympic athletes and medical students.

David Peloza

Dialectical Behavior Therapy & Biofeedback & Psychosocial Stress with Breast Cancer Patients

Rebecca Anderson, PhD
Kathleen Jensik, MSW
Alonzo Walker, MD

Purpose: To assess the utilization and effectiveness of Dialectical Behavior Therapy skills set (DBT) and Biofeedback in the breast cancer patient population. **Patients and Methods:** 14 newly diagnosed (within 12 months of diagnosis) breast cancer patients enrolled. DBT and Biofeedback skills were taught in individual and group sessions. The DBT skill areas included: mindfulness, emotional regulation, interpersonal effectiveness, and distress tolerance. Biofeedback tools included pulse rate, NCCN distress scale, and bio-thermal measurement. These were measured before and after a stressor event. Additionally, participants completed quality of life tools (BSI-18, FACT -B, DASS). **Results:** There were statistically significant improvements in pre-study and post-study scores in the Biofeedback and BSI-18 data. **Conclusion:** The DBT skill set and Biofeedback tools seem to be an effective strategy to help manage stressors and improve QOL in this population. Supportive participant feedback encourages the further and development of these techniques.

POSTER

Rachel Petro

Radiologic Abnormalities in a Child with Hyperzincaemia & Elevated Calprotectin

Judyann Olson, MD
Arthur Meyers, MD
Craig Johnson, MD

We report a 14 year old male who presented with arthritis, anemia, short stature, hepatosplenomegaly, and elevated C-reactive protein. He was subsequently found to have hyperzincaemia and an elevated calprotectin level, a calcium- and zinc-binding protein produced mainly by neutrophils that is thought to play a role in the regulation of inflammation. Previous case studies have described several patients with anemia, hepatosplenomegaly, and evidence of systemic inflammation all in the setting of hyperzincaemia and elevated calprotectin. In addition to the above symptoms, the patient also displayed unique radiographic manifestations which have not been previously described. These abnormalities include significant osteopenia, periarticular inflammation, loss of joint space, and a preference for medium to large sized joints

POSTER

Nicholas Philpot

Does J-tip Lidocaine Injection Improve Successful IV Placement in Children

Maren Lunoe, MD, Amy Drendel, DO David Brousseau, MD, MS

Background/Hypothesis/Objective(s): Peripheral IV insertion is a source of pain and anxiety for children in the ED. Needle Free Jet-Injection system with buffered lidocaine (J-Tip) has been shown to reduce pain for IV insertion. Design/Methods: Retrospective cohort study of children ages 1 to 18 years with emergent IV placement. A random sample of children was selected for each of three age groups. Chi square test was used to compare the proportion of first attempt success as well as the effect of diagnosis, gender, race/ethnicity and history of prematurity on first attempt success Results:300 children (150 PRE and 150 POST) were enrolled in each of the three age groups, totaling 900 children. Overall, first attempt success was similar between the PRE and POST groups: PRE 67.6% v. POST 70.0% (mean difference +2.4 %, CI = -3.6% to +8.4%). No difference was found in any of the age groups. Conclusion: The use of J-tip does not improve the proportion of successful first IV attempts for children 1 to 18 years.

David Radler

Indirect Gulation of Nuclear Entry of Kinesin 17 via Phosphorylation

Joseph Besharse, PhD

Kinesin 17 (KIF17) is a motor protein required to form the distal tip of human photoreceptors. KIF17 is delivered to cilia via a ciliary localization sequence, KRKK, which also functions as a nuclear localization sequence. Here we set out to determine the role of an adjacent phosphorylation site, S1029, with the hypothesis that phosphorylation prevents nuclear entry. Phosphomimetic KIF17 displays a quantifiable decrease in the nucleus compared to WT KIF17 and uncharged KIF17. However, removal of the motor domain from each construct results in 100% nuclear localization, indicating that phosphorylation of S1029 does not prevent nuclear localization of KIF17. Cultures expressing phosphomimetic KIF17 also display significantly increased ciliary KIF17. Thus, we propose that S1029 regulates ciliary localization of KIF17, which cycles between cilium and nucleus. Our work further implies that ciliary localization requires the motor function of KIF17. Further work is needed to determine the nature of this mechanism.

POSTER

Christopher Reding

Idiopathic Pauci-immune Pulmonary Capillaritis as a Source for Diffuse Alveolar Hemorrhage

Pinky Jha, MD

Diffuse alveolar hemorrhage (DAH) in the setting of pulmonary capillaritis usually occurs in association with either systemic vasculitides or collagen vascular diseases such as Wegener's granulomatosis, microscopic polyangiitis, SLE, and less commonly, Goodpasture's syndrome, Henoch-Schönlein purpura, cryoglobulinemia, antiphospholipid antibody syndrome, and idiopathic pulmonary fibrosis. Isolated DAH with underlying capillaritis without any signs, symptoms, or laboratory findings of systemic disease was first described as a rare diagnosis of exclusion in a review study by Jennings, et. al. in 1997 [3]. In February of 2013, a 60 year old male presented to Froedtert Memorial Lutheran Hospital with a several day history of hemoptysis. After PE and infectious etiology was ruled out, a lung biopsy demonstrated pauci-immune capillaritis. Thorough rheumatologic workup revealed no evidence of systemic vasculitides, autoantibodies, or collagen vascular disease.

POSTER

Jenna Reichel

Pre-hospital IV Placement in Children

Amy Drendel, DO Ron Pirrallo, MD, MHSA Ken Yen, MD, MS

This study investigated which children had an IV placed in the pre hospital setting and variables associated with failed IV attempts. A retrospective analysis was conducted reviewing records of children under 18 years of age transported by Milwaukee County EMS between 4/1/09 and 4/30/11. Records completed by paramedics were reviewed for IV/patient characteristics and failed placement attempt. 863 children had an IV placed with an overall 9% failure rate. The youngest children were significantly more likely to fail; 19.1% of children less than 1 year, 35.0% of children 1 year to 35 months. 13.4% of children with neurologic conditions had a failed IV attempt. Pre hospital placement of an IV in children is not uncommon. Only 9% of IV attempts failed. Failure is more likely in young children and children with neurologic conditions. Future prospective interventions in the pre hospital setting should consider alternative routes of administration for these populations.

PODIUM

Haley Robinson

Long-term Single Center DLI Outcomes Show a Role for Durable Response

Monica Thakar, MD
Melodee Nugent
Pippa Simpson, MD
Carolyn Keever Taylor, PhD
David Margolis, MD
James Casper, MD

Donor lymphocyte infusions (DLI) are used to treat relapsed disease after allogeneic hematopoietic cell transplantation (HCT) but there is limited evidence of their effect on overall survival (OS) in children. An IRB-approved, retrospective study investigating DLIs from CHW was performed. There were 33 patients with leukemia, solid tumor, and non-malignant diseases who received 61 DLIs. Of the 21 patients who developed GVHD after HCT, 62% did not re-develop GVHD after DLI. When evaluating the effect of DLI cellular content on GVHD and OS, there were no advantages to having products with either higher/lower CD3, CD56, CD19, CD4, or CD8 content. With a median follow-up of 0.6 years, the OS at 5 years is 32 ± 8%, with patients having lymphoid diseases faring better. With a long follow-up, DLI has some benefit for promoting OS in a subset of pediatric malignancies, in particular lymphoid diseases. However, for most, DLI is ineffective.

Colin Rogerson

The Relationship between Chest Compression & Chest Recoil during CPR

Tom Aufderheide, MD

We tested the hypothesis that there is a relationship between chest compression depth and frequency of complete chest recoil, dependent on rescuer type and CPR technique. Thirty laypersons trained in CPR and thirty EMS providers participated. Subjects performed three minutes of CPR using the standard hand position followed by three minutes using an alternative Five-Finger Fulcrum technique. Chest compressions between 38 and 51 mm were classified as adequate depth and chest recoil within 2 mm of baseline was classified as complete chest recoil. There is a statistically significant relationship between chest compression depth and frequency of complete chest recoil, which varies by rescuer type. Complete recoil is significantly more frequent in laypersons with adequate compression depth ($P<0.0028$) and in EMS providers with inadequate compression depth ($P<0.0001$). The Five-Finger Fulcrum technique resulted in two times the incidence of complete chest recoil with both rescuer types and regardless of chest compression depth.

Kent Rosenwald

Patterns of Arthritis Medication Use in a Community

Kristyn Ertl
Kathlyn Fletcher, MD
Jeff Whittle, MD, MPH

Introduction: Although arthritis is disabling, prevalent, and often treated without health professional input, little is known about treatments selected by affected individuals. Such information is important because of the toxicity associated with some arthritis treatments. **Objective:** To describe the pattern of drug treatment use in a sample of persons with arthritis. Methods: We distributed an 11-item survey to veterans' organization post meetings. Of 32 posts, 26 returned surveys from 446 persons. **Results:** Most respondents (65%) reported having arthritis, which impaired function in 78.6%. Acetaminophen use (41.0%) and OTC NSAID use (42.1%) were common. NSAID use did not decrease with older age or increase with greater functional impairment. **Discussion:** Self-medication for arthritis is common and often does not follow clinical guidelines. Efforts to improve the quality of osteoarthritis care that focus solely on health care providers are unlikely to ensure optimal osteoarthritis care.

POSTER

Purna Shah

Exploring Physicians' Advocacy Organizations in a New Era of Medicine

How is the role of physicians' advocacy changing in the new era of patient-centered medicine, especially with regard to the gradual implementation of the PPACA? **INTRODUCTION:** The implementation of the PPACA in 2010 has proven to be controversial both among the general public and physicians. Though the AMA endorses the provisions of the PPACA, many physicians hold their own reservations. **METHODS:** I attended the WMS caucus and the regional AMA meeting last year. I researched the history of physicians' advocacy in Wisconsin and its role in regional medicine. Lastly, I will attempt to conduct e-mail interviews with local WMS physicians to learn more about their positions. **RESULTS:** Debate among physicians in the WMS is rancorous. The vigor of debate at the WMS is shaped by the history of physicians' advocacy in Wisconsin. **DISCUSSION:** These findings may be predictive of greater trends in physicians' advocacy in the country as a whole.

POSTER

Maheen Siddiqi

Iron Saturation and Apoptosis in Refractory Anemia

Seth Corey, MD

Background: Refractory anemia with ringed sideroblasts is a disease in which the deposition of iron in RBCs causes the formation of reactive oxygen species. To mimic the features of RBCs in a patient with RARS, we aimed to create an iron-overloaded human erythroleukemia cell line model. **Methods:** HEL cell lines were incubated with Ferric Ammonium Citrate. Prussian blue staining was then performed. Cell growth of iron-loaded cells was concurrently measured by doing cell counts every 24 hours. **Results:** Microscopic images of Prussian blue-stained cells showed that FAC was incorporated into HEL cells. Cells grown in the absence of FAC were negative for iron deposition. Additionally, we showed that iron decreased cell growth. **Conclusion:** Incubation with FAC produces a ringed sideroblast in HEL cells. Also, iron overload decreases cell growth. From this study, we were able to establish the use of an in- vitro laboratory model to successfully mimic in- vivo characteristics of RARS.

POSTER

Sameer Siddiqui

Branch Retinal Artery Occlusion After Internal Carotid Artery Angioplasty & Stenting

Peter Karth, MD
Donald Garbett, MD
Kimberly Stepien, MD

Purpose: We report a 67-year-old man with an embolic branch retinal artery occlusion occurring as a complication of internal carotid artery stenting despite the use of a distal filter cerebral protection device. **Methods:** Observational case report. Patients: One patient case is included in this case report. **Results:** Our patient developed a branch retinal arterial occlusion with visible emboli 24-hours after a carotid angioplasty and stenting procedure and was found to have multiple anastomoses between the external carotid artery and ophthalmic artery due to carotid stenosis. He required a second, emergent angioplastic procedure. **Discussion:** External carotid-ophthalmic arterial anastomoses can act as a pathway for emboli to travel from the internal carotid artery to the retinal circulation, resulting in retinal arterial occlusions, despite the use of cerebral protective devices. Ophthalmologists and interventional radiologists should be aware of these factors, especially as the number of percutaneous carotid artery stenting procedures continues to increase.

Jeremiah Stromich

Enterococcus Dynamics in the GI Tract: a Novel Mouse Model

Christopher Kristich
Nita Salzman
Michael Hayward
Daniel Bretl
Jennifer Zaksheske

Enterococci are common intestinal commensals of humans, but may also act as opportunistic pathogens. Because of their antibiotic resistance, they are difficult to treat and have become a public health concern. To study the interplay between Enterococcus, the intestinal microbiota, and the host, we colonized mice with a marked strain of Enterococcus faecalis (EF) and then evaluated this strain in the presence of antibiotics. Feeding of adult mice with EF resulted in colonization of the GI tract, without disrupting the intestinal microbiota. Mice exposed to ceftriaxone resulted in disruption of the microbiota, alterations in epithelial innate immune expression, and a profound bloom of EF in the GI tract, accompanied by EF translocation and systemic spread. The bloom of EF was self-limited and declined in levels in association with the recovery of the microbiota. Our mouse model allows a more detailed study of the mechanisms by which Enterococcus colonizes and infects the GI tract.

Kristine Sullivan

Virtual Reality Therapy on Upper Extremity Function & Balance

Michelle Johnson, PhD
J. Placeway, MD
Shawn McGargill, MD
John McGuire, MD

Nintendo Wii and Wii Balance Board (NW/WBB) have been shown to increase upper extremity (UE) function and improve balance in patients suffering from stroke related spasticity. This study asked 13 subjects with stable chronic stroke and spasticity receiving BTX-A injections to add 1-hour of NW/WBB play per day to their Home Exercise Program (HEP) between their second and third injections (B2, B3). Eight of 13 subjects attended OT/PT of varying frequency; 10 reported strength training activity; 12 reported stretching ≥3 days per week as part of their HEP. All 13 subjects were ambulatory, with 9 utilizing an assistance device. At B1, B2, and B3 we measure impairment, UE function, and balance. To date, one subject has completed the intervention portion of the study, but with much less use of the NW/WWB than instructed. Preliminary results from this patient showed no significant change in impairment, UE function, or balance. Further results are expected.

POSTER

Rachel Sullivan

Effect of Estrogen on Heart Rate Variability During Tilt Testing

Thomas Chelimsky, MD
Thomas Prieto, PhD

Heart rate variability (HRV) is a non-invasive method of assessing autonomic nervous system function by looking at changes in the R-R interval on a beat-to-beat basis. Healthy individuals have high HRV because the sympathetic and parasympathetic nervous systems respond to internal and external stimuli, thus constantly changing the length of the R-R interval. Prior studies show that estrogen leads to increased HRV and increased parasympathetic control of heart rate. However, menopause and loss of estrogen increases sympathetic drive and decreases HRV. This study examines the changes in HRV in pre- and post-menopausal women who presented with orthostatic complaints during head-up tilt testing in order to assess the effect of estrogen on HRV during a specific orthostatic challenge in comparison to what is known regarding estrogen's effects at rest. Additionally, we describe the HRV differences in women with the specific diagnoses of postural orthostatic tachycardia syndrome and migraine headaches.

POSTER

Amir Hossein Talebi Liasi

Novel Approach In Burn Donor Site Dressing Using Melolin & Flexigride

Amir Vejdan, MD
Mashad I.R.Iran

Burn donor site cares is one of the most important concerns in burn surgery. In the deep burn wounds requiring surgical debridement and semi-thickness grafting from another site, the choice of dressing type and its quality are of important determinants of graft donor site healing time. Traditional dressings have some disadvantages, which interfere with epithelial growth and final results. This study evaluates the role of a novel complex dressing in the management of the donor burn site.

Kyle Thompson

The Effect of Continuous Intrathecal Baclofen on the Soleus H-reflex

Chris Cronsell
Nicholas Ketchum, MD
John McGuire, MD

Continuous intrathecal baclofen (CITB) by an intrathecal baclofen pump (Figure 1) is a common treatment option for the management of spasticity in patients of all ages. The H-reflex (Hoffman's reflex) is a nerve conduction study of monosynaptic reflex activity that can be obtained from certain muscles in the upper and lower extremities. Typically the H-reflex is increased in patients with spasticity (Figure 2). Previous studies have indicated that the H-reflex is sensitive to the effects of ITB (Stokic 2006). The dose dependent response of the H-reflex to baclofen has not been well described. The objective of this study was to investigate the effect of stable doses of CITB on the soleus H-reflex. The results of this study could aid clinicians in trouble-shooting an ITB pump system malfunction and may also improve understanding of the CITB dose necessary to maintain and improve function in patients with ITB pumps.

POSTER

Jason Valadao

Children of Addiction: Changing the Family Legacy

Children are full of life, innocence, creativity, and most importantly emotion. They can sense something being wrong or out of place. As they age they learn about where they have come from and what lies ahead in terms of continuing their own family's legacy. This begs the question of why the Children's Hospital of Wisconsin does not possess a program to help children who come from families of addiction? A program such as this is just as essential as any other medical specialty, especially in a community that is addiction ridden. This project proposes a plan to establish such a program, along with subsets of information that envelope such a topic. Under the guidance and implementation by the Betty Ford Center Children's Program staff, along with generous donors from the community, and partnerships with community programs, this proposal can become a reality.

Varun Varadarajan

Continuous Remote Assessment of Parkinson's Disease Patients using Mobile Devices

Sanket Jain
Karen Blindauer, MD
Christopher Butson, PhD

Parkinson's disease patients can experience variations in symptom severity and treatment effectiveness over periods ranging from minutes to years. These changes can be difficult to capture using conventional assessment tools such as the Unified Parkinson's Disease Rating Scale (UPDRS) which are usually performed during clinic visits. Recently, consumer mobile computing devices have been equipped with an array of measurement instruments and communication capabilities. We created an iOS app, Motor, to perform continuous assessment of Parkinson's disease. The app uses built-in accelerometer for detecting motion and the wireless communication interface for transmitting data. We tested the app on an iPod Touch that was worn by patients with a jogging clip or armband. This system accurately detected and characterized tremor and rhythmic activity such as walking. The device and app could provide new information about symptom severity and patient activity that are difficult to capture with other methods. This system appears feasible and useful for acquiring information about patients and may augment the data collected using tools such as the UPDRS.

POSTER

Wendi Wendt

Implementation of a Depression Screening Tool in Adults in a Low Income Underserved Family Practice Setting

Madelaine Tully, MD

Depression is a common health problem in the United States with major depressive disorder affecting an estimated 6.6% of the U.S. adult population within a 12 month period and accounts for over $43 billion dollars annually. An estimated 6.7% of Wisconsin's population has a depressive episode at any one time. In 2002, the US Preventive Services Task Force recommended screening for depression in primary care settings and the American College of Preventative Medicine reiterated that sentiment in 2009. In this study, we evaluated the feasibility and efficacy of administration by nonphysician staff of the Zung Depression Scale screening tool to patients in a low income underserved family practice. Additionally, evaluation was made of the effect of the tool on patients' perceived need to discuss their mood with their doctor.

Kai Yang

Behavioral Functioning & Quality of Life in Children with Congenital Heart Disease

Mahua Dasgupta, MS
Raymond Hoffman, PhD
Angie Flemm, BS
Cheryl Brosig, PhD

Background: Children with congenital heart disease (CHD) are at increased risk for neuro-developmental and psychosocial problems. The purpose of this study is to describe the behavioral functioning and quality of life of children with CHD **Methods:** Parents completed a demographic form, the Child Behavioral Checklist (CBCL), the Pediatric Quality of Life (PedsQLParent Report) and depending on the age, the Teacher Report Form (TRF). **Results:** Results of the CBCL and TRF were significantly higher than the normal population for internalizing, externalizing and total problems ($p<0.0001$). On the PedsQL Parent Report, scores for child physical health, psychosocial health and total QOL were significantly lower than a healthy sample ($p=0.001$). Patients with higher levels of internalizing, externalizing and total behavior problems had lower QOL scores. **Conclusions:** Children with congenital heart defects who are referred for psychological services have significantly higher rates of behavioral and emotional problems compared to a normal population. Thus, incorporating psychological services within a pediatric cardiology program may be beneficial for children with CHD.

POSTER

Erika Zevin

Diagnosis of Methanol Ingestion and the Use of Osmolar Gap

A 48 year old male with a history of Type II DM and depression is admitted to the hospital with acute acetaminophen ingestion (559 pills) and diabetic ketoacidosis. He developed multi-organ failure, anion-gap metabolic acidosis, and respiratory alkalosis. Osmolar gap was 0 and delta ratio was 1.0. After treatment with Mucomyst and charcoal, he remained acidotic and had continuing organ dysfunction. A volatile drug screen was performed which was positive for methanol. The uses of osmolar gap and considerations in the diagnosis of methanol ingestion will be discussed.

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

POSTER

Arnav Agarwal

Occupant & Crash Characteristics in Patients with Thoracolumbar Spine Injuries Following MVCs

Raj Rao, MD
Chirag Berry, MD
Narayan Yoganandan, PhD

Introduction: Motor vehicle collisions (MVC) are a leading cause of thoracolumbar (TL) spine injury in all ages. Our objective was to analyze specific patterns of TL spine injuries in MVC. **Methods:** Demographic, injury and crash data, obtained from the Crash Injury Research and Engineering Network (CIREN) database, was analyzed for correlations between type of T-L spine injury, type and use of seat belts and airbags, and other crash characteristics. **Results:** TL injuries were identified in 631 of 4572 vehicle occupants. Compression fractures were most prevalent in the elderly, burst fractures and fracture-dislocations in young and middle-aged adults, flexion-distraction injuries in patients below forty, and extension injuries in patients above fifty. Among occupants wearing a three-point seat belt, 36.8% sustained TL spine injuries, while only 12.64% of the unbelted patients sustained TL spine injuries. **Conclusions:** TL spine fracture patterns

Keenan Atwood

Bimodal Hearing on Music & Speech with Fine Structure Processing

David Friedland, MD, PhD
Christina Runge, PhD

Objectives: 1. Evaluate bimodal listening on speech and timbre when using FSP versus CIS-based cochlear implant (CI) strategies. 2. Recognize effects of chronic FSP use on performance. **Methods:** Ten adults experienced with CI and hearing aid were enrolled in a double-blinded test using FSP and HDCIS strategies both bimodally and CI alone. Timbre and vowel recognition were tested. Outcomes scored as percent correct. **Results:** Vowel recognition, performance significantly increased in FSP (41.2% to 72.7%; p=.012) and HDCIS bimodally(46.3% to 76.8%; p=.014). Timbre, performance significantly increased for HDCIS bimodally (46.5% to 55.1%; p=.023). FSP daily strategy users performed better in every condition for both tests without significant difference. **Conclusions:** Bimodal listening provided significant benefit in vowel recognition regardless of strategy. Bimodal performance for music benefitted HDCIS but not FSP, suggesting FSP better approximates acoustic hearing. In addition, regular use of FSP may enable users to outperform regular HDCIS users.

Kenneth Berg

CTA Hemiarthroplasty: Should the Subscapularis be Spared?

Steven Grindel, MD
Rick Papandrea, MD
Dean Ziegler Blount, MD

Shoulder degeneration from progressive or untreated full thickness rotator cuff tears can lead to a cuff deficient arthritis known as cuff tear arthropathy (CTA) for which one surgical treatment option involves release of the subscapularis muscle from the humerus. Literature suggests that subscapularis release leads to worse patient outcomes. We conducted a retrospective chart review examining functional and pain outcomes in 25 subscapularis-releasing CTA hemiarthroplasty patients from 2009 to 2011. Postoperative follow-ups were conducted at an average of 11.3 months and compared to preoperative numbers demonstrating: American Should and Elbow Surgeon (ASES) shoulder mean scores improved 31.7 to 68.6 (p=.000047), Constant Shoulder mean scores improved from 34 to 45.9 (p=.037), and Visual Analog Scale pain ratings from 5.9 to 1.9 (p=.00035). This data indicates that patients do well from a functional and pain stand-point following subscapularis-releasing CTA hemiarthroplasty, and sparing the subscapularis in the surgical approach may not be necessary. Future research comparing two study groups undergoing subscapularis release or sparing is warranted

Mark Bowers

In vitro Evaluation of Labral Seal after Labrum Reconstruction

Patrick Birmingham, MD
Linda McGrady,
Mei Wang, PhD

Introduction: Labral tears are a cause of hip pain and have been implicated in the development of osteoarthritis. The purpose of this study was to quantify the labral seal by measuring the suction force in the intact, torn and reconstructed state of the labrum. **Methods:** Six cadaveric hemipelvises were skeletonized and a load cell pull-out handle was fixed to the femur. A manual pullout of the femur from the acetabulum was performed while the suction force was measured in the three labral conditions. **Results:** The mean suction forces for the labral conditions are: 45.1±45.5N (intact), 7.4±5.9N (torn), and 27.2±22.6N (reconstructed). All specimens demonstrated a trend of significant reduction (74%) for the labral tear state from its intact state ($p<0.014$), and a substantial restoration (77%) for the labral reconstruction state compared to its intact state. **Conclusions:** Labral tears had significant impact on labral seal, and labral reconstruction can restore 77% of the native sealing function.

Garth Brandal

Near Infrared Light-Dependent Nitric Oxide Effect on Mitochondrial Respiration

Martin Bienengraeber, PhD

Restoration of blood flow to a region of previously ischemic myocardium (reperfusion) is a critical life-saving intervention against tissue necrosis, but reperfusion itself also results in significant damage to myocardium. Animal studies have shown near infrared light (NIR) to have a protective effect on myocardium during ischemia and reperfusion. The beneficial effect of NIR is thought to be mediated in part by a nitric oxide synthase-independent increase in nitric oxide (NO) bioavailability. Under hypoxic conditions, heme-containing proteins such as myoglobin (Mb) and hemoglobin exhibit nitrite reductase activity which results in an increase in NO bound to Mb and Hb. NIR treatment is thought to cause a photolysis of MbNO and HbNO which results in an increase in active NO when applied at the time of reperfusion. We hypothesize that NIR-enhanced NO during reperfusion modulates mitochondrial bioenergetics by interaction with the electron transport chain and thereby may induce cardioprotection.

Josh Brown

Dual role of X-linked mental retardation protein, BRAG1, in synaptic function

Amber Petersen
Ling Zhong, PhD
Randall Wallkonis
Nashaat Gerges, PhD

Learning disorders often result from disrupted AMPA receptor trafficking. X-linked mental retardation (XLMR) is a developmental disorder characterized by significant limitations in cognitive function, and the ability to perform basic daily tasks. Recently, mutations of a post-synaptic density (PSD) protein, BRAG1, were identified as a cause of XLMR (Shoubridge et al., 2010). Here we report that BRAG1 is necessary for normal synaptic transmission, and sufficient to increase the synaptic expression of recycling GluA2-containing AMPA receptors in hippocampal slice cultures. This enhancement was blocked with an interfering peptide designed to prevent interactions with the PDZ-binding domain. Moreover, a c-terminal truncation lacking the PDZ-binding domain failed to produce an increase, indicating that BRAG1 PDZ interactions facilitate synaptic GluR2 expression. We also report that BRAG1 guanine nucleotide exchange factor (GEF) activity, which is impaired in XLMR patients, is required for low frequency stimulation (LFS)-induced long-term depression (LTD). In fact, blocking BRAG1-GEF activity drastically increases AMPAR-mediated synaptic transmission after prolonged (3 day) expression, suggesting AMPARs accumulate over time without GEF-mediated internalization. Together, these results indicate a critical role in synaptic function for BRAG1 involving the insertion and removal of AMPARs.

Brian Carroll

IgE Expression on Murine Lung Conventional Dendritic Cells During Paramyxoviral Infection

Erika Buell
Desire Hunter
Mitchell Grayson, MD

RATIONALE: Respiratory infection with Sendai virus (SeV) drives the IgE receptor, FcεRI, on murine lung conventional dendritic cells (cDC). FcεRI is required for development of post-viral atopic disease. **METHODS:** Mice were inoculated with SeV. Mice were euthanized, lungs removed, and single cell suspensions made. Using flow cytometry, IgE on CD11c+ cDC was then determined and compared to FceRI expression. **RESULTS:** No IgE was detected on naïve cDC. IgE was not bound on day 3 or 5 PI. IgE was detected by day 7 and remained through day 10. This demonstrates a delay, as FceRI is expressed by day 3 p.i. and remains expressed past day 10 p.i., but does parallel serum anti-SeV IgE levels. **CONCLUSIONS:** IgE binds FcεRI on murine lung cDC between day 5 and 7 p.i. This expression parallels the SeV specific IgE levels in the serum, and is delayed compared with expression of FceRI on cDC.

PODIUM

Ruben Chanmugathas

Caregiver Health Literacy Is Associated with Non-Urgent Emergency Department Visits

Andrea Morrison, MD
Marilyn Schapira, MD, MPH
Marc Gorelick, MD, MSCE
Raymond Hoffmann, PhD
David Brousseau, MD, MS

One in four caregivers of children treated in the ED has low health literacy affecting their understanding of their child's health condition, potentially affecting success of the ED visit and health care utilization. We proposed to examine the association of caregiver low health literacy with the likelihood a non-urgent ED visit. This cross-sectional study assessed the health literacy of caregivers accompanying children with fever to the ED. Visit urgency was determined by resources utilized during the enrollment visit. 299 caregivers completed required study materials. 39% of enrollment ED visits were non-urgent; 47% of caregivers had low health literacy. Low health literacy was associated with a higher proportion of enrollment non-urgent ED visits (47% vs. 31%). In regression analysis, only health literacy was related to non-urgent ED use. Health literacy is an independent predictor of ED use and may serve as a novel target in future interventions.

Eric Chow

Aortic Protein Glutathionylation as a Function of Endotheliuar

Erich Stauder, Jennifer Whitsett, Jeannette Vasquez-Vivar, PhD

Low tetrahydrobiopterin (BH4) levels decreases nitric oxide production and increases superoxide production from endothelial nitric oxide synthase. This study was aimed at establishing the relationship between endothelial BH4 levels and increased oxidative stress in early atherosclerosis. To investigate the influence of aorta endothelial BH4 we used apoE-/- mice with an endothelial specific over-expression of the rate-limiting enzyme in the biosynthesis of BH4 (apoE-/-Tg(GCH)), using apoE-/- and C57BL6 mice as controls. We measured aortic BH4 concentrations using HPLC. We established differences in the oxidative stress marker glutathionylated protein (PSSG) using western blot. We examined transcription levels of antioxidant proteins: GPx1, Trx1, and Trx2 using RT-PCR. PSSG in apoE-/- was increased, whereas apoE-/-Tg(GCH) had lower levels closer to those found in C57BL6. Aortic BH4 in apoE-/-Tg(GCH) decreased with age. Only expression of Trx1 in apoE-/-Tg(GCH) was significantly higher than in controls. Consequently, endothelial BH4 could stimulate Trx1 expression to ameliorate oxidative stress.

POSTER

Dylan Coss

Endocannabinoid Expression Altered by early Life Stress of the Neonate

Cecilia Hillard, PhD

Endocanabinnoid signaling is believed to play a role in the mediation of stress and devlopment of anxiety disorders. We hypothesize that early life stress during the neonatal period alters the expression of the cannabinoid receptor thereby interfering with normal organization of the brain during a stress-sensitive period of development. Neonatal rats were subject to a perturbed rearing environment between postnatal days 1-9 by a reduced bedding stress protocol. mRNA concentrations for receptor CB1 in PFC and amygdala were analyzed by qPCR. Stressed females were found to have significantly increased amounts of CB1 in amygala and PFC compared to unstressed controls .These results show that early life stress changes the expression of the endocannabinoid receptor in females within regions associated with the stress response. Further studies will be performed to determine the behavioral effects of these changes and to determine the genetic basis for transcription differences.

Breana Cummens

Protective Effects of a 20-HETE Analog on Lung Tissue Bioenergetics

Meetha Medhora, PhD
Elizabeth Jacobs, MD

Hypoxia limits mitochondrial ability to produce ATP and increases free radical formation, which at high levels are toxic and pro-apoptotic. We investigate a novel pharmacological preconditioning protocol with N-[20-hydroxyeicosa-5(Z),14(Z)-dienoyl]glycine (20 5,4HEDGE), a 20-hydroxyeicosatetraenoic acid (20-HETE) analog. We hypothesized pretreatment is protective by maintaining ATP levels and mitochondrial function. Sprague-Dawley rats were given vehicle or 20-5,14HEDGE intraperitoneally 1hour before anesthesia. The left hilum was clamped 1hour, reperfused 2hours, and removed. Mitochondria were isolated from homogenate by differential centrifugation. ATP was analyzed by chemiluminescence and oxygen consumption measured by a Clark-type electrode. 20-5,14HEDGE increased ATP content in IR-injured lung by 21.6% (p=0.027) versus vehicle-IR. State 3 and state 4 respiration rates, as well as respiratory control index (RCI), were not significantly different between groups. Therefore we concluded 20-5,14HEDGE has protective effects on the energy status of IR-injured rat lungs. Further work includes examining duration of ischemia and correlation with in vivo imaging.

John Davis

The Correlation Between Calcium Intensity & Histo-pathological Changes in Brachial Plexus Nerve Injuries

Elizabeth O'Connor, MD
Lin-Ling Zhang, MD
Michael Agresti, MS
Hani Matloub, MD
James Sanger, MD
Safwan Jaradeh, MD
Ji-Geng Yan, MD, PhD

Background: After nerve injury, an influx of calcium exceeds the homeostatic capacity, which damages peripheral nerves. Our previous studies identified that following nerve crush, function improves as calcium levels normalize. **Methods:** Electrophysiological analysis was performed to measure the Compound Muscle Action Potential of 15 patients' damaged nerves. These samples were evaluated for calcium level and also stained with a Luxol fast blue and neurofilament antibodies to evaluate the myelin sheath and neurofilaments of the nerves. Based on Sunderland's scale, we identified 3 exclusive types of peripheral nerve injury groups. **Results:** There was a correlation between histopathological damage and calcium levels of 0.81, ($P<.05$). The average RFU was 235.28±19, which corresponds to 5.3x10-7M of calcium, 5 times the normal value. **Conclusion:** Our study shows promising clinical implications via faster pathology results by the RFU technique. Our calcium-staining approach allows for faster clinical diagnosis with great sensitivity and specificity.

Naomi-Liza Denning

Gastrostomy Tube Complication Rates Based on Tube Characteristics

John Densmore, MD
Danielle Leranth

As many as 11,000 gastrostomy tubes are placed in children in the United States every year with minor and major complications rates reaching nearly 75% and 5% respectively. Although multiple studies assess overall complication rates, no studies have compared the complication rates between gastrostomy tube types. This retrospective chart review will attempt to determine if the usage of a specific tube type reduces the number of complications. This study will compare the number of post-surgical complications among gastrostomy tubes of predominantly two types in children under one year of age. Since the majority of tubes fit in these two categories, the type of tip, tube composition, tube length, and use of tube extensions will be analyzed independently as predictors of post-surgical complications. We hypothesize that initial placement of button type tubes will result in a greater number of post surgical complications.

Jared Forrester

Cannabinoid Induced Brain Activity: Regional & Temporal Patterns of Activation

Alicia Barr
Sally Durgerian
William Collier
Alan Bloom, PhD

Functional magnetic resonance imaging (fMRI) is an effective neuroimaging technique to assess temporal and spatial changes in brain activity. The brain structures activated by the cannabinoids of Cannabis sativa are known; however, the temporal pattern of regional brain activation has yet to be described. We used fMRI to assess this pattern in Male Sprague-Dawley rats by administration of Δ9 tetrahydrocannabinol (THC); its active metabolite: 11-OH-Δ9-tetrahydrocannabinol (11-OH-THC); a synthetic cannabinoid (CP-55,940); or a cannabinoid antagonist (SR141716A). All high dose cannabinoids showed initiation of drug effect first in areas involved with the reinforcing and rewarding response (nucleus accumbens) followed later by areas associated with emotion (amygdala) and memory (hippocampus). In addition, the cannabinoid antagonist altered tone in the areas associated with emotion (right and left amygdala) and drug craving (right agranular insular cortex). Behaviorally active cannabinoids show activation first in brain regions responsible for reward, providing a basis for self-administration and for recreational use of these drugs.

POSTER

Jessie Guo

Analyzing Effects of Cardiac Rehabilitation on Patients after Cardiac Surgery

Albert Yen (2014)
Byung-Il Choi, MD

Cardiac Rehabilitation is a valuable resource that benefits elderly patients in their recovery from cardiac surgery by providing a structured exercise program. Despite the availability of these programs, it is under-referred by physicians and lacks a significant foundation in research to prove its validity and positive influences. 200 Patients who have completed their 6 week Cardiac Rehabilitaion program at the Community Memorial Hospital with a primary referal secondary to cardiac surgery (stenting, catheterization, CABG or valve replacement) will be retrospectically reviewed. Split into the control group of patients with pre-rehabilitation ejection fractions above 50% and study group below 50%, patient's heart rate will be measured at warm up, maximum exertion and cool down during the first and last session of rehabilitation. The aim is to show a statistically significant increase in heart rate by the end of rehabilitation in the study group; one that is comparable to the increase in heart rate in the control group. This conclusion will help strengthen the validity of how Cardiac Rehabilitation can measurably improve patient recovery and introduce quantifiable ways to represent the effectiveness of Cardiac Rehabilitation to improve physician referral rates.

Sean Hansen

Selective Cone Photoreceptor Injury in Acute Macular Neuroretinopathy

Robert Cooper
Alfredo Dubra, PhD
Joseph Carroll, PhD
David Weinberg, MD

Purpose: To evaluate retinal structural and functional abnormalities in a patient with Acute Macular Neuroretinopathy (AMN). **Methods:** An adaptive optics scanning light ophthalmoscope (AOSLO), spectral domain optical coherence tomography (SD-OCT), and microperimetry were used to assess photoreceptor structure and function. **Results:** Microperimetry showed reduced function of localized areas within retinal lesions corresponding to subjective scotomas. SD-OCT imaging revealed attenuation of two outer retinal bands typically thought to reflect photoreceptor structure. AOSLO images of the photoreceptor mosaic revealed a heterogeneous presentation within these lesions. Within these lesions, cone densities were shown to be significantly lower than eccentricity matched areas of normal retina, as well as accepted histological measurements. A 6-month follow up revealed no change in rod or cone structure. **Conclusions:** Imaging of AMN using an AOSLO shows a preferential disruption of cone photoreceptor structure within the region of decreased retinal sensitivity.

Michelle Hofmeister

The Importance of Trauma Informed Care in the Urban Community Medicine Setting

Kaela Chiu, MD,
Karen Brasel MD, MPH
John Davis (2014)
Terri deRoon-Cassini, PhD

Posttraumatic stress disorder (PTSD) is a prevalent, yet under-acknowledged and under-treated disorder with significant ramifications on individuals and society. The aim of this study was to assess an inner-city population's exposure to violence, prevalence of PTSD symptoms, and barriers to receiving care. We administered a 3-part survey at a free clinic for the uninsured in an inner-city community to 116 patients. 30.2% of our sample met a score suggestive of PTSD. This subgroup had significantly higher lifetime exposure to violence ($p < 0.001$). Financial constraints (16%) and being unaware of psychological services (10%) were the most frequently reported barriers to care. The prevalence of PTSD in our sample is almost four times the reported national average. It is important to increase awareness of PTSD among primary care providers, especially those serving the urban poor, and to develop community resources to help to intervene and improve outcomes in this population.

Sanghee Hong

Global Trends in Radiation Therapy Use in Hematopoietic Cell Transplantation

C Barker, J Klein, P Shaw, C Bredeson, A Angelina, P Rowlings, J Cahn, M Kharfan-Dabaja, M Aljurf, J Szer, W Wood, I Ahmed, D Aimaguer, Y Atsuta, M Sanz, G Hale, M Litzow, M Pasquini, MD

This is the first study characterizing trends and practice patterns in use of radiation therapy (RT) as part of hematopoietic cell transplantation (HCT) globally. CIBMTR registry data from 215,341 first HCTs from 52 countries between 1995 and 2010 were analyzed. Associations of country, patient, disease, transplant-center and conditioning regimen with RT use were made. RT use trends over time and RT techniques, such as dosage, fractionation, shielding, and additional radiation, were analyzed. Utilization of RT-based conditioning decreased (31% to 21%, $p<0.0001$) in all continents and diseases except for allogeneic HCTs in Latin America (15% to 25%, $p<0.0001$) and allogeneic HCTs for acute lymphocytic leukemia (74% to 84%, $p<0.0001$). RT was most commonly given to a dose of 12Gy in 6 fractions over 3 days with lung shielding. Use of RT of <2 Gy increased from <1% to 25% $p<0.0001$). Overall, RT use decreased and less doses were used globally.

POSTER

Kathryn Hoppe

The Presence of Atopy in Common Variable Immunodefiency Patients

Meribeth Klancnik
Pippa Simpson, PhD
Kim Gajewski
Mary Hintermeyer, APNP
Nicole Chase MD
John Routes MD

Common variable immunodeficiency (CVID) is an immune deficiency characterized by a decrease in the level of serum immunoglobulins and impaired production of specific antibodies in response to infection or immunization. Complications of CVID include recurrent infections, chronic respiratory disease, autoimmune disease, and malignancy. By the time of diagnosis, many patients have repeated pulmonary infections; therefore, obstructive lung disease, bronchiectasis, is the most common chronic pulmonary complication of CVID. The presence of bronchiectasis may obscure the diagnosis of reversible obstructive airway disease (asthma). This issue is of critical importance, as proper treatment of asthma may significantly improve their pulmonary function. We will determine the prevalence of atopy (allergy testing) and assess the level of reactive airway disease (FeNO, full PFTs). We expect to show an increase in reactive airways disease within this population which could change treatment options for these patients and improve their pulmonary function.

POSTER

William Huepfel

Pressure Indices of Daily Activities During Ambulatory Manometry: A Quantitative Analysis

Arash Babael, MD
Mark Kern
Sohrab Naunum, MD
Venelin Kounev, MD
Benson Massey, MD
Reza Shaker, MD

Ambulatory pH and impedance monitoring are commonly used to assist in diagnosis of gastroesophageal reflux disease (GERD). Interpretation of these recordings could be improved by accurate identification of different patient activities. We have shown that pressure patterns of common daily activities are recognizable by an experienced observer. However, it is not known if these distinctive pressure patterns could also be identified numerically and quantifiably as pressure indices of each activity. Utilizing a novel portable manometry system, we studied the pharyngeal, esophageal and gastric pressure tracings of 12 healthy volunteers (27±6 yr, 7F) who performed the following activities: walking, changing position, talking, coughing, drinking, clearing throat, drinking and bearing down. Using relatively simple pressures indices, we were able to reliably identify when participants were talking, walking, coughing and bearing down. These results should aid in the development of the more accurate methods for diagnosing GERD and other esophageal motility disorders.

Benedict Hui

Development & Testing of an MR Compatible Algometer

Daren Hughes
Hong Wu, MD
Omar Bhatti, MD
Shi Zhao
Michelle Johnson, PhD

Pain is a common condition which can be involved in many clinical diseases and disorders. The study of pain and possible interventions are hindered as most measures of pain are subjective (e.g. visual analog scale). An MR compatible algometer would allow for objective measure of possible interventions on conditions such as phantom and residual limb pain through fMRI. An MR compatible pneumatically actuated, remotely operated algometer was developed and tested for MR compatibility. MR compatibility was tested by scanning a spherical head phantom under various conditions. A general linear mixed model was used. With eight regions (ROIs) analyzed. We hypothesize no correlation between different variables and regions. Statistical analysis yielded an F value of 1.43 and Pr>F of 0.249 for group and an F value of 1.50 and Pr>F of 0.1984 for region indicating no correlation across groups and between regions. Thus, MR compatibility was shown.

POSTER

Anthony Hunter

Examining the Role of Neutrophils in Mouse Lung Carcinoma

Haris Vikis, PhD

Introduction: Numerous studies have demonstrated a role for inflammation in tumorigenesis. Previous Vikis lab studies have shown that inhibiting neutrophils in mice treated with methylcholanthrene and butylated hydroxytoluene significantly decreases tumor number. **Methods:** Mice were treated daily with Reparixin, a CXCR2 antagonist, KYC, a myeloperoxidase inhibitor, or saline to determine effects on tumor growth. One week after treatment began LLC cells were injected into each mouse flank creating heterotopic tumors. Tumor volumes were followed and on day 21 tumors were removed and weighed. **Results:** The average weights of each group showed no significant differences (p=.230). Treatments had no consistent effect on myeloperoxidase activity or neutrophil number. **Discussion:** These findings likely arise from ineffectiveness of KYC or the short half-life of Reparixin and thus ineffective neutrophil inhibition. Additionally, neutrophils, or more specifically myeloperoxidase, may play a larger role in the initiation of tumors than the growth of tumors, as investigated here.

Jesse Jacobs

Differential Adenosine A1 & A3 Receptor Modulation of Superoxide Generation

Debebe Gebremedhin, MD
David Harder, PhD

Adenosine exerts its effects via four types of G-protein-coupled receptors, termed A1, A2a, A2b and A3. While the role of adenosine A2a and A2b receptors has been investigated, the contributions of the A1 and A3 receptors in superoxide generation remain unknown. Using the superoxide detecting probe hydroethidine and fluorescence HPLC analysis, stimulation of the A1 receptor with the A1 agonist N6-cyclopentyladenosine (N6-CPA, 100 nM) led to a decrease in basal superoxide level, whereas stimulation of the A3 receptor with the A3 receptor agonist IB-MECA (100 nM) led to an increase in superoxide production. A1 receptor antagonist 8-cyclopentyl-1,3-dipropylxanthine (DPCPX, 100 nM) pretreatment rendered the A1 agonist to increase superoxide production, whereas the A3 antagonist 9-chloro-2-(2-furyl)-5-phenylacetylamino[1,2,4]triazolo[1,5-c]quinazoline (MRS-1220, 100 nM) markedly reduced the A3 stimulated increased superoxide production to control levels. These findings indicate modulation of adenosine A1 and A3 receptors impose differential superoxide production in astrocytes that could be protective or injurious

Karl Johnson

Adrenocortical Function During Hypoxia in Neonatal Rats: Second Messenger Concentrations

Eric David Bruder
Hershel Raff

The adrenocortical response plays a critical role in the neonatal adaptation to acute hypoxia by increasing corticosterone levels through an ACTH dependent cAMP cascade in adrenal cells. It has previously been demonstrated that the neonatal corticosterone response to acute hypoxia shifts from ACTH independence to ACTH dependence between postnatal-days two (PD2) and eight (PD8). This study aims to determine the concentration of second messengers cAMP, cGMP, and IP3 in adrenal cells of acutely hypoxic PD2 and PD8 rats. PD2 and PD8 pups were exposed to room air or 8% O2 and adrenal glands were flash frozen at 0 or 30 minutes. Frozen adrenals were pulverized and second messenger concentrations were determined using ELISA assays. Results have shown no significant increase in cAMP concentrations in PD2 adrenal cells, and appropriate increases in cAMP concentration in PD8 adrenal cells. These results support previous demonstrations of ACTH independent corticosterone release in PD2 pup

Stephen Johnston

HDAC-6 Inhibition is Cardioprotective in endothelial cell/ Cardiomyocyte Co-culture Model

Jesse Procknow, PhD
Judy Kersten, MD

It has previously been demonstrated that nitric oxide (NO) generated via activated endothelial nitric oxide synthase (eNOS) is important for cardioprotection. One HDAC isozyme, HDAC-6 regulates the acetylation state of alpha tubulin and heat-shock protein 90 (HSP-90). Since alpha tubulin and HSP 90 can regulate the activity of eNOS, we hypothesized that HDAC-6 plays a role in cardioprotection. Rat cardiomyocytes and human coronary artery endothelial cell (HCAEC) co-cultures were pre-treated with selective HDAC-6 inhibitor tubacin for one hour before hypoxia and reoxygenation. Separately, HCAECs were transduced with a HDAC-6 shRNA lentiviral vector prior to co-culture. LDH activity of tubacin-treated co-cultures was lower compared to untreated co-cultures. Knockdown of HDAC-6 resulted in lower LDH compared to co-cultures infected with scrambled shRNA (SCR). Intracellular NO was increased in infected cells compared to SCR co-cultures. This data may show that inhibiting HDAC 6, specifically in endothelial cells, offers a potential target for clinical cardioprotection.

Mandy Kao

T cell Trafficking in IL-23-induced Model of Psoriasiform Dermatitis

Tomotaka Mabuchi, Tej Pratap Singh, Tomonori Takeoshi, Guang-fu Jia, Xuesong Wu, Ido Weiss, Joshua M. Farber, Sam Hwang, MD, PhD

Psoriasis is a common and currently incurable chronic skin disorder. A subset of T cells that express Th17 cytokines, CC chemokine receptor-6p (CCR6), and low level of γδ T cell receptors (γδ-low, GDL) is implicated as key players in the reported interleukin-23 (IL-23)-mediated immunopathogenesis of this inflammatory disease. In this study, IL-23 treatment was used to induce psoriasiform dermatitis in CCR6-deficient (knockout, KO) and wild type (WT) mice. Following IL-23 injection, GDL T cells significantly accumulated in the epidermis of the WT mice but not in the epidermis of CCR6 KO mice. On the other hand, comparable populations of GDL T cells were observed in the dermis of both WT and CCR6 KO mice following treatment. Therefore, CCR6 is implicated in the regulation of trafficking of GDL T cells from the dermis to the epidermis in psoriatic inflammation. CCR6, therefore, is potentially a valuable therapeutic target in psoriasis.

David Kay

Photoreceptor Structure in Presumed Non-Neoplastic Autoimmune Retinopathy

Robert Cooper, Drew Scoles, Fouad Zakka, MD, Vesper Williams, Alfredo Dubra, PhD Joseph Carroll, PhD Kimberly Stepien, MD

Purpose: SD-OCT has shown outer retinal abnormalities in patients with autoimmune retinopathies (AIR). Adaptive optics scanning light ophthalmoscopy (AOSLO) enables high-resolution imaging of the photoreceptor mosaic. This study incorporates AOSLO into the investigation of individuals with AIR. **Methods:** Three individuals with AIR underwent retinal imaging over 5 – 14 months. Retinal appearance and lamination were assessed using fundus photography and SD-OCT. The photoreceptor mosaic was assessed using AOSLO. **Results:** SD-OCT revealed decreased central macular thickness in two patients, and focal disruption of outer retinal lamination at the fovea in all patients. This disruption was also visible on AOSLO as hyporeflective foveal areas. In addition, AOSLO revealed significant reduction in parafoveal cone density in all subjects. This disruption was not visualized on SD-OCT. **Conclusions:** Both SD-OCT and AOSLO show retinal changes associated with AIR not apparent on clinical examination. However, AOSLO allows for assessment of photoreceptor structure at a resolution not resolvable on SD-OCT.

Tyce Kearl

PD-1/PD-L1 Blockade after Transient Lymphodepletion to Treat Myeloma

Wei Qing Jing, Jill Gershan, Bryon Johnson, PhD

Early phase clinical trials targeting the PD-1/PD-L1 pathway to overcome tumor-mediated immunosuppression have reported promising results for a variety of cancers. We demonstrate that PD-1/PD-L1 blockade with a PD-L1-specific antibody elicits rejection of a murine myeloma when combined with lymphodepleting irradiation. The anti-tumor effect of lymphodepletion/anti-PD-L1 therapy was most robust when tumor antigen-experienced T cells were present either through cell transfer or survival after non-myeloablative irradiation. In vivo depletion of CD4 or CD8 T cells completely eliminated anti-tumor efficacy of the lymphodepletion/anti-PD-L1 therapy, indicating that both T cell subsets are necessary for tumor rejection. In summary, our results support the clinical testing of lymphodepletion and PD-1/PD-L1 blockade as a novel therapeutic approach for improving the survival of patients with multiple myeloma and other hematologic malignancies.

Andrew Kim

Onabotulinumtoxin A (ONA) injections & postoperative pain in Cervical Decompression & Fusion

Nicholas Ketchum, MD
Trisa Danz

The main objective of this study is to assess whether preoperative ONA injections into the paraspinal muscles can reduce postoperative pain and improve functional outcomes following posterior cervical decompression and fusion. The study will recruit a total of 20 participants, randomly assigned to receive either preoperative ONA or placebo injection. Between 14 and 21 days prior to scheduled treatment, recruited subjects will receive an intramuscular injection of ONA or placebo into the paraspinal muscles of the region to be treated. Participants will then undergo posterior cervical decompression and fusion and participants will rate pain on the visual analogue scale (VAS). Disability will be assessed using the Neck Disability Index (NDI) before the procedure and 3 months postoperatively. Statistical analysis will determine whether the use of preoperative ONA intramuscular injection into the paraspinal muscles effectively reduces postoperative pain following cervical decompression and fusion.

Michael La Pointe

Outcomes for Combined Pincer Impingement & Capsular Laxity

Patrick Birmingham, MD

Suture plication has been described to treat chronic hip pain secondary to capsular laxity and hip instability. The goal of this study was to evaluate functional outcomes following pincer osteoplasty and arthroscopic anterior hip capsular plication for patients with femoroacetabular impingement. Ten patients underwent the procedure. There was a negative correlation between age and baseline Modified Harris Hip Score (MHHS) (r=0.67). No correlation was found between age and outcomes, or between Coronal Center Edge Angle (CEA) and outcome scores. There was no association between the presence of a ligamentum teres tear and attainment of a good/excellent outcome. Patients returned to preinjury activity levels and yielded significant improvements in MHHS and Hip Outcome Score (HOS) by their 6-month visit, and this improvement increased with further follow up. Functional outcomes were not found to be associated with age, CEA, or the presence of a ligamentum teres tear.

POSTER

Benjamin La Hood

Role of Ancillary Providers in Patient Care

Roger Daley, MD

This study will address the increasing roles of physician extenders, the current balance between clinical and surgical responsibilities, and specific factors surrounding an orthopaedic surgeon's time spent in clinic. This goal will be accomplished by obtaining 100-200 survey responses from physicians in the Milwaukee area. This survey will help to clarify whether orthopaedic surgeons are maintaining a significant clinical volume or are progressing towards the role of a surgical technician. The first part will examine the increasing involvement of mid-level providers such as physician assistants (PA's), nurse practitioners (NP's), and medical assistants (MA's). Questions such as the number of each type of physician extender employed, who performs new patient examinations, and how much time a surgeon spends in clinic each week will help to understand the roles of the extenders. Additional factors concerning a physician's clinic as well as demographic information will be studied to obtain a more complete picture.

Megan Land

Outer Retinal Structure in Best Vitelliform Macular Dystrophy

David Kay (2014)
Robert Cooper,
Adam Dubis, PhD
Pooja Godara, MD
Alfredo Dubra, PhD
Joseph Carroll, PhD
Kimberly Stepien, MD

Characterize outer retinal structure in patients with Best Vitelliform Macular Dystrophy (BVMD), using spectral domain optical coherence tomography (SD-OCT) and adaptive optics scanning light ophthalmoscopy (AOSLO). In this observational case series, four symptomatic members of a family with BVMD with known BEST-1 gene mutations were recruited. Subjects underwent clinical examination, fundus photography, and SD-OCT. Thickness of inner and outer segment layers were measured using SD-OCT. Images of the photoreceptor mosaic within and around the visible lesions were obtained using AOSLO, and cone density was assessed. Each subject was found to be at a different stage of BVMD, with photoreceptor disruption evident by AOSLO at all stages. When comparing SD-OCT and AOSLO images from the same location, AOSLO images allowed for direct assessment of photoreceptor structure. Retained photoreceptors were seen within all lesions, and the mosaic immediately adjacent to the visible lesions appeared contiguous had normal photoreceptor density.

POSTER

Leah Marie Landsem

Severe Cystoid Macular Edema in a Patient after Fingolimod Use

Kimberly Stepien, MD
Douglas Woo

Purpose: In clinical trials of fingolimod, a small percentage of participants experienced cystoid macular edema (CME). Little is known about CME in patients with retinal disease. Here we present a case of CME in a patient with MS and type 1 diabetes treated with intravitreal bevacizumab. **Case description:** A 35 year old with type 1 DM and MS presented with bilateral blurred vision 3 months after starting fingolimod. Fundus exam showed bilateral CME, OCT showed subretinal fluid and fluorescein angiogram demonstrated ischemia with diffuse edema bilaterally. Fingolimod was discontinued and both eyes underwent one course of bevacizumab. **Results:** Visual improvement was reported within five days post-injection. Clinical exam four weeks later showed increased visual acuity and resolution of CME. During 9 month follow-up there in acute, severe macular edema and treatment with bevacizumab may restore visual acuity and resolve CME.

Andrew Leiker

Cost-analysis of Thyroid Lobectomy & Intraoperative Frozen Section vs. Total Thyroidectomy

Tina Yen, MD, MS
Kevin Cheung, MD, MS
Douglas Evans, MD
Tracy Wang, MD, MPH

Background: The optimal surgery for a patient with a thyroid nodule 'suspicious for papillary thyroid cancer (PTC)' on fine-needle-aspiration (FNA) is unclear. This study examines the incremental cost-utility of thyroid lobectomy with intraoperative frozen section (TL) vs. total thyroidectomy (TT). **Methods:** Cost-utility analysis was performed for patients with a cytologic diagnosis of 'suspicious for PTC' on FNA. Patients underwent either initial TT or TL and, if needed, completion thyroidectomy.
Results: The model is sensitive to the accuracy of frozen section and TL is more cost-effective only if both frozen section and final pathology are benign in ≥92% of patients. With increasing rates of RLN injury associated with TT, there is a trend towards TL being more cost-effective. **Conclusions:** In our model, initial TT is the most cost-effective strategy for patients with a single thyroid nodule suspicious for PTC on FNA. TL is preferred only when complications reach unacceptable levels.

Niranjan Manoharan

Scaffold Protein IQGAP1 Organizes ERK 1/2 Activation in B Cells

Subramaniam Malarkannan, PhD

IQGAP1 has been shown to be one of the essential scaffolding proteins that coordinate multiple signaling pathways in B lymphocytes. However, its role in the development and functions of B cells has not been characterized. In the present study using IQGAP1 gene knockout mice, we found the absence of IQGAP1 significantly altered the absolute numbers of distinct B cell subsets in the bone marrow and spleen. One of these altered numbers of B cell subsets included significantly decreased marginal zone B cells in the spleen of IQGAP KO mice. More importantly, the ability of B cells in the IQGAP1 KO mice to mediate antibody responses to model antigens was significantly reduced. Currently, we are conducting biochemical analyses of B cells after activation to determine the molecular defects that were caused by the absence of IQGAP1. This study will help to define exciting new intracellular functions of IQGAP1 in B cells.

POSTER

Matheen Mohabbat

Comparison of Infratentorial vs. Supratentaorial Radiation Therapy

Selim Firat, MD
Sachin Jogal, MD

An increase in the effectiveness of cancer treatments has improved the long term survivability of children with many types of cancer including tumors of the central nervous system (CNS). These survivors are at risk for long term treatment related toxicities. The goal of our study is to further investigate whether risk of these toxicities is different for children who have had radiation given to supratentorial tumors versus infratentorial tumors. Medical records of children who have been treated for tumors in these two locations will be reviewed. Measures which will be used to compare toxicity associated with each treatment consist of endocrinopathies, neurosensory deficits, anatomical lesions, cognitive and psychiatric deficits. The results of this study will help to identify patients at higher risk of these toxicities with radiation therapy, and develop alternative treatment strategies for these patients.

Darren Nabor

Role of Nitric Oxide in Anesthetic Preconditioning in a Consomic Rat Model

Qunli Chen,
Judy Kersten, MD
David Stowe, MD, PhD
Jozef Lazar, MD, PhD
Matthias L. Riess, MD, PhD

Introduction: SS hearts are more susceptible to IR-injury than BN or consomic SS^{6BN} hearts. IR injury can be attenuated by APC and IPC in BN, but not SS hearts. We hypothesized that cardioprotection by APC is due to genetic information on BN chromosome6 mediated by NO. **Methods:** Hearts from BN, SS and SS^{6BN} were preconditioned with two-exposures to sevoflurane before ischemia and reperfusion; controls were not preconditioned. In some hearts, NO synthase was inhibited by L-NAME. We monitored LV pressure and measured infarct size. **Results:** Functional return on reperfusion was lower, and IS larger in SS than in BN or SS^{6BN}. L-NAME abolished both the APC-mediated protection in BN and the endogenous protection in BN and SS^{6BN} hearts. **Discussion:** Endogenous cardioprotection depends on NO availability as does APC-mediated protection in BN vs SS rats. These findings suggest that NO availability is necessary for APC to protect cardiac function against IR-injury.

On 4/25/2013, the
3rd Annual Physician Scientist Pathway
Student Research Presentation Day
showcased:
Kenny Berg, Ruben Chanmugathas, Jared Forrester, Johnny Myers, Jeffrey Peng, Greg Robbins, Lauren Seline, & Kevin Sullivan.

Peers rated their presentations using Glassick's Criteria, and event sponsor MCW/Marquette Medical Alumni Association awarded $150 to top scorers:

Ruben Chanmugathas (2014)
"Caregiver Low Health Literacy is Associated with Non-Urgent Emergency Department Visits"

Jeffrey Peng (2015)
"Effects of T Cell Infiltration in Renal Ischemic Reperfusion Injury in Female CD247 Knockout Rats"

Congratulations!

POSTER

Bhavin Patel

Protecting Life & Limb: The Expansion of Surgical Strategies in the Era of Damage Control Resuscitation

Anahita Dua, MD
John Kragh, Jr, MD
John Holcomb, MD
Charles Fox, MD

Objective: The effectiveness of damage control resuscitation (DCR) has been demonstrated in recent US conflicts. Wartime casualties treated for hemorrhagic shock from vascular wounds were studied. **Methods:** Joint Theater Trauma Registry (JTTR) data from August 2006-April 2011 were retrospectively reviewed. **Results:** The study group consisted of 497 severely wounded local national and military casualties presenting with acidosis, tachycardia, and coagulopathy. Given DCR, and early management of vascular injury, blood pressure, heart rate, temperature, hemoglobin and base deficit improved promptly ($p<0.05$). US casualties ($n=111$) had limb salvage attempted for 113 extremity vascular injuries (3 iliac, 33 femoral, 23 popliteal, 13 tibial, 33 brachial, 4 ulnar, and 4 radial). During follow-up 96 grafts remained patent, 16 casualties required a delayed amputation, and 110 survived. The amputation-free survival was 84%. **Conclusion:** In severely wounded casualties wartime surgical stratgies to save both life and limb evidently permit definitive procedures at initial surgery with excellent limb salvage results.

Jacquelyn Phillips

Categorical Perception of Speech in Aging

Einat Liebenthal, PhD
Merav Sabri, PhD

Age-related hearing loss may not be the only reason older adults struggle with speech comprehension. A decline in the level of categorical perception, the ability to discriminate better between two categories than within a category, may prevent accurate speech perception in this population. Fifteen young adults and 15 older adults were tested on two-alternatives-forced choice identification and same-different sound pair discrimination tasks using stimuli from four continua: place of articulation speech, voice onset time (VOT) speech, and two non-speech control continua. In the identification task, the older subjects performed worse for tokens VOT2 ($p<0.038$) and VOT4 ($p<0.019$). For the discrimination task, the older group performed worse for the across category token pair VOT3-VOT5 ($p<0.014$). The results suggest that older adults may have difficulty categorizing speech sounds that are characterized by subtle timing differences, such as the VOT cue.

POSTER

Megan Plato

Multivariate Analysis of Lower Extremity Reconstruction

Nicholas Flugstad, J B Stephenson, John LoGuidice, MD

Predicting potential complications post lower extremity reconstruction is a difficult task. We hypothesize that open fractures will have a longer time to full weight bear and healed wound, and increased number of infections and amputations post flap reconstruction surgery in comparison to closed fractures. 125 lower extremity fractures necessitating flap coverage were included. Patients were categorized by wound etiology: Acute coverage of an open fracture, dehiscence, infection and unstable scar after reduction and fixation. Chi-square analysis showed no significance with open fracture and risk for infection ($p=0.79$), readmission <90 days ($p=0.63$), acute osteomyelitis ($p=0.57$) or secondary amputation ($p=0.80$). It did show significant risk for bony non-union ($p=0.007$) and time to full weight bearing using pr>ChiSq analysis (0.0455). Open fracture requiring flap coverage poses a significant risk for bony non-union and time to full weight bearing. Wound etiology was not statistically significant increase in infection, readmission or amputation.

POSTER

Gregory Robbins

Evaluation of Direct Cell-Binding Activity in Known Leptospira ECM Adhesins

Karen Evangelista
Beth Hahn
Lavinia Padimore
Jenifer Coburn, PhD

BACKGROUND: Pathogenic spirochaetes from the genus Leptospira cause leptospirosis, a common zoonotic infection that occurs globally. The bacteria are spread through contact of mucous membranes or skin abrasions with the urine of reservoir animals. To elucidate mechanisms of survival inside these animals, three known Leptospira ECM adhesins, LipL32, Loa22, and OmpL1, were evaluated for direct binding to cells. **METHODS:** MBP fusion proteins were produced using the genome of the strain Leptospira interrogans Copenhageni Fiocruz L1-130. Direct binding to Ea.hy-926 macrovascular cells and HEP2 laryngeal carcinoma cells was evaluated in a cell-binding assay followed by ELISA for quantification. **RESULTS:** MBP-OmpL1 showed repeatable binding to Ea.hy-926 and HEP2 cells at 100 nM ($P<0.04$) when the passage number was < 7. For passages 7-10, binding was not repeatable. MBP-LipL32 and MBP-Loa22 did not bind to cells. **CONCLUSION:** OmpL1 binds directly to cells. This interaction may help explain tropism for specific tissues.

POSTER

Emily Roth

Prosthesis Use & Satisfaction across Post-Acute Care Settings

Liliana Pezzin, PhD, JD
Emily McGinley, MS, MPH
Timothy Dillingham, MD, MS

Lower limb amputations are expected to rise along with rates of diabetes mellitus and peripheral vascular disease. Prosthesis use and satisfaction has been shown to correlate with an amputee's quality of life, however, the role of post-acute care setting in prosthesis use and satisfaction is unclear. This prospective multi-center study examined whether post-acute care setting (inpatient rehabilitation (IRF), skilled nursing facility (SNF), or home) influences prosthesis use and satisfaction among patients with a dysvascular lower limb amputation. A two-stage instrumental variable model was applied to examine prosthetic use and satisfaction, while addressing the non-random post-acute care assignment. Adjusted outcomes demonstrated that IRF patients were more likely to use their prosthesis more ($p<0.05$), have less pain ($p<0.05$), and be more satisfied with gait than those at SNF ($p<0.10$). Our results indicate a strong association between post-acute care at an IRF and higher intensity of prosthesis use, less pain, and increased satisfaction with gait.

Lauren Seline

MicroRNAs Signatures in Cutaneous Squamous Cell Carcinomas of Immunocompetent & Organ Transplant Patients

E Olasz, M Neuburg, J Lazar, N Duncan, A M Schock, A Lopez, Y Lu, P Liu, Z Lazarova

Cutaneous squamous cell carcinoma (CSCC) is the second most common skin malignancy and is especially severe in organ transplant recipients (OTRs). MicroRNAs (miRNAs) are epigenetic regulators of gene expression and act as regulators of tumor growth and metastasis in cancer pathogenesis. Differential expression of 88 miRNAs was analyzed using SABiosciences PCR arrays in 44 CSCC patients; 32 immunocompetent (IC) patients and 12 OTRs. Expression for all samples was normalized and compared with those in 15 normal skin samples. To assess the differences, nonparametric permutation tests were performed to calculate individual p-values. Four miRNAs were significantly upregulated and sixteen were significantly downregulated in CSCCs taken from IC patients. Two miRNAs were significantly upregulated and seventeen were significantly downregulated in CSCCs taken from OTRs. Our findings suggest that CSCCs have a unique miRNA profiling pattern. This study may provide fundamental information for further investigations of functional roles of miRNAs in CSCC development, progression, and metastasis.

Nancy Stevens

Video Education Intervention in the Emergency Department

Amy Drendel, DO, MS
Stephen Weisman, MD

After discharge from an emergency department (ED), parents under-treat children's pain. Video education standardizes information without requiring time or literacy. This was a randomized single blinded clinical trial of parents of children presenting in pain to a pediatric ED. Primary outcome was the proportion of children receiving pain medication in the two days after discharge. Data was analyzed using a chi square test. Pain knowledge was tested before, immediately following, and 2 days after intervention. McNemar's test determined odds that improved knowledge correlated with intervention.100 parents enrolled: 72.9% followed up. More parents provided analgesics after the educational video: 96% vs. 80%. Immediately following intervention, there were significantly higher odds parents had correct knowledge about: pain scores ($p=0.04$), pain's effect on function ($p<0.01$), and medications ($p<0.01$). Significance remained three days later. A video about pain management significantly increases the proportion of children receiving pain medication, and improves parents' pain knowledge.

PODIUM

Kevin Sullivan

Morphine is Less Cytotoxic Than Lidocaine to Bovine Chondrocytes in Vitro

Patrick Birmingham, MD
Alicia Loiwing (2013)
Demetrios Douros, MD

Background: Studies show anesthetics used as intra-articular injections, including lidocaine, are cytotoxic to bovine chondrocytes. Previous evidence suggests morphine injections can provide comparable analgesia; we investigated morphine's cytotoxicity to chondrocytes in vitro. **Methods:** We exposed cultured tissues of bovine chondrocytes to 0.9% saline, 2% lidocaine, and 1.2% and 2.3% morphine sulfate and, at multiple time points, assessed cell viability using a MTT absorbance assay. Additionally, we cut osteochondral cores from bovine knees, treated them with each drug, and stained them to image the live and dead cells via fluorescence microscopy. **Results:** Compared to saline, lidocaine absorbance decreased while 1.2% and 2.3% morphine absorbance decreased by about half as much. When imaged via microscopy, the depth of cell death was greatest in lidocaine, while saline, 1.2%, and 2.3% morphine were each similar. **Conclusions:** The tissues treated with both 1.2% and 2.3% morphine exhibited greater cell viability, and less cytotoxicity, than lidocaine.

Chelsea Tessler-Verville

The role of CD8+ Foxp3+ Tregs During Graft Versus Host Disease

Amy Beres, PhD
William Drobyski, MD

Graft versus host disease (GVHD) is the major complication of bone marrow transplantation. Previous research suggests that GVHD is associated with a deficiency of regulatory T cells (Tregs). Tregs are classically defined as CD4+ Foxp3+. However, a population of CD8+ Foxp3+ Tregs was recently identified. The goal of these studies was to determine the role of CD8+ iTregs in GVHD with the hypothesis that they would mitigate the disease. For in vitro studies, effector T cells from mice were stimulated and CD8+ in vitro-induced Tregs (iTregs) were added. Effector cell proliferation was quantified. For in vivo studies, mice were transplanted with bone marrow alone or with HLA mismatched T cells to induce GVHD. An additional cohort received iTregs. CD8+ iTregs suppressed in vitro effector T cell proliferation ($p<0.002$). However, they failed to mitigate GVHD in vivo. The inability to ameliorate GVHD was associated with Foxp3 instability, as 80% of iTregs lost Foxp3 expression. This suggests that the transfer of CD8+ iTregs is not currently a viable treatment for GVHD.

Kevin Wang

ASE Recommended Left Atrial Volume Values Overestimate Disease

Leanne Harmann, RDCS, RDMS, RVT
Alexis Visotcky, MS
Sergey Tarima, PhD
Timothy Woods, MD

Background: The American Society of Echocardiography (ASE) published a scale for left atrial enlargement based on indexed volume (LAVI), a marker of diastolic dysfunction. We hypothesized that this scale is highly sensitive, but poorly specific. **Methods:** We applied the ASE recommended reference range (ASERR) to a healthy volunteer group. A new normal LAVI was determined from this group. We tested the ASERR and new Healthy Volunteer reference range (HVRR) against the gold standard, pulmonary capillary wedge pressure (PCWP). **Results:** When ASERR LAVI of 22±6 ml/M2 was applied to 109 volunteers, 89% had LA enlargement. The HVRR was 37±8 ml/M2. Unlike the ASERR, the HVRR significantly discriminated between patients with normal and elevated PCWP. **Discussion:** The ASERR identifies LA enlargement with high sensitivity, but very poor specificity. This causes false positive diagnoses of left atrial enlargement, leading to unnecessary patient and provider concern, referrals, and health care cost.

Andrew Wang

Genetic Control of iNKT Cells in NOD mice

Ashley Ciecko, Yi-Guang Chen

Similar to humans, multiple genetic susceptibility loci contribute to type 1 diabetes (T1D) in NOD mice. Development of T1D in NOD mice is partly due to defects in invariant natural killer T(iNKT)-cells. The ICR mouse is genetically similar to NOD mice but is protected from developing T1D. In this study, the genes on Chr11 and 12 effecting iNKT-cells will be further confirmed and potentially refined in (NODxICR)xNOD backcross (BC1) mice. Frequency of iNKT-cells are determined in the BC1 mice. Tail genomic DNA was purified and genotyped to determine the effects of ICR genetic variants on iNKT-cell frequencies. This analysis mapped the region of interest down to around position 97 Mb in Chr11 and 119 Mb in Chr12. These regions overlap syntenic human T1D loci on Chr17 and 14. This suggests iNKT-cells development is genetically controlled and there are potential genetic links between iNKT-cells and T1D in mice and humans.

Kasper Warrick

Adoptive transfer of Myeloma-Reactive T-cells

Weiqing Jing, PhD
Bryon Johnson, PhD

We are attempting to expand myeloma-reactive T-cells in vitro for adoptive transfer into myeloma-bearing mice as a potential treatment modality. The survival of mice that receive adoptive transferred myeloma-specific T-cells will be compared to the survival of mice that receive T-cells from non myeloma-bearing mice. CD4 and CD8 T cells were purified and expanded with different strategies. We used CD3/28 beads, CD3/28/137 beads, and the artificial antigen presenting cells (aAPCs) Yac-1 CD32+/137L+ and K562 CD32+/137L+ to expand these T-cells. Our T-cell populations have expanded initially with stimulation but subsequently lost their growth potential when cytokine IL-2 was used. So far, the most successful expansion strategy can yielded 3 rounds of cell proliferation. We will utilize IL-2, and combination with other homeostatic cytokines IL-7, and IL-15, to achieve best T-cell expansion. We will attempt to achieve a T-cell number high enough for effective and therapeutic adoptive transfer.

Kenneth Weinlander

Interaction Between the General Anesthetic Propofol and the Endocannabinoid System

Cecilia J Hillard, MD

Propofol is one of the most widely used general anesthetics for induction of anesthesia in the United States. It is thought that the mechanism of anesthesia of propofol, much like thiopental, is through GABA potentiation. Unlike thiopental, propofol has many beneficial side effects (e.g. anti-emesis) that are thought to be mediated through indirect CB1 receptor agonism. Fatty acid amide hydrolase (FAAH) degrades the endogenous ligand of CB1, anandamide. Some studies have shown evidence of FAAH inhibition as the mechanism of propofol's CB1 agonism. In a novel experiment, we dosed FAAH gene knockout, CB1 gene knockout, and wild type mice with thiopental, propofol, and saline and measured their response to each treatment using loss of righting reflex (LORR) as our marker. We hypothesized that propofol induces anesthesia in part through endocannabinoid signaling via anandamide stimulation of the CB1 receptor. The collected statistically significant data support our hypothesis

Carson Welker

VRK1 Overexpression in 3D Breast Acini

Paula Traktman, PhD

The VRK1 protein is a pro-proliferative protein kinase that we hypothesize will induce mammary oncogenesis when overexpressed. Two cell lines will be used, one given a transmutated lentivirus to induce VRK1 overexpression and the other cell line will be normal MCF10-a breast cells. Cell cultures will be produced using flow cytometry to quantitate initial number of cells. Each cell line will be harvested at days 4, 7, 12 and 14. Analysis of acini architectural change will be done through direct immunofluorescence of caspase, microtubules, nuclei and the basement membrane of the acini. Protein analysis will be accomplished through western blot to confirm correct overexpression of VRK1 and to also observe other protein expression abnormalities such as Cyclin-D1 overexpression and BAF. Results are pending as project is not finished.

Andrew Wuenstel

Resistance of Complex IV activity to Extended Ischemia & Reperfusion

Amadou Camara, James Heisner, Mohammed Aldakkak, David Stowe

Mitochondrial respiratory complexes sustain damage due to reactive oxygen species (ROS) generated during ischemia/reperfusion injury. Complex IV, however, is resilient to shorter ischemic times and therefore we investigated the role of ROS in complex IV injury during extended ischemia. Guinea pig heart mitochondria were isolated after 30 min reperfusion in four groups: time-control (TC), 35 min ischemia, 45 min ischemia, and 45 min ischemia+ROS scavenger cocktail. Complex IV enzyme activity was assessed via oxidation of cytochrome c measured at 550 nm. Phasic (systolic–diastolic) left ventricular pressures (LVP) were 92±1, 47±7, 17±5, 23±3 mmHg, and diastolic LVPs were 0, 9±4, 41±5, 22±2 mmHg, for TC and ischemia lasting 35, 45, and 45 min+ROS scavengers, respectively. Despite the significant differences in cardiac function, complex IV activity was not different among groups. Understanding why complex IV is resistant to oxidative stress could provide insight into strategies to protect the more susceptible complexes.

POSTER

Ying Qiu Zhou

Neural Mechanisms of Reading–fMRI with Multivariate Pattern Analysis

Reading involves derivation of meaning from words (semantics), recognizing shapes and letter combinations (orthographic processing) and retrieval of sound information (phonologic processing). The precise contribution of different brain areas to these distinct processes is not fully understood. Here, we aim to further define areas involved specifically in semantic processing. We manipulate two linguistic factors known to alter semantic processing during reading: word imageability and frequency. Manipulating imageability and frequency should change activation in brain areas involved in semantic representations of words and areas involved in lexical access (process by which word information is accessed from visual or spoken input), respectively. Using fMRI in and multivariate pattern analysis (MVPA), a novel machine-learning data analysis, we reveal more resolution regarding regions involved in lexical access and semantic processing compared to traditional fMRI analysis. These areas include regions implicated in other studies of semantic processing, including the middle temporal gyrus, fusiform gyrus, and anterior temporal lobe.

Thank You ...

To the faculty who have generously given their time and expertise to support the Physician Scientist Pathway small groups. This Pathway would not be successful without you, and we are deeply indebted for your service!
(Years of participation denoted in parenthesis)

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Alan Bloom, PhD (4)
Amanda Brandow, DO (3)
Jonathan Bock, MD (1)
Joe Carroll, PhD (4)
John Densmore, MD (1)
Amy Drendel, DO (4)
Mary Eapen, MBBS, DCH, MRCPI, MS (2)
Mike Farrell, MD (3)
Dara Frank, PhD (4)
Jon Gould, MD (1)
Bryon Johnson, PhD (4)
Joanne Lagatta, MD (1)
E. Brooke Lerner, PhD (1)
Scott Levick, PhD (1)
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These faculty members each contributed approximately 90 minutes per month, from August through March, to the facilitation of small student groups in the Physician Scientist Pathway. Consistently rated by students as the most helpful and rewarding component of the Pathway, your hours of dedication are tremendously appreciated! *Thank you!*

Quality Improvement & Patient Safety

Geoffrey Lamb, MD
& Cassie 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.

POSTER

Ben Dickey

Demographics of the Saturday Clinic for the Uninsured in 2011

This study characterizes the patient population, presenting diagnoses, and services provided by the Saturday Clinic for the Uninsured (SCU) in 2011. Administrative data were obtained on 45 clinic days. A total of 997 patient visits were recorded with a mean of 22 visits per clinic day. 60% of patients were black, 55% were male, and 75% were between the ages of 35 and 65. Patients were more likely to live in north-central Milwaukee County. Unemployment was estimated to be 16.2%, average household income $32,029, with 26% of households using food stamps and 28% living below the poverty line. The analysis demonstrates that SCU cares for a population which is disproportionately composed of minorities from areas of low income, high poverty, and high unemployment. The geographic distribution of patients was not only a function of proximity to the clinic, but also mirrored US Census data identifying black, low SES areas of Milwaukee.

POSTER

Daniel Lackey

Blunt Liver Injury Triage: A Retrospective Quality Improvement Study

John Weigelt, MD, DVM

Background: Literature review suggests that patients with Grade IV and V liver lacerations with hypotension unresponsive to fluid replacement should receive a FAST exam with those positive proceeding to surgery. Management of Grade IV and V liver lacerations at Froedtert Hospital was compared to this standard of care. **Methods:** All Grade IV and V liver lacerations for the last 3 years were identified and records reviewed including pre-hospital and Emergency department care. Primary endpoints were appropriate use of FAST exam and triage to the OR. **Results:** 1 patient did not receive a FAST exam despite meeting criteria. All 3 patients requiring surgery were appropriately triaged. These 3 were among 4 patients requiring pre-hospital blood products. **Conclusion:** Treatment for 1 of 18 patients did not follow guidelines. Additionally, pre-hospital blood product administration may be a marker for patients requiring surgery allowing allow for earlier identification and augmented treatment for these patients.

PODIUM

Juyeon Lee

Effect of Follow-up Calls on Reducing Sickle Cell Disease Readmissions

David Brousseau, MD, MS

Patients with sickle cell disease (SCD) have high rates of readmission. Our goal was to determine the effect of nurse follow-up calls, 24-48 hours after discharge, on reducing the 30-day readmission rate for children with a sickle cell crisis. The nursing staff at the Children's Hospital of Wisconsin made follow-up calls from 8/23/2011 – 6/13/2012 to patients discharged with a SCD diagnosis. Nursing documentation of follow-up calls was reviewed and administrative data was used to assess readmission rates. We compared 30-day readmission rate, and total admissions for the project period and the prior year. There were a slightly higher number of admissions in the follow-up period (259 vs 237); however the readmission rate decreased from 27% to 14%. Slightly over one-third of discharged patients received a follow-up phone call. While these results are promising, individual level analyses are needed to fully evaluate the effect of the nurse phone call program.

POSTER

Lea Moody

Documentation of Pressure Ulcers by Nursing & Physician Staff in the PICU

Sven Olson, (2014)
Matthew Scanlon, MD

Introduction: Pressure ulcers, a common, serious and expensive iatrogenic problem in the PICU setting, have historically been viewed as a "nurse" problem. However, physician care may impact development, prevention and treatment of ulcers. There is no pediatric literature on physician documentation of pressure ulcers. **Methods:** Retrospective chart review of physician documentation of 84 patients with known pressure ulcers from March 2009 to February 2010 the PICU at Children's Hospital of Wisconsin. **Results:** Preliminary review of the initial 12 patient records revealed 23 ulcers, of which 5 (22%) were coded by the hospitals and 1 pressure ulcer (4%) and 3 "lesions" (12%) were documented by physicians. Delay in physician documentation average ~2.25 days. **Discussion:** Lack of physician documentation suggests a lack of awareness of and attention to pressure ulcers, and contributing factors. Future work includes determining reasons for this lack, along with designing interventions to improve physician engagement.

PODIUM

Sven Olson

Evaluation of Whiteboard use in a Pediatric Intensive Care Unit

Lea Moody (2014)
David Triscari
Matthew Scanlon, MD

Introduction: Manual whiteboards could help to improve inter-provider communication and reduce adverse events, but little is known about how whiteboards are used in the pediatric intensive care unit. **Methods:** Observations of patient rooms in a 72-bed PICU were made over four days. Frequency of whiteboard use was noted, photographs were taken of used whiteboards, and types of recorded information were quantified. A verbal survey was administered to the bedside nurses assessing the usefulness and ease of use of whiteboards. **Results:** Whiteboards were used in 100 of 204 occupied rooms (49%), most frequently to list daily and discharge goals. A majority of surveyed nurses found whiteboards useful and easy to use. There was no statistically significant relationship between whiteboard use and perceived usefulness or ease of use. **Discussion:** Whiteboards are considered valuable communication tools in the PICU, but barriers to consistent use clearly exist as suggested by their relatively low rate of actual use.

The Pathway Directors and staff would like to thank
Amy Palka, MBA
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Quality Improvement & Patient Safety Pathway.
The support she provided her directors, students,
and Pathway staff is greatly appreciated.

POSTER

James Ward

Meta-Analysis Evaluating Fixed-dose Combination Medication Adherence vs Monotherapy Counterparts

David Lillich, MD

BACKGROUND: Nonadherence to medication is estimated to cost 100-289 billion/year for Americans. Fixed-dose combination medications have the potential to reduce non-adherence by reducing pill counts and simplifying regimes. **METHODS:** Comprehensive search was performed by OVID/Medline, Google Scholar, and Pubmed. Included papers were narrowed down by relevance (FDCs vs monotherapy counterparts measuring compliance), English only, and Jadad score >3. No retrospective studies were included in this study to avoid sampling bias. **RESULTS:** Seven papers met the inclusion criteria: Totaled 517 patients on the FDC side and 832 on the combined monotherapy side. FDC regimes resulted in a 33% decrease in non-compliance compared to the combined monotherapy regimes (RR=0.65, 95%CI [0.46–0.92], P=0.02). Because there was no evidence of heterogeneity, data was analyzed using fixed effects model. **CONCLUSION:** FDCs reduce non-adherence to medication. This study worked to reduce sampling bias that typically hinders meta-analyses and further proved that FDCs should be considered in chronic conditions.

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

Iris Adipue

Falls in the Hospice Population

Nancy Havas, MD,

One-third of adults 65 and older fall each year in the US. Falls are a leading cause of injury deaths/non-fatal injuries in the geriatrics population, but few studies address the hospice population. Many interventions to prevent falls in the geriatrics population conflict with the goals of hospice to manage pain/symptoms. This project is a preliminary/descriptive study determining: **1)** when/where falls most likely occur, **2)** which hospice patients are most likely to fall, and **3)** whether a fall predicts death within a certain time frame. Results from a retrospective chart review of fall reports from a community hospice from a two-year period show: 49 falls among 23 patients, 65% of patients with a prior history of falls, and most falls occurring in the home. It cannot be determined with statistical significance whether a fall predicts death. Study results may help generate future interventions to prevent falls in hospice patients.

POSTER

Sherry Baker

Patient Education Classes at the Saturday Clinic for the Uninsured

Jessica Lautmann, (2014)

Chronic diseases such as diabetes, obesity, and hypertension are among the leading causes of morbidity and mortality in the United States. Despite efforts by primary care physicians, there remains a lack of knowledge in many patient populations particularly low-income, urban, and uninsured patients. To address this need in the MCW student-run Saturday Clinic for the Uninsured, group classes were created to focus on chronic disease management and to enhance patients? understanding of their condition. The classes utilized a supportive group setting to facilitate exchange of ideas and compliment the preexisting one-on-one patient education program. They involved introductory presentations on various topics, group activities, and group discussions. The patient education classes in the medical student setting were beneficial to both the patients, who received additional support for their chronic disease, as well as the medical students, who learned more about the disease and how to better educate future patients.

Delara Bastani

Method for Evaluating Childhood Nutrition in a Community Setting

Kristin Roensch, (2015)
John Meurer, MD, MBA
David Nelson, PhD, MS

Background: Community centers hold promise for instituting programming to curb childhood obesity. **Purpose:** To promote awareness of nutrition challenges facing communities and to help strengthen community-academic partnerships. **Methods:** We developed a low-cost method to assess food wasted by youth in community food service programs and conducted a pilot study at a community summer day camp. **Results:** Fruit waste was 59 percent and vegetable waste was 50 percent (N=62), and campers consumed only one-fourth of the recommended milk serving. **Discussion:** This protocol engages communities to look introspectively at their nutrition practices and devise unique interventions specific to their institutions to maximize healthy nutrition within financial and organizational constraints. Academic institutions, in turn, can utilize these community findings to augment the existing literature and pool data across multiple communities to study larger populations. These academic-community partnerships are essential if we hope to improve national nutrition practices and lower childhood obesity rates.

POSTER

Omuwa Braimah

An Analysis of the SISTA Program and its Relevance to African American Women

The HIV infection rate is disproportionately high in African American women. SISTA-Sisters Informing Sisters about Topics on AIDS – is a group level intervention facilitated by AA women for AA women designed to reduce sexual HIV risk. This intervention is based on the Social Cognitive Theory and the Theory of Gender and Power. The purpose of this project was to ascertain whether the program was relevant to the women and find out issues that are not addressed by the program. Qualitative analysis was done on three pre-recorded cycles of the intervention with the aim of looking for topics and issues the women raised on their own and how the women talked about sex, relationships and HIV risk. Results showed that the topics included in the program are relevant to the women. However, it does not address power dynamics in relationships which affects how women can be assertive in their relationships.

POSTER

David Brewer

Safety Net Clinic Survey

John Meurer, MD, MBA
Laura Cassidy, MS, PhD
Renee Hill, MPH, PhD
Tom Chelius, MS

A significant number of Milwaukee residents who are uninsured rely on safety net clinics for health care. Many MCW faculty are involved with these community organizations providing for a healthier Milwaukee through organized partnerships and unofficial volunteering partnerships. An online survey was sent to MCW faculty assessing what safety net clinics they provide care at number of annual sessions billed and unbilled and appropriateness for medical students. 1229 MCW faculty were surveyed with 226 responding. 17% of responders had provided care at safety net clinics. The higher volume clinics had the most care providers and were appropriate for medical students. 38 responders showed interest in volunteering their services. Response rate was lower than anticipated but these results demonstrate a commitment from MCW providers to give to their community and underserved populations. Results will be passed along to MCW leadership for strategic planning in providing quality medical education and medical care.

James Campbell

Physician Adherence to Childhood Obesity Prevention & Treatment Protocol

James P Campbell
Charlene Gaebler-Uhing, MD, MHPE
Kim Gajewski
John Meurer, MD, MBA
MAHEC Community Health Internship Program

Background: The Downtown Health Center (DHC) implemented a protocol that stratifies Well Child visits into prevention (PVT) or treatment (TX) groups for childhood obesity according to BMI%, family health history, and dietary, sedentary and physical activity behaviors. **Objective:** Determine physician adherence to obesity protocol. **Methods**: NEW Kids™ Health Habit screening forms (n=2 used to assess risk for obesity, assign PVT or TX category, and track physician adherence to protocol. **Results:** Adherence to protocol ranged from 15% to 68% (mean=48%), correlated with increasing weight category (healthy to extremely obese) (R^2=0.962), and was greater for TX group than for PVT group ($p<0.0001$). **Conclusions:** Physicians miss opportunities to engage in obesity prevention for healthy at risk and overweight patients as is recommended for primary care. To significantly impact obesity, physicians need to address the majority healthy at risk patient population. Further study is warranted to identify barriers to engaging in prevention.

POSTER

Andrea Chiem

CARRAnet Gazette: Presenting Research Findings for Pediatric Rheumatology Patients & Families

Marsha Malloy, RN, MBA
Judyann Olson, MD

Approximately 300,000 children in the U.S. suffer from some form of rheumatic disease. The Childhood Arthritis & Rheumatology Research Alliance (CARRA) is composed of pediatric rheumatologists and researchers who focus on improving outcomes for these diseases. The CARRA registry is a growing database of information from affected patients nationwide. After conducting chart review and data collection for the registry, I grew interested in its results. I became involved with the CARRAnet Gazette, a newsletter sharing CARRA research progress with patients and families. For the second issue, we highlighted Juvenile Idiopathic Arthritis and I contributed an explanation of its various classifications. We are now working on our third issue. Our goal is that the newsletter will educate patients and families, demonstrate the importance of their involvement, and recruit more patients. However, I realize it may be difficult to distribute these newsletters in a busy clinic setting and track their impact.

POSTER

Claire Connell

Health & Homelessness: Health Education at the Milwaukee Women's Center

Sabina Diehr, MD
Wendi Ehrman, MD
The HOME Project team

According to existing research, homeless women have higher rates of risky sexual behavior, gynecological issues, poor pregnancy outcomes, and increased drug and alcohol dependence[1]. In 2010, the HOME project conducted a needs assessment of Milwaukee homeless shelters. The MWC expressed a need for increased health education. Four interactive presentations were developed on relevant health topics and presented at the shelter in one hour sessions. The goal is to increase resident's knowledge of the health effects of smoking, nutrition, infant/toddler nutrition, and sexual health and to provide women with tools to make healthy choices. Feedback was obtained following each session. To ensure that project goals were met, anonymous surveys were created to assess the specific goals of each class. Future work will involve analyzing the data and implementing necessary changes to the curriculum. This project was developed to be sustainable and will continue to provide educational opportunities for future medical students.

PODIUM

Steven Daniels

Group Cohesion in a Formal Exercise Program Composed Predominately of Older Men

Nancy Wilke, OT
Kristyn Ertl, (PCOR)
Jeff Whittle, MD, MPH

Background: Group cohesion correlates with decreased drop out rate in group exercise programs. A commonly used measure of group cohesion, the Physical Activity Group Environment Questionnaire (PAGEQ), is untested in older men. **Methods:** We administered an anonymous survey which included the PAGEQ, demographics, and measures of frequency and duration of attendance to the Walk a Mile or More (WAMM) walking group, which is composed of US military veterans, during group sessions in May 2012. **Results:** Forty participants (mean age 62, 77.5% male) completed surveys. Neither the PAGEQ nor its subscales were significantly associated with duration or frequency of WAMM participation. PAGEQ scores indicated higher mean levels of group cohesion than were reported in prior research. **Conclusion:** The PAGEQ was found to be a valid measure of group cohesion in older men. Factors unique to WAMM (shared veteran status, new member support, etc.) may influence group cohesion.

POSTER

Steven Donlon

The Prevalence and Circumstances of Co-Sleeping in the Greater Milwaukee Area

Jason Jarzembowski, MD, PhD
Caitlin Wallach, MD

The issue of co-sleeping is important in the Milwaukee community because of the large numbers of infant deaths despite safe sleep campaigns. Furthermore there is a void of information regarding co-sleeping and there have not been studies looking at the prevalence or circumstances surrounding co-sleeping in the Milwaukee area. To address this lack of information we administered a survey to caretakers of children (n=81) that came into the Emergency Department at the Children's Hospital of Wisconsin that included views on co-sleeping as well as demographic information. Although a formal statistical analysis of results has yet to be performed an initial look shows 74.2% of subjects felt co-sleeping was "Always Unsafe" and 95.2% "Never" or "Rarely" slept on the same surface as their child. Our results suggest that despite largely negative views of co-sleeping there is still a large portion that sleeps with their infant at least once a month.

POSTER

Clark DuMontier

A Multi-method Intervention to Reduce No-shows in an Urban Clinic

Kirsten Rindfleisch, MD
Jessica Pruszynski, PhD
John J. Frey III, MD

Missed appointments can create financial, capacity, and continuity issues in primary care. This study sought to measure the effects of a multi-method approach to decreasing the overall clinic no-show rate over time. A clinic team implemented a three-stage process: an interview with a cohort of patients with a high no-show rate, a double booking process for patients with a history of frequently missed appointments, and a change in the entire schedule to a modified advanced access system. The cohort differed from the overall clinic, being largely African-American women on Medicaid with a large burden of medical co-morbidities and a high prevalence of mental health issues. After the intervention, the rate of no-show appointments in the cohort fell from 33.3% to 17.7% and the overall clinic rate fell from 10% to 7%. Identifying a large at-risk population for no-shows and using a multi-method approach to addressing the issue can show persistent improvement.

Amanda Ernst

Adiposity: A Potential Mediator of Socioeconomic Differences in Cognitive Functioning?

Tara Gruenewald, MPH, PhD

Context: Increasing rates of dementia are expected with the aging of the population, and those of lower socioeconomic status (SES) are at increased risk. Adiposity is a potential mediator but there has been little examination of this hypothesis. **Objective:** To examine adiposity as a mediator of the relationship between SES and cognitive function. **Methods:** Analyses examined data from M.I.D.U.S. Indicators included education, income, BMI, waist circumference, waist-to-hip ratio, episodic memory and executive function. Associations between SES, adiposity, and memory/executive function were assessed. **Results:** Higher SES was associated with higher cognitive scores, and lower levels of adiposity. Negative associations were found between adiposity and cognitive function. However, adiposity did not mediate SES variations in cognitive functioning. **Conclusion:** Lower SES and greater adiposity are associated with lower cognitive functioning. Those of lower SES also have significantly greater levels of adiposity. However, adiposity was not a mediator of SES variations in cognitive function.

PODIUM

MacKenzie Faddis

Early Developmental Screening for Children in Foster Care

Kelly Hodges, M.D

Children in foster care are at increased risk for developmental delay and the AAP recommends developmental screening for this population. This study compared detection rates of developmental delay for children in foster care before and after implementation of the Parent's Evaluation of Developmental Status (PEDS) screening tool. Screening with the PEDS tool increased the detection rate to 46.1% from the previous rate of 33.9% (p=0.041). The study also compared consistency of PEDS results when performed within 5 days of placement and a month after placement into foster care. 83.3% of children who screened positive for developmental delay, initially remained positive one month later (p<0.001). 83.8% of children who screened negative for developmental delay initially, remained negative one month later (p<0.001). Developmental screening using the PEDS tool detects more developmental delays in children in foster care than surveillance alone. Screens should be performed as early as possible so necessary evaluations and referrals are not delayed.

POSTER

Jean Gibb

Quality Improvement In the Care of HIV/HCV Co-Infected Patients at the AIDS Resource Center of Wisconsin

John Fangman, MD

In the state of Wisconsin Milwaukee County accounts for 50% of HIV infections and 42% of viral hepatitis C infections. Located in downtown Milwaukee, the AIDS Resource Center of Wisconsin (ARCW) serves over 200 patients living with HIV/HCV co-infection and operates a co-infection clinic to address the needs of this population. Our QI project identified a cohort of 118 co-infected patients who as of 11/11/11 had not been evaluated by a hepatologist at ARCW and created a database of patient information relevant to HCV treatment candidacy with intent to expedite referrals. This database allowed ARCW management staff to analyze referral patterns and develop a tiered program to expedite evaluation in the co-infection clinic and when indicated proceed with HCV treatment. Referral patterns in our cohort indicate that significant barriers to care for ARCW patients living with co-infection include failure to remain engaged in care, mental health concerns, and substance abuse.

POSTER

Lauren Goetsch

Pisando Fuerte: A Fall Prevention Program for Latino Seniors

Rachel Wiche, (2014)
Margaret Ward, (2014)
Erin Hanlin, (2015)
Stephen Hargarten, MD MPH,
Angelica Delgado-Rendon , (United Community Center)

Background: Falls occur frequently in the elderly and result in significant morbidity and mortality but many are preventable. Based on a needs assessment conducted at the United Community Center's (UCC) senior center we sought to create a culturally appropriate falls prevention curriculum for Latino elderly. **Methods:** Interactive educational presentations were created in Spanish covering topics generated with input from UCC seniors and staff. Topics included vitamin D, balance and strength exercises and proper footwear. Qualitative feedback was gathered at the end of each module. **Results:** Approximately 12 women attended events consistently. Participants were highly engaged and contributed input for future sessions. Staff changeover at the UCC presented challenges to project continuity but provided lessons in community partnership. **Conclusions:** An instructor's guide will be available for future use. Next steps include incorporation of caregiver training and a formal evaluation plan. Continued engagement from new staff and students will ensure project sustainability.

POSTER

Alexander Graf

The Price of Poverty: Pediatric Appendectomy Complications in the Uninsured

Casey Calkins, MD,
Melissa Christiansen

Background: Acute appendicitis (AA) is the most common surgical emergency in children. Previous studies have shown children living in poverty to have longer delays in care greater complication rates and extended hospital stays relative to those who are not. **Methods:** The current study is a retrospective cohort study of the 69 patients ages 16-18 years admitted to Children's Hospital of Wisconsin in 2012 for suspected appendicitis. Age race insurance status and zip code of referring institution as well as baseline lab values at admission complication rate and hospital length of stay were reviewed. **Hypothesis:** Expected results are that children living in poverty referred from outside institutions will have a relatively greater incidence of surgical complications and longer hospital stays. **Results:** Results will be presented at pathway forum. **Conclusions:** These results may signify the need for referral protocol reform for patients with suspected AA to decrease patient morbidity and hospital cost.

POSTER

Sindalana Hean

Hepatitis B Screening & Awareness Campaign in the Milwaukee Hmong Community

Tuong Van Nguyen (GH, 2014)
Kia Saelen, MD

Hepatitis B is a major world-wide health issue, with 2 billion infected and 600,000 dying each year from its consequences, despite an effective vaccine being available since 1982. In the U.S. the Hmong ethnic group is disproportionately affected, with rates reported as 1 in 5. However, little research and outreach has been done within the Milwaukee Hmong community, one of the largest in the nation. This project aims to promote awareness and education through outreach efforts at Hmong community gatherings, radio shows, and direct community partnerships. Additionally, students organized a free screening event with grant support from the National Task Force on Hepatitis B. Preliminary results for 70 patients show 9 with active infection, 17 susceptible, and 4 requiring additional testing. Results further support that chronic hepatitis B infection disproportionally affects the Hmong community and that more outreach is needed to help prevent possible liver cancer/cirrhosis in those chronically infected.

POSTER

Kathleen Hemauer

Retrospective Study of Patients Admitted to Hospice Africa Uganda

Eddie Mwebesa, MD HAU
Tifany Frazer, MPH
Junmin Shi,
Daniel Eastwood, MS
Anne Merriman, MD, HAU
Lauren Wiebe, MD

Hospice Africa Uganda (HAU) is a non-governmental organization that has provided palliative care to Uganda since September of 1993. A limited number of studies describe the needs of the community of patients admitted to hospice in Africa. This study is a retrospective chart review of 150 adult patients from HAU who died over a 6-month period (November 2010- May 2011). Variables collected included age, sex, diagnosis, pain score, medications, religion, main distress, and expectations of hospice. Upon admission the average pain score was 4.1 on a 6-point Likert scale (range: 0-5 standard deviation = 1.2). The majority of patients (62.0%) reported severe pain with a pain score of 4 or 5. All patients with severe pain were provided morphine (100%). Additionally, 46.7% of patients with severe pain were prescribed adjuvant medication. 74.6% of patients reported physical symptoms, such as pain ,as their main distress. However, 67.3% of families reported psychosocial concerns.

POSTER

Tyler Koehn

Kosciuszko Community Center Health Careers Program

Janet Lin, (2014)
David Nelson, PhD
Brian Stewart
Milwaukee Christian Center

Underserved minority populations suffer disparate disease burdens compared to the general population. As of 2001 only 6% of practicing physicians were African American or Latino despite representing 26% of the general population. However, encouraging early interest in minorities through health science mentorship has proven to be an effective method for bridging this gap. Since 2010 we have partnered with the Kosciuszko Community Center to generate a health career mentorship program for minority students. The primary goals are for students to describe basic human anatomy and common diseases, and most importantly, to gain a better understanding of various health careers available to them. To meet these objectives we have created a series of presentations consisting of health science education, hands on activities, and health career discussion. Early qualitative results have shown increased knowledge and interest in the human body as well as broader insight into available health career options.

POSTER

Lindsey Latteman

Healthy Moms Healthy Kids: Ethnography of a Community Garden Program

Venice Williams, Alice's Garden
Linda Meurer, MD, MPH

Health does not occur in a vacuum and health promotion does not only occur in the clinic. Alice's Garden, a community garden in one of Milwaukee's poorest zip codes, is a verdant reminder that health has many aspects and depends on more than pills and doctor visits. "*Healthy Moms Healthy Kids*" aimed to encourage neighborhood mothers and their children to practice healthy behaviors. The program was conceived as a combination of learning sessions, a demonstration plot open to all participants, and a mentorship program to promote healthy eating and improve health knowledge. Through designing and participating in the program, an extended engagement with the neighbors occurred, leading to a deeper understanding and identification with the community. This personal experience undergirds this ethnographic report that examines the impact of the garden on the neighborhood, the gardeners themselves, and the friends of the garden who became intertwined with its programs.

See Sherry Baker, Page 47

POSTER

Jessica Lautmann

Patient Education Classes at the Saturday Clinic for the Uninsured

Sherry Baker (2014)

Ashley Lessmeier

Sentinel Injuries in Non-abused Infants Evaluated for Abuse

Lynn Sheets, MD
Ashley Lessmeier, (2014)
Pippa Simpson, MD

A sentinel injury is any unexpected and poorly explained injury in a pre-cruising infant. Previous studies have found that 25-30% of severely abused infants have a history of a prior sentinel injury. Our objective was to determine what percentage of infants valuated for child physical abuse and determined to not be abused, have a history of sentinel injuries. We completed a retrospective case series of infants evaluated for abuse concerns at Children's Hospital of Wisconsin and diagnosed as not being abused. There were no sentinel injuries in the medical histories of these infants. Compared to rates in severely abused infants this is significant at $P<0.001$. Thus sentinel injuries are early indicators of child physical abuse; and sometimes are correlated with later escalation of abusive violence. Recognition and appropriate intervention when there is a history or exam finding of a sentinel injury, could prevent some cases of child physical abuse.

POSTER

Adam Levin

Establishing a Partnership Between MCW & Neighborhood House

Alison Wittchow, (2014)
Dominic Zarlengo, (2014)

The Neighborhood House (NH) founded in 1945, is an intricate part of the West Side of Milwaukee and a member of United Neighborhood Centers of Milwaukee. NH's mission is to empower and teach youth through various learning social and recreational programs and activities. We contacted and met staff at NH to discuss their needs and conducted three pilot sessions. Using our experiences with the pilot sessions we planned future education sessions and began to recruit new students to the project. Our goal was to create a lasting relationship between NH and MCW, and expose youth to medicine so they would feel comfortable discussing medical problems with their physicians. While working toward our goal, we learned a great deal via plan-adjustments and subsequent reflection from our mistakes and difficulties. Most importantly we learned some of the techniques and most efficient ways to start a partnership with a community member.

POSTER

Janet Lin

Kosciuszko Community Center Health Careers Program

Tyler Koehn, 2014
David Nelson , PhD
Milwaukee Christian Center

See Tyler Koehn, page 51

Alexander Newman

Developing Biologic Outcome Measures - Impact of a Network-Based HIV Prevention / Intervention

Andrew Petroll, MD

Rates of HIV transmission remain unacceptably high in the US and new cases disproportionately affect African American men who have sex with men (AAMSM). MCW's CAIR has begun a 5-year NIH-funded multi-site, social network-based, HIV prevention study. This study will develop implement and evaluate the effect of a social network-based intervention focused on AAMSM. The goal of this research was to develop appropriate biologic outcome measures by which to compare the two study groups. STI rates among AAMSM were researched to select the most prevalent STIs, thereby increasing the power of the study to detect a difference in effect between the two study arms. A cost analysis was conducted to determine the most feasible and cost-effective method for STI/HIV screening and treatment. Protocols related to STI/HIV testing treatment and recording of test results, and for self-collection of rectal swabs, were written for the study.

Rachel Patterson

Internet-based Information-seeking Behaviors after Parents Receive Abnormal Newborn Screening Results

Sara Roedl, PhD
Michael Farrell, MD

This study explored the role of the Internet as a source of information and support for parents after receiving abnormal results for Newborn Screening. Researchers examined parents' motivations for accessing Internet-based information, their perception of their online experience, and positive and negative outcomes. 481 parent interviews from the Wisconsin Project on Communication Process and Outcomes after Newborn Screening were analyzed and coded, according to emergent themes. This qualitative analysis showed that Internet searches were motivated by specific goals including seeking additional knowledge, re-exposure to information after initial surprise, confirmation of information obtained from the doctor, and confirmation of their own understanding. Parents perceived their search experiences as being positive, negative or neutral depending on their success in achieving goals, and the benefits or negative outcomes experienced. Many indicated a desire for physician guidance when searching the Internet, including suggestions about specific reliable relevant websites to visit.

POSTER

Michael Phung

Comparison of Two COPD Symptom Assessment Measures in Urban Populations

Sarah Sanchez, (2014)
Ileen Gilbert, MD

See Sarah Sanchez, Page 54

POSTER

Sarah Sanchez

Comparison of Two COPD Symptom Assessment Measures in Urban Populations

Michael Phung, (2014)
Ileen Gilbert, MD

INTRODUCTION: COPD morbidity and mortality are greatest in lower SES patients. A new classification (GOLD 2011) predicts all-cause mortality. Our study evaluates how the Modified Medical Research Council Dyspnea Scale (mMRC) and COPD Assessment Test (CAT) used in GOLD, correlate and reflect potential mortality in urban patients. METHODS: 52 MCW COPD Clinic patients completed the questionnaires and had spirometry and exacerbations assessed. Analyses by Spearman's correlation coefficient, and Chi Square. RESULTS: 56% showed more symptoms via the mMRC and 65% via the CAT. More patients of lower SES scored in this category (mMRC $p < .01$, CAT $p < .05$). Regardless of SES, the measurements were correlated (rho = .78, $p < .01$), but 21% had discordant GOLD classifications leading to mortality risk underestimation ($p < .001$; 15% via mMRC, 6% via CAT). CONCLUSIONS: MMRC and CAT are correlated, but a better assessment of mortality risk is obtained when both are employed.

POSTER

Kaitlin Seeger

Fitness & Nutrition with Moms

Jenny Ovide, RN
Beth Damitz, MD

Current guidelines for pregnant women are that they should exercise most, if not all days of the week, due to the findings that regular physical activity has been proven to result in marked benefits for mother and fetus. In 2010 the violent crime rate in Milwaukee was 158.77% higher than the national average posing as a barrier to safe exercise. Women of the Milwaukee community stated that they did not feel safe to exercise in their neighborhood. To meet this need, exercise classes were established at St. Josephs Family Care Center with the goal of providing pregnant women of the community a safe place to exercise. Informal feedback demonstrated that the classes were very well received. Many participants continued to attend after they had their babies. Based on feedback with the need for nutritional education future classes will continue with more of a nutrition emphasis and for women with children.

Laura Sheets

The Association between Child Maltreatment & Youth Violence Victimization

Marlene Melzer-Lange, MD

Background: Intentional injury is a significant preventable concern for children. Given the negative health consequences of adverse childhood experiences specifically youth violence it is imperative that risk factors are identified in order to develop prevention programs. Different forms of violence are often co-morbid, which may mean that experiencing child maltreatment makes children vulnerable to future violence exposure. Methods: A retrospective case series of 574 patients ages 7-18 who presented to an emergency department with injuries from youth violence. These patients were compared to national data on all children, for history of maltreatment. If present the nature of the child's maltreatment history was determined using a hospital database. Results: Victims of youth violence were more likely to have a history of maltreatment (15%) when compared to all children (1%) $p < 0.01$. Conclusion: An opportunity may exist to prevent youth violence by focusing early interventions on child maltreatment victims.

Paul Shotkin

Asthma & Health Literacy

Sharon Perry,
S. Zhao,
A. Szabo,
Ileen A. Gilbert, MD

RATIONALE: Health literacy (HL) correlates to outcomes in chronic conditions. A three-question, HL measure has been validated. Limited data relate the measure to education, SES, and outcomes. METHODS: Morbidity pre- and post-enrollment was compared based upon HL, education, and SES. Population included 175 adults (49+11 years; 75% female; 54% Caucasian, 38% African American, 9% Latino). Analysis was by paired/unpaired t-tests, Chi-square, McNemars, Spearman correlation coefficient, and logistic and Poisson regression. RESULTS: HL, education, and SES were positively correlated. Education related to presenting morbidity. All morbidity indices improved. Decreased unscheduled encounters independently related to HL, education, and SES. Education related to improved life impairment. Everyone improved MDI competency, relating to decreased symptoms. Patients with higher HL, education, and SES achieved higher MDI competency. CONCLUSION: HL, education and SES are correlated and independently related to morbidity. Morbidity can improve for everyone. Interventions are needed for asthmatics with lower HL, education, or SES.

POSTER

Ginger Smith

Mentoring in Medicine: Preparing the Next Generation of Healthcare Professionals

Lauren Splittgerber (2014)
Randal Harris (2013)
Linda Meurer, MD, MPH
Suzanne Letellier (Mike AHEC)
Mary Ellen Lalko (MPS - James Madison)

See Lauren Splittgerber, page 55 (below)

POSTER

Derek Spindler

Impact of Service Learning on Medical Student Attitudes towards the Homeless

Linda Meurer, MD, MPH
Sabina Diehr, MD
Margaret Samyn, MD

Homeless individuals have complex healthcare needs and face challenges obtaining healthcare, while physician attitudes may produce barriers to adequate care. Community-based service learning experiences may influence medical student attitudes toward homeless patients. To explore this question, the validated Health Professionals' Attitudes Toward the Homeless Population Inventory (HPATHI), was administered to 174 first, second, and third year medical students participating in curricular tracks in Urban/ Community and Global Health. The results were compared among students in each class and respective pathway, and with regard to involvement in service learning activities and exposure to homelessness at school and in the community. Results suggest that the groups' attitudes toward homelessness are similarly positive, with second/third year students having slightly more negative attitudes. Participation in service learning and homeless curriculum produced a difference in mean overall survey score for first year students only. Significant limitations exist, including possible self-selection bias with regard to pathways sampled.

POSTER

Lauren Splittgerber

Mentoring in Medicine: Preparing the Next Generation of Healthcare Professionals

Ginger Smith, (2014) Randal Harris, (2013)
Linda Meurer, MD, MPH
Suzanne Letellier (Mike AHEC)
Mary Ellen Lalko (MPS - James Madison)

Introduction: While over 25% of the US population is African American, Latino, or American Indian, these ethnic groups comprise less than 10% of America's healthcare professionals. Our project aims to reduce some of this disparity through the implementation of a "pipeline" program for minority high school students. **Methods:** Through a partnership with Milwaukee AHEC, we developed a mentoring pipeline program for minority high school students. Each month we design and present workshops focused on health and pursuing healthcare careers. **Results:** We have led multiple workshops over the course of two years, each of which involves an interactive activity that helps students apply the information presented. Examples include games of Medical Jeopardy, college application workshops, tours of MCW's STAR Center, and a presentation by Marquette Dental School. Between 6-25 students have attended each session. **Discussion:** Programming has been well received. Evaluation of the program is ongoing and will inform program revisions.

POSTER

Heather Stief

The Moms & Maternal Support Program

Suzanne Walczak, MD

Milwaukee is among the worst cities in the United States with regard to infant mortality. The City of Milwaukee Health Department has identified the major contributing factors to this distinction as prematurity, sudden infant death syndrome, and congenital anomalies. Among these SIDS and prematurity are potentially avoidable causes which are increased by factors such as low socioeconomic status, poor prenatal care, and stress. The Moms and Maternal Support Program attempts to address this issue by pairing medical students with expectant women who are in need of extra support. Our study aims to determine the program's effectiveness at improving participants' pregnancy experiences and comfort with navigating the health care system. A second objective is to determine whether medical students who have participated in the program find the experience to be a valuable addition to their education. Preliminary feedback has suggested an overall positive response from both patients and students.

POSTER

Karuna Voddi

Asthma Smarts

John Meurer, MD, MBA
Raymond Hoffmann, MD
Mahua Dasgupta, MS
Erin Lee, MA
Brett Fuller, MA
Bruce Dreyer
Mitchell Grayson, MD

Background: Asthma tends to affect urban youth at a disproportionately greater rate then the general pediatric population. Given this increased morbidity it is imperative that effective asthma interventions are implemented, especially in urban settings. **Purpose:** To evaluate an asthma education program. **Methods:** Asthma Smarts is a school-based asthma education program that focuses on providing 3rd-5th graders with asthma in Milwaukee Public Schools with the knowledge/skills necessary to self-manage their asthma. Standardized sessions are taught by medical students in three 45 minute blocks with pretest and posttest administered at sessions one and three respectively. **Results:** Results from this data suggest a considerable increase in students' ability to identify specific asthma triggers, distinguish early symptoms of an asthma attack, and identify correct indication/usage of controller therapy. **Conclusions:** Effective educational intervention such as Asthma Smarts has the potential to directly impact urban youth by providing the skills necessary to manage/prevent future attacks.

See Adam Levin, page 52

POSTER

Alison Wittchow

Establishing a Partnership Between MCW and Neighborhood House

Adam Levin (2014)
Dominic Zarlengo (2014)

POSTER

Dominic Zarlengo

Establishing a Partnership Between MCW and Neighborhood House

Adam Levin (2014)
Alison Wittchow (2014)

See Adam Levin, page 52

Community Partner Organizations

Deep gratitude goes to our community partners for providing input and expertise to Pathway planning, core sessions, site visits, advising and service learning projects.

Alice's Garden
AIDS Resource Center
Milwaukee Area Health Education Centers
Asthma Smarts
Bach Mai Hospital
Bread of Healing Clinic
CARRAnet
Center for AIDS Intervention Research(CAIR)
Children's Hospital of Wisconsin
Clement J. Zablocki VA Medical Center
Community Advocates—Milwaukee Women's Center
Dry Hootch of Milwaukee
FAM Allies
Fondy Food Center
Friedens Community Food Pantry
Froedtert Memorial Lutheran Hospital
GET Collaborative
Guest House of Milwaukee
Highland Gardens
Hindu Temple of Milwaukee
Holton Youth Center
House of Peace
Independence First
International Adoption Clinic
James Madison Academic Campus
Journey House
Kosciuszko Community Center
Milwaukee Childhood Obesity Prevention Program
Milwaukee Center for Independence
Milwaukee Christian Center
Milwaukee County Department on Aging
Neighborhood House
Milwaukee Health Department
Pan African Community Association
Pearls for Teen Girls
Philippine Center
Project Adam—Herma Heart Center
Saturday Clinic for the Uninsured
Sebastian Psychology Family Practice
SET Ministry
St. Ben's Clinic
Sunny Korea Clinic
Teledermatology Project, Belize CA
United Community Center
Voces y Manos por el Derecho a la Salud
Walnut Way Conservation Corp
WAMM (Walk A Mile of More)
Wheaton Franciscan—Family Care Center
Wisconsin Medical Society

Service Learning for Pathway Students

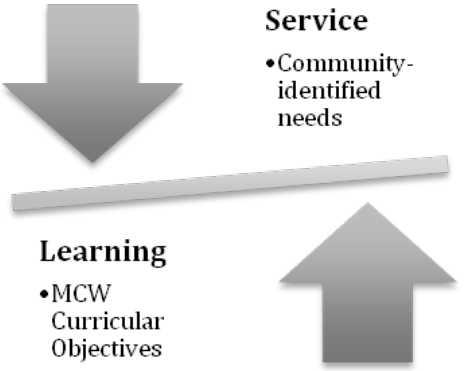
"a structured learning experience that combines community service with preparation and reflection. Students engaged in service-learning provide community service in response to community-identified concerns and learn about the context in which service is provided, the connection between their service 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 of Service learning:

- Part of the curriculum and results in academic credit
- Places equal value on community-defined service objectives and curricular learning objectives
- Is planned and implemented through partnership among the 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.

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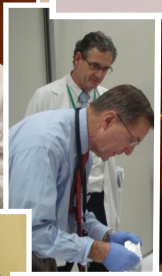




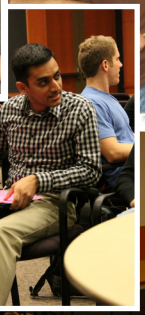


Policy and Practice
Schistosomiasis control in China:
World Bank Loan Project (1992–2