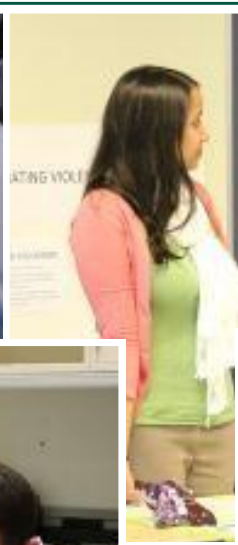




MCW PATHWAYS

Scholarship Forum

June 21, 2012





The MCW Pathways were implemented in 2010 as a required component of the M1-M3 medical school

curriculum. Students select one of five areas of concentration through which they enrich and individualize their medical training, while exploring a career path of interest.

The Pathways are:

- Clinician Educator
- Global Health
- Master Clinician
- Physician Scientist
- Urban & Community Health

Each of the Pathways features a structured curriculum with a core set of content delivered through monthly didactic and small group sessions and an experiential component in which each student is guided by a faculty advisor and their own Individual Learning Plan (ILP) to apply the core concepts in a variety of clinical, classroom, research and community settings.

The students featured here represent the first class to complete 3 years of Pathways. While not required to complete a scholarly project, their accomplishments include research in the basic, clinical and

social sciences, curricular innovations and teaching, and community engaged projects to address health disparities in Milwaukee and abroad.

The Pathways culminate with today's Scholarship Forum. The program features a selected number of podium and poster presentations (see pages 3 and 4), as well as project abstracts and narrative reflections on the Pathways experience by M3 students in all 5 pathways.

We thank the class of 2013 for their creativity and innovation as the new Pathways evolved. Their excellent work has built a foundation for scholarship for future MCW students.

SPECIAL THANKS

The Pathway Directors would like to express their sincere gratitude to the Pathway Planning Council members, faculty advisors and mentors, and community partners who have helped our students succeed. Thanks also to the Pathways staff, Meaghan Hayes, Hilary Chavez, Amy Palka and Jennifer Kraus for your hard work and support, and to Dr. Karen Marcdante, whose vision and leadership were instrumental in making the Pathways a reality.

The Pathways were supported by an educational grant from the Advancing Healthier Wisconsin Endowment at the Medical College of Wisconsin.



CLASS OF 2013 PATHWAYS SCHOLARSHIP FORUM AGENDA

1:00	Convene & Welcome	Linda Meurer, MD, MPH	
	Special Remarks	John Raymond, MD, MCW President Joseph Kerschner, MD, MCW Dean	
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	Julie Owen (Clinician Educator Pathway)		7
	Salient Film Series: Promoting Empathy & Reflection in Future Physicians		
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	Fall Risk & Prevention Needs Assessment in an Older Adult Latino Population		
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	Impact of Nursing Home Violations on ED/Inpatient Treatment of Falls		
	Randal Harris (Urban & Community Health Pathway)		51
	Mentoring in Medicine: Preparing the Next Generation		
2:15	Break - Poster Viewing & Refreshments (Alumni Center)		
3:15	Platform Presentations II (Kerrigan Auditorium)		
	Robert Jacobs (Physician Scientist Pathway)		41
	Dynamic Cam-type Femoroacetabular Impingement Produces Pubic Symphysis & Sacroiliac Joint Rotation: A Cadaver Study		
	Antony Hayes (Global Health Pathway)		12
	Disaster Medical Education & Simulated Crisis Events: A Translational Approach		
	Senthil Rathinavelu (Master Clinician Pathway)		33
	Investigating Themes for Re-admission at Froedtert Hospital		
	Ryan Jackman (Urban & Community Health Pathway)		51
	The Impact of Parental Perceptions of Illness on Healthcare Seeking Tendencies		
4:00	Pathway Awards & Acknowledgements		
4:20	Summary Remarks & Closing	Karen Marcdante, MD	



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Pathways Information

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 Urban & Community Health, Global Health
 Hilary Chavez, MS, hchavez@mcw.edu, 414-955-2811
 Master Clinician, Quality Improvement & Patient Safety
 (new for 2012)
 Amy Palka, MBA, apalka@mcw.edu, 414-955-2286
 All Pathways:
 Jennifer Kraus, jekraus@mcw.edu, 414-955-2284

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Clinician Educator

Patricia Lye, 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

As residency and fellowship training programs seek competence in geriatrics, they face multiple barriers including constrained curriculum, limited faculty time and/or geriatric content expertise and competing clinical priorities. Methods: Specialty-specific interdisciplinary Geriatric Education Teams (GETs) were formed consisting of 1-2 members from each of the following groups: geriatricians, residency/fellowship program director/faculty, residents/fellows, medical educators and medical students. Students participated in each phase of the process from specialty specific needs assessments (e.g., analysis of in-service scores, resident/faculty surveys, interviews, chart audits) through materials development, teaching and evaluation.

Results: Students served as co-authors on “just in time” Geriatrics Fast Facts aligned with their GET curriculum topic. These evidence-based resources can be downloaded from a dedicated, searchable website. Conclusion: Medical students have been enthusiastic, contributing members of the GETs. Their broad knowledge of basic science was essential to the success of education materials.

POSTER

**Christopher Anderson
(with John Petronovich)**

GET Going: Engaging Medical Students Teach Geriatrics as Members of Specific Geriatric Education Teams

**Advisor:
Dr. Deborah Simpson**

Collaborators: M2s Yana Thaker, Cate Tsufis, and the Geriatric Education Team (GET) Collaborative

Krista Asp

An Education

**Advisor:
Dr. Edmund Duthie**

They hand you a textbook, a sheaf of slide-lined papers, a schedule smattered with variously engaging and enraging lectures. They preach the importance of synthesis into practical knowledge. You show up, you study, you sometimes sleep. They hand you an iPod, a stethoscope, a password to an inconceivable amount of medical information. And they emphasize the importance of your attention to detail, your ever-expanding fund of knowledge. You assess, you plan, you rarely sleep. You develop a taste for caffeinated naps, stretching your own physiology even as you work to balance patient function. You perfect an awareness of your own progress and process, even as you strive to comprehend the bodies and minds of others. Then to those bodies you hand a diagnosis, a sheaf of educational materials, a prescription. And to those minds you offer explanation, empathy, support. You hope they understand, they act, they restfully sleep.

Curriculum change is both feared and desired. Positive aspects of present and former curricula can be utilized to drive future changes. This project employed longitudinal, appreciative, inquiry interviews to elicit common themes concerning advantageous aspects of both the traditional and pilot integrated curricula at MCW. Interviews were conducted by members of the Evaluation Council and interviewees included administrators faculty and students in both the traditional and pilot integrated curricula. Interviews were then coded by 4 members of the council and common themes were derived. These themes included faculty and student engagement and relationships, community and collaboration, active learning, and faculty excitement about teaching. Future goals include coding second round of interviews and determining modes for integration of common themes into the MCW Discovery curriculum.

POSTER

Alexandria Bear

Identifying Cross-Cutting Successes in Medical Student Education Program at a Time of Curriculum Revitalization

**Advisor:
Dr. Deborah Simpson**

Collaborators: Dr. Dawn Bragg, Diane Brown & AI Workgroup

**Kristin Cameron
(with Tiffany Cheng)**

**Transition to the
Clinical Years**

**Advisor:
Dr. Karen Marcante**

The transition from classroom to clinical based learning can be daunting for medical students and can lead them to feel uncomfortable in their new roles. This may be due to a variety of factors such as a more subjective grading schema, an independent learning environment, and varying support from the staff. Studies have identified that this can lead to signs and symptoms of depression, but it has also been shown in other populations that demoralization can present similarly. We have been developing a survey tool to identify subjective incompetence (a measure of demoralization). Using this tool we will identify changes as they progress into and through the clinical years and if early clinical exposure decreases feelings of subjective incompetence. We will also identify those who are more successful in the transition and what factors help them to do so, to make generalizations that can be used to guide curriculum development.

See Kristin Cameron, above

**Tiffany Cheng
(with Kristin
Cameron)**

**Transition to the
Clinical Years**

**Advisor:
Dr. Karen Marcante**

Albert Chow

**Patient Education
Program: Peer-to-Peer
Teaching on Patient
Counseling**

Advisor: Dr. Patricia Lye

**Collaborators: Megan
Determan, Sherry Baker,
Eric Chow, Melissa Lueder,
Kai Yang, & Dr. Palma-Sisto**

The Family Medicine Student Association (FMSA) Patient Education Program aims to have M1 and M2 medical students educate patients on healthy lifestyle behaviors and chronic disease management at the Saturday Clinic for the Uninsured (SCU). We restructured the Program to train M1 and M2 students through a series of peer-to-peer workshops, and developed basic handouts for patients. We synthesized and condensed information from existing patient literature down to 1-2 pages per topic. We utilized PowerPoint, "teach back" method, and small group sessions for the peer-to-peer workshops. We assessed the clinic flow at SCU to determine the best means to integrate student Patient Educators. M1 and M2 students felt better prepared and more comfortable educating patients. Patient Educators were able to utilize the developed resources to aid in educating patients. SCU staff and patients seemed more receptive to Patient Educators.

The Clinician Educator Pathway provided a framework for improving my clinical teaching. Working at two clinics for uninsured patients, my work focused on improving the clinical skills of M1s and M2s. Working alone or in dyads of M1s and M2s, I focused on three areas: teaching new physical exam skills, providing medical knowledge related to the case, and giving appropriate feedback about history & physical skills. Pathway core sessions allowed me to become a better teacher as I learned small group teaching methods, how to frame and offer feedback, what a learner-centered approach, and how to recognize my own limits as a teacher.

John Dang

**Improving the
Student/Patient
Exchange in
Underserved
Population Clinics**

**Advisor:
Dr. Karen Hulbert**

Richard Deklotz**Reflection****Advisor:**
Dr. Diane Braza

M1 year: Intro to pathways with confusion and mystery; full of enthusiasm for every opportunity, dissecting frogs, advising HS students and undergrads. Using pathways time to the fullest, taking advantage of such a great opportunity. M2 year - what's next: what is an ILP? What is a mentor/mentee? Research and investigation of mentors in medicine, search expanded to mentorship in business and apprenticeship in the skilled trades. What a diverse and potentially influential relationship! Career counselors, advisors, mentors, journeymen, experts - the relationship must be pursued and embraced from both ends. M3 - Where to fill the time this year... Core sessions are becoming excellent. How can I contribute in a sustainable way? Step 1 tutor program, Angel site revision, elective rotation objectives and grading rubrics. Mid-clerkship evaluation video and resident personality assessment. Pathways in review: What a trip it's been. Core time I will miss you the most.

Drawing on my experience as an educator prior to medical school, I chose to use my Clinician Educator Pathway time honing skills that were previously untapped. Focusing specifically on how to teach clinical skills, I designed an M3 workshop on "How to Demonstrate a Procedure to M1s." I designed a video of poor teaching examples to be utilized as a discussion-starter, and facilitated small group discussion on effective teaching strategies. With content assistance from a former student, I organized the curriculum of "Small Group Facilitation" to be implemented each Fall with M3 small group mentors in the Physician Scientist Pathway. My third year was the opportunity to step it up: from trainer, to Trainer of trainers.

Angie Geiger**Transitioning into the "Train the Trainer" Role****Advisor:**
Dr. Patricia Lye**Tracy Knippel (with Jessica Hanley & M2s Leah Koetje, Michael Phung & Alison Wittchow)****Camp Cardiac****Advisor:**
Dr. Megan L. Noon**Collaborators: Dr. Richard Lee & Michael Yensel, Northwestern University**

Camp Cardiac was developed by physicians at Northwestern University to expose high school students to careers in medicine. Focusing on the cardiovascular system, campers explore different aspects of the medical professions through structured learning activities including dissections, workshops, games, lectures, and panel discussions. Brought to Milwaukee for the first time the summer of 2011, a group of dedicated medical students managed the MCW-led Camp Cardiac from conception to execution: administrating people, designing the curriculum and serving as counselors, teachers, and panelists. Camp Cardiac was a positive and educational experience for both campers and counselors alike, leaving a foundation for future physicians' careers.

Empathy is a medical education goal of the AAMC. Studies suggest that medical student empathy declines significantly during the course of medical education. It is worth examining the role that the film may play in the cultivation and preservation of attributes such as empathy and compassion. Method: 4 films with medical themes were shown to M1-M4 medical students. Faculty members facilitated post-film discussions inviting students to reflect upon and share personal experiences in patient care while exploring prepared learning objectives incorporating ACGME core competencies. Students were asked to complete anonymous qualitative surveys to rate the perceived impact and usefulness of the Salient Film Series. Preliminary results reveal that the majority of students surveyed rated the film series as very or extremely useful as a co-curricular offering on campus and that the series had a significant or extremely significant impact on their perceived ability to empathize with patients as future physicians. Conclusion: The use of medically relevant films coupled with focused small group discussion and reflection is an effective tool in the cultivation of empathy and compassion in medical students.

PODIUM**Julie Owen****Salient Film Series: promoting empathy and reflection in future physicians****Advisor:**
Dr. Nancy Havas**Collaborator:**
Dr. Michael Farrell

Katherine Schuster**Student to Educator to
Clinician Educator****Advisor: Dr. John
Hambrook**

Every medical student experiences "medical education" in the first person - whether in the lecture hall or on clinical rotation. Enrollment in the Clinician Educator Pathway allowed me to think "outside the box" and examine my role as a teacher - now and in the future. All students give feedback from their perspective, but what of the Point of View of the medical educator? During core sessions I combined learning and teaching, taking in information about effective educational strategies, as well as educator perspectives that could be integrated in to my learning experiences. One of my favorite core session was on creating test questions. Utilizing that new knowledge, I rewrote a quiz for a high school health class. The most intriguing aspect of the Clinician Educator Pathway was how applicable the information was to my current endeavors - as a student, as a tutor, as an "experienced" JMS.

Gamuts or differential diagnoses suggested by an imaging observation are central to radiology. We sought to create a Semantic Web knowledge resource to support educational tools and clinical decision support systems. Using the Protégé ontology editor we created a knowledge model for the diagnosis of diffuse or multifocal liver diseases. Differential-diagnosis lists including "Gamuts in Radiology 4.0" (<http://gamuts.isradiology.org/Gamuts.htm>) served as references. We defined the predicate "causes" its inverse "caused_by" and subtypes to indicate common and uncommon causes of observed findings; we identified 144 disease concepts 17 imaging observations and 330 causal relationships. We condensed information from vocabularies and gamut lists into one source. This serves as a user-friendly tool for students to learn relationships between disease and observation. It also allows clinicians to ascribe a more complete differential diagnosis to a given observation. The ontology allows for the addition of new information and could be published online for use.

POSTER**Matthew Shore****Radiology Gamuts
for the Semantic
Web****Advisor:
Dr. Charles Kahn****Kiruba Vembu
(with Leonid Vydro
& Albert Chow)****The PQRST of Medical
Student Feedback****Advisor:
Dr. Dawn Bragg****Collaborator:
Dr. Patricia Lye****See Leonid Vydro, (below) page 8**

One of the most essential components of education is the feedback given to learners throughout their experiences, yet many medical students express considerable dissatisfaction with the quality of the feedback given to them. During a Clinician Educator core session, a discussion was conducted where students expressed qualities that ideal feedback would encompass. A document was prepared that had a mnemonic (The PQRST of Feedback) with these qualities and explanations, as well as examples of good phrases to use in feedback. Initial responses from the MCW Residents as Educators committee were positive, and future plans include distributing the mnemonic as a poster across the Medical College of Wisconsin, particularly in areas where residents populate. There is an opportunity to study the mnemonic's effectiveness on changing the quality of feedback from residents, as perceived by medical students.

POSTER**Leonid Vydro
(with Kiruba Vembu
& Albert Chow)****The PQRST of Medical
Student Feedback****Advisor:
Dr. Tomer Begaz****Collaborator:
Dr. Patricia Lye**

Reflecting on Participation in the MCW Tutoring Program

Collaborator:
Karen Shanahan

The MCW tutoring program allowed for the development of skills necessary to educate medical students while providing a useful service. As part of this program, the aspiring Clinician Educator is able to practice developing lesson plans and delivering educational sessions to M1 and M2 students, as a supplement to the basic science curriculum. It creates a mutually beneficial learning environment. Basic science students readily participate in the opportunity for review, and future Clinician Educators get an opportunity to educate medical students - an opportunity not readily available to medical students elsewhere. This program has certainly helped to develop practical skills that affect my future as instructor.



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

Infant mortality is an issue that has plagued the world recently. The Millennium Development Goals adopted by the United Nations in 2000 aims to reduce the 1990 mortality rate among under-five children by two thirds by 2015, but certain areas of the world have been lagging in achieving this milestone. There are many barriers and reasons for these results, and many aid organizations have come up with ways to overcome these difficulties. Next February, I plan on doing my part by going to the Jawaharlal Institute of Postgraduate Medical Education and Research in Pondicherry, India and working in the neonatal intensive care unit.

Ranjani Ananth

Infant Mortality Worldwide

Advisor:
Dr. Uptala Das

POSTER

**Lisa Chowdhury
(with Christopher Ford)**

**Clipping Hypertension:
Milwaukee's Barbershop
Blood Pressure Screening
Program**

Advisor: Dr. James Sanders

**Partner: Gaulien Smith at
Gee's Clippers**

See Christopher Ford, (opposite) page 11

2013 OSR regional meeting

Studies estimate that avalanches cause about 40 deaths per year in North America, and around 140 deaths per year in North America and Europe combined. A 12-year review of 109 totally buried avalanche victims in Austria who were rescued or recovered showed a survival rate of only 18.3% to hospital discharge. Causes of death for avalanche victims include asphyxiation, trauma, and hypothermia. Awareness, injury prevention, search and rescue/safety equipment, extrication, and resuscitation including airway management and re-warming are all specific issues that need to be studied and addressed in order to prevent future incidents and to improve outcomes for avalanche victims.

Trisa Danz

**Improving
Outcomes for
Avalanche Victims**

Advisor:
Dr. Uptala Das

Mary Dennison

**Healthcare Through
Improved
Communication**

**Advisor:
Dr. Ileen Gilbert**

The Global Health Pathway began during my first year of medical school and over the past three years it has expanded in topic as well as participants. My reason for joining this pathway was my love of the Spanish language. I began working at a Spanish-speaking Asthma and COPD clinic in Milwaukee where the patients spoke little or no English. As an M1 and M2 this provided me with an excellent opportunity to not only practice my Spanish, but to also practice my history and physical exam skills. Working in this clinic gave me great perspective on the population of Milwaukee and inspired me to further my knowledge of the Spanish language. During the end of M2 year and all of M3 year, I used Rosetta Stone to learn and practice more Spanish. This has helped my conversation skills and has allowed me to speak with patients during clinical rotations.

It is known that multiple women's health issues including elevated STI and HIV rates as well as poorer birth outcomes continue to be a problem within the country of Zambia. Research has been directed towards alleviating these problems but there is still much to be done. This paper demonstrates that although advances have been made, there continue to be multiple barriers in research and application of innovative programs. These include the vast portion of Zambia's rural women living significant distances from urban areas as well as cultural barriers such as the taboo nature of discussing sex and sexual health outside of close circles of women. By taking these limitations into account when addressing issues of women's health in Zambia, more significant research outcomes and successful programs may be implemented.

Nicole Ebel

**Women's Health in
Zambia**

**Advisor:
Dr. Ndidimaka Musa**

POSTER

**Christopher Ford
(with Lisa
Chowdhury)**

**Clipping Hypertension
-Barber Shop Blood
Pressure Screening**

**Advisor:
Dr. Peter Rossi**

**Partner: Gaulien Smith,
Gee's Clippers**

Hypertension is an important public-health challenge worldwide. It is estimated that over 26.4% of the adult population suffers from hypertension with majority in developing nations. In the US, the number of affected individuals mirrors the figures seen globally. For individuals living in lower income communities, more specifically those without access to healthcare, hypertension may go undetected until symptoms present (stroke, vision loss, headaches). We created a blood pressure screening project at Gee's Clippers on the South Side of Milwaukee. Electronic blood pressure cuffs and training were provided to the barbers. Prior to their haircut, patrons were given the opportunity to have their blood pressures taken. If found to be hypertensive, their information was collected, and they were offered information on hypertension and clinics they could follow-up. Our goal was to provide a means of screening and education on hypertension in a population where such means are scarce.

2013 OSR regional meeting

Fall risk is not well described in Latino populations nor have fall prevention programs considered the needs of this population. The objectives of this study were to define the impact of falls in elderly Latinos at the United Community Center (UCC), to determine possible barriers and strengths in this population with regards to fall prevention, to determine the level of interest in various fall prevention methods and to provide medical students an opportunity for participation in a culturally-diverse community project. A survey was developed and conducted with 103 older adult program participants at the UCC. Older adult Latinos in this group frequently fall and are worried about falling. Risk factors for falling are prevalent. A fall prevention program is warranted and should include exercise and information classes and a connection with local primary care providers. A partnership between MCW and the UCC is an ideal collaboration for the future development of this program, and this initial pilot project has expanded to include additional junior medical student, creating a sustainable educational initiative.

PODIUM

Erin Hanlin

**Fall Risk & Prevention
Needs Assessment In an
Older Adult Latino
Population**

**Advisor:
Dr. Stephen Hargarten**

**Partners: Rene Farias,
Angelica Delgado-Rendon,
United Community Center**

**Other faculty:
Dr. E. Brooke Lerner**

PODIUM

POSTER

Antony J. Hayes**Disaster Medical
Education & Simulated
Crisis Events: A
Translational
Approach****Advisor:**
Dr. Zeno Franco**Partners:**
**Jessica Lancaster (M2) &
Anne Kissack RD, MPH**

This review addresses current educational and research efforts in disaster medical education (DME) in the U.S. DME has received greater attention since the events of 9/11, but problems remain in terms of ensuring that large numbers of medical students are exposed to high quality DME. Barriers to widespread adoption include lack of performance metrics, disagreement concerning task areas, and lack of emphasis on physician leadership. Efforts must ensure retention of key information; utilize objective training metrics that will allow for an evidence base to form; and develop low cost, scalable training approaches that offer greater fidelity to the disaster environment. DME research must move toward a translational science model, integrating important advances in basic information science that improves the clinical performance of medical staff. Simulations for disaster manager training may provide an avenue toward improved DME by exposing medical students to scenarios that challenge their assumptions in real-time game play.

As part of my Individualized Learning Plan for the 2011-12 year, I spent time completing online learning modules and worked with the Infectious Disease inpatient consult team at Froedtert Hospital. These activities have been tailored to enhance my understanding of the clinical aspects of infectious disease and its burden on global health. Throughout the year, I have developed a specific interest in malaria and HIV, including the implications that each has on women's health. In this paper, I will reflect upon some key learning points that I have learned regarding malaria and HIV, as well as the role of women's health in the prevention and treatment of these infectious diseases.

Justin Houseman**Learning Points
About Malaria,
HIV &
Women's Health****Advisor:**
Dr. Theodore MacKinney**Megan Jourdan****Global Health, Parental
Expectations &
International
Adoption****Advisor:**
Dr. Theodore MacKinney

Every year, people look to countries abroad in the hopes of adding a new member to their family. These prospective parents are never quite sure what child they will get matched with, or what health and mental issues the child may have when the child is home. The purpose of my project with the International Adoption Clinic is to assist families in making decisions regarding adoption. Stage one of this project is reviewing files from potential adoptions within the past decade, and compiling the data (birth history, health, and IAC consultation information) onto a brief survey form. Stage two of this project will be to computerize the data. This information will be important because it will help to prepare future adoptive families for the challenges they may face, and help them to manage expectations of their child's future.

See Satish Vembu, page 14

POSTER

**Ann Kronenwetter
(with Satish Vembu)****Dissemination of BCG
for Intra-vesicular
Therapy in a Non-
Immunocompromised
Male****Advisor:**
Dr. Paul Hunter**Partner: Milwaukee Health
Department**

Annie Layno-Moses**A Reflection****Advisor:**
Dr. Ileen Gilbert

The Global Health Pathway has enhanced my understanding and broadened my horizons in regards to global health issues worldwide as well as in Milwaukee. For my non-core hours, I focused on learning Spanish on an individual basis as well as in the classroom to be able to better communicate with the Latino community of Milwaukee. I volunteered at Clinica Latina's Pulmonology Clinic actively seeking patient care while practicing and building my Spanish language skills. The Family Medicine Clinic of Clinica Latina offered me an opportunity to work one-on-one with a family medicine physician from South America. Together, we reviewed medical vocabulary lists and edited drafts of his Spanish-English Medical Dictionary which will soon be published. The Global Health core activities, have expanded my knowledge of medical issues internationally, and, through non-core activities, has improved my patient care and patient communication through medical issues locally.

The UCC which has a Latino clinic that diagnoses patients with Alzheimer's disease provided me with a lot of insight into the global perspective of neurological disorders. It was hard to follow the history part of the interview as each one was done in Spanish and my Spanish is a little rusty. The physical portion of the exam transcends culture and is relatively straightforward. There are a few cross-cultural lessons. For example, the MOCA which is like a modified mini-mental is both socially and culturally biased. For someone who does not have a US education cannot be expected to have a baseline performance equal to a US citizen. Thus, we had to modify the score and adapt to these issues for most of our Spanish speaking population. Normally the MOCA is scored out of 30, but because of the cultural differences, we had to adjust the max score for most if not all patients.

Winnie Palispis**Philippine Free Medical Clinic:
Caring for Milwaukee's Population****Advisor:**
Dr. Jim Ninomiya**Partners: Philippine Clinic, Erlinda Ramos & Dr. Violetta Singson**

There is an estimated 100,000 people in Milwaukee County without health insurance. The Philippine Free Medical Center (FMC) has been an integral part of health care in Milwaukee, serving a total of 2,750 patients for years. The FMC's goal is to provide basic medical care to the uninsured and underinsured regardless of their race, age, ethnicity, religion and immigration status. FMC has been a main source for health care for many of their patients – providing free medical services including lab work up, maintenance care, and medications. Moreover, FMC has been involved with medical missions and forming a long term relationship with the overseas population that they help treat and serve. My pathways paper will explore the impact of FMC in the community, including future programs, its commitment to the people of Milwaukee, and the support and recipe behind its success.

Spinal stenosis is a very common clinical presentation with lower back pain. Acupuncture shows significant therapeutic improvement. Spinal stenosis is "any type of narrowing of the spinal canal, nerve root canals or inter-vertebral foramina." Western treatments include physical therapy, NSIADs and surgery. Eastern treatments focus on herbal interventions and acupuncture. Acupuncture begins with identification of pain by inspection, auscultation, inquiring, and palpation. Multiple physiologic models have been proposed on the effects of cytokines, hormones, the immune system, and the autonomic and somatic nervous systems. It is associated with neurotransmitters releasing at both the spinal and supraspinal levels. Patients with spinal stenosis, acupuncture appears to have much greater efficacy than when patients are left untreated.

Ang Li**UCC Alzheimer's clinic****Advisor: Dr. Mohammed Abd Alla****Partners: Dr. Piero Antuono, United Community Center****POSTER****Laura Shu****Spinal Stenosis and Acupuncture****Advisor:**
Dr. Xuefeng Zhang

POSTER

**Satish Vembu
(with Ann
Kronenwetter)**

**Dissemination of BCG
for Intravesicular
Therapy in a Non -
Immunocompromised Male**

**Advisor:
Dr . Paul Hunter**

BCG or Bacille Calmette-Guerin is a live attenuated strain of Mycobacterium Bovis to prevent Tuberculosis. It has emerged to be the most administered vaccine in the world with over 3 billion individuals having received the vaccine. Amongst its uses in preventing TB and other mycobacterial infections, BCG has also emerged as one of the mainstays of bladder cancer via intravesicular therapy. While the exact mechanism of action is yet unknown, BCG has proven to be extremely effective, in treating non-invasive bladder cancers, with superior efficacy in comparison to conventional chemotherapeutic agents. Despite its effectiveness and relative safety of use, BCG has a specific concern of dissemination of TB disease while using it to treat superficial vesicular cancer. This article highlights the dissemination of disease in an elderly male smoker with vesicular cancer, and the course of such patients, along with reasons for concern in the use of such treatments.

Through the Global Health Pathway I sought to expand my knowledge on a variety of topics regarding healthcare in other countries in order to be prepared to work abroad after my residency training. I created relationships with faculty in the fields of psychology, emergency medicine, pediatrics, infectious disease and general practice. During my second year in medical school, I worked at the Milwaukee Health Department and was involved in refugee health screening and the development of clinical experiences abroad. During my third year, I made efforts to pursue language learning and establish relationships with the Sebastian Psychology Clinic. I served as a general delegate on the standing committee for reproductive health and HIV/AIDS. During my third year, I made efforts to pursue language learning and establish relationships with the Sebastian Psychology Clinic.

Shabana Walia

**International
Community Service
& Clinical Care**

**Advisor:
Dr. Samantha Wilson**

**Partner:
Sebastian Psychology
Family Practice**

Sarah Wilson

**Reflection on Lan-
guage as a Barrier to
Care**

**Advisor:
Dr. Michael Kron**

We often discuss common barriers to care - money, transportation, time - with our patients, and we spend considerable effort finding ways to work around these problems to ensure patients receive the best possible care. However over this year, I have found that language has been one of the most consistent barriers to quality patient care. Although there are multiple systems in place to circumvent this in the hospital, including in-person translators and various telephone services, they often fall woefully short of facilitating the crucial direct dialogue between patient and provider that will ensure the best possible care. Experiencing this frustrating problem firsthand many times this year, I sought to improve my own language skills, as well as examine the way language and communication barriers impact patient care.

In 2010 over 50,000,000 Hispanics were living in the United States, 37% of whom were born outside of the United States. Many variables influence the healthcare available and provided to Hispanics. More specifically, I have examined the influences of acculturation, health insurance, and education on healthcare in the Hispanic community. First-generation immigrants face challenges that are unique from the challenges that subsequent generations encounter. In addition, 31.2% of Hispanics are without health insurance, which severely limits the healthcare provided to them. Education also plays an important role in health as higher education is associated with decreased morbidity and mortality. This is significant when considering 37.7% of Hispanics (ages 25 and older) living in the United States in 2010 had not graduated from high school. Furthermore, access to healthcare is strongly influenced by legal status. Hispanic immigrants with legal documentation have access to government-funded resources where those without documentation are limited.

Cara Zokoe

**Healthcare &
the Hispanic
Patient**

**Advisor:
Dr. David Waters**

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 health 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

My reflective synthesis paper details my geriatric focused experience for the Master Clinician Pathway. This paper discusses my geriatrics clinical experience with Drs. Edith Burns and David Lillich, as well as the continuation of my summer research project “Shoulder symptoms and function in diabetic and non-diabetic geriatric patients” which included preparation of a poster which I presented at the Gerontological Society of America conference last November. In addition, I reflect on my experience at this conference including viewing posters and symposia. I discuss how these experiences satisfy the Master Clinician competencies, relate to topics discussed at core sessions, and provide exposure to the field of geriatrics above and beyond the typical Junior Medical Student clinical and research experience.

Daniel Abbott

Geriatrics Reflective Synthesis: A clinical & research perspective

Advisor:
Dr. Edith Burns

Collaborator:
Dr. David Lillich

Christopher J Anderson

Reflection of Master Clinician Pathway Experiences

Advisor:
Dr. Robert Krippendorf

As part of the Master Clinician Pathway I embodied the six main competencies over the past three years of medical school which include: professionalism and physician identity, systems based practice, practice-based learning and improvement, medical knowledge, patient care, and interpersonal and communication skills. Much of my work was with my advisor in the internal medicine clinics in order to fine tune my history-taking and physical exam skills as well as utilizing the most up-to-date resources to learn about and help these patients. Other experiences lead me to define myself as a future physician to learn about the business of medicine and to gain a better understanding of how the team role plays into medicine and patient care. Overall these experiences have influenced me towards becoming a better physician.

My reflective synthesis paper deals with my experience in my field of choice which is pathology. I was exposed to a wide variety of clinical decision-making skills incorporating tissue information from patients along with clinical data and providing a patient and problem centered therapeutic plan. In addition to the time I spent shadowing in sign out I am recently starting an experiment in which I will learn to predict the therapeutic response of a tissue liposarcoma based on genetic analysis. I will discuss the pathology of liposarcoma including the cell of origin molecular basis histology and clinical behavior of this tumor in association with the genetic markers of therapeutic response.

Janice Aportela

Forming an Interest in Pathology

Advisor:
Dr. Sachin Jugal

Collaborator:
Dr. Craig McKinnon

POSTER

Christopher Arndt

**Case Series of
Pre-hospital Blood
Administration in a
Helicopter Emergency
Medical Service (HEMS)**

**Advisor:
Dr. M. Riccardo Colella**

**Collaborators:
Dr. M. Riccardo Colella &
Dr. E. Brooke Lerner**

Methods – A retrospective review of patients transported by a HEMS agency between 8/2006 and 6/2010. Results – 99 patients received HEMS PRBC. 65 were transported to the participating trauma center and were included in this analysis. Of the surviving patients, the average HR was 94, BP of 88/58, and 17 patients had a GCS of ≥ 14 . Initial hospital labs were Hemoglobin 11.2, Hematocrit 32.9, Platelets 198.6, INR 1.37, and PTT 46.2. All 59 patients were admitted to the hospital. In the first 24 hours after admission, patients received an average of 1.6 units PRBCs with 7 patients receiving >20 units of PRBC. 39 patients survived and 20 patients died. **Conclusions** – Severely injured patients who received HEMS PRBCs show no improvement in their first measured vital signs at the trauma center. Further research is needed to compare the benefits of HEMS PRBC's with the costs of maintaining a HEMS PRBC program.

Over the course of the M3 year my focus for the Master Clinician Pathway has been professional development in the following areas: professionalism and physician identity, medical knowledge, patient care, interpersonal and communication skills, systems-based practice, and practice-based learning and improvement. I have furthered my professional development in these areas through a variety of approaches. In the following reflective synthesis I will review my experiences volunteering in clinic for the uninsured, attending topic-based discussions at the Medical College, participating in conferences, practicing clinical skills with my peers, and reading to further my medical knowledge. I will further address the impact of the Pathway core-sessions on my professional development and how this has influenced my growth as a future clinician. These core sessions included hands-on training such as the suture skills workshop, lectures to further medical knowledge, and group discussions and presentations to develop teamwork and clinical communication skills.

Kelly Bailey

**Master Clinician
Professional
Development**

**Advisor:
Dr. Colleen Crowe**

Eric Barker

**Orthopedic Surgery -
Beyond the Clinical
Skills**

**Advisor:
Dr. Don Hackbarth**

While reflecting on my time in the Master Clinician Pathway throughout these first three years I again am encouraged by the fact that I was able to more fully solidify my decision on applying to an Orthopedic Surgery residency. By taking the time provided to me for the Pathways with non-core hours I was able to get into multiple Orthopedic clinics as well as Orthopedic operating rooms. By doing this I was able to apply the six major competencies the Master Clinician Pathway stresses while also learning more fully the “ins and outs” of Orthopedics and seeing if it was a life-style and profession for me. I was also able to start a research project this year within the Orthopedic department which will make me a better residency applicant. The core sessions and the readings also provided me with knowledge to become a better physician as a whole.

The January core session of Bedside Manners greatly affected my outlook on patient care. The lesson of teamwork and delivery effective patient care, enhanced my second semester and subsequent clerkships greatly. Taking these principles to heart, I applied them to a surgical patient of mine, Mrs. M. I strove to coordinate her care between the attendings, residents, NP's and RN's. In her three weeks of inpatient stay, I knew her better than anyone on the team. I will forever remember her and the Bedside Manners principles.

Jessica Bartelt

**Teamwork &
Collaboration:
Important at all
Levels of Care**

**Advisor: Dr. Christopher
Plambeck**

Timothy Botler

Does Tight Control of HBA1C Affect Outcomes for Diabetics?

Advisor:
Dr. Eric Pifel

The epidemic of Type 2 Diabetes coincident with our epidemic of obesity is well known to both the public and medical profession. Microvascular and macrovascular complications include retinopathy, neuropathy, nephropathy and cardiovascular disease. At the Saturday Clinic for the Uninsured, I follow a patient who has uncontrolled diabetes, with a HBA1C over 10. I posed the clinical question –“Does tight glycemic control improve outcomes?” A literature search brought me to the “Diabetes Control and Complications Trial.” This study examined the difference between conventional therapy and therapy aimed at keeping HBA1C less than 7%. The results found that not only does maintaining tight glycemic control reduce the risk of microvascular complications, but it also decreases the long-term cardiovascular outcomes. The findings of this study have been extrapolated to Type 2 DM, and multiple other studies have looked at outcomes in type 2 diabetics.

My Pathways project will be a reflection paper on what I have learned and how my thinking has changed this past year. It will be centered on the core competencies and how I have improved in each. More specifically I will go over activities I have been involved in this year and how they have shaped my growth individually. I will also write about the core sessions we have had over the year and how they relate to the core competencies and how they have caused growth in my thinking processes.

Timothy Burns

Pathways Reflection Paper

Advisor:
Dr. Eric Hohenwalter

**Margarita Cantir
(with Joshua Pearl)**

Saturday Clinic for the Uninsured Quality Improvement Study

Advisor:
Dr. John N. Jensen

Collaborators:
**Sameer Siddiqui, M2
& Dr. Rainer Gedeit**

The Saturday Clinic for the Uninsured is designed to provide quality medical treatment for patients and provide medical students clinical experience and education. The purpose of our study was to identify a method in improving the efficiency of the clinic without decreasing either the quality of medical care or the education received by the medical students. An intake form was designed with the intention of shortening the interview time required per patient. The patients filled out the intake form at a rate of 98%. Additionally, the students noted no decrease in the satisfaction of education received with 75% requesting the continued use of the intake form. However, the current study sample size is limited and further data will be necessary to determine the effect on the perceived quality of education. Also, limited information is available regarding the data concerning the efficiency of the clinic or patient satisfaction with the form.

For this final reflective paper, I will think about the patients who touched me the most, the ones who challenged me to rise above who I am presently and also the ones who challenged my beliefs. It has been an interesting year, learning to navigate several environments, as well as different networks of people and providers. I will reflect on the various core activities, the students that I was in small groups with, usually under-classmen, and integrate what I learned within the clinical experiences while working with ancillary staff. Being in the Master Clinician Pathway, I often incorporate aspects of my ILP into the goals I have as a student.

Margaret Carpenter

Growth of a JMS - a Year in Reflection

Advisor:
Dr. Rose Campise-Luther

Scott (Michael) Carver

Applying Anesthetic Skills to At-Risk Populations

**Advisor:
Dr. Matthew Tews**

The beginning of the year I switched from the Physician Scientist Pathway in order to explore differing fields of acute care seeing that I was unsure of what career path I wanted. I used this time to explore acute care: emergency medicine, surgery and anesthesiology. This time was also utilized in applying medical knowledge gained in clerkships to acute care settings.

My Master Clinician Pathway experience was valuable. Core-time allowed me to grow and develop elements necessary for every medical professional. Non-core time allowed me to nurture my personal interests in medicine and focus on specific competencies. I developed skills related to the six ACGME competencies over the past three years in the Master Clinician Pathway. The six competencies are Medical Knowledge, Communication, Systems Based Practice, Practiced-Based Learning & Improvement, Physician Identity, and Patient Care. The majority of my non-core time was spent with my Pathway advisor, Dr. David Schmitt, a vascular/general surgeon at Waukesha Memorial Hospital (WMH).

James Clay

Reflective Synthesis

**Advisor:
Dr. David Schmitt**

Keli Coleman

Master Clinician Pathway: An M3 Journey of Self-Reflection

**Advisor:
Dr. Jacqueline Nohl**

My reflective paper details the unique opportunity I have been afforded to expand upon and discover new medical interests both clinically and personally through participation in non-core hours. Working alongside Dr. Robbins at the MLK center and others has provided me the chance to improve my physical exam skills enhance my ability to take patients' histories and made me cognizant and more sensitive to the importance of effective communication concerning diseases to patients from diverse background. Assisting her has helped to reaffirm my decision to dedicate a portion of my medical practice to working in underserved communities where my medical knowledge Spanish and strong interpersonal skills will be an asset to future patients. Dr. Robbins has demonstrated through seemingly effortless good bedside manners how the power of connecting with others can be rewarding to both the patient and healthcare provider. These experiences have positively influenced the dreams that I have for myself as a future physician.

A reflective synthesis set throughout three years of Pathways detailing a unique exposure to various aspects of the profession of medicine. Throughout medical school, the Pathway sessions positively impacted the approach to a patient encounter and also how to function safely and effectively as part of a healthcare team. The goal of this synthesis is to expound on experiences rounding with emergency medicine physicians, radiologists, anesthesiology staff and residents of Froedtert Hospital and how these noncore hours were impacted by core sessions. The conclusion of this synthesis is a reflection of how patient interaction, professional guidance and constant drive for medical knowledge can shape a medical student into a future physician.

Patrick Darga

Preoperative Medicine: an Experience Above the Drape

**Advisor:
Dr. Amanda McQueen-Klein**

PODIUM

Jill Daubner

Impact of Nursing Home Violations on ED Inpatient Treatment of Falls

Advisor:
Dr. Christopher Chitambar

Collaborators:
Dr. Peter Layde, Clare Guse, MS & Dr. Donna Peterson

Falls among the elderly are a substantial problem in the United States accounting for greater than 35 million emergency department visits each year. The aim of this study was to evaluate the relationship between nursing home regulatory compliance with the occurrence of falls requiring ED/inpatient care. A county level analysis of Wisconsin nursing home emergency department and inpatient data from the Wisconsin Hospital Association Medicare Nursing Home Compare Minimum Data Set and Wisconsin Department of Health Services was performed. Of the 59,186 Wisconsin nursing home residents 65 years of age and older in 2007-2008 715 required ED/inpatient treatment for falls. Multivariate analysis using negative binomial regression revealed that residents from counties with nursing homes having a greater number of federal violations in counties with a fewer number of nursing homes per county or in large fringe metropolitan counties show a significantly greater risk of ED/inpatient admissions for fall-related injuries.

Hepatic encephalopathy (HE) is a neuropsychiatric condition that causes significant morbidity and mortality in those with chronic liver disease. The exact pathogenesis of HE is still unknown, but is believed to be caused by enterically absorbed toxins, such as ammonia, that accumulate in the blood due to the decreased detoxifying capabilities of those with liver disease. The standard management and prophylaxis is through the use of lactulose, a non-absorbable disaccharide. Lactulose acts as both a cathartic as well as preventing the absorption of ammonia. The side effect profile of lactulose includes chronic diarrhea, abdominal pain, and nausea and leads to noncompliance and sometimes frequent hospitalizations for HE. This patient case is illustrative of this relationship. Alternative treatments to lactulose include the antibiotic rifaximin, and this paper weighs the benefits and drawbacks of its use, with special consideration to noncompliant patients.

Michael DiMarco

Alternatives to Lactulose in Treatment of Hepatic Encephalopathy, a Patient Case

Advisor:
Dr. Tony Thrasher

Andrew Do

Becoming a Well-Rounded & Informed Physician

Advisor:
Dr. Jason Liu

My reflective synthesis paper will illustrate how my participation in the Master Clinician Pathway has helped prepare me to become a more well-rounded and informed physician. The most meaningful experiences I had in this Pathway include my times in the emergency department with my physician-mentor performing bed-side exams and procedures. I also spent much of my Pathway time at the Saturday Clinic for the Uninsured where I was able to spend more time with patients and improve upon my communication and diagnostic skills. I will also expand upon my own shortcomings and how I will move forward to improve.

Before matriculating into medical school young pre-med students are eager and excited that all their hard work has finally paid off. They are going to become DOCTORS after all. That said the average idealistic and naive student (read: me) does not realize what the next four years entail: the studying stress internal battles and for some (read: me) the chronic indecision of what to be when he or she actually grows up! I have spent most of my non-core Pathway time trying to answer that very question. My reflective paper will delve into the complexities of discovering my identity as a future physician. It is a journey full of highs and lows ups and downs cynicism and optimism primary care and dermatology etc. I hope to depict a very honest portrayal of what medical students face in trying to decide a specialty in the complicated and evolving field of medicine.

Whitney Endsley

Undecided

Advisor:
Dr. Edward Callahan

Kristin Fay

Reflective Synthesis

Advisor: Dr. Nikki Allen

These past three years have been very eventful for me. The Master Clinician Pathway has provided the opportunity to experience areas of medicine I may not have sought out otherwise. I participated in many shadowing experiences that helped me meander through different specialties. I also worked on a quality improvement research project about improving Anterior Uveitis screening in Juvenile Idiopathic Arthritis patients that helped me understand the research side of being a physician. My reflective synthesis will discuss these opportunities in detail and how they are an integral part to my success as a future physician.

A reflective synthesis on injury and how my perspective has changed over the year with participation in the anesthesia resident assistant program, shadowing in the trauma bay, and working with the emergency medicine physicians on bedside rounds.

Edward Fazendin

Reflections

**Advisor:
Dr. Christopher Plambeck**

Patrick Fleming

Cryptogenic Organizing Pneumonia: A case study

Advisor: Dr. Jacqueline Nohl

The majority of my Pathways hours this M3 year I have spent making a case presentation on a patient I followed for several weeks during my internal medicine rotation. This patient presented with signs and symptoms of pneumonia which were unresponsive to antibiotics. He underwent extensive workup and was eventually diagnosed with cryptogenic organizing pneumonia based on negative infectious disease workup a response to steroids and pathology studies. My interactions with the patient and my research based on a PICO question related to the duration of treatment therapy tied into all of the core Master Clinician competencies.

Education is not only necessary for future physicians but for current ones as well. This year 3 major experiences have helped to shape my thinking and aspirations as a pediatrician. I have continued to work at the Child Protection Center at the Downtown Health Center where I worked with Dr. Guinn on providing foster care check ups and abuse exams. I also participated in a research project assessing the amount of knowledge obstetricians have on opiate addiction in pregnancy and where there is need for improvement. And finally I participated in the M2 Board Review Mentor Program. All three of these experiences demonstrated the important of education to future physicians current physicians and the community. Thanks to these experiences I have solidified my interest in pediatrics feel that I am knowledgeable and know where there is work to be done in the field.

Samantha Friedman

The Importance of Education

**Advisor:
Dr. Judy Guinn**

Justin Friske

**Anti-coagulation
Management for
Low-risk Surgery Two
Months After
Pulmonary
Embolism**

**Advisor:
Dr. Joshua Meskin**

A review of evidence based anti-coagulation strategies for a 47yo woman undergoing low-risk surgery two months after an unprovoked significant pulmonary embolism.

My Pathways projects have helped me better understand the different specialties and aided my most recent decision to pursue internal medicine. In the beginning of third year I thought I would want to go into OB/GYN. I shadowed at the high risk OB clinic at Froedtert and saw a lot of things I would otherwise never have gotten to see. Later, I had my pediatrics rotation and unexpectedly loved it. I started a project where I shadowed different specialties in pediatrics to better understand what they do on a day to day basis. Doing that was very interesting and I ended up looking up so many different diseases that I'd never heard of. Later in the year I unexpectedly enjoyed internal medicine. I started working at Saturday Clinic for the Uninsured to get more experience and enjoy it because I get to work with patients, a team and do some teaching!

Amber Galarowicz

**Finding My Specialty:
A Reflection**

**Advisor:
Dr. Rainer Gedeit**

**Steven Gale
(with Daniel Sturgill,
UCH)**

**An assessment of
AED programs
in Wisconsin Schools**

**Advisor:
Dr. Alan David**

**Collaborators: Dr. Stuart
Berger, Debra Klich,
Project ADAM
Herma Heart Center**

BACKGROUND: Sudden Cardiac Arrest happens to 500-1000 children annually and frequently causes death in school-aged children. Although bystander use of Automated External Defibrillators (AEDs) decreases incidence of Sudden Cardiac Death it is unknown whether most Wisconsin schools have AEDs. This cross-sectional survey assesses the status of AED programs and potential barriers to AED program implementation. **METHODS:** Electronic surveys regarding AED program status were sent to administrators at Wisconsin schools listed through the Department of Instruction (DPI) and statistically analyzed across demographics. **RESULTS:** 72% of Wisconsin schools had AEDs with high schools (80%) more likely to have at least one AED than middle (67%) or elementary schools (71%). AEDs were present in public schools more often than at private schools ($p < 0.001$) and both financial and time issues were cited as barriers to AED program implementation. **CONCLUSIONS:** A majority of Wisconsin schools have AED programs but barriers remain to achieving 100% compliance.

The field of Internal Medicine has a wealth of sub-specialty careers available to those who elect to pursue it. However in the traditional medical school curriculum students often are not exposed to these diverse options until after setting a firm career path. The Master Clinician Pathway has afforded me the rich opportunity to explore the field of Cardiology. Throughout the past three years I have worked in concert with my advisor Dr. James Kleczka to gain exposure to a variety of unique clinical encounters including cardiac catheterization, echocardiography and cardioversion. Additionally I have dedicated time to cardiology clinic where I have had the privilege to improve my auscultation skills and experience the formulation of evidence-based treatment plans for all patients.

Noelle Garster

**Practicing Evidence-
Based Cardiology**

Advisor: Dr. James Kleczka

Phillip Guajardo

Brain Morphology & Its Relationship to Alcohol Relapse Propensity

Advisor:
Dr. Michael McBride

Collaborator:
Zablocki Veterans Administration Hospital

During my time in the VA, I worked with a Veteran who had had multiple alcohol related relapses and was an inpatient receiving treatment for his alcoholism. During his time with our service we performed a CT Scan that showed diffuse brain atrophy likely secondary to prolonged alcohol use. As a result this led me to question whether or not brain morphology is related to subsequent alcohol related relapses. According to a study in Biological Psychiatry patients that were deemed as "future relapsers" were seen to have smaller brain volumes in the regions of the mesocorticalimbic reward system. This system controls impulse control, emotional regulation and craving that likely contributes to future alcohol related relapse. These differences were deemed significant when compared to patients deemed "future abstainers." This morphology when combined with environmental factors likely leads to an increase in alcohol related relapses and subsequent admission.

For my final Pathways project I will write a reflective synthesis of the year. In it I will discuss and reflect on the activities I participated in during both the core sessions and during non-core time. The synthesis will focus on what I had hoped to gain from the year as well as what in actuality I did gain. I will reflect on how these activities have or have not changed my thinking and planning as I continue through medical school and beyond. In addition I will discuss and reflect on the core competencies outlined at the beginning of the year in my ILPs and how well they were met.

Marc Gunderson

My Year in Review

Advisor:
Dr. Jon Lehrmann

Brett Hall

Survey on the Method of the Lateral Pull-down Exercise

Advisor:
Dr. James Ninomiya

Collaborators: **Dr. Jason Long & Anne Kulikowski, Wisconsin Athletic Club**

Exercises are often examined and scrutinized to determine their effectiveness and safety. Previous research of the various methods of the lateral pull-down exercise concluded the anterior lateral pull-down provides the greatest stimulus for development of the latissimus dorsi muscle and also places less stress on the shoulder joint. Our survey distributed to the local Wisconsin Athletic Clubs sought to determine how people are learning and performing the lat pull-down. No difference existed between the use of anterior and posterior lat pull-down across different ages, sexes or modalities of learning. We found that persons who used a personal trainer were less likely to perform the posterior lat pull-down.

The most common barrier identified by physicians who fail to screen for PTSD in trauma patients is time constraint. We hypothesized that the 4-question PC-PTSD screen would be an acceptable alternative to the currently used 17-question PCLC. To test this consecutive trauma patients admitted to a Level I trauma center were given the PCLC at time of hospitalization. The four PC-PTSD questions are contained within the PCLC screen. When comparing the screens we found that the PC-PTSD identified a similar percentage of patients with PTSD symptoms: 16.10% using the PCLC and 17.22% with the PC-PTSD. PC-PTSD also had reasonable sensitivity (72.35%) while retaining specificity (93.36%). Although some sensitivity is lost the PC-PTSD is a shorter screen and the loss of sensitivity may be offset by an increased frequency of administration. With further research we hope to implement the PC-PTSD as a potential screening tool for PTSD in hospital trauma patients.

POSTER

Jessica Hanley

Efficiency of a Four-Item PTSD Screen in Trauma Patients

Advisor:
Dr. Scott Van Valin

Collaborators:
Dr. Terri de-Roon Cassini & Dr. Karen Brasel

Whitney Hansen

**Working with a
Diverse
Population**

**Advisor:
Dr. Jennifer McArthur**

The Master Clinician Pathway has augmented my experience in medical school and it has changed my way of thinking and approaching my education. I was especially enriched by my non-core hours. I have been focusing on widening my experience with a diverse patient population as well as learning about their experience with healthcare and interactions with medical personnel. These patients have ranged from a child with ADHD to a 90 year old who had recently undergone aortic valve replacement with many other enjoyable patients in between. I have also been focusing on learning more about different medical specialties. I started shadowing a broad range of fields as an M1 and as I was exposed to different fields I learned what was important to me in a career and was able to focus my M3 clinical experiences and this has greatly aided my choice for a permanent career.

My reflective synthesis paper details how my experiences in the Master Clinician Pathway have helped me take a step closer to attaining my goal of becoming a Master Clinician. There are many aspects that one must continue to work on throughout their career to become a Master Clinician. Some of these areas are medical knowledge ,professionalism, communication skills, patient care, systems based practice and practice based learning. Throughout the year I have been involved in core and non-core activities that allowed growth in each of these areas. I especially enjoyed working with the Anesthesiology faculty and residents working on performing a proper and complete pre-operative evaluation, synthesizing a peri-operative plan, communicating efficiently with other members of the patient care team and quickly establishing rapport with anxious patients.

Colin Hoff

**Master Clinician
Reflective
Synthesis**

**Advisor:
Dr. Charles Harkins**

My reflective synthesis paper demonstrates the wide variety of activities that were utilized during my Pathway time. A large percentage of those activities involved working with or shadowing doctors. It was important to gain clinical experiences especially during my 1st and 2nd year of medical school. I especially enjoyed working in the otolaryngology department and learning the different aspects of the ENT physical exam. As time went by and my clinical experience increased I began to focus on choosing a specialty. I continued to shadow doctors during Pathway time for the purpose of discovering what I did and did not like in the world of medicine. I also spent a large portion of my time researching different specialties and reflecting. This time was quite necessary and has allowed me to narrow down my career choices.

Ovarian torsion is a relatively uncommon but serious cause of lower abdominal pain that remains difficult to accurately diagnose in the acute care setting. Studies have shown that less than half of patients with a clinical diagnosis of ovarian torsion who undergo laparoscopy actually have an ischemic torsed ovary. Further complicating the diagnosis the severity of symptoms correlates poorly with the degree of infarction as approximately one quarter of patients with surgically confirmed ovarian torsion are minimally symptomatic. Doppler US and CT can reliably detect ovarian lesions however they have a somewhat limited ability to detect ovarian torsion and the resulting ischemia. Thus the decision to proceed to laparoscopy can be challenging. For my EBM project I reviewed the potential use of serum interleukin-6 in cases of suspected acute ovarian torsion to help determine which patients require urgent exploratory laparoscopy and which can be safely monitored without surgical intervention.

Yuichiro Hayashi

One Step at a Time

**Advisor:
Dr. Joshua Meskin**

Jon Holzberger

**Interleukin-6 as a
Potential Marker for
Ovarian Torsion a
Publication Review**

**Advisor:
Dr. Tomer Begaz**

Annie Huang

A reflection

**Advisor:
Dr. Larry Duenk**

As a previous combat medic accustomed to blood and guts I came into medical school with a firm inkling that I wanted to be an Emergency Room physician. Never did I think that I would encounter so much turmoil choosing a medical field for a career. Each clerkship opened my eyes to new experiences--after each one, I could see myself in that specialty. It was refreshing yet frustrating at the time. I spent numerous Pathway noncore hours shadowing doctors spending time in all fields including the Emergency Department, Surgery Department or Pediatrics. The personal time I spent with individual physicians and clinical experiences I gleaned from them helped me to find my true physician identity in general surgery. Though I have been frequently dissuaded, I am confident that I have explored many fields to properly narrow down the one that best fits me.

Hydrochlorothiazide has been viewed as the end all antihypertensive medication due to its relatively low cost and purported effects on elevated blood pressures. But is it really the best medication for the job? Evidence based medicine would disagree. I will be comparing the effects of hydrochlorothiazide and other various antihypertensive on blood pressure control in an attempt to elucidate the best first line antihypertensive medication.

Benjamin Jenny

**Rethinking
Hydrochlorothiazide
EBM Analysis**

**Advisor:
Dr. Edmund Duthie**

David Kaplan

**My Social Views
on Medicine**

**Advisor:
Dr. Timothy Woods**

Throughout medical school I have participated in the Saturday Clinic for the Uninsured as part of the Master Clinician Pathway. This paper is a reflection about how the experience has affected my social views on medicine, how it served as an ancillary training ground for my clinical skills, and how it allowed me to pass along knowledge to other students.

For my final Pathways project I have chosen to do a reflective synthesis. During my three years in the Master Clinician Pathway I have been able to experience multiple activities and core sessions that have enhanced my medical school training. From learning to read chest x-rays and CTs to enhancing my suturing skills the Master Clinician Pathway has consistently given me an opportunity to learn and develop the skills necessary to become an accomplished and skilled physician. This Pathway has also allowed me to spend time in the community doing a variety of community service projects which help me have a greater understanding of my future patients and the physician's role in the community.

Jeffrey Kenyon

**Reflective
Synthesis**

**Advisor:
Dr. Colleen Crowe**

Tana Kim**Management of
Recurrent
Erythema
Multiforme
Outbreaks****Advisor:
Dr. Ileen Gilbert**

A 15 yo African American male with history of recurrent erythema multiforme presented to CHW for an acute mucocutaneous outbreak. He presented with targetoid lesions on his bilateral hands and painful ulcers involving his lips, gums, and tongue. This was the patient's fourth erythema multiforme outbreak since the age of 12. A prior outbreak was associated to be HSV induced; however his most recent hospitalization did not show any HSV involvement. He was on a home regimen of prophylactic acyclovir, but outbreaks seem to occur despite his regular anti-viral therapy. My final project will be based on an EBM paper looking at recurrent erythema multiforme induced by HSV and of unknown etiology. Specifically, I hope to answer the question: In patients with recurrent erythema multiforme of possible HSV origin, does daily prophylactic anti-viral therapy versus no prophylactic therapy at all help to decrease the overall recurrence of erythema multiforme?

Skin exposure to ionizing radiation affects the normal wound healing process. We investigated the effects using a rat model of combined radiation and wound skin injury. Using a soft X-ray beam a single dose of ionizing radiation (10-40 Gy) was delivered to the skin. At 1 h post irradiation two skin wounds were made on the back of each rat. Control and experimental animals were euthanized at varying times post irradiation. The wound areas were measured and tissue samples were evaluated for laminin 332 and matrix metalloproteinase (MMP) 2 expression. Our results demonstrate that radiation exposure significantly delayed wound healing in a dose-related manner. Our evaluations showed decreased deposition of laminin 332 protein together with an elevated expression of all three laminin 332 genes within 3 days post irradiation. These data strongly suggest that laminin 332 deposition is inhibited by ionizing radiation can contribute to the delayed wound healing of irradiated skin.

**Wasakorn
Kittipongdaja****Diminished Laminin
332 Deposition in
Irradiated Skin****Advisor:
Dr. Zelmira Lazarova****Collaborators: M. Jourdan,
A. Lopez, E. Olasz, N. Dun-
can, M. Demara, B. Fish, A.
Schock, N. Morrow,
V. Semenenko,
B. Baker, J. Moulder, &
Z. Lazarova****Jaclyn Klekman****Comparing
Perinatal
Outcomes in
Gestational
Diabetes Treatment****Advisor:
Dr. Carey Ehler**

In accordance with a personal interest in maternal fetal medicine I have chosen an evidence-based medicine project to address the P.I.C.O. (patient intervention comparison outcome) question: Is there a difference in perinatal outcomes in women with gestational diabetes treated with metformin compared to insulin? This paper serves as a critical appraisal of an article published in The New England Journal of Medicine "Metformin versus Insulin for the Treatment of Gestational Diabetes" by Rowan J.A. M.B. Hague W.M. M.D. et al. (2008). This randomized controlled trial looked at women ages 18-45 between 20-33 weeks of pregnancy diagnosed with gestational diabetes and found no significant difference between metformin and insulin in terms of perinatal outcomes. Therefore metformin appears to be a safe and valuable alternative to insulin in the management of gestational diabetes.

Objective: The purpose of this study is to determine short to intermediate-term failure rates and functional outcomes of GAP cup reconstructions performed in patients with acetabular bone loss from tumor. **Methods:** Patients with antiprotrusio cage acetabular reconstructions for tumor from 2001 to 2010 were identified. Patients were interviewed and examined. Radiographs were analyzed to determine implant migration. **Results:** 18 patients met inclusion criteria. Twelve were primary reconstructions and 6 were revisions. 3 of the revision reconstructions failed (16.7%). One failed due to infection and 2 patients with previously radiated osteonecrotic bone mechanically failed. Average follow-up time for the non-failures was 20+/-21 months and the average time from surgery to failure was 17+/-11 months. The 9 examinable patients were ambulatory. **Conclusion:** Antiprotrusio cage reconstructions for acetabular bone loss from tumor have acceptable short to intermediate-term survival and allow for preserved ambulatory function. A higher failure rate was noted in radiated bone.

POSTER**Bradley Kook****Antiprotrusio Cage
GAP Cup Acetabular
Reconstructions for
Tumor - Outcomes
Analysis****Advisor:
Dr. David King****Collaborators:
Dr. Donald Hackbarth,
Department of
Orthopaedic Surgery**

Matthew Laudon

Pathways in Pediatrics

**Advisor:
Dr. Stephanie Whitt**

My reflective synthesis paper will describe how I spent non core hours working with my preceptor in a pediatric clinic. Beginning M3 year I had decided on going into emergency medicine as a career. My first rotation was pediatrics and I was surprised to find that I actually enjoyed it. After my rotation was over I chose a preceptor in pediatrics. I felt that after my pediatrics rotation my exposure to children would be minimal. I still have decided on emergency medicine but I think my increased exposure to pediatric patients will be useful in the future.

In the Master Clinician Pathway, I had the opportunity to learn how to critically appraise research articles and develop an understanding of forming a PICO question. My patient is a 43 yo male railroad conductor with a history of DVT and on anticoagulation therapy. My PICO question is: In patients who have DVT being treated with warfarin, is self monitoring and self management of anticoagulation as safe and effective as compared to standard monitoring in maintaining therapeutic INR and preventing reoccurrence of DVTs? Results of outcome showed that self-monitor and self-management of anticoagulation when compared with standard monitoring are effective means to prevent adverse outcomes of major hemorrhage, thromboembolic events, and death.

Leonard Lee

**EBM project -
Anticoagulation Therapy & the
Effectiveness of Self
Monitoring**

**Advisor:
Dr. Mario Montalbo**

Soojae Lee

**Early Exposure to
Geriatrics & Family
Centered Approach
of Care**

**Advisor:
Dr. David Lillich**

In the Master Clinician Pathway I had the opportunity to work with my adviser in clinic and at the Philippines Free Clinic. I focused on completing the core competences in patient care system based learning and furthering my fund of knowledge. At the Philippines Free Clinic I had a greater role in patient care and focused on understanding the disparities in health care and access to those utilizing their services. I am in the process of helping modify the free clinic's paper charts to help streamline care and improve how patient information is recorded and utilized.

Over 40 million Americans currently smoke cigarettes and around 400,000 preventable deaths are caused by smoking each year. During this past year I have personally interacted with a number of patients who smoke and others who are experiencing the deleterious effects of smoking. During my Family Medicine rotation I learned about a counseling technique called Motivational Interviewing that has been used to help illicit behavioral change. I want to determine if Motivational Interviewing when compared to no intervention effectively assists in smoking cessation and specifically if these findings can be applied to a patient that I cared for during my M3 year. A critical appraisal of my experience creating and solving this PICO style clinical question using EBM will be included.

Patrick Lehman

**Utility of Motivational
Interviewing in
Smoking
Cessation**

**Advisor:
Dr. Marlene Melzer-Lange**

Katelyn Levene

Contemporary Interventions for Carotid Artery Stenosis

Advisor:
Dr. Aysha Schaper

The VA Vascular Surgery service was consulted regarding a functional 87 year old gentleman who was recently admitted for stroke-like symptoms. The patient was well established with the Vascular Surgery clinic for routine surveillance of established carotid artery disease. Despite recently meeting ultrasound criteria for intervention he declined elective operation. Now he is interested in surgical management to help prevent further strokes and their debilitating sequelae. CT angiography shows a long segment lesion that extends from the carotid bifurcation inferiorly deep to the angle of the mandible superiorly. Lesions with such characteristics have recently been recognized as good targets for endovascular stenting. For my Final Pathways Product I will critically appraise an article that answers the following PICO question: For an elderly patient with symptomatic carotid artery stenosis is carotid artery stenting superior to carotid endarterectomy in reducing long-term morbidity and mortality related to future strokes?

Pathways gave me a well-rounded exposure through the core sessions of the various other privileges and responsibilities that doctors have to patients and to society at large beyond just the mastery of disease that is taught through the regular portion of the curriculum. Through my various non-core activities I was able to explore these further and believe they have helped me to better realize all that medicine encompasses. I was able to further explore clinical research in medicine communication death/dying medical decision making and serving the uninsured.

These are experiences that will aid my future career and be of benefit to my patients.

David Linn

Reflective Synthesis

Advisor:
Dr. Glenn Ragalie

Luis Lopez

My Third Year Pathway Activities in a Nutshell

Advisor:
Dr. Colleen Lawton

For my Master Clinician Pathway activities I worked on research in the field of Radiation Oncology, founded and was editor of a student newsletter, volunteered at Saturday free clinic, Vice President of Student Assembly, Iris Reading, and the Pass Program. With the aid of my Pathway advisor and mentor, Dr. Lawton, and Dr. Siker, I was able to participate in research regarding the reoccurrence of meningiomas after radiation treatment and write-up a article on the topic of tomography and anal cancer. Also, as Vice President of Student Assembly, I took on the project of starting a student newspaper, "The Second Opinion," with two other M3 medical students, and organized various volunteering projects in the community. I also participated in various activities in the community further developing my skills as a physician : Saturday Free Clinic, Pass Program, and Iris Reading. All of these activities enriched my medical school experience and exposed me to the competencies set by the Master Clinician Pathway.

My scholarly project for the M3 year is the retrospective research study entitled "Hemodynamic and Angiographic Analysis of the Role of Venous Tributaries of the Innominate Vein in Association with the Bidirectional Glenn Shunt." We are studying the presence of venous channels and their alterations occurring in association with the bidirectional Glenn shunt. We hope to correlate angiographic outcomes and the development of veno-venous collateral channels with hemodynamic and respiratory variables. We are using several different variables to measure outcomes of patients that qualify for this study.

Timothy Maher

Venous Channels

Advisor:
Dr. Todd Gudausky

Collaborator:
Dr. Andrew Pelech

Brian Marcus

Reflection on Master Clinician Pathway

**Advisor:
Dr. Daniel Mielnicki**

The Master Clinician Pathway proved valuable to my medical education as it allowed me to experience medical practice in a variety of settings and to facilitate serving people in the Milwaukee area. Ranging from outpatient clinics to soup kitchens from emergency rooms to health fairs I feel as though I was able to both ultimately decide on what area of medicine I plan on specializing in while helping members of my community. Participation in this Pathway helped round out my medical education by providing opportunities to learn about topics not covered in lecture or clinical rotations and to see how medical care and education is delivered to patients. Finally it highlighted the importance of improving personal medical knowledge while also stressing how volunteering and patient education is crucial to improving the well-being of a community.

For the scholarly project I will be doing an EBM assessment of new diagnostic technique for determining the malignant potential of an IPMN (Intraductal Pancreatic Mucinous Neoplasm). In a subset of patients with these neoplasms an aggressive form of pancreatic cancer can develop if the lesion is not surgically removed. However a large subset of people with these identified with IPMN would develop pancreatic cancer and can be managed simply through routine CT monitoring. Currently many patients undergo a prophylactic Whipple procedure to remove any suspicious lesions that grow beyond 3 cm. However it is believed that many patients get this risky surgery unnecessarily. A new technique has been developed to genotype these lesions as a way of better identifying surgical candidates versus patients who only require regular follow up.

Brodie Marthaler

To Whipple or Not to Whipple

**Advisor:
Dr. Kevin Regner**

Robert McMurray

M3 Reflection

**Advisor:
Dr. Lewis Somberg**

My reflective synthesis paper documents how my involvement in the Master Clinician Pathway has influenced and enriched my medical school experience. Through this Pathway I have continually strived to strengthen not only my exposure to the core competencies but also my skill set within each of these areas. I have achieved this through volunteerism within the community in such activities as the Saturday clinic for the Uninsured and teaching shadowing the trauma team at FMLH and persistent attempts at building my knowledge base by reading scholarly journals and textbooks. I feel that my experience in the Master Clinician Pathway has allowed me to build relationships with people that will benefit me in the future and vastly improved my ability to function efficiently and competently as a future physician.

The MC Pathway provided me with time to add my own medically related experiences to the MCW curriculum. I frequently volunteered in free clinics and learned first hand patient care already in my M1 year which allowed me to connect the basic sciences to practical medicine. I was able to analyze a free clinic website I created prior to Pathways and analyze what sort of information over 800 patients and doctors look at each month. Then I used this assessment to revise communication weaknesses. I spent time with physicians and politicians all across the state and learned a lot about the business and political aspects of medicine as well as future difficulties. I was able to explore my own anticipated career through my adviser. Finally the hodgepodge of subjects covered by the core sessions provided insight into areas of health care not frequently covered by the standard medical school curriculum.

Casey Melcher

Reflection on Pathways

**Advisor:
Dr. Parag Patel**

Lydia Mendoza

**Master Clinician
Reflective
Synthesis**

**Advisor:
Dr. Amy Kenny**

During the Master Clinician Pathway I was able to create an individualized focus on areas outside of patient care and medical knowledge during my M3 year. In particular I was able to develop my own physician identity while determining my future career in Emergency Medicine through working with physicians in the Emergency Department and practicing knowledge learned during core sessions on difficulty breathing and managing airways.

A 15 year old previously healthy African American presented to an OSH ED with bilateral cranial nerve 7 palsies dysphagia and inability to walk due to numbness and tingling in her lower extremities. The patient was subsequently transferred to Children's Hospital of Wisconsin, where she was diagnosed with Neuroborreliosis and secondary Guillian Barre Syndrome. My clinical question for this case is:

In teenage females is Guillian Barre Syndrome (GBS) secondary to Neuroborreliosis a known finding and if so does IV ceftriaxone secondarily resolve GBS in these patients by treating the neuroborreliosis? Through an OVID search I did find that Neuroborreliosis has not been linked to GBS in the past however it has been linked to causing a secondary transverse myelitis.

My assessment of the applicability of these articles to my patient is low as GBS has not been reported as a manifestation of neuroborreliosis before this point.

Stephanie Miller

**Neuroborreliosis &
Guillain Barre
Syndrome**

**Advisor:
Dr. Joanne Lagatta**

Joshua Nelson

**My time in the
Master
Clinician
Pathway**

**Advisor:
Dr. Thomas Bachhuber**

During my time in the Master Clinician Pathway my interests have varied significantly. Initially I spent a large portion of my time at the Sixteenth Street Clinic, a family practice clinic in an underserved Hispanic community, and at the Saturday Clinic for the Uninsured. Working at the Sixteenth Street Clinic allowed significant improvement in my medical Spanish. I am far from fluent, but have gained the ability to comprehend the majority of what is spoken and am able to conduct a very basic interview in Spanish. Although I have continued working at the Sixteenth Street Clinic, during this past year I found my interest shifting from general practice to surgery. In light of this, I have tailored my Pathways time toward educating myself on surgical techniques and practicing skills related to operative medicine.

Background: Tricuspid annular Doppler tissue imaging (DTI) has been used to assess right ventricular (RV) function in the systemic right ventricle. The aim of this study was to correlate septal annular and RV free wall DTI measurements with outcomes in infants with Hypoplastic Left Heart Syndrome (HLHS). Methods:

Tricuspid annular DTI velocities were measured at the septum and RV free wall.

These measurements were compared with outcomes during staged palliation. Results: Echocardiograms from 39 patients performed at a median of 35 days after Norwood procedure were reviewed. The septal annular myocardial performance index (MPI) was significantly higher at the septal annulus in patients who died or required transplant compared to survivors (0.88 vs. 0.66; p=0.009). RV free wall

DTI measurements were not predictive of survival. Conclusion: Septal annular MPI is associated with transplant free survival and is a more reliable measure of RV function.

POSTER

Callie Nguyen

Septal Annular Doppler Tissue Imaging Indices are Predictive of Outcome in Infants with HLHS following Staged Palliation

**Advisor:
Dr. David Saudek**

Collaborators: Dr. D. Saudek, Dr. D J. Gorentz , M. Otto, M. Krolkowski, P. Simpson , Dr. S. Li & Dr. P. Frommelt

Courtney Nibbe

Reflective Synthesis

Advisor:
Dr. Marlene Melzer-Lange

My reflective synthesis will focus on how my thinking has been influenced by this year's Master Clinician core and non-core activities. I will address how my clinical volunteerism practice-based improvement and supplementary reading have shaped how I will practice as a physician in the future and how I can further develop the Master Clinician Pathway competencies of medical knowledge, patient care, interpersonal and communication skills, professionalism and physician identity, systems-based practice, and practice-based learning and improvement.

My reflective synthesis paper details my experience in the Master Clinician Pathway and how I meet my competencies in my individualized learning plan. One of my most valuable experiences was working as a Clinical Continuity Track medical student provider at Saturday Clinic for the Uninsured and having the opportunity to provide care to and take ownership of my uninsured patient.

Brilliant Nimmer

Reflective Synthesis

Advisor:
Dr. Julie Biller

Bryce Osbourne

Perfecting the Physical Exam & Expanding Your Differential Diagnosis

Advisor:
Dr. Douglas Bower

My reflective synthesis highlights some of the particular physical exam components and reviews some of the research regarding their effectiveness in clinical medicine. It also reviews some experiences I had with primary care concerning common illnesses such as diabetes hypertension otitis media and the information that I learned concerning approved treatments.

During my non-core clinical time in the Reproductive Endocrinology and Infertility Clinic I encountered a patient who experienced discomfort as the attending was trying to artificially inseminate her. He then changed from a rigid to a soft catheter after which the patient was able to tolerate the procedure well. After witnessing this I was curious as to whether using a soft vs. a rigid catheter for intrauterine insemination affected the primary desired outcome - pregnancy and eventually living children. I discovered an article that directly addressed that question: "Intrauterine insemination catheters for assisted reproduction: a systematic review and meta-analysis" in Volume 21 of the Journal Human Reproduction. I assessed the article for coherence soundness of scientific methods and applicability of the results to the particular patient in question and to the practice of Reproductive Endocrinology and Infertility as a whole.

Katherine Oyster

Rigid vs. Soft Intrauterine Insemination Catheter Use & Pregnancy Outcomes

Advisor:
Dr. Suzanne Walczak

Sarang Patel

Comparing ACE Inhibitors & ARBs in Patients with Diabetic Nephropathy

**Advisor:
Dr. Guglielmo Sala**

I was able to work in several different clinical settings during my time in the Master Clinician Pathway. While working with a nephrologist, I came across a typical case I had encountered many times before both in the clinic and on my month in inpatient medicine, which was of a patient with diabetic nephropathy. I was aware of the use of either an ARB or ACE inhibitor in this setting. After seeing this case so many times, and seeing how much damage uncontrolled diabetes could place on the kidneys, I wondered if the two compared equally in effectiveness. My project involves the study of a paper analyzing the results of the DETAIL trial, a RCT comparing long term outcomes of ARB vs. ACE inhibitor therapy in patients with diabetic nephropathy.

The Saturday Clinic for the Uninsured is designed to provide quality medical treatment for patients and provide medical students clinical experience and education. The purpose of our study was to identify a method in improving the efficiency of the clinic without decreasing either the quality of medical care or the education received by the medical students. An intake form was designed with the intention of shortening the interview time required per patient. The patients filled out the intake form at a rate of 98%. Additionally, the students noted no decrease in the satisfaction of education received with 75% requesting the continued use of the intake form. However, the current study sample size is limited and further data will be necessary to determine the effect on the perceived quality of education. Also, limited information is available regarding the data concerning the efficiency of the clinic or patient satisfaction with the form.

**Joshua Pearl
(with Margarita Cantir)**

Saturday Clinic for the Uninsured Quality Improvement Study

**Advisor:
Dr. William Raasch**

**Collaborators:
Sameer Siddiqui, M2
& Dr. Rainer Gedeit**

John Petronovich

Integrating Geriatrics within General Surgery Training

**Advisor:
Dr. Nancy Havas**

**Collaborators:
Dr. Travis Webb,
Dr. Thomas Wade,
Dr. Kathryn Denson
& Diane Brown**

With an aging population medical training programs must ensure adequate exposure and competency within geriatric medical care. As part of a collaborative team I worked with the Geriatrics Educational Training team in the department of surgery to address geriatric care. The project began with a needs assessment to identify areas that are underrepresented in the training program. The assessment identified end of life discussions medication management and delirium/dementia as areas of specific need. From this we were able to construct a series of FAST facts which are written documents on these selected patient care topics which are intended to be implemented into the available resources for residents. Additionally a chart review of patients evaluated by the trauma service revealed that documentation of goals of care is delayed and would be aided by the development of guidelines for documentation.

Clinical background: The management of fluid overload in a patient on the VA medicine service prompted me to wonder how diuretic regimens are followed clinically. How can a clinician accurately judge when a regimen is working? For a given method will it lead to improved outcomes? EBM PICO Question: In patients admitted to the hospital with fluid overload and diagnosed systolic heart failure is management with the 5 Bs (body weight, blood pressure, biomarkers, bioimpedence vector analysis, and blood volume) a strategy that yields improved patient survival?

Madeline Pokorney

**Fluid Overload Management in Heart Failure:
A Clinical Strategy**

**Advisor:
Dr. Edit Olasz**

Dustin Porter

Cranial Nerve Involvement in Scleroderma

**Advisor:
Dr. Sachin Jogal**

Background: Scleroderma is a progressive disease with an unknown etiology associated with an excessive production of collagen in the skin and other organ systems. Although the skin is most often affected the gastrointestinal tract kidneys heart muscles and lungs are frequently involved. In some cases involvement of cranial nerves has been found but it is unknown whether this is a primary or secondary occurrence. Case Description: A 45 year old female with a history of carpal tunnel syndrome presented to clinic with the chief complaint of a tight feeling around her hands and ringing in her ear on the right side. On further evaluation she also complained of right-sided vision loss concomitant with the unilateral tinnitus. A clinical diagnosis of scleroderma was made during the initial visit. Analysis: In patients with scleroderma is cranial nerve involvement a predictor of increased morbidity or mortality?

We admitted a 3 year old boy with pneumonia and a pleural effusion. I investigated if drainage would be necessary in addition to IV antibiotics in his case. PICO Question: In a 3 yo male with parapneumonic effusion how does treatment with antibiotics alone compare to treatment with antibiotics plus drainage in the successful resolution of pneumonia with effusion? Access: Management of Children With Empyema: Pleural Drainage Is Not Always Necessary from Pediatric Pulmonology. Appraise: This retrospective study found 52% of the children received only antibiotics and 45% underwent drainage. Significant predictors for drainage included ICU admission and effusion >1/2 of hemithorax. While the study produced significant result, its limitations as a retrospective study must be recognized. Apply: In my patient it would be reasonable to hold off immediate pleural drainage and use IV antibiotics alone as an initial management strategy. Assess: Through this process I learned in which areas of EBM I am weak and was able to improve these skills.

Nicole Purcell

Use of Pleural Drainage in Children with Parapneumonic Effusion

**Advisor:
Dr. David Lautz**

Weston Radford

Healthcare Communication Errors & Patient Safety

**Advisor:
Dr. Ehab Saad**

Medical communication breakdowns are a very serious and very well-documented source of preventable healthcare errors. Although these errors are often times the result of systemic issues or poor workflow systems there has been considerable research into the topic to improve patient outcomes and has identified several areas of interest. Renewing our focus on proper and thorough communication in a variety of modern healthcare settings (e.g., patient transfers, ED handoffs, EMR documentation) should be a high priority in today's medical training to help combat these largely avoidable and costly errors.

This final Pathway product will reflect upon the breadth of experiences I have had as well as the knowledge I have attained through the Master Clinician Pathway. My Pathway experiences have helped to augment my knowledge and clinical training. Core sessions have been particularly beneficial in increasing awareness of critical topics in Medicine. The Master Clinician Pathway has allowed me to spend time working with physicians in various specialties including primary care wound care interventional radiology and GI. These experiences have helped me to decide which areas of medicine I am most passionate about and have refined my clinical skills. Moreover the MC Pathway has enhanced my ability to establish strong rapport and work with diverse patient populations. I feel that my experience with Pathways has facilitated my growth over the last several years and will allow me to become a more dynamic physician.

Jason Rakita

Growth & Development through the Master Clinician Pathway

**Advisor:
Dr. Scott Jorgensen**

PODIUM

Senthil Rathinavelu

Investigating Themes for Readmission at Froedtert Hospital

Advisor: Dr. Jon Pryor

Partner: Dr. Geoffrey Lamb

High readmission rates at Froedtert Hospital have been a key problem over the last several years and beginning in 2013 hospitals will be forced to pay penalties. We conducted a qualitative analysis looking at patients readmitted within 30 days from 10/2010 to 6/2011. Patients were assigned to medical/procedural/surgical departments based on the discharging physician who also included comments about any intervention that could have prevented readmission. Each case was categorized into one of 11 themes for readmission. Out of 441 readmits the most common theme was same diagnosis. Social reasons and financial reasons combined only accounted for 6.4% of readmissions. Several themes emerged as areas for avoiding readmissions including earlier follow up better patient education early removal of lines/catheters close monitoring of labs delaying discharge to ensure proper return of bowel/bladder function and any other post-op issues and clear communication with patients with chronic medical conditions.

The patient was a 53-year-old African American male with a history of multi-drug use GERD recent colitis and previous Hepatitis B infection presenting with nausea and abdominal pain of one day's duration. His LFTs included moderate transaminitis elevated alkaline phosphatase and extremely elevated GGT consistent with mixed hepatic injury. Extensive labs and imaging revealed no other potential cause for increased LFTs; however the patient had been taking the NSAID sulindac regularly for chronic low back pain and arthritis over the past several months. The patient improved clinically without intervention after cessation of sulindac throughout his hospital stay. Sulindac-induced hepatotoxicity was his leading diagnosis upon discharge. Chart review several weeks later revealed his LFTs were normalizing and he remained asymptomatic. NSAID-induced hepatotoxicity's prevalence and pathogenesis will be addressed as well as the typical clinical patient presentation. Furthermore the relative toxicity of various commonly used NSAIDs will be discussed.

Natalie Schellpfeffer

NSAID-induced Hepatotoxicity: A Case Presentation

Advisor: Dr. Gary Cohen

Dmitry Shnayderman

The Use of Meniscal Allograft for Glenoid Resurfacing in Young Patients with Glenohumeral Arthritis

Advisor: Dr. Steven Grindel

My experience in the Master Clinician Pathway provided me with an opportunity to shadow my mentor in his operating room while also doing clinical research in orthopaedic surgery. My research project was a retrospective review involving patients with glenohumeral arthritis who were younger than fifty years of age and had failed conservative management. The patients received a meniscal allograft with glenoid resurfacing total shoulder replacement and were tracked for an average of 30 months post operation. The outcomes were assessed using Simple Shoulder Test (SST) UCLA Score and modified Constant Shoulder Score. The results have shown that all patients improved compared to their preoperative state. Furthermore there were no early failures of the equipment and all the patients at final follow-up were willing once more to undergo this procedure.

Case: A 28 y/o male presented to the ED in respiratory distress with shortness of breath for the last 2 weeks which exacerbated a few days ago. Physical examination CXR and CT chest were consistent with a large right pleural effusion. CBC showed leukocytosis with eosinophilia. Emergent thoracentesis was performed and he was transferred to the ICU. The next day the patient continued to be dyspneic fatigued and diaphoretic. Further investigation revealed a 4-month history of diarrhea abdominal cramps and 20 lb unintentional weight loss. Physical exam suggested persistent right pleural effusion. CT abdomen displayed diffuse bowel wall thickening. EGD and colonoscopy were normal. Stomach duodenum and colon biopsy results returned consistent with eosinophilic gastroenteritis. The patient was started on prednisone and symptoms improved dramatically. Discussion: Eosinophilic gastroenteritis (EGE) is a rare gastrointestinal disorder that presents predominantly with abdominal symptoms. EGE manifesting with pulmonary symptoms is exceedingly uncommon.

Omar Sinno

Message from Below: A Rare Presentation of Eosinophilic Gastroenteritis

Advisor: Dr. Daniel Mielnicki

Collaborators: Dr. Ritesh Panwar, Dr. David Vitale & Dr. Eric Martin

Brian Skjei

Pathways Reflection

Advisor:

Dr. M. Riccardo Colella

My Pathways experience up to this point has consisted of mainly shadowing and volunteering. I have used my non-core time to explore various specialties and learn more of what each has to offer. It has been nice to have time outside of medical student clinical duties to interact with physicians. I feel that often on clerkships the medical student can be locked down with scut work and spend nearly all of their time interacting with residents. Pathways has afforded me the opportunity to observe and participate in attendings' interactions with patients. In addition I have spent time at the Saturday Clinic for the Uninsured. I enjoy working with upcoming students and helping them understand the basics of seeing patients. Providing a service to those in need has been a positive experience for me throughout my education at MCW.

As my final project for the Master Clinician Pathway I intend to write a reflective synthesis paper describing the contributions my various Pathway experiences have made on me as a future physician. My reflection will discuss the significance of making the Pathway your own, as I feel that tailoring one's Master Clinician experiences and goals truly maximizes the benefit obtained from these activities. I will discuss at length the efforts I went to in designing my individualized learning plans to specifically customize my non-core time to my specific path as a physician. I will also discuss how my perspective of core sessions also applies to my unique clinical goals. The unique skills and knowledge I have developed as a result of my Pathways experiences have enriched my medical school experience and will continue to serve me in my career as a physician.

Emily Sweet

**Finding Your Path
in the Master
Clinician
Pathway**

Advisor:

Dr. Thomas Sato

Sarah Thill

**Readmission for
Complications Follow-
ing
G-tube Placement in
the Pediatric
Population**

Advisor:

Dr. Michael Stephens

Enteral tube feeding is the delivery of liquid nutrients through a tube directly into the gastrointestinal tract. This can be accomplished through several methods one of which is a gastrostomy tube (G-tube) that is surgically placed into the stomach through the abdominal wall. In pediatric cases it facilitates long term enteral feeding for children and infants with a functioning GI tract who are not able to orally ingest adequate nutrients. Current practice is for patients to be observed up to 23 hours after G-tube placement and discharged if tolerating feeds well. Our question is whether patients would have fewer ED visits and/or hospitalizations for G-tube complications within a two week period after placement if the initial post-procedure hospitalization was >23 hours.

Introduction: The elder abuse and neglect burden in Milwaukee County is substantial with 3,384 reports made in 2006 to 2009. Provider awareness of victim and perpetrator characteristics is necessary to increase recognition and response. **Methods:** A cross-sectional analysis of elder abuse cases reported to the Milwaukee County Department on Aging in 2006 to 2009 was performed to profile of the county's elder abuse burden. **Results:** 58% of MCDA reports of abuse were substantiated after investigation. Victims tended to be over 75 (64%) and female (64%). Reporting rates were significantly lower in 2009 than 2006 levels. Perpetrators were often adult children (48%) or a spouse (14%). Most reports were made by medical professionals (23%), relatives of the victim (21%), and community agencies (18%). **Discussion:** This study provides a valuable profile of elder abuse in Milwaukee County. **Conclusion:** Characteristics of vulnerable elders and potential abusers are described to inform clinical practice.

POSTER

Mary Thomson

**An Analysis of
Elder Abuse Rates
In Milwaukee
County**

Advisor:

Dr. Alexandru Barboi

Collaborators:

**Dr. Lauren Lietzau,
Dr. Megan M. Doty,
Dr. Linda Cieslik,
Dr. Ramona Williams
& Dr. Linda Meurer**

Richard Thorsted

Available Modes of Exercise used to Treat Parkinson's Disease

Advisor:
Dr. John E. Thomas

In my 3rd year rotations I have become intrigued and impressed by the amount of patients being sent to physical therapy. Most recently a patient of mine with mild Parkinson's was working with the physical therapy and was discussing what other exercises he could do to help maintain his balance and posture. This raises the question as to what types of exercises could potentially improve a patient's balance and posture, thus giving the patient more time to live independently.

Over the past year I have participated in a variety of different clinical opportunities, addressing the six master-clinician competencies. These experiences include but are not limited to shadowing reading up on medical literature participating in organizational meetings and getting involved with a research project. Reflecting back on my individualized learning plan from earlier in the year compared to the activities I have participated in I believe that I have achieved marked growth in many areas as a student doctor yet realize there is still room for improvement. In this reflective piece I hope to share this growth as a student doctor I have accomplished in my time in the Master Clinician Pathway.

Nader Tondravi

Reflective Synthesis

Advisor:
Dr. Ty Carroll

POSTER

Craig Tork

Graft Survival of Stem Cell Transplants in Minipig Spinal Cord

Advisor:
Dr. Christopher Wolfla

Collaborators:
Emory University—
Dr. Jonathon Riley, Dr. Bethwel Raore, Dr. Thais Federici, Dr. Nicholas Boulis; Cedars-Sinai Regenerative Medicine Institute, Brandon Shelley & Dr. Clive Svendsen

Stem cells offer a therapeutic benefit for the delivery of neurotrophic factors and treating disease. Here we demonstrate the use of a floating cannula microinjection system to test the viability of stem cell transplants in the minipig in addition to the effects of an immunosuppression regimen on both allograft and xenograft stem cell injections. Minipigs were transplanted with either porcine or human neural progenitor cells (pNPC or hNPC) into the spinal cord using a coordinate-based microinjection system. Transplants showed significant cell survival with immunosuppression and that targeting is possible within the ventral horn of the lumbar spinal cord of a large animal model.

Historically, head computed tomography (CT) without contrast has been regarded as the gold standard for detecting ICH, especially during the hyperacute time frame – critical for the decision to initiate tPA therapy. However, as magnetic resonance imaging (MRI) sequences become more technologically advanced and their utility better understood, various studies have questioned the notion of CT as a “must” for the exclusion of ICH. Thus one could ask: for patients presenting to the emergency room with acute, focal neurological findings is an MRI equal, or non-inferior, to CT in accurately diagnosing stroke in a timely manner? Below is a discussion of three relatively current and well designed studies which attempt to show that MRI is superior to CT in the diagnosis of acute stroke, especially ischemic stroke, and is at least non-inferior to CT in detecting hyperacute hemorrhage.

Meg Van Nostrand

MRI vs. CT in the Diagnosis of Acute Stroke

Advisor:
Dr. Keith Baynes

POSTER

Juan Carlos Vera**Post-operative
Morbidity & Mortality
after fMRI/DTI
Pre-surgical Brain
Mapping****Advisor:
Dr. Ann Helms****Collaborators:
Dr. MA Carroll, Dr. JA
Cochran, Dr. A Lozen, Dr.
JL Ulmer & Dr. W Mueller**

Diffusion tensor (DTI) and functional magnetic resonance (fMRI) imaging are used to guide the resection of intracranial neoplasms. Here we quantify post-operative outcomes with DTI and fMRI pre-surgical brain mapping. We reviewed medical records of all patients undergoing fMRI and DTI for pre-surgical planning over 54 months at a single academic tertiary referral center. Of these patients undergoing resection of a supratentorial neoplasm with demographic operative and pre- and post-operative documentation was reviewed to assess post-operative morbidity and mortality. Seventy-six patients underwent pre-surgical DTI/fMRI brain mapping prior to resection for 69 primary and 7 metastatic lesions. Of patients with pre-operative neurological deficits (N=67) 53% demonstrated improvement post-operatively while 5% demonstrated worsening symptoms. Post-operatively 21 patients experienced new post-operative neurologic morbidity; 90.5% occurred in high-grade neoplasms and 48% resolved by 6-months post-operatively. There was one peri-operative mortality at 22 days; six-month mortality was 14% all in patients with high-grade lesions.

Long-term vibration has been known to cause neurodegenerative disease for decades.

The effects of this disease can persist for years after the vibration has stopped. It is commonly seen in workplaces involving the regular use of power tools. To understand the lingering effects of vibration injury the present study used longitudinal nerve sections to examine the recovery from structural damage in a rat tail model. The rats were split into two separate groups that were subjected to vibration (4 h/day) for 7 and 14 days respectively. The amount of damage to the myelin sheath correlated directly with the duration of vibration and when the vibration was sustained for longer than 7 days the nerves did not show any signs of recovery. The rat tail model helps to gain further understanding of the damages seen in hand-arm vibration syndrome.

Anthony Watt**Vibration
Induced
Injury****Advisor:
Dr. James Sanger****Collaborator:
Dr. Hani Matloub****Sarah Welsh****Aortic Valve Replace-
ment: Mechanical or
Bioprosthesis?****Advisor:
Dr. Bruce Campbell**

My final Pathways product will be an EBM project on a patient from the Cardiothoracic Surgery service. In brief Mr. B is a 69 year old male with severe aortic stenosis and symptoms of NYHA class III heart failure. CT surgery was consulted for aortic valve replacement. During the consultation the risks and benefits of bioprosthesis vs. mechanical valves were discussed with the patient deciding on a bovine valve for his surgery. After I was curious what studies demonstrated the difference in outcomes between the two valves. My PICO question was: In older adult males with aortic stenosis how does valve replacement with a bioprosthesis compare to a mechanical valve in terms of mortality and complications such as re-operation valve failure and bleeding? I will critically review the article ?A Comparison of Outcomes in Men 11 Years after Heart-Valve Replacement with a Mechanical Valve or Bioprosthesis? (N Engl J Med 1993; 328:1289-1296) to answer my question.

Evidence-based Medicine review on transcatheter versus traditional surgical replacement of the aortic valve in high-risk patients with severe aortic stenosis in the PARTNER Trial. The transcatheter aortic valve replacement displaces and functionally replaces the dysfunctional diseased valve with a bioprosthetic valve via a catheter through the femoral artery or the left ventricular apex. High-risk patients were defined based on coexisting conditions (including NYHA class III or IV CAD previous MI/CABG/PCI/balloon aortic valvuloplasty CVA PVD COPD atrial fibrillation pulmonary hypertension) that were associated with a risk of death of at least 15% by 30 days after the procedure. Valve replacement via transcatheter and surgical routes were comparable in improvement in symptoms from valvular disease and 30-day and 1-year mortality. The transcatheter route shortened the length of ICU and hospital stay.

However increased neurovascular events and procedural complications in this procedure make it a less favorable option at this time.

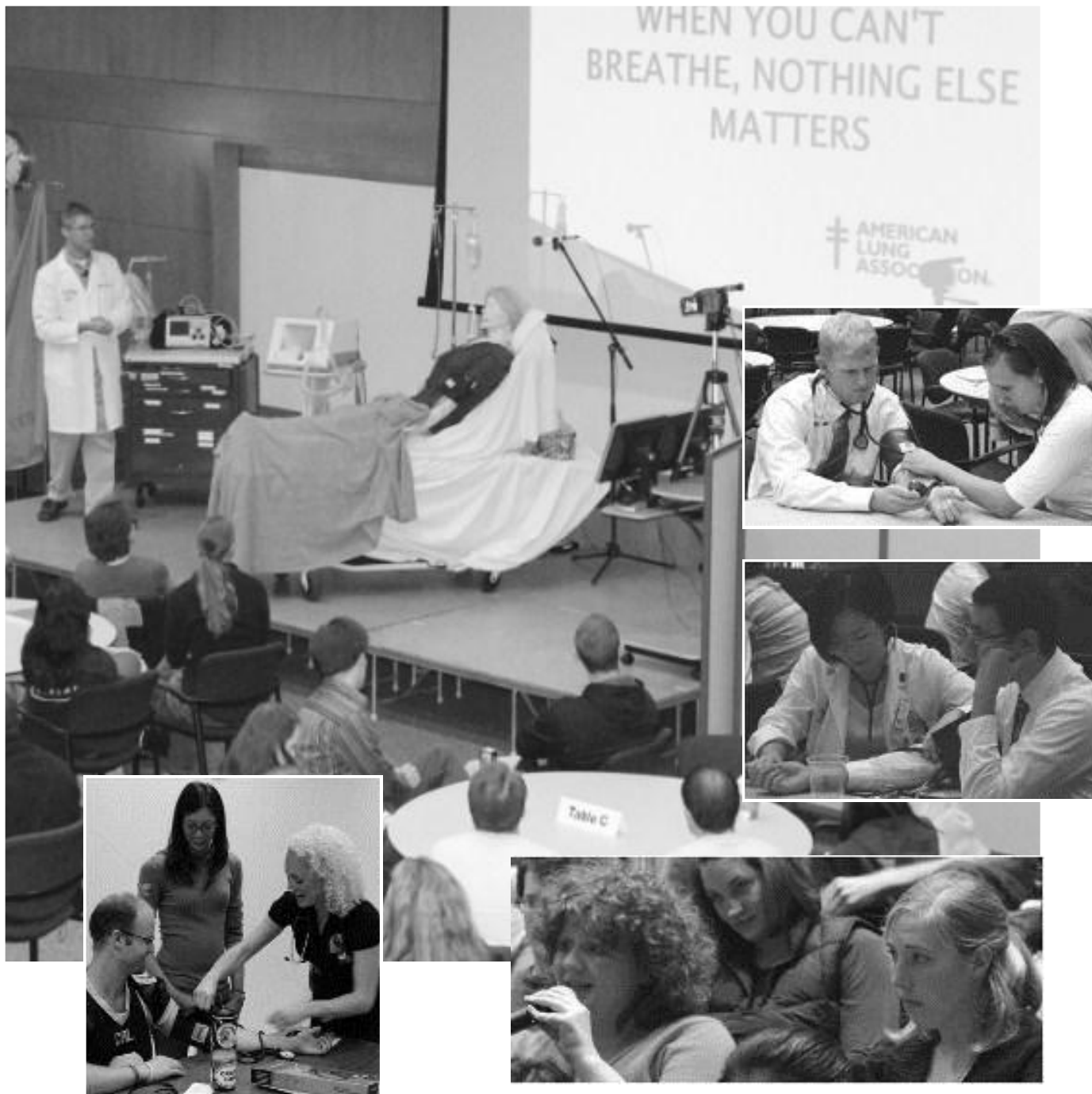
Claudia Yeung**EBM Review on
Transcatheter vs.
Surgical Replacement
of Aortic Valve****Advisor:
Dr. Sheetal Vora**

Matthew Yocum

**What is the
Utility of PET in
Staging
Non-Small
Cell Lung Cancer:
A Critical Review**

**Advisor:
Dr. Ileen Gilbert**

After seeing a number of patients during both my medicine and surgery rotations with non-small cell lung cancer (NSCLC) who presented with lesions identified by imaging and required further work up for staging I was interested in looking at the efficacy of PET in this setting. The most recent patient I saw had a 3.5cm mass identified by CT after work up for unrelated symptoms. The CT images suggested the possibility that the cancer could be staged anywhere between stage II and IV. Appropriate staging will be vital to identify whether or not he is a candidate for curative surgery. Inaccurate staging puts him at risk of having a 'futile' thoracotomy for NSCLC that is too far progressed for thoracotomy to be curative. To examine the utility of PET for staging of NSCLC a recent article of a RCT will be critically reviewed.



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

Verbal memory decline is frequent after left anterior temporal lobectomy (L-ATL). Here we assess if hippocampal volume asymmetry is predictive of verbal memory decline following L-ATL. It is predicted that larger left hippocampal volume and smaller right-left hippocampal asymmetry will be associated with more severe verbal memory decline following L-ATL. Sixty-six left temporal lobe epilepsy patients treated with L-ATL had preoperative and 6-month postoperative neuropsychological testing. Volumetric parcellations of the hippocampus from T1-weighted preoperative MRI scans were created. Initial data from 53 subjects demonstrated that left hippocampal volume ($r = -.267$ $p < .05$) and hippocampal asymmetry ($r = .252$ $p < .05$) were modestly predictive of postoperative verbal memory change. Larger left hippocampal volume and smaller asymmetry values correlated with worse postoperative memory outcomes. This suggests that preoperative hippocampal volume measures are sensitive to unilateral hippocampal pathology but only modestly predictive of postoperative verbal memory outcomes.

Patrick Bauer

Hippocampal Volume as a Predictor of Verbal Memory Decline after Left Anterior Temporal Lobectomy

Advisor:
Dr. Jeffrey Binder

Eric Abston

Advisor:
Dr. Srividya Kidambi

Autoimmune myocarditis progresses to chronic Dilated Cardiomyopathy (DCM) in susceptible subjects. TLR4 contributes to inflammation leading to DCM, but TRIF can be situated along the signaling pathway critical to the innate immune response to DCM. To test TRIF-signaling in the progression of DCM, subjects were infected with heart-passaged CVB3 to induce autoimmune disease. Post-testing revealed left ventricular dilation and systolic dysfunction in TRIF^{-/-} subjects, characterized by: 30% increase in left ventricular end diastolic diameter, EF of 38%, a 42% decrease in contractility, and a developed pressure of 68mmHg. In TRIF^{-/-} mice: myocardial inflammatory cell infiltration increased by 40% and viral replication increased from 600 PFU/g in WT to 10,000 PFU/g. TRIF^{-/-} hearts show an accelerated progression to dilation and failure, increased viral replication, and greater inflammatory infiltration. Cytokine analysis allowed demonstration that TRIF regulates IFN- β signaling, and IL-33.

To determine contribution of the Kölliker-Fuse nucleus (KFN) to the coordination of swallowing and breathing, cannulas were implanted into the KFN of 4 goats. They were studied for 5.5 hrs on control day, and on separate days after receiving 1 μ l and 10 μ l injections of ibotenic acid (IA) separated by 1wk. There was a biphasic response in swallowing and breathing with an initial increase ($P < 0.05$) followed by a prolonged decrease ($P < 0.05$) with 10 μ l IA, but no effects during the control or 1 μ l IA studies. Consistent with the concept that swallowing is dominant over breathing, E & I swallows reset respiratory rhythm, but injection of IA progressively eliminated the resetting, suggesting a decreased dominance over respiratory motor output with increasing IA injections. Thus, the KFN has a modulatory role in the network regulating swallowing and breathing in both rhythm and motor pattern generation.

Joshua Bonis
The Effects of Lesions in the Dorsolateral Pons on the Coordination of Swallowing & Breathing in Awake Goats

Advisor:
Dr. Hubert Forster

Collaborators: Suzanne Neumueller, Brooke Marshall, Katie Krause, Dr. B Oian, Dr. L Pan & Dr. M Hodges

Elaine Cabugason

The Effect of Tailored Step Count Feedback on Vascular Homeostasis & Cardiovascular Performance in Patients with/without Underlying Coronary Artery Disease

Advisor:
Dr. Michael Widlansky

Adults ages 50-80 will be recruited for a randomized control trial to determine whether 30 minutes of moderate aerobic activity or 10,000 steps/day affects cardiovascular function in subjects with and without CAD. Eligible participants are divided into three groups: control; pedometer intervention group asked to increase their steps by 10%/week; a pedometer/interactive website group who have access to a website providing tips and motivational messages. At visit 1, participants' heart rates, blood pressures, vascular endothelial function, and vascular stiffness are measured. A blood sample is taken to measure BNP and an echo is performed. At visit 2, participants are randomized into 1 of 3 groups and given pedometers. At visits 3-5 participants undergo the same testing procedures as in visit 1, except for the echo. We are currently in the process of recruiting patients and collecting data.

Background: Exercise stress testing with echocardiogram is used to detect coronary artery disease (CAD) for intermediate risk patients. However utilization has doubled despite constant myocardial infarction prevalence. The goal of this study is to look at clinical parameters to help physicians determine the likelihood of a positive or negative stress test and help to avoid over-utilization. Methods: Chart review of patients seen by primary care physicians without history of CAD from 2007-2011. Results: A clinical score for predictability of results of Stress Testing (Sensitivity 100% and Specificity 60% c-statistic 0.82. **Scoring system:** Any

Chest Pain- 3 points Shortness of Breath- 1 point Fatigue-1 point > 2 Risk factors -1 point family history of early CAD- 1 point.

Discussion: Using this simple clinical score we can eliminate 60% of Stress Test ordered by primary care. This would result in significant health care dollar saving without compromising quality of health care.

Shawn Call

Clinical predictors of the results of Stress Testing with imaging

Advisor:
Dr. Michael Widlansky

Collaborators: Dr. S Hariman,
Dr. N Gaglianella, Dr. R Mayhorn, & K Murugiah

Christine Choi

Correlation between E7 Gene Variants of Human Papillomavirus Type 16 & Clinical Parameters

Advisor:
Dr Michael Widlansky

Collaborator:
Dr. Raymond Hovey

It is well-known that high risk Human Papillomavirus types such as HPV type 16 and 18 play a causative role in invasive cervical cancer. While past studies demonstrate that E6 and E7 genes are critical in the oncogenic transformation of HPV and that certain variants of HPV are more prevalent among particular ethnic groups studies that look into the individual nucleotide variants within the E7 region in correlation with clinical data have been limited. In our current study we will look into the genomic sequence of the E7 region of HPV type 16 by PCR amplifying and DNA sequencing the E7 gene of 200 FFPE cervical cancer samples using 2 sets of specifically designed primers. The sequences will be analyzed using the DNASTAR software and nucleotide variants will be noted. The noted variants will then be correlated with various clinical data such as depth of cancer invasion mortality race etc.

Breast cancer patients encounter stressful situations throughout their treatment and recovery including breast-related body image stress. This pilot qualitative study was designed to determine how breast cancer patients prefer their physicians communicate with them about breast-related body image stress. Data was collected from patients through the Breast Evaluation Questionnaire (BEQ) followed by a qualitative questionnaire from thirty-three women with early stage breast cancer. Ten physicians were also given a qualitative questionnaire. The data indicates that patients want their physicians to be honest open and direct in their communication of breast-related body image stress. The physicians reported being comfortable speaking about breast-related body image issues; however most do not directly broach the subject.

Mallory Cohen

Communication Between Breast Cancer Patients and Their Physicians About Breast-Related Body Image Issues

Advisor:
Dr. Alonzo Walker

Collaborators: Dr. Rebecca Anderson & Kathleen Jensik

Adam Covach

Characterization of the ApoE Knockout Rat

Advisor:
Dr. Aron Geurts

Elevated plasma cholesterol levels is a disorder and risk factor for coronary heart disease, vascular disease, and stroke. Protein ApoE clears cholesterol from the plasma. A mouse ApoE knockout model demonstrates the expected disease patterns of elevated plasma cholesterol, early plaque formation, and increased heart attack risk. While the mouse model has been a widely used, we feel that a rat model of ApoE deficiency may present with some advantages owing to its larger size and its dominance as a cardiovascular model. Using zinc finger nuclease technology, we created three ApoE knockout rat strains to generate a new rat model of hypercholesterolemia in the Dahl salt-sensitive strain. The purpose of this study is to characterize the knockout strains and observe atherosclerotic progression. Initial experiments were done on the M7 model, but the methods employed in this study will be utilized to characterize an ApoE/LDLR double KO at a later date.

The Physician Scientist pathway allowed me to perform basic science research and clinical research. The basic science research project with Dr. Brian Stemper, PhD looked at traumatic brain injury and behavioral changes in a rat model. The clinical research project with Dr. Travis Webb looked at the treatment and health outcomes of the elderly trauma population admitted to Froedtert Hospital. After participating in clinical and basic science research, I have a better understanding of the challenges and rewards that both types of research provide. These projects allowed me to develop crucial research skills that I will take with me during the rest of my clinical practice.

Justin Dux

Physician Scientist Research Projects

Advisor:
Dr. Travis Webb

Katelin Engerer

The Role of EEG in Evaluating & Predicting Outcomes in Traumatic Brain Injury & Coma

Advisor:
Dr. Christopher Butson

Collaborator:
Dr. Xuefeng Wei

In 2007 Dr. Nicholas Schiff and colleagues demonstrated that deep brain stimulation (DBS) has the potential to improve outcome in traumatic brain injury (TBI) patients in prolonged comatose states. Multimodal data was collected in Schiff's patients including MRI EEG and clinical response to DBS trials. EEG has been utilized to correlate electrophysiology with outcomes and these studies demonstrated that measurable changes in EEG are present following TBI. Here we seek to create a cohesive description of trends among previously documented EEG findings in TBI patients and to integrate the findings from the early trials of DBS in TBI patients into this body of literature. We used power spectra and bispectral analysis methods to analyze recruiting responses and evoked potential distributions following DBS to thalamic nuclei. While we are still far from relying on EEG to predict exact clinical responsiveness this paper marks a novel effort toward these goals.

Valsalva voiding (VV) has been identified as a potential risk factor for complications following anti-incontinence surgery. This study attempts to determine if subjective VV based on AUASI predicts objective presence on urodynamic studies (UDS). A retrospective chart review was performed on patients undergoing video UDS and had an AUASI. An AUASI of >3 for the symptom of VV is identified as subjective VV. Pressure-flow studies of UDS were analyzed for presence of VV. Predicting a component of VV on UDS, subjective VV had a sensitivity of 38.5% (95% CI 20.2% 59.4%) a specificity of 87.0% (95% CI 66.4% 97.2%) a PPV of 76.9% (46.2% 95.0%) and a NPV of 55.6% (38.1% 72.1%). Conclusion: subjective impression of VV is not a strong predictor of VV presence on UDS. Patients reporting subjective VV may be more likely than not to have this confirmed on UDS, but the converse is not true.

Gabriel Fiscus

Does Subjective Valsalva Voiding Predict Its Presence on Urodynamic Testing?

Advisor:
Dr. Hrair George Mesrobian

Collaborators: Dr. AM Shah, Dr. RC O'Connor, Dr. D Eastwood & Dr. ML Guralnick

Max Geers

Advisor:
Dr. Amy Drendel

Despite various improvement efforts, pain assessment and treatment in pediatric trauma patients remains suboptimal. We hypothesize that the 2006 modification of the trauma record at CHW to include a 2nd pain assessment increased the proportion of pediatric trauma patients at CHW that had appropriate assessment & treatment of pain. This was a retrospective cohort study of trauma resuscitations at CHW during 2005 and 2009. Demographics, clinical parameters, and interventions were recorded from the pre-hospital setting and the trauma room. There was a significant improvement in the proportion of patients with a 1st & 2nd pain score. There was an improvement in the proportion of patients with appropriate pain treatment based on a pain score > 4, although not significant. This analysis suggests that modifying the trauma record is associated with an improvement in pain assessment & treatment.

POSTER

Gabrielle Graves

Evaluation of the Color Difference Plot Scoring System Analysis of the 103 Hexagon Multifocal Electroretinogram in the Detection of Hydroxychloroquine Retinal Toxicity

Advisor: Dr. Dennis Hans

Collaborators: Dr. Murtaza & Dr. A Kimberly & Dr. E Stepien

Our goal was to evaluate sensitivity, specificity, and reproducibility of color difference plot analysis (CDPA) of 103-Hexagon multifocal electroretinogram (mfERG) in detecting established hydroxychloroquine (HCQ) retinopathy. Patients taking HCQ were divided into nontoxic and toxic groups. Age-corrected mfERG in central ring (Rc) and paracentral ring (Rp) was evaluated. An abnormal ring contained a hexagon of 2+ SD from normal (color blue or black). Compared to Rc, Rp was more sensitive (89% vs. 83%) but less specific (82% vs. 93%). Requiring either ring to be involved (Rc U Rp) did not increase sensitivity (89%) and decreased specificity (80%). The requirement for both rings to be involved increased specificity (95%) but had lower specificity (83%). The optimum number of abnormal hexagons was 1 hexagon when analyzing either Rc or Rp but was 3 for Rc U Rp. CDPA has high degree of reproducibility and intergrader agreement.

POSTER

Hans Huang

Cellular Mechanism of Angiotensin II Mediated ROS Production in Cultured Endothelial Cells

Advisor:
Dr. David Guterman

Collaborator:
Dr. Natalya S. Zinkevich

In CAD disease states, the vascular oxidative state becomes of greater significance in modulating vascular tone through the release of H₂O₂ in response to shear stress. Both mitochondria and NADPH oxidase can be sources for the production of superoxide and H₂O₂ during shear stress. We hypothesize that angiotensin-II stimulation of endothelial cells utilizes a similar molecular mechanism with the same cellular components. Human microvascular endothelial cells were incubated with angiotensin-II and fluorescence microscopy was used to quantify mitochondrial and cytosolic fluorescence intensity. Angiotensin-II administration stimulated mitochondrial superoxide and cytosolic H₂O₂ production, both blocked by incubation of cells with Apocynin. These results suggest that ROS generation in HMVEC likely occurs by a series of steps with NADPH oxidase activation occurring prior to mitochondrial ROS production. This leaves open the possibility of a common ROS-induced ROS release pathway being activated by both mechanical and chemical stimuli.

PODIUM

Robert Jacobs

Dynamic Cam-type Femoroacetabular Impingement Produces Pubic Symphysis & Sacroiliac Joint Rotation: A Cadaver Study

Advisor: Dr. Kelly Birmingham

Collaborators: Dr. BT McGrady & Dr. LM Wang

Cam-type femoroacetabular impingement (FAI) is a bony overgrowth of the femoral head-neck junction limiting hip rotation through acetabular rim and femoral head interference. We hypothesize that cam-type FAI causes 3D rotation at the pubic symphysis (PS) and sacroiliac joints (SIJ) through internal rotational contact forces. We measured 3D PS and SIJ motion due to cam-type FAI in 12 hips and femurs from 6 intact pelvises, suspended on a custom loading-jig from 1 iliac wing. The contralateral femur was flexed to 90° and internally rotated at neutral adduction. 3-D rotation of the PS and SIJ was measured for an intact and cam-FAI state. Statistically significant rotation of the PS and contralateral SIJ was found between the 2 measured states in the transverse plane, thus Cam-type FAI causes increased rotation at the PS and contralateral SIJ. These supraphysiologic rotations may be the pain generators in patients with FAI.

Mohammad -Ali Jazayeri

DTI of the Injured Spinal Cord

Advisor: Dr. Shekar Kurpad

Diffusion Tensor Imaging (DTI) is an MR-based technique which has demonstrated marked differences in spinal cord diffusivity of water molecules following injury in humans and animals. Injury-induced changes in cord structure and function have been shown to correlate with DTI indices, including fractional anisotropy (FA), mean diffusivity (MD), and longitudinal (LADC) and transverse (tADC) apparent diffusion coefficients. In our study, 40 healthy Sprague-Dawley rats were equally divided among sham, mild, moderate, or severe spinal cord injury (SCI) groups. All groups received T8 laminectomies, after which injury groups received severity-specific weight drop injuries. *In vivo* DTI scans at 2, 5, and 10 weeks post-injury indicated significant differences in a number of these biomarkers across injury groups, both at the injury site and more distant regions. These results show promise for accurate assessment of injury severity and prediction of functional recovery and may prove useful in guiding future treatment decisions for SCI.

AAO-HNS and Gardner Robertson schemes were not sensitive enough to identify individuals at risk for hearing loss (12.9 and 9.7%). However the Chang classification scheme was able to identify those at risk for hearing loss (Sensitivity = 75% Specificity = 68.75%). Quadratic approximation of subject's pre-treatment hearing thresholds led to the development of a statistical model providing an individual's probability of hearing loss (area under ROC curve = 0.835). Conclusions: The Chang classification scheme and our statistical model provide predictive tools for identifying those at risk for potential hearing loss following cisplatin based chemotherapy.

Andrew Johnson

Statistical Model for Prediction of Hearing Loss in Patients Receiving Cisplatin Chemotherapy

Advisor: Dr. Christina Runge

Collaborators: Dr. S Tarima, Dr. S Wong & Dr. D R Friedland

PODIUM

Katherine Kelley

Factors Associated With Discussion of Pre-operative Mammography in Women Undergoing Reduction Mammoplasty

Advisor: Dr. Amanda Kong

Collaborators: Dr. KA Hudak & Dr. JB Hijawi

The purpose of this study was to examine factors associated with discussion of undergoing preoperative mammography prior to reduction mammoplasty. Between January 2000 and December 2010, 638 patients were identified who underwent reduction mammoplasty. Data collected was compared using Chi square tests and Wilcoxon rank sum tests. The median age was 36 with 44% >40; 56% were Caucasian; 37.5% were African-American. Mammography was discussed in 43.8% of patients and completed in 42.1%. On final pathology 8 patients (1.2%) had high-risk lesions and 2 (0.3%) demonstrated malignancy. Factors associated with mammography discussion were: age, being White, presence of comorbidities, family history of breast cancer, prior breast surgery, prior breast biopsy (all $p < 0.0001$) and tobacco use ($p = 0.04$). Due to the potential risk of invasive cancer and atypical lesions found in the final surgical specimen, preoperative mammogram should be considered for most patients by plastic surgeons—especially for all patients age 40.

MA-10 cells are mice cells in which steroidogenesis can be stimulated with the addition of dibutyryl-cAMP. StAR proteins are critical for the transfer of cholesterol into the mitochondria for conversion to pregnenolone at the onset of steroidogenesis. Methods: MA-10 cells were stimulated with db-cAMP. Western blotting was then used to visualize the difference in StarD1 expression. To investigate the effect of 7-OOH on survivability we used MTT assays. Cells were exposed to db-cAMP or serum-free medium. Afterwards varying concentrations of 7-OOH were added. MTT compared the survivability of cells exposed to 7-OOH under stimulated vs. non-stimulated conditions. Results: A significant increase in StarD1 protein expression was observed in db-cAMP cells using Western blot. The MTT assay showed a greater loss of viability in MA-10 cells exposed to 7-OOH with prior db-cAMP treatment compared with cells left untreated.

Matthew Lippner

StAR Protein-mediated Transport of Cholesterol Hydroperoxides Under Oxidative Stress Conditions

Advisor: Dr. Albert Girotti

Alicia Lolwing

Morphine's Effect on Bovine Articular Chondrocytes

Advisor:
Dr. Patrick Birmingham

Intra-articular injections of morphine are commonly used as sources of anesthetic for arthroscopic surgery but no study has looked at potential dose and time dependent cytotoxic effects of morphine. This study looked to determine if an increase in morphine concentration and time of exposure results in a decrease in articular chondrocyte viability and how these results compare to lidocaine treatment. Bovine articular chondrocytes were constructed into hydrogel tissues and treated with 1.2% morphine 2.3% morphine 2% lidocaine or .9 % buffered saline for 15 30 or 60 minutes. MTT assay was performed analyzing chondrocyte viability 1 hour 1 day and 1 week post-exposure. Significant reductions in chondrocyte viability were seen after 60 minutes of lidocaine exposure as compared to saline 1.2 % morphine and 2.3% morphine ($p < .05$). There was not a significant reduction in cell viability with 1.2 % morphine or 2.3 % morphine as compared to saline treatment.

Children with congenital heart disease (CHD) are at increased risk for neurodevelopmental and psychosocial problems. Little is known about quality of life and impact on family for these infants. Children's Hospital of Wisconsin implemented a routine developmental follow-up program in 2007. Parents completed the Infant and Toddler Quality of Life (QOL) and the Impact on Family (IOF) Scales. Results of 125 infants showed all QOL subscale scores were significantly lower than healthy norms ($p < 0.05$) except for temperament/mood. Parental impact both emotional and time was more negative for the CHD group ($p < 0.001$). However family cohesion was reported as better than norms ($p = 0.03$). Infants with CHD and their families are at risk for reduced QOL and negative family impact. It is important to evaluate QOL/IOF as a routine part of developmental follow-up.

Future research should include longitudinal studies to determine how QOL/IOF change over time.

Meiqian Ma

Quality of Life and Impact on the Family in Infants with Congenital Heart Disease

Advisor:
Dr. Kathleen Mussatto

Collaborators: M Dasgupta, Dr. R Hoffmann, Dr. L Bear, Dr. C Brosig, A Chin & Dr. S Berger

David Nielsen

Effects of Ischemia/Reperfusion Injury to Mitochondrial Complexes

Advisor:
Dr. David Stowe

Partner:
Dr. Amadou Camara

Injury due to ischemia/reperfusion of an organ is commonly known to negatively affect mitochondrial respiratory complex activity. The purpose of my study is to examine the protective effects of mild hypothermia applied only on tissue reperfusion after 35 min ischemia in isolated perfused hearts and the impact hypothermia has on protecting mitochondrial function particularly the respiratory complexes that are responsible for shuttling electrons to produce water protons and ultimately ATP. To assess mitochondrial function studies to assess electron transfer via FeS centers located in several of the respiratory complexes in hearts isolated after ischemia reperfusion injury were performed using EPR and native gels. In addition a studies were performed with a cocktail of free radical scavengers to asses impact on mitochondrial function.

As part of the summer research program and physician scientist pathway I had the privilege of working in Dr. Misra's lab. Prior to this experience I had a vague idea about the role of researchers. I have learned some of the basic sciences research nuts and bolts including being creative performing PCRs managing cell lines stains and much more. I have also become a more astute reader and analyst of research articles.

Through these experiences I have come to appreciate researchers in the field of medicine. I hope to apply some of my experiences and knowledge in future research endeavors.

Olamide Olambiwonnu

Research Reflection

Advisor: Dr. Ravindra Misra

Jonathan Pace

Modulators of a CYP Pathway Affect Development & Angiogenesis in Zebrafish Embryos

Advisor:
Dr. John Imig

Collaborators: Dr. Khan,
Dr. Ramchandran &
Noah Leigh

Arachidonic acid is metabolized to Epoxyecosatrienoic acids (EETs) via the action of cytochrome P450 enzymes and are inactivated by soluble epoxide hydrolase (sEH) to dihydroxyecosatetraenoic acids (DHETs). 20-hydroxyecosatetraenoic acid (20-HETE) are also derived from arachidonic acid. EETs have effects such as increased angiogenesis vasodilation anti-inflammation antihypertension vascular protection and improved insulin sensitivity while 20-HETE increases vasoconstriction. These molecules are exciting pharmacotherapeutic targets. A zebrafish model system was utilized to compare heart and caudal plexus development in zebrafish embryos. A 2-tailed t-test was used. Heart development was affected significantly in a 20-HETE antagonist eliciting a heart width of 176.7uM compared with 114.5uM of the control fish. ($p < 0.05$). All compounds narrowed the caudal plexus by 13-21% compared with control fish ($p < 0.05$). This demonstrates that the compounds tested affected angiogenesis in zebrafish embryos. Also, manipulation of the EET pathway alters endothelial cell developmental patterning.

Adenosine is a ubiquitous metabolite that is released from active cells. Within the brain, astrocytes take up this adenosine and couple neuron activity to cerebral vasodilation. The mechanism by which vasodilation is induced remains poorly understood. This study examined the role of prominent signaling pathways in adenosine receptor induced generation of superoxide EETs & 20-HETE within astrocytes using western blotting fluorescent HPLC LC/MS and oxygen- glucose deprivation. Stimulation of brain astrocytes with adenosine or with the A2a adenosine receptor agonist CGS-21680 induced an increase in Akt phosphorylation mediated by the A2a receptor subtype which was independent of the adenosine inducible second messengers cAMP and cGMP. Stimulation of the adenosine receptors induced activation of p38 MAPK that was augmented following inhibition of the PI3K pathway, suggesting that Akt phosphorylation may negatively regulate p38 MAPK activation. It is the balance of these pathways that ultimately determine cell survival.

Nicole Rau

Signaling Mechanisms of Adenosine in Rat Brain Astrocytes

Advisor:
Dr. Debebe
Gebremedhin

Collaborator:
Dr. David Harder

Timothy Schnettler

Metal Ions Upregulate Lymphocyte Binding to Endothelial Cells: Potential Mechanisms for the Formation of ALVAL Following Joint Replacement with Metal on Metal Articulations

Advisor:
Dr. Jim Ninomiya

Collaborators:
Dr. Dorothy Weihrauch
& Dr. Janine Struve

In patients receiving metal-on-metal hip replacements comprised of cobalt-chromium alloys a unique biologic reaction consisting of lymphocytic and vascular infiltrates termed Aseptic Lymphocytic Vasculitis Associated Lesions (ALVAL) is frequently observed. This study investigates the upregulation of Intracellular Adhesion Molecule 1 (ICAM-1), a protein involved in lymphocytic endothelial migration in the formation of ALVAL. Endothelial cells in tissue culture were exposed to salts of both Co+2 and Cr+3. Resultant upregulation of ICAM was determined using Western blot analysis and immunohistochemistry. Western blots and immunohistochemistry demonstrated an upregulation of ICAM for both Co+2 and Cr+3 ions. Endothelial cells may be central to the migration of lymphocytes to the perivascular spaces as seen in ALVAL. A further understanding of these processes will aid in the ability to evaluate and determine the biologic responses to metal on metal surfaces that are used clinically.



POSTER

Irina Sparks

Lymphedema Following 3-D Conformal Radiation Therapy for Lymph Node+ Breast Cancer

Advisor:
Dr. Julia White

Collaborators: Dr. P Prior,
Dr. Q Xiang, Dr. X Li,
Dr. T Yen & Dr. A Currey

Lymphedema rates after 3DCRT are unknown. 172 LN+ BC cases (2000-2007) treated with surgery following 3-DCRT were reviewed. 90% of axillary target volumes (ATV) received at least 45 Gy. Post-treatment arm circumference measurements (96%) were recorded. Median follow-up was 83.7 months. Median age was 50 (premenopausal 52%) with 76% estrogen/66% progesterone/16% HER2 positive receptors. 52% underwent lumpectomy with mean resected axillary volume 157.8cc. Median numbers were: LN removed 17 +LN 3 tumor size 3.7 cm. Mean ATV was 69 cc. 16.7% developed measurable lymphedema with higher rates following mastectomy ($p=0.042$) or larger AND ($p=0.032$) (ATV ($p=0.883$) and RT dose inhomogeneity coefficient ($p = 0.049$)). In this study 3DCRT parameters did not show association with lymphedema.

Tight inpatient glycemic control (80-110 mg/dL) and the improvement of all cause morbidity and mortality was demonstrated by the 1999 landmark study by Van den Berghe et al. That study failed to include a significant population of inpatients admitted for neurological insults. The goal of our study is to understand the role of glycemic control in a subset of stroke patients with intracerebral hemorrhage. We studied 277 adults patients admitted with intracerebral hemorrhage from 2003-2007.

We gathered glucose data for their time as inpatients as well as characterized their intracerebral hemorrhages. Only 105 of the 277 patients stayed as inpatients for 72 hours. The outcomes data is the last part of my project that will be completed on the 105 qualifying patients.

Robert Stone

Glycemic Control in Patients with Intracerebral Hemorrhage

Advisor:
Dr. Ann Helms

Collaborator:
Dr. Michel Torbey

Shaan Sudhakaran

Pre-Glenn Echocardiographic Assessment of Diastolic Function of the Systemic RV in HLHS

Advisor:
Dr. Edward Kirkpatrick

Collaborators: M Dasgupta,
Dr. R Hoffman, &
Dr. P Frommelt

In pediatric hypoplastic left heart syndrome (HLHS), poor RV compliance leads to elevated atrial and ventricular pressures, which can complicate tolerance of Glenn physiology. Cardiac catheterization measurements can evaluate diastolic function prior to Glenn procedure, and Echo Doppler measurements support prediction of post-Glenn surgical outcomes. Eighty-six HLHS patients were analyzed. Pre-Glenn echo included Doppler of pulmonary vein, tricuspid inflow, RV lateral tissue (DTI), and RV-PA conduit Doppler flow. Post-Glenn courses were examined via medical charts. Correlation between echo indices and cath atrial, ventricular and pulmonary artery pressures were analyzed. Pre-Glenn echo values and cath pressures were correlated with length of post-Glenn hospitalization. Despite a strong association between tricuspid lateral DTI and cath diastolic pressure, the strongest clinical outcome correlation was to tricuspid A wave. This may reflect the importance of atrial function in HLHS outcomes and warrants further evaluation.

A physiologic rise in $m[Ca^{2+}]$ can correlate with increased mitochondrial bioenergetics, but excess can initiate cell death. Tight regulation of $m[Ca^{2+}]$ is vital to normal function of the cell. Mg^{2+} is also important in regulating mitochondrial bioenergetics. In this study we examined the interplay of Mg^{2+} and Ca^{2+} in the dynamics of changes in $m[Ca^{2+}]$, and how it influences O_2 consumption and redox state. Guinea pig cardiac mitochondria were isolated and suspended in media containing Mg^{2+} . Mitochondrial Ca^{2+} -uptake and NADH levels were measured after addition of $CaCl_2$. O_2 consumption was measured. Mg^{2+} increasingly attenuated Ca^{2+} uptake into the matrix. However, these differences in $m[Ca^{2+}]$ between the Mg^{2+} groups and the different $[Ca^{2+}]$ did not change the rate of respiration or the NADH levels during ADP-induced respiration.

Oluwatosin Thompson

Mg^{2+} Attenuates Ca^{2+} -Uptake into Mitochondria but Does Not Alter ADP-induced Respiration

Advisor:
Dr. Frank Pintar

Collaborator: Dr. Amadou Camara

POSTER

Matthew Thompson

**Stenting & Angioplasty
of the Vertebral Artery
Origin for
Atherosclerotic
Stenosis**

Advisor: Dr. Osama Zaidat

**Collaborators: Dr. JK Brian,
Dr. F Fitzsimmons &
Dr. J Lynch**

We report the preliminary data on long-term clinical outcome and procedural safety. We retrospectively reviewed all cases of stenting performed at the MCW by our interventional neurology team and collected data on all patients with stenosis at the vertebral artery origin. Clinical and imaging follow-ups at days 30 and 90 post-procedure and technical results are also reported. We treated 43 patients. Technical success was achieved in 100% of the cases with no peri-procedural complications. At a mean follow-up of 10.4 months, we had 3 patients (14%) who were found to have significant restenosis ($\geq 50\%$), and 3 patients (14%) who suffered a recurrent transient ischemic attack; however, no strokes or deaths were observed. In our experience, endovascular management of VAOS using stenting \pm angioplasty is safe and effective at reducing stenosis.

Relapse is the most common cause of treatment failure after HCT. While total body irradiation (TBI) <13 Gy + cyclophosphamide (Cy) is standard, attempts to lower relapse rates have led to intensifications of conditioning regimens. We report on 765 patients who received HCT. Outcomes were examined in four groups: **1)** TBI <13 Gy + Cy (n=304); **2)** TBI <13 Gy + Cy + etoposide (n=108); **3)** TBI ≥ 13 Gy + Cy (n=327); and **4)** TBI ≥ 13 Gy + Cy + etoposide (n=26). Neither higher dose TBI (≥ 13 Gy) nor the addition of etoposide, regardless of TBI dose, was associated with decreased relapse or longer LFS. Without an advantage for leukemia control, further intensification of the condi-

Tochi Umunakwe

**Transfection
Optimization of Human
T Cell Leukemia Virus
Type 2 (HTLV-2)
Proviral Clones in
Jurkat Cells**

Advisor: Dr. Mark Beilke

Unlike HIV, Human T cell leukemia virus types 1 (HTLV-1) and 2 (HTLV-2) are generally asymptomatic for the individual's lifetime. The transcriptional activating proteins (Tax 1 & 2) are essential for viral replication and can modify host cellular events involved in innate immunity. Preliminary data demonstrate that recombinant Tax2 protein resulted in improved PBMC viability, proliferation and inductions of CC-chemokines. To confirm and validate the in-vitro function of Tax2, wild type HTLV-2 was compared with a Tax2-deficient HTLV-2 infectious clone with respect to affect of PBMC proliferative capacity and elaboration of CC-Chemokines in a jurkat cell model. Although only low levels of protein were detected using, this model will be useful in future studies to characterize the differential effects of HTLV-1 and HTLV-2 on human lymphoid cell immune function in vitro and in vivo.

The CDC estimated 1.4 million TBI-related deaths and hospital related incidents reported each year. Despite these high numbers, no one knows the full extent of damage caused by concussions. One of the most common signs of a concussion is a person's loss of postural stability. The Romberg Test is a balance test used to determine postural stability - but only in terms of subjective assessment. Our project objective is to quantify the already widely-accepted Romberg Test by using force plate analysis measuring center of pressure (COP) and postural trunk sway data in control vs. concussion patients. We hypothesize that our study will show a significant correlation between a positive Romberg Test and displacement of COP as well as significant differences in COP and postural stability between the concussion and control groups.

POSTER

James Tracey

**Transplant Conditioning
Regimens & Outcomes
after Allogeneic Hemato-
poietic Cell Transplanta-
tion (HCT) in Children &
Adolescents with Acute
Lymphoblastic Leukemia
(ALL)**

Advisor: Dr. Mary Eapen

**Collaborators: Dr. M Horowitz,
Dr. MJ Zhang,
Dr. E Thiel, Dr. KA
Sobocinski & Dr. DJ Wiesdorf**

David VerBunker

**Correlation
Between Functional
Assessment and
Romberg Test in
Post-concussion
Children**

**Advisor:
Dr. Liu Xue-Cheng**

**Collaborator:
Dr. Walter Kevin**

Felix Wong**Assessment of an
Ultrasound Training
Program for Family
Medicine Physicians****Advisor:
Dr. Zeno Franco****Collaborators:
Dr. MB Phelan, Dr. C Lam
& Dr. A David**

The Department of Family Medicine at MCW organized an ultrasound training session as an initiative toward developing a long-term ultrasound education program for residents and faculty. An ER physician facilitated an 8-hour training consisting of didactic lectures case review and hands-on experience imaging standardized patients with ultrasound machines. Participating physicians were evaluated for changes in self-perceived comfort and proficiency with ultrasound before and after the training. Despite a small sample size statistically significant changes for most items were demonstrated using non-parametric tests. These ranged from *I am comfortable with aorta ultrasound exam* with a pre-post median change of +5 on a 7 point scale a significant improvement $S(8) = 18$ $p > 0.01$; while *I consider myself proficient using the ultrasound for the cardiac exam* showed lesser improvement of +3 $S(7) = 10.5$ $p > 0.05$.

We compared the differences in music instrument identification at different stimulation rates in older vs. younger cochlear implant (CI) users. There was a younger (age < 65) and older group (age > 65), all using Advanced Bionics devices.

They were programmed with a novel 5-channel map at stimulation rates of 800, 1200, 2000 and 3000 pps, and underwent music testing. Scores ranged from 22% to 70%. In the < 65 group there was a significant trend of increasing score with increasing stimulation rate ($p = .0003$). There was a significant difference in this group between 3000 and 800 pps ($p = .0254$). In the > 65 group there was no trend between stimulation rate and score, and no significant difference between scores in the older group. Stimulation rate can affect music instrument identification for individual subjects with younger CI users benefitting from higher rates of 3000 pps.

Haogang Zhang**Effects of Stimulation
Rate on Music
Instrument
Identification in
Elderly Cochlear
Implant Users****Advisor:
Dr. Christina Runge****Collaborator: Dr. David
Friedland****2nd Annual PS Student Research Presentation Day**

April 26th, 2012

In February, each M3 and several M2s submitted an abstract, which was blinded and rated during small group sessions. The highest-rated abstracts were invited to present at the *Second Annual Physician Scientist Pathway Student Research Presentation Day*. Six students presented, and their peers rated the presentations utilizing a scale loosely based on Glassick's Criteria. The final scores were close! The winners, and recipients of a \$150 award prize courtesy of the **MCW/Marquette Medical Alumni Association**, were:

Shawn Call, Class of 2013

And

Matthew Thompson, Class of 2013

Congratulations to all presenters!

**Sponsored by the
MCW/Marquette Medical Alumni Association**

Shawn Call, Class of 2013*The Impact of a Step-Stool on
Cardiopulmonary Resuscitation:
a Cross-Over Mannequin Study***Jonathan Pace, Class of 2013***EET Analogs and 20-HETE Antagonists: The
Future of Cardiovascular Protection?***Phillip Sommer, Class of 2013***Pitfalls in Foveal Development
in People with Albinism***Kevin Sullivan, Class of 2014***The Effect of Morphine on
Bovine Chondrocytes***James Tracey, Class of 2013***Transplant Conditioning Regimens &
Outcomes after Allogeneic Hematopoietic
Cell Transplantation (HCT) in Children
& Adolescents with Acute
Lymphoblastic Leukemia (ALL)***Matthew Thompson, Class of 2013***The Natural History of Vertebral Artery
Origin Stenosis and the Efficacy of
Endovascular Management*

Jason Croskrey

Adverse Reactions To Suture Material Used For Sclerotomy Closure At Pars Plana Vitrectomy: A Comparison Of Polyglactin 910, Polyglycolic Acid, & Plain Gut

**Advisor:
Dr. Joseph Carroll**

Vitrectomy may require suture closure to maintain normal intraocular pressure and lower infection risk. Adverse suture reactions (ASR) include local inflammatory reactions. ASR after vitrectomy was compared among suture materials. Retrospective review for procedures during a period of transition between use of synthetic to plain gut sutures. Data collection included identification of suture material type for sclerotomy closure, and whether or not ASR occurred. Fischer's exact test compared the rate of ASR among suture materials. Three suture materials were included: polyglactin 910, plain gut, and polyglycolic acid. ASR occurred between 1-41 days. Rates of ASR for polyglactin 910, plain gut, and polyglycolic acid, respectively, were 11/83, 1/49, and 6/22, $p=0.03$, 0.003 , and 0.19 . Plain gut suture had a lower ASR rate when compared to polyglactin 910 and polyglycolic acid. Plain gut appears suitable for sclerotomy closure at PPV and may be associated with lower postoperative suture-related morbidity.

Viruses that establish latent infections in their hosts, such as herpesviruses, face a challenge in the form of the innate immune system. These pathogens have evolved "immuno-evasin" proteins that help them evade immune detection. The Human Herpesvirus 6 (HHV-6) immuno-evasin U21 diverts Class I MHC molecules from the cell surface to lysosomes. U21 does not require any known lysosomal sorting signal motif for its function, suggesting a novel mechanism. In this work, mutant U21 proteins with conserved residues changed to alanines will be assayed for function using immunofluorescence and flow cytometry. The phenotypes of the mutant proteins and the physical locations of the mutated residues in a 3D structure of U21 will yield information about which parts of the U21 protein are important for function. These data promise to lend insight into how U21 diverts Class I MHC from the cell surface to aid HHV-6 in immune evasion.

Deanna Downs

Structure/function analysis of Human Herpesvirus 6 I immune evasion protein U21

**Advisor:
Dr. Amy Hudson**

**Collaborator:
Dr. Dennis Han**

Tran Lac

Evaluation of Choroidal Thickness Symmetry in Normal & Eyes with AMD

**Advisor:
Dr. Judy Kim**

**Collaborators:
Meiqian Ma, Kiseok Kim,
Dongwon Lee
& Robert Urman**

The choroid plays a vital role in supporting the retina and has been implicated in the pathophysiology of retinal diseases. Few studies have compared the symmetry of choroidal thickness between the right and left eye. In this study we: 1) compare the symmetry of choroidal thickness between the right and left eye of normal patients and patients with Dry/Wet AMD; 2) determine if change in choroidal thickness between right and left eye is correlated with age. Methods: retrospective study analyzing EDI-SD-OCT images of 20 patients with normal eyes 18 patients with bilateral dry AMD and 17 patients with dry AMD in one eye and wet AMD in the other eye. We found no significant difference between the mean subfoveal choroidal thickness of right and left eye regardless of disease status. The difference in choroidal thickness between right and left eye was also not significantly associated with age.

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

Health literacy is strongly associated with health outcomes, and a major role of a physician is to be a source of health information and communicate it in an effective and useful manner to increase health education and thus health literacy. My Pathways activities included curriculum development for a youth wellness camp held at Walnut Way in Lindsay Heights. We had the attention of 26 six to 12 year old students from the Lad Lake Valley Camp. It was a daunting task to communicate the benefits of healthy nutrition to young children. There is limited evidence on child health literacy, but conclusions still remain that low literacy leads to low health outcomes. Some of the challenges in providing health education to children included being conscious of their ages, level of comprehension, and captivating their interest in our curriculum's health topics with a focus on nutrition and mental health. Multiple hours of planning, and practice trial runs allowed us to implement a successful event, and every child shared something they learned.

Sreevalli Atluru

**Mirrored evolution:
A Journey through
Third Year**

**Advisor:
Dr. John Fangman**

I met my first clinical continuity patient at the Saturday clinic for the uninsured just as I began my third year. I invested energy and effort to provide my ambivalent patient resources to improve her health, encourage her to persevere even with her diagnosis and lack of health insurance. Moving through third year my patient became more proactive with her health as I took on more responsibilities clinically. My patient taught me the importance of follow up and hopefully I taught her to be responsible with her health. Our relationship is still a work in progress but the majority of my Pathway activities this year have been about her teaching me how to be a better doctor rather than me imparting knowledge to her.

Within the current medical model, access to specialty care is limited especially among the uninsured population. Free health care clinics often serve as safety nets for uninsured individuals when in need of medical attention. However, an undeniable problem when treating the uninsured is difficulty accessing specialty care referrals. Few free clinics have access to on-site specialists and those that do have limited hours patients can access these volunteer providers. During my work through the UCH pathway I was able to experience this issue first hand by working at a monthly Dermatology free clinic. Here I became familiar with the barriers community health centers face when treating the uninsured with specialty care needs. I will explore these barriers and discuss potential solutions to this problem while referencing my personal experiences over the past three years.

Sherry Abraham

**Working Towards
Increasing Child Health
Literacy**

**Advisor:
Dr. Staci Young**

**Partners: Walnut Way
Conservation Corp & Lind-
sey Heights
Neighborhood Health
Alliance**

Rebecca Bauer

**Barriers Accessing
Specialty Care Among
the Uninsured**

**Advisor:
Dr. Barbara Wilson**

**Partner:
St. Ben's Clinic**

POSTER

Michelle Becker
(with Margaret Schaefer,
Claudia Yeung (MC),
Brooke Rogers & Brianne
Zechlinski)

The HOME project
Health Outreach at the
Women's Center

Advisor: Dr. Sabina Diehr

Partners: Madeline Amos,
Cynthia Johnson,
Milwaukee Women's Center

See Margaret Schaefer, page 55

POSTER

**Tam Do (with
Jennifer Lee & Aman-
da Smith)**

**PEACE Program—
Parent Night**

Advisors:
Dr. Sheri Johnson,
Dr. Staci Young
& Dr. Jill Hekman

Partner:
Laurie Laehn,
SET Ministry

See Jennifer Lee, (opposite) page 51

Milad Eshaq

**The Growing Somali
Patient Population in
Milwaukee**

Advisors:
Dr. James Sanders

Partners: Dr. L. Kevin
Hamberger, Wheaton
Franciscan Family Care
Center, Jenny Ovide, RN

In order to understand some of the socio-cultural values and current socioeconomic conditions of the Milwaukee Somali refugee population, we sought to hold four small focus groups, each centered around a broad topic, with Somali patients from a Milwaukee family medicine clinic. We drafted an IRB proposal to be sent to the MCW IRB. We then submitted a request for a coordinated review between MCW and the clinic (an MCW affiliate but still a separate institution). Meanwhile, I joined the clinic nurse on some of her home visits with the Somali refugees to gain an introduction to their experiences as immigrants. To reflect, I will comment on 1) the purpose and design of the project, 2) the challenges of writing an IRB proposal for a project with a potentially vulnerable population, 3) the process of coordinating between multiple institutions for the project, and 4) the future of the project.

Pregnant patients from a local clinic were invited to participate in a comprehensive prenatal care program with the goal of fostering healthier living during pregnancy. In addition to private, scheduled prenatal care visits, participants were encouraged to attend monthly enrichment sessions. Upon enrollment into the program, participants were asked to fill out a survey detailing health prior to pregnancy, access to food in the past 30 days, and pre-pregnancy weight. In order to examine the correlation between weight gain during pregnancy and pregnancy outcomes, we performed a retrospective data analysis using de-identified pregnancy weight gain and infant birth weight from our patients and compared these data to national guidelines.

POSTER

Angela Giesel

**Healthy Moms,
Healthy Babies**

Advisor:
Dr. Beth Damitz

Partner: St Joseph's
Hospital, Dr. Sylvia J.
Rozek & Sandra Olsen

POSTER

**Michael Girolami
(with Tyler Ulbrich &
Karlye Rodriguez-
Wisdom)**

**Urban Gardening with
Milwaukee's HOMEless**

Advisor: Dr. Sabina Diehr

**Partners: The Guest House
of Milwaukee & Friedens
Community Pantry**

See Karlye Rodriguez-Wisdom, page 54

PODIUM

Randal Harris

**Mentoring in Medicine:
Preparing the Next
Generation**

**Advisors:
Dr. Linda Meurer
& Dr. Dawn Bragg**

**Partners: M2s Ginger Smith
& Lauren Spittgerber, Su-
zanne Letellier & Jackie
Martin, Milw. AHEC Pro-
gram, Mary Ellen Lasko &
Bertha Morrow at James
Madison Academic Campus**

More than 25% of the US population is African American, Latino or American Indian but these ethnic group compromise less than 10% of the nation's nurses, physicians, and dentists among other health careers. Through a partnership with Milwaukee AHEC (Area Health Education Center), we developed a tiered mentoring program with students at James Madison Academic Campus. Our program sought to fulfill 2 main objectives: 1. To help students further their pursuit of health careers through monthly programming that explored various health careers and development of health related skills. 2. To serve as mentors as students developed a service learning project. Each month we designed and presented workshops followed by an interactive activity that helped them apply the information presented. In addition, through grant funding from the American Heart Association, we helped students develop 2 service learning projects for the Youth Health Focus on the Heart program.

PODIUM

Ryan Jackman

**The Impact of Parental
Perceptions of Illness
on Healthcare-seeking
Tendencies**

**Advisors:
Dr. Michael Farrell**

**Partner:
Dr. David Lancy**

Understanding how an individual perceives the severity of an illness has direct implications for health care providers, especially in the context of how these perceptions expedite or delay the individual's health care seeking tendencies. Previous research has identified factors that influence adults' perceptions of illness and consequently impact when care is sought from a health care provider. Little research has been undertaken to identify how similar factors affect parents' perceptions of illness in their children and their subsequent health care seeking tendencies. This multi-stage, multi-site research has sought to identify through community and clinic based surveys when parents seek care for their children and how specific factors influence these decisions. Three factors were found to significantly influence parents' perceptions and behaviors: annual income, health insurance coverage, and race. In contrast to the previous research on adults no factors were associated with a significant delay in seeking care.

Early this school year, the group met with Laurie Laehn and Dr. Sheri Johnson to brainstorm project ideas for the year. It was decided to participate in the parent nights monthly by introducing activities that parents and children can do together, incorporating the PEACE program's teachings. This would benefit the PEACE program as well as us as medical students, as one of our goals was to have more interactions with the urban community. Thursday afternoons were spent at the SET ministry office researching possible activities to present on parent night and interacting with the residents in the building. Monthly, we attended parent night. We participated in discussions where Dr. Thelma Newby addressed concerns that mothers had about disciplining their children, as well as presenting our activity to the parents and kids. Our projects include making a stress ball, writing in a diary, and growing a sunflower.

POSTER

**Jennifer Lee
(with Amanda Smith
& Tam Do)**

**PEACE Program Parent
Night**

**Advisors
Dr. Sheri Johnson, Dr. Staci
Young & Dr. Jill Hekman**

**Partner: Laurie Laehn,
SET Ministry**

Abby Lochmann-Bailkey

Mental Health Reflection

Advisor: Dr. Gunnar Larson

My Pathway's project has evolved over the past three years as my interests and abilities have changed. I originally focused on intensive psychiatric care through the VA system during my M1 year, and broadened my scope within the realm of community psychiatric care during M2 year. This past year I have still participated in activities related to psychiatry, but my main focus has been on continuity of patient care by participating in the Clinical Continuity Track at the Saturday Clinic for the Uninsured. I have participated in the regular SCU programs since my M1 year, but I have found that being the primary care provider for my CCT patient has been a very valuable experience. I also continued to participate in the regular SCU activities and I can appreciate my previous exposure to psychiatric care as it seems as though most patients can benefit from attention to their mental health needs.

These past three years in the UCH pathway we have focused on many of the current health disparities that are present in our community. In thinking about these complex issues it's easy to become overwhelmed and burnt out. The "War on Poverty" has been raging on for almost 50 years now, how are we supposed to make a difference? I'm not sure we can, at least not a meaningful difference in the short amount of time we have during our education. However, that's not to say we can't make a significant difference in the individualized care we provide for our patients.

We have all the opportunity in the world to truly help someone in their time of need. This is something that I've believed throughout my UCH pathway experience, regardless of the status of our current health care system, we can make a difference our patients' lives.

POSTER

Clinton Logan

Veterans' Affairs Hospital Use Among Veterans Utilizing the DryHootch: A Veteran Community Outreach

Advisor: Dr. Staci Young

Partners: Dr Zeno Franco, Dr Jeffrey Whittle, DryHootch of Milwaukee, Bob Curry & Mark Flower

This study utilized the results of a survey conducted by DryHootch, a local veterans organization. The purpose of this analysis was to: 1) assess the number and characteristics of veterans that currently use the VA, and 2) to determine the reasons for not using the VA hospital. The results showed that 62.3% of DryHootch-associated veterans were currently using the VA hospital system. Veterans involved in combat, veterans of the Vietnam war, and veterans of the Cold War eras were more likely to use the VA with a relative risk of 2.41, 1.94, and 2.50, respectively. Among veterans that do not use the VA, 73.5% stated that they had other insurance coverage, 17.1% said that they did not know if they qualified for the services they wanted, 15.0% said it was too much hassle to get registered, and 13.3% said that they have had a bad experience at the VA.

Also see Brittane Parker, page 53

In 2009, the Milwaukee Journal Sentinel reported that the Hispanic population of Wisconsin had increased 48% since 2000. To accommodate this influx of a largely Spanish-speaking population, many physicians have endeavored to learn medical Spanish to better communicate with this population. The advanced medical Spanish course at MCW was offered for a second time this spring after first being offered in spring 2011. This course is targeted towards MCW medical students who may already have intermediate to advanced Spanish proficiency, but lack appropriate Spanish medical vocabulary to comfortably interview and examine Spanish-speaking patients. The four week course includes a didactic lecture on Tuesday and a small group session on Thursday in which students practice their vocabulary and phrases with Spanish-speaking volunteers, many of whom work as medical Spanish interpreters.

Jason Loera

Solving Health Care Disparities One Patient At a Time

Advisor: Dr. Ileen Gilbert

Jay Nichols

MCW Advanced Medical Spanish Course for Medical Students

Advisors: Dr. Brett Bordini

Partners: Dr. Susan Koethe & Dr. Cristina Grieben

Casie Nigbur

Becoming a "Good" Physician

Advisor:
Dr. David Nelson

When medical school started I felt as though I knew who I was and that I had what it took to be "good" doctor. One of the first decisions I had to make in medical school was what pathway I wished to participate in. For me the answer was simple and natural: Urban & Community Health. While that decision was easy, explaining how "Pathways" has helped me become a more "well-round physician," has been a challenge. Upon completion of Pathways, I will reflect back to illustrate my struggles and successes that I have had with the Urban & Community Health Pathway, and how at the end of a long road to becoming a "good" doctor, it was Pathways, that truly allowed me to spread my wings and determine what it takes, besides the clinical knowledge, to become a skilled and successful physician.

It is valuable experience when medical students are given the opportunity to directly speak with a patient. In this moment, students realize how knowledge gained through their training helps to equip patients with the tools needed to live a healthy life. This pathway project worked with low-income housing residents in East Milwaukee to educate them on how to identify common diseases and maintain good health. Through a partnership with SET Ministry, students participated in monthly wellness clinics that provide free blood pressure checks and organized afternoon discussions on health topics chosen by members of the Highland Garden community. As requested by the residents, these topics ranged from diabetes prevention and care to Alzheimer's disease. The presentations were designed to stimulate audience participation and to encourage questions and sharing of personal stories. The residents freely related their specific health challenges and triumphs. Students gained experience on how to deliver information in a way that the general public can understand, and in return, learned how disease affects different aspects of a patient's life.

POSTER

**Maiteeny Pumpuang
(with Ritu Zei)**

**Preventing Dating
Violence among
Milwaukee's Teens**

Advisors:
**Dr. Joan Bedinghaus &
Dr. Staci Young**

Partners: Holton Youth
Center, Pathfinders &
Gerry Howze, Pearls for
Teen Girls

The CDC reports that 1 in 4 adolescents experience physical, sexual, or emotional abuse from a dating partner. Given that more than 70% of 8th and 9th graders report being in dating relationships, we aimed to create and deliver a series of interactive presentations on teen dating violence for the youth of Milwaukee. We reviewed literature about developing youth-friendly curricula on dating violence as well as solicited the input of local youth serving agencies. Our first presentation is adapted from a publicly available curriculum called Love is not Abuse. This pilot was delivered to 7 individuals at Walker's Point Youth & Family Center and was followed by positive feedback from attendees. Long-term plans include scheduling more presentations, further developing relationships with local youth organizations, recruiting more students to work on the project, creating additional presentations on focused topics relevant to teen dating violence, and developing an evaluation.

Obesity has been increasing exponentially in recent years, particularly apparent in the inner city. Scarcity of healthy eating options and limited resources for physical activity have played a role in this phenomenon. I have been working with a community collaboration to create ways to maximize the use of land for promoting healthy living by primarily focusing on developing walking groups to create a safe environment and use the built space in the community for physical activity. The women I work with have increased knowledge and physical capacity as a result of this project. They have created a ripple effect in recruiting new members. In continuation of this project, I have developed a training manual for starting walking groups and plan to continue developing a usable resource for individuals to walk on their own or create their own groups, which is distributed at community clinics.

POSTER

**Brittane Parker
(with Clinton Logan)**

**Community Engage-
ment with Educational
Health Discussions**

Advisor:
Dr. David Lillich

Partners: M1s Monica
Stout & Steven
Mudroch, SET Ministry,
Laurie Laehn & Highland
Gardens, Lula Chambers &
Carolyn Giersch

Elizabeth Pyne

**Walking for Wellbeing
Groups Promote Land
Use for Physical Activity**

Advisor: Dr. David Nelson

Partners: Jim Bartos, Silver
Spring Neighborhood
Center, Sarah O'Connor &
MCOPP

POSTER

**Alexander Raskin
(with Nathan Zokoe)**

**Breaking the
Re-Incarceration Cycle**

Advisor: Dr. Sabina Diehr

**Partners: The Guest House
of Milwaukee,
Cindy Krahenbuhl &
Community Advocates,
David Riemer, JD**

It is estimated that 300,000 inmates suffer from mental health issues, which is roughly equivalent to the populations of St. Louis. Upon release back into society, these inmates lose all appropriate care and follow-up. In an economically strained society the lack of care and follow-up perpetuates unnecessary hardships felt by the populace. Examples include victimization of crime, increased substance abuse rates, and mental health relapse, ultimately leading to increased re-incarceration rates. Without the proper structure in place this cycle continues repeatedly. With established health insurance access and appropriate treatment upon release, these possible hardships can be circumvented. Under the provisions of the Affordable Health Care Act, a system can be developed that registers inmates for health insurance and follow-up care as part of the parole process. This type of system will allow for a reduction in re-incarceration rates and will improve treatment outcomes for recently released inmates suffering from mental health and substance abuse.

We desire for our community to have access to fresh food that does not come out of a corner store or a can. Cream City Gardens is an urban garden created by the Guest House homeless shelter and Friedens Food Pantry, with the help of MCW students and many community volunteers. The purpose of Cream City Gardens is to provide opportunities for the acquisition of skills and experiences that will make homeless shelter residents more desirable as employees; improve the nourishment of the residents and the community; and build a neighborhood that will be more attractive to residents, community organizations, and businesses alike. We were involved in the planning and construction of 45 garden beds, as well as the first season of growing and harvesting. We also sought training for grant-writing, have applied for garden funding, and are currently training new students in the grant-writing process.

POSTER

**Brooke Rogers
(with Margaret
Schaefer, Michelle Beck-
er, Claudia Yeung (MC) &
Brianne
Zechlinski)**

**The HOME project:
Health Outreach at the
Women's Center**

Advisor: Dr. Sabina Diehr

**Partners: Milwaukee Wom-
en's Center**

See Margaret Schaefer, (opposite) page 55

Free clinics are a common source of health care access for many Americans who lack health insurance. Typically, such clinics are open limited hours each week or month and are staffed by volunteer physicians. Many medical schools are also affiliated with free clinics, allowing educational experiences for the students in addition to free healthcare for the patients. Clinics are excellent for providing routine primary care. Unfortunately, they tend to be extremely limited when it comes to proving access to specialist care, imaging, expensive diagnostics, surgeries, and more. Since free clinics rely on volunteers, grants, and donations, they are quite limited when it comes to providing or referring for these procedures. Through my work in the Clinical Continuity Program, I saw this firsthand. Providing adequate access to specialist care for patients is a limitation that free clinics across the country face, which carries both ethical and professional implications.

POSTER

**Karlye Rodriguez-
Wisdom
(with Tyler Ulbrich
& Michael Girolami)**

**Urban Gardening
with Milwaukee's
HOMEless**

**Advisor:
Dr. Sabina Diehr**

**Partners: The Guest
House of Milwaukee &
Friedens Community
Ministries**

Erin Ruedinger

**Limited Access to
Specialists through
Free Clinics**

**Advisor:
Dr. Fredrik Broekhuizen**

POSTER

**Margaret Schaefer
(with Michelle Becker, Claudia
Yeung (MC), Brooke
Rogers & Brianne
Zechlinski)**

**The HOME project
Health Outreach at the
Women's Center**

Advisor: Dr. Sabina Diehr

Partners: Milwaukee Women's Center

Beginning in Spring 2010, 13 first-year medical students from MCW developed the HOME Project (Homeless Outreach in Medical Education), in an effort to improve the health of Milwaukee's homeless. Our initial needs assessment identified three local shelters interested in partnering with MCW in the HOME Project. This poster will focus on our collaboration with the Milwaukee Women's Center, an emergency shelter serving approximately 350 women and children each year. Over the last three years, we have developed health outreach programs covering topics relevant to the women's interests including: monthly health education classes for both adults and children, after-school tutoring sessions, a health record compilation day, and a women's health fair. These programs have been well-received by shelter residents and we look forward to our continued partnership.

The issue of health insurance coverage has gained much public attention lately with the Patient Protection and Affordable Care Act passed in 2010 and the recent Supreme Court case in 2012 on constitutionality of the act. Lack of health insurance has been shown to be associated with higher all-cause mortality rate. Uninsured patients utilize a variety of health care resources which traditionally includes increased Emergency Department use and less primary care use. Free Clinics have become one of the important resources for uninsured patients, which can provide primary and preventative care, however most have a limited range of services. This year I examined the use of free clinics for uninsured patients, drawing on personal experience from participating at the Saturday Clinic for the Uninsured.

Jessica Shaheen

**The Uninsured:
Utilization of Free
Clinics**

**Advisor:
Dr. Suzanne Walczak**

POSTER

**Amanda Smith
(with Jennifer Lee
& Tam Do)**

**PEACE Program—
Parent Night**

**Advisors Dr. Sheri Johnson,
Dr. Staci Young
& Dr. Jill Hekman**

**Partner: Laurie Laehn,
SET Ministry**

See Jennifer Lee, page 51

Schools continue to add CPR and Automatic External Defibrillator programs to address the devastating effects of sudden cardiac arrest (SCA). However, without a national/state database the prevalence of such programs and barriers to full participation in AED programs remains relatively unknown. In this cross-sectional study, a survey was sent to an administrator from every Wisconsin school (n=3343) with the goal of elucidating AED prevalence, location of AEDs within schools, program funding, and barriers hindering prospective and nascent AED programs. 174 Wisconsin schools completed the survey with 72.2% indicating that they had at least one AED on campus and 46.8% of those schools citing the gymnasium as the location containing an AED. The greatest challenge to CPR/AED implementation was financial (47.2% schools) followed by staff/time constraints (45.8%). CPR/AED programs are becoming commonplace in Wisconsin schools as AEDs have proven to be both cost-effective and life saving. However there is significant progress yet to be made in order to obtain the goal of full participation in CPR/AED programs.

**Daniel Sturgill
(with Steven Gale,
MC)**

**An Assessment of
AED Programs in
Wisconsin Schools:
How are we doing
protecting
our kids?**

**Advisor:
Dr. Sabina Diehr**

**Partner: Debra Klich,
Project ADAM**

Stephanie Sullivan

**An Exploration of
Disaster
Preparedness and
Management**

Advisor: Dr. Tom May

The field of emergency/disaster preparedness and management is one that is very important in urban and community health. When disasters strike in the community there is potential for numerous casualties, great economical impact, and overall disruption to the way of life. Fortunately, this is a blossoming field that is learning from prior mistakes and making strides towards improving the management of disasters and emergencies in the future. I have dedicated my pathway time to learning more about this topic so that I will be prepared to be an active participant in this work as a physician. Through readings, I have learned about how disasters such as 9/11 and Hurricane Katrina were handled, the lessons learned, and the subsequent changes made in preparation for future emergencies. Additionally, my experience, doing an ambulance ride along, shadowing in the emergency department, and completing the Basic Disaster Life Support course have allowed me to see how some of these plans and strategies are put into practice.

POSTER

See Karlye Rodriguez-Wisdom, page 54

**Tyler Ulbrich
(with Karlye
Rodriguez-Wisdom &
Michael Girolami)**

**Urban Gardening with
Milwaukee's HOMEless**

Advisor: Dr. Sabina Diehr

**Partners: The Guest House
of Milwaukee & Friedens
Community Food Pantry**

Tia Vernon

**Assessment of
Demographic Risk
Factors in Asthma
Morbidity**

Advisor: Dr. Ileen Gilbert

**Partners: S.M. Perry &
Dr. Ileen Gilbert**

**2011 ATS International
Conference**

RATIONALE: Race and socioeconomic factors have been found to affect asthma morbidity, but little is known about the impact of government vs. private healthcare coverage. **METHODS:** We compared asthma morbidity outcomes for 143 patients with at least one year of continuous enrollment in a standardized continuity program. Various asthma morbidity indices were assessed retrospectively for the year prior to entry and prospectively at each clinic visit. Data were analyzed by paired and unpaired T tests and Chi-square. **RESULTS:** African Americans showed higher asthma morbidity than Caucasians. Similar morbidity was seen for government vs. private insurance patients. Caucasians with government insurance had increased morbidity when compared to Caucasians with private insurance. African Americans with government insurance did not differ from African Americans with private insurance on any morbidity index. **CONCLUSIONS:** Insurance type plays a differential role in morbidity for Caucasian vs. African American asthmatics. Environmental and/or pathophysiologic explanations are being explored.

POSTER

See Margaret Schaefer, page 55

**Brianne Zechlinski
(with Michelle Becker,
Claudia Yeung (MC)
& Brooke Rogers)**

**The HOME project
Health Outreach at the
Women's Center**

Advisor: Dr. Sabina Diehr

Partners: Milwaukee Women's Center

POSTER

Ritu Zei
(with Maiteeny Pumpuang)

**Prevention of Dating
Violence in
Milwaukee's Teens**

Advisor:
Dr. John Meurer

Partner: Gerry Howze,
Pearls for Teen Girls

See Maiteeny Pumpuang, page 53

See Alexander Raskin, page 54

POSTER

Nathan Zokoe
(with Alex Raskin)

**Breaking the
Re-Incarceration Cycle**

Advisor:
Dr. Sabina Diehr

**Partners: The Guest House
of Milwaukee, Cindy
Krahenbuhl &
Community Advocates, Da-
vid Riemer, JD
Public Policy Institute**

2011/12 Signature Pathway Events

THE GLOBAL HEALTH ORGANIZATION presents FOURTH ANNUAL GLOBAL HEALTH FAIR SEXUAL AND REPRODUCTIVE HEALTH

Thursday, February 16, 2012 12:30-4:30pm

Featuring: "Global Reproductive Health Through a Filmmaker's Lens"
with Lisa Russell, MPH Emmy Award-winning documentary filmmaker.
"TransNational Women's Health Stories: Beyond the Hippocratic Oath"

Carol Ritter, MD 2008 MCW/Marquette Medical Alumni

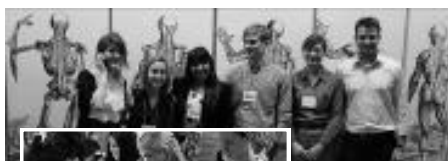
"How to prepare for international health activities in Reproductive Health" Fredrik Broekhuizen, MD

"Women's Health and AIDS in Zambia and Peru" David Klehm

"Female Genital Mutilation" James Sanders, MD, MPH

"The intersection of culture and sexual health decision making in Hispanic Populations" Julia Lechuga, PhD

Made possible by a generous grant from the Alumni Office—MCW Class of 1984 Global Health Pathway



In partnership with the
HEALTHIER WISCONSIN PARTNERSHIP PROGRAM
The UCH Pathway hosted a

Connection Reception

March 22, 2012

This was for students and community partners to
meet and connect around projects.



THANK YOU FOR YOUR CONTRIBUTIONS

Pathway Planning Councils

Council members meet regularly to provide input into the curricula, plan core sessions, review evaluations and structure noncore opportunities for students in the Pathways.

Clinician Educator

Patricia Lye, MD, MS
Meaghan Hayes
 Christopher Anderson, M3
 Kathryn Barbieri, M1
 Tomer Begaz, MD
 Kellie Brown, MD
 Joseph Budovec, MD
 Elizabeth Ellinas, MD
 Ann Helms, MD
 Karen Hulbert, MD
 Peter Layde, MD
 Erin Preloger, M4
 Anil Sharma, M2
 Deborah Simpson, PhD
 David Wang, M2
 Travis Webb, MD

Global Health

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 Byung-il Choi, MD
 Jenifer Coburn, PhD
 Mary Flynn, LSS
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 Ben Rader, PhD
 Irmine Reitzl, RN MHD
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 Kenechukwu Udoh, M1
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 Eric Barker, M3
 Keith Baynes, MD
 Richard Berens, MD
 Diane Book, MD
 Brian Brinkerhoff, M4
 Rainer Gedeit, MD
 Trevor Gessel, M2
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 George Haasler, MD
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 Michael Farrell, MD
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 Ali Jazayeri, M3
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 Carol Moreno-Quinn, MD, PhD
 Julie Panepinto, MD, MSPH
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 Mina Farahzad, GY1
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 Tia Vernon, M3
 Suzanne Walczak, MD
 Staci Young, PhD

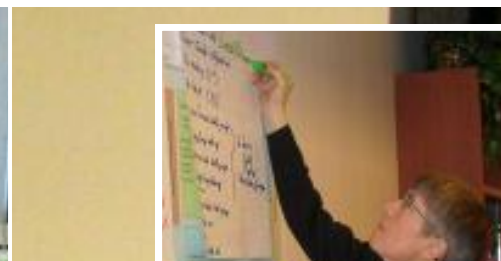
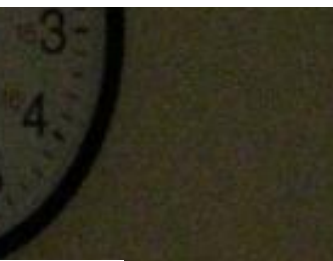
Community Partner Organizations

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



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www.mcw.edu

Alice's Garden	Froedtert Memorial Lutheran Hospital	Pathfinders
Area Health Education Centers	Gee's Clippers	Pearls for Teen Girls
Bread of Healing Clinic	GET Collaborative	Philippine Center
Center for AIDS Intervention Research (CAIR)	Guest House of Milwaukee	Project Adam—Herma Heart Center
Child Protection Center at the Downtown Health Center	Highland Gardens	Saturday Clinic for the Uninsured
Children's Hospital of Wisconsin	Holton Youth Center	Sebastian Psychology family Practice
Clement J. Zablocki VA Medical Center	Independence First	SET Ministry
Community Advocates—Public Policy Institute & Milwaukee Women's Center	International Adoption Clinic	Silver Spring Neighborhood Center
Diverse & Resilient	James Madison Academic Campus	St. Ben's Clinic
Dry Hootch of Milwaukee	Martin Luther King Center	St. Joseph's Hospital
FAM Allies	Milwaukee Childhood Obesity Prevention Program	United Community Center
Fondy Food Center	Milwaukee County Department on Aging	Walnut Way Conservation Corp
Friedens Community Food Pantry	Neighborhood House	Waukesha Memorial Hospital
	Milwaukee Health Department	Wheaton Franciscan—Family Care Center
		Wisconsin Athletic Club



M3 Faculty Advisors

Advisors assist students with the development and execution of their Individual Learning Plans and provide critical feedback and assessments of student performance.

Mohammed Abd Alla, MD, PhD	Carey Ehler, MD	Robert Krippendorf, MD	Christopher Plambeck, MD
Nikki Allen, MD	John Fangman, MD	Michael Kron, MD, MS	Jon Pryor, MD
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Keith Baynes, MD	Rainer Gedeit, MD	David Lautz, MD	Peter Rossi, MD
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Mark Beilke, MD	Albert Girotti, PhD	Jon Lehmann, MD	Guglielmo Sala, MD
Julie Biller, MD	Steven Grindel, MD	David Lillich, MD	James Sanders, MD, MPH
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Gary Cohen, MD	John Jensen, MD	Ndidiamaka Musa, MD	Alonzo Walker, MD
M. Riccardo Colella, DO, MPH	Sachin Jogal, MD	Kathy Mussatto, RN, PhD	David Waters, MD
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Amy Drendel, DO	Judy Kim, MD	Edit Olasz, MD, PhD	Christopher Wolfla, MD
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Edmund Duthie, MD	Edward Kirkpatrick, DO	Eric Pifel, MD	Staci Young, PhD
Mary Eapen, DCH, MBBS	James Kleczka, MD	Frank Pintar, PhD	Osama Zaidat, MD, MS
	Amanda Kong, MD, MS		Xuefeng Zhang, MD, PhD

