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The complete program including abstracts is available on the
Western Michigan University Homer Stryker M.D. School of Medicine website:
<http://www.med.wmich.edu/research/research-activities/research-day>.

WIFI Information:

| WIFI Username: **WMU Medicine** |
| WIFI Password: **bronco4** (all lowercase) |

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DISCLOSURES

Please see the handout offered at the registration table for a listing of disclosure statements from today's presenters.

INTRODUCTION

RESEARCH, EDUCATION AND SCHOLARSHIP

The commitment and participation of Western Michigan University Homer Stryker M.D. School of Medicine (WMed), its faculty, and the Kalamazoo scientific community in “Research Day” continues on this day marking a 35th anniversary milestone. One-hundred thirty-one abstracts were received and reviewed by a panel of 22 judges. One-hundred twenty-one have been accepted for either oral or poster presentation.

Such success is due, of course to a large number of talented and dedicated people. We wish to acknowledge the participation of a group of faculty and thank them for volunteering their time and expertise to review the submissions. A panel of over 20 judges participated in the reviews. Each judge typically reviewed approximately 15 submissions, which were assigned based upon area of expertise. The judges’ evaluations were critical in determining the award winning presentations and posters, as well as those selected for presentation in the oral sessions.

In addition, it is my privilege to have worked with this year’s Research Day organizing committee. This committee worked diligently over an extended period of time to endeavor to bring you an exceptional learning and networking opportunity. Members of this year’s committee were: Bethany Banner, Laura Bauler, PhD, Craig Beam, PhD, Heather Chen, Shanna Cole, PharmD, Prentiss Jones, PhD, Keith Kenter, MD, Wendy Lackey, PhD, Samuel Lai, David Lee, Elizabeth Lorbeer, EdM, Benjamin Roush, David Spillers, and Sheri VandenBerg, RN, MS.

We hope this year’s Research Day will inspire you to pursue your own research and to, as well, support the basic, medical and healthcare research of our Southwestern Michigan Community colleagues. As you attend today’s activities, please be sure to stop by the various tables in the venue to learn about the many resources that have been created to support your research activities.

Finally, I want to personally thank Dr. Laura Bauler for “going above and beyond” in ensuring the success of this year’s Research Day. Her signal contributions are greatly appreciated by myself and the community.



Craig Beam, PhD
Chair
2017 Research Day

We wish to thank the following WMed professionals who dedicated their time to participate as abstract scoring judges and/or session moderators for today's event.

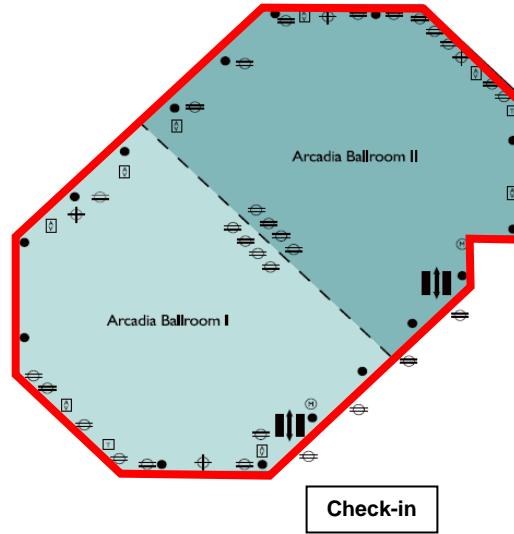
Robert Baker, MD	Laura Bauler, PhD	Time Bauler, PhD
Craig Beam, PhD	Tyler Gibb, PhD	Lisa Graves, MD
Jeffrey Greene, PhD	Krishna Jain, MD	Jagadeesh Kalavakunta, MD
Keith Kenter, MD	Andrey Leonov, MD	Larry Lutwick, MD
Thomas A. Melgar, MD	Tracey Mersfelder, PharmD	Lisa Miller, MD
Gitonga Munene, MD	David Overton, MD	Dilip Patel, MD
Elizabeth Brooke Pope, PhD	Jerry Pratt, MD	Dale Rowe, MD
Steven Rudich, MD	Carrie Sandborn, MD	Mark Schauer, MD
Robert Satonik, MD	Shama Tareen, MD	Dale Vandr�, PhD
Perry Westerman, MD	Allan Wilke, MD	

RADISSON CONFERENCE CENTER FLOOR PLANS

Lobby Level

Check-in and Sessions

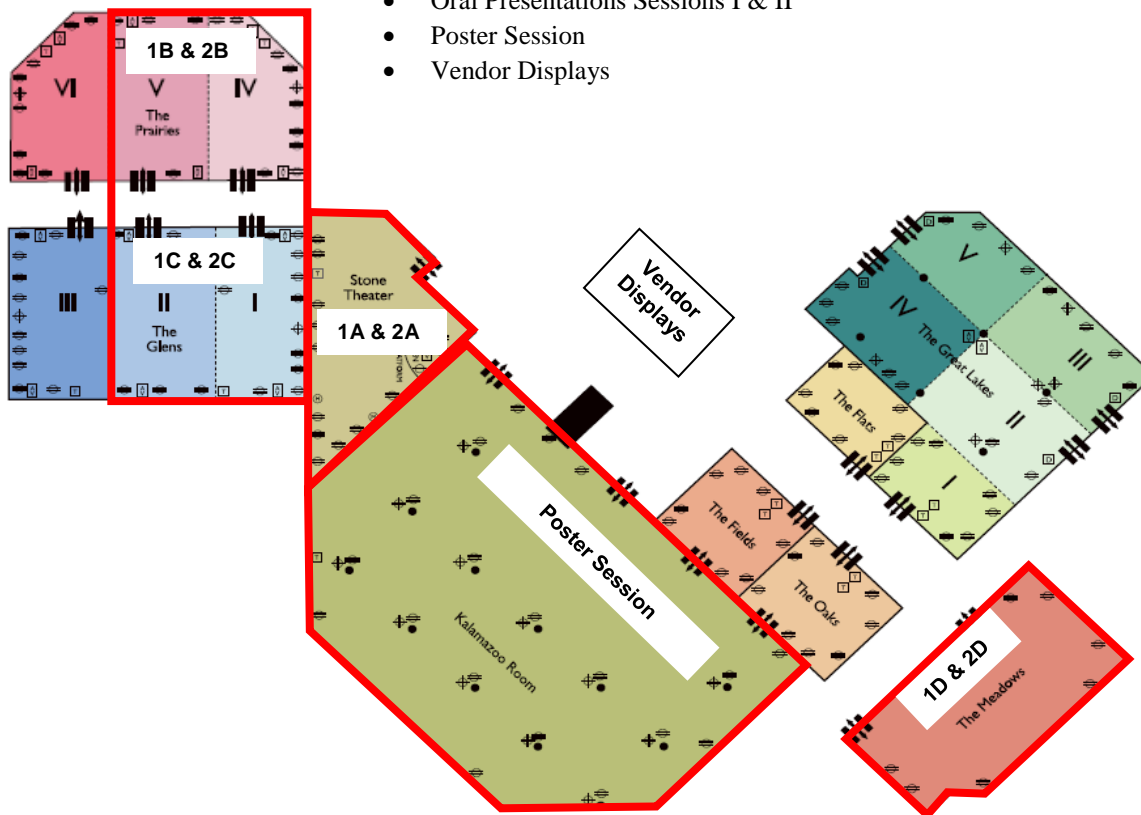
- Keynote Speaker with Lunch
- Afternoon Oral Presentations and Awards



Lower Level

Sessions

- Oral Presentations Sessions I & II
- Poster Session
- Vendor Displays



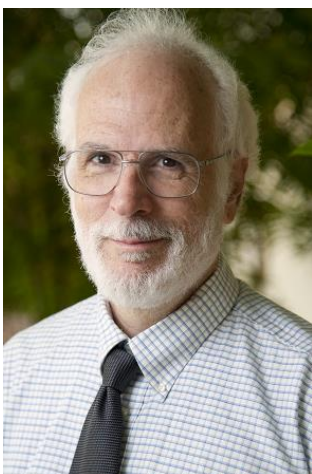
SCHEDULE

8:00 – 8:30 am	Check-in Refreshments available	Lobby Level
8:30 – 9:45 am	Oral Presentation Session 1 Session 1A Session 1B Session 1C Session 1D	Stone Theatre The Prairies IV & V The Glens I & II The Meadows
9:50 – 10:50 am	Poster Presentations	Kalamazoo Room
	Vendor Display Tables	Lower Level Area
11:00 am – 12:15 pm	Oral Presentation Session 2 Session 2A Session 2B Session 2C Session 2D	Stone Theatre The Prairies IV & V The Glens I & II The Meadows
12:15 – 12:25 pm	Break Restrooms, pick up boxed lunch, find seat	
12:30 – 1:40 pm	Lunch / Keynote Speaker	Arcadia Ballroom I & II
1:45 – 3:15 pm	Oral Presentation Session 3 1:45-2:00 pm Clinical Research 2:00-2:15 pm Quality Improvement Research 2:15-2:30 pm Educational Research 2:30-2:45 pm Community Research 2:45-3:00 pm Basic Science Research 3:00-3:15 pm Medical Humanities Research	Arcadia Ballroom I & II
3:15 – 3:30 pm	Award Presentation	Arcadia Ballroom I & II
3:30 pm	Farewell	Arcadia Ballroom I & II

KEYNOTE SPEAKER

The Dr. Robert P. Carter Research Lecture

This is the ninth year of this annual lecture supported by the Board of Western Michigan University Homer Stryker M.D. School of Medicine to celebrate the Research Day activities and to recognize Dr. Carter's commitment and support of research.



Richard Miller, MD, PhD

Professor of Pathology, Associate Director for Research, Geriatrics Center, Research Professor, Institute of Gerontology at the University of Michigan

presents

The Search for Drugs that Slow Aging

Richard A. Miller, M.D., Ph.D., is a professor of Pathology and associate director for research of the Geriatrics Center at the University of Michigan. He received a B.A. degree in 1971 from Haverford College, and M.D. and Ph.D. degrees from Yale University in 1976-1977. After postdoctoral studies at Harvard and Sloan-Kettering, he moved to Boston University in 1982 and then to his current position at Michigan in 1990.

Dr. Miller has served in a variety of editorial and advisory positions on behalf of the American Federation for Aging Research and the National Institute on Aging, and as an editor-in-chief of Aging Cell. He is the recipient of the Nathan Shock Award, the AlliedSignal Award, the Irving Wright Award and the Kleemeier Award for aging research. His main research interests all relate to the control of aging rate in mice, and include ongoing studies of mutations that slow aging, the relation of cellular stress resistance to longevity, mapping of genes that influence lifespan and age-sensitive traits, screens for drugs that extend lifespan in mice, and methods to improve function of T lymphocytes from old donors.

ORAL PRESENTATIONS

SESSION 1A

STONE THEATRE

- Moderator:** Andrey Leonov, MD; Pediatrics and Adolescent Medicine
- 8:30-8:45 am **Evaluation to Determine the Utility of a Pharmacist-Driven Protocol to Discontinue Inappropriate Proton Pump Inhibitors or Histamine-2 Receptor Blockers in an Inpatient Setting.** Chris Jacob, DO; Tracey L. Mersfelder, MD; Monoj Kumar Konda, MD; Jason K. Lam, DO; Suceil L. Sivsammie, MD; Christin M. Campbell; Eric J. Edewaard; Andrew M. Fiore; Aness Al-Khateeb, MD; Kevin J. Kavanaugh, MD
- 8:45-9:00 am **Aeromonas Hydrophila as a Cause of Chronic Diarrhea.** Lauren Lamie, DO; Larry Lutwick, MD
- 9:00-9:15 am **Fourniers Gangrene as the Presenting Sign for Perforated Rectal Cancer. A Rare Presentation of a Highly Fatal Pathology.** Alan Hifko; Jairo Espinosa, MD; Thomas Rohs, MD; William Curtiss, MD
- 9:15-9:30 am **Thallium Toxicity: Complexities of a Diagnosis and Management.** Emily Cordes, DO; Chris Di Felice, MD; Lauren Lamie, DO; Thomas Melgar, MD
- 9:30-9:45 am **Nutritional Assessment of a Charitable Meal Program in Kalamazoo.** Eleanor Yu; Janet Karpus; Melissa Olken, MD, PhD, FHM

SESSION 1B

THE PRAIRIES IV & V

- Moderator:** Liz Lorbeer, EdM; Medical Library
- 8:30-8:45 am **Use of Dopamine in a Statewide Emergency Medical Services System.** Jennifer E. Raae-Nielsen, BS, E; William Fales, MD
- 8:45-9:00 am **Symptomatic Giant Basilar Pseudoaneurysm in a Young Male.** Aydin Tavakoli, MD, MSc; Zhen H. Geng, MD; Lauren S. Piper, DO; Jeffrey W. Miller, MD
- 9:00-9:15 am **Case Report of Late-Onset Bipolar Disorder with EEG Changes after Left Temporal Meningioma Resection.** John Jacob, MD; Arslan Ahmed, DO; Peter Longstreet, MD
- 9:15-9:30 am **A Year in Review: Clarifying the State of Chronic Traumatic Encephalopathy Research in 2016.** Patrick Albright; Dagan Hammar; Xavier Jean; Beau Prey; Nicholas Sweda; Brendan Tamm
- 9:30-9:45 am **Alopecia: A Less Known but Devastating Side Effect of Serotonin Reuptake Inhibitors.** Kinza Tareen; Joshua Hekmatjah; Ruqiya Shama Tareen, MD

ORAL PRESENTATIONS (cont.)

SESSION 1C

THE GLENS I & II

- Moderator:** Mark Schauer, MD; Medicine
- 8:30-8:45 am **Developing a Perinatal Depression Clinic within a Psychiatry Residency Program.** Ruqiya Shama Tareen, MD; Catherine L. Kothari, PhD; Colleen L. MacCallum, MS; Remitha M. Charoth, BS, RN; Suzanne M. Suchyta, MPA; Michael R. Liepman, MD
- 8:45-9:00 am **A Retrospective Review of Clinical Admissions to Afghan National Security Forces Healthcare Institutions.** Jairo Espinosa, MD; Christian Ertl, MD; David Royal, PhD
- 9:00-9:15 am **Patient Safety Reporting: Impact of a Novel Training Program on Medical Residents.** Satya Dalavayi; Serena Chen; Amy Chonghasawat; Michael Behun; Cheryl Dickson, MD
- 9:15-9:30 am **Experimental Characterization and Numerical Simulations of Surgical Knots.** Arz Y. Qwam Alden; Peter Gustafson, PhD; Andrew G. Geeslin, MD; Jeffrey C. King MD
- 9:30-9:45 am **Analysis of Appropriate Initial Shoulder Imaging by Referring Physicians Referred to an Orthopaedic Surgeon for Shoulder Pain.** Christopher Betzle, MD; Keith Kenter, MD

SESSION 1D

THE MEADOWS

- Moderator:** Lisa Graves, MD; Faculty Affairs
- 8:30-8:45 am **Partner Abuse Changes with Pregnancy and Postpartum: A Mixed Methods Analysis.** Catherine L. Kothari, PhD; Angie Moe, PhD; Grace Lubwama, MPH, DPPD
- 8:45-9:00 am **The Impact of Sexually Transmitted Infections on the Birth Outcomes for Women in Kalamazoo, Michigan Between 2008-2014.** Laura Bauler, PhD; Catherine L. Kothari, PhD; Alyssa Woodwyk, MS; Duncan Vos, MS; Terra Bautista, BA
- 9:00-9:15 am **Using Focus Groups to Understand Racial Disparities in Infant Mortality.** Amy Damashek, PhD; Alison Geist; Kalamazoo College Students in Community and Global Health 210, Spring 2015; Ariel Berman, MA; Catherine Kothari, PhD
- 9:15-9:30 am **Pregnancy, Crime and Birth Outcomes.** Lauren Rosenthal, BA; Catherine L. Kothari, PhD; Thomas Duong; Xandie Gold, MD, MPH; Jeff Getting, JD; Alyssa Woodwyk, MS; Heather Rauch
- 9:30-9:45 am **Engagement in Home Visiting Services During the Perinatal Period: Focus Group Findings.** Ariel Berman, MA; Amy Damashek, PhD; Catherine L. Kothari, PhD; Ann Miles, PhD

ORAL PRESENTATIONS (cont.)

SESSION 2A

STONE THEATRE

- Moderator:** Lisa Miller, MD; Surgery
- 11:00-11:15 am **A Stochastically and Biomechanically Accurate Finite Element Approach for Patient Specific Modeling of Cancellous Bone.** Saif Alrafeek; James R. Jastifer, MD; Peter A. Gustafson, PhD
- 11:15-11:30 am **Rare Intraoperative Fracture of Intramedullary Reamer.** Dart Newby; Nicholas Miladore, MD; Karen Bovid, MD
- 11:30-11:45 am **Orthopaedic Traumatologist Preference for Use of Regional Anesthesia in Fracture Management. A Survey of OTA Members.** Tyler Snoap, MD; Jason Roberts, MD; Robert Gorman, MD
- 11:45 am-12:00 pm **Posterior Dislocation of a Total Knee Arthroplasty with a Polyethylene Tibial Post Fracture.** Alexander Connaughton, MD; Mark Noffsinger, MD
- 12:00-12:15 pm **Lower Extremity Surgical Treatment to Improve Function in a Patient with Gollop Wolfgang Complex.** Joshua M. Veenstra, MD; Karen Bovid, MD; Jason Habeck, MD

SESSION 2B

THE PRAIRIES IV & V

- Moderator:** Krishna Jain, MD; Center for Clinical Research
- 11:00-11:15 am **Arrhythmogenic Right Ventricular Cardiomyopathy Associated with Pediatric Cardiac Arrest.** Thomas Pott, MD
- 11:15-11:30 am **Thromboelastography Following Liver Resection.** Brandon Tanner, MD; Gitonga Munene, MD, FACS; Steven Lu, MD; Richa Khatri, MD; Guston Zervoudakis
- 11:30-11:45 am **Success of Retrograde Tibial Artery Approach in Lower Extremity Revascularization.** Samuel H. Lai; Jordan Fenlon; Benjamin Roush; Krishna M. Jain, MD
- 11:45 am-12:00 pm **Success of Atherectomy in Lower Extremity Ischemia Performed in Office Based Lab.** Benjamin Roush; Jordan Fenlon; Samuel Lai; Charles Brewerton; Krishna M. Jain, MD; John Munn, MD; Daniel Johnston, MD; Mark Rummel, MD; Syed Alam, MD
- 12:00-12:15 pm **Impact of Socioeconomic Status, Race, and Insurance Payer on Outcomes following Allogenic Hematopoietic Cell Transplantation.** Nicole Foley; Aaron Logan, MD, PhD

ORAL PRESENTATIONS (cont.)

SESSION 2C

THE GLENS I & II

- Moderator:** Tom Melgar, MD; Medicine-Pediatrics
- 11:00-11:15 am **Times of Peak Innate and Adaptive Immunity in Peripheral Blood Subsets: Potential Implications for Study Design, Assessment of Immune Function, and Therapeutic Intervention in Type 1 Diabetes.** McKenzie Akers; Heather Rauch; Alyssa Woodwyk, MS; Thomas Blok, MD; Patrice Mason, RN; Daniel Perry, PhD; Todd Brusko, PhD; Clive Wasserfall, MS; Mark Atkinson, PhD; Craig Beam, PhD
- 11:15-11:30 am **Adverse Reaction to Nebulized Budesonide in a Patient with Mast Cell Activation Syndrome.** Alissa Welsh, MD; Andrey Leonov, MD
- 11:30-11:45 am **Successful Desensitizations with Ceftriaxone and Azithromycin in a Patient with Mast Cell Activation Syndrome.** Patrick Staso, MD; Andrey Leonov, MD
- 11:45 am-12:00 pm **Gastrocnemius Contracture in Patients with Rheumatoid Arthritis.** James Jastifer, MD; Adam Green, BS
- 12:00-12:15 pm **Hindfoot Moment Arm and Pes Planovalgus Radiographic Parameters in the Adult Acquired Flatfoot and Normal Patient Populations.** Matthew Jaykel, MD; Adam Green, BS; James Jastifer, MD

SESSION 2D

THE MEADOWS

- Moderator:** Ruqiya Shama Tareen, MD; Psychiatry
- 11:00-11:15 am **Chronic Refractory Candida Parapsilosis Infecting the Pneumonectomy Stump in a Patient with Cystic Fibrosis.** Joseph Lamar, MD; Myrtha Gregoire-Bottex, MD; Lauren Vandenbos; Mitchel Kardux; Teresa Bailey, PharmD
- 11:15-11:30 am **Vancomycin Resistant Enterococcal Endocarditis Presenting as Spondylodiskitis.** Meveshni Govender, MD; Larry Lutwick, MD; Yirong Zhu
- 11:30-11:45 am **Infection of Atrial Septal Defect Closure Device: Even Low Turbulence Devices Get Infected.** Michelle L. Knapp; Larry Lutwick, MD; Janie Katarsky, DO
- 11:45 am-12:00 pm **Non-Hemolytic Group B Streptococcus as a Cause of Chemotherapy Port Infection.** Ray-Young Tsao; Larry Lutwick, MD
- 12:00-12:15 pm **Single Incision Laparoscopic Resection of a Giant Ovarian Mature Cystic Teratoma.** Hira H. Abidi, MD; Michael J. Leinwand, MD

ORAL PRESENTATIONS (cont.)

The following presentations represent the top-scoring abstracts in each of the six topic areas.
Together with Dean Jenson, we congratulate all of the authors on their fine work.

SESSION 3

ARCADIA BALLROOM

Moderator:	Craig Beam, PhD; Epidemiology & Biostatistics
1:45-2:00 pm	Treatment of Headache in the ED: Haloperidol in the Acute setting (THE-HA Study) Kim Aldy, DO; Jessica McCoy, MD; Elizabeth Arnall, DO; Joshua Petersen, PharmD
2:00-2:15 pm	Assessment of the Accuracy and Effectiveness of Pediatric Drug Dosing Tools used by Paramedics. Maria Willoughby-Byrwa, M.Ed, E; Donald Sefcik, DO, MBA; William Fales, MD, FACEP, FAEMS
2:15-2:30 pm	Design and Evaluation of a More Realistic Tube Thoracostomy Task Trainer. Mark Williams; Richard Lammers, MD
2:30-2:45 pm	A Multivariable Analysis of Risk Factors Affecting Low Birth Weight Infant Mortality in Kalamazoo County. Teresa Evans; Jennifer Kim; Samuel Lai; Dart Newby; Duncan Polot; Terra Bautista, BA; Duncan Vos, MS; Catherine L. Kothari, PhD
2:45-3:00 pm	Deafferentation and Direct Injury Case Different Microbial Response Profiles in the Adult Zebrafish Olfactory Bulb Susanna R. Var; Christine A. Byrd-Jacobs, PhD;
3:00-3:15 pm	Burnout in Healthcare Professions: Reigniting the Flame. Tyler Gardner; Auditi Kundu; Amrith Shettigar; Daphne Darmawan; Yen-Yu Tina Chen

Oral Presentations

EVALUATION TO DETERMINE THE UTILITY OF A PHARMACIST-DRIVEN PROTOCOL TO DISCONTINUE INAPPROPRIATE PROTON PUMP INHIBITORS OR HISTAMINE-2 RECEPTOR BLOCKERS IN AN INPATIENT SETTING

Chris Jacob, DO; Tracey L. Mersfelder, MD; Monoj Kumar Konda, MD; Jason K. Lam, DO; Suceil L. Sivsammeye, MD; Christin M. Campbell; Eric J. Edewaard; Andrew M. Fiore; Aness Al-Khateeb, MD; Kevin J. Kavanaugh, MD

WMU Homer Stryker M.D. School of Medicine, Department of Internal Medicine; Ferris State University/Borgess Medical Center/WMU Homer Stryker M.D. School of Medicine, Pharmacy; WMU Homer Stryker M.D. School of Medicine, Department of Internal Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Medicine-Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Internal Medicine; Borgess Medical Center, Pharmacy; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; Michigan State University, College of Osteopathic Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Internal Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Internal Medicine

INTRODUCTION: Overutilization of proton pump inhibitors (PPIs) and histamine-2 receptor (H2R) blockers is a well-known and published statistic, especially when used for stress ulcer prophylaxis (SUP). Different strategies have attempted to avoid unnecessary use and adverse effects, as well as to decrease cost.

RATIONALE/OBJECTIVE: Our study aims to determine the utility of a pharmacist-driven protocol; the protocol would authorize the pharmacists to discontinue inappropriate use of PPI or H2R blockers in the non-intensive care population.

METHODS: Patient names were retrospectively obtained using a computer reporting system within the institution's electronic medical record. The system identified all patients admitted to the hospitalist service prescribed an oral PPI or H2R blocker during a one-month period. The charts were reviewed to determine whether one of these was a home medication or had documented indication(s) for their use. If neither of these criteria were met, the acid-suppressant medication could have been discontinued. The Institutional Review Board reviewed the protocol and determined non-study status.

RESULTS: The patient's average age was 68.53 years. One hundred and thirty-one charts were reviewed, 72% of which were excluded because the PPI or H2R blocker was a continuation of a home regimen. Ten charts had appropriate indications documented. Excluding these, 19.8% of patients on either a PPI or H2R blocker would have met criteria for discontinuation.

DISCUSSION: The literature has shown that up to 56% of patients received SUP without appropriate indications. Our study evaluated patients for all indications. The lower percentage found in our study may be due to exclusion of intensive care patient, all provider groups, and patients prescribed either a H2R blocker or PPI prior to admission.

CONCLUSION: This phase 1 study demonstrated a need for a pharmacist-driven protocol to decrease the inappropriate use of PPI or H2R blockers in the hospital setting.

AEROMONAS HYDROPHILA AS A CAUSE OF CHRONIC DIARRHEA

Lauren Lamie, DO; Larry Lutwick, MD

WMU Homer Stryker M.D. School of Medicine, Department of Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Medicine and Biomedical Sciences

INTRODUCTION: *Aeromonas hydrophila* is an uncommon human pathogen which is a rare cause of gastroenteritis. The modern era of molecular diagnostics have produced broad spectrum nucleic acid based screening panels for viral, bacterial, fungal and protozoan pathogens that may cause infection. We present a case of *Aeromonas*-associated chronic colitis that was identified on standard microbiologic culture but was not found using a broad gastroenteritis molecular screening as the organism is not part of the screening.

CASE REPORT: A 63-year-old woman with a history of hepatitis C-associated cirrhosis was admitted with a 4 week history of watery diarrhea. She lived in a semirural environment using well water. An out-patient evaluation produced a stool culture positive for *A. hydrophila* sensitive to trimethoprim/sulfamethoxazole (SXT) and ciprofloxacin and she was treated with SXT without response. After several more weeks of watery diarrhea without blood or mucous and without constitutional symptoms, the patient was admitted for further workup. Two additional stool cultures revealed *A. hydrophila*, blood cultures were negative and a stool molecular marker screening panel was negative including the viral causes of diarrhea and the *E. coli* enteropathogens but not *Aeromonas*. *C. difficile* was negative as was stool ova and parasite assay and colonoscopy revealed erythema, small ulcers covered with a purulent discharge. Pathology suggested chronic colitis. Ciprofloxacin was administered which caused disappearance of the diarrhea and clearance of the *A. hydrophila* in the stool.

CONCLUSION: *Aeromonas hydrophila* is a fresh water Gram negative bacillus associated with skin and soft tissue infection and is a rare cause of enteric infection in man which can be persistent in nature. This report underscores that enteric infection can be persistent and that the modern DNA diagnostic batteries to diagnose infections in the respiratory and gastrointestinal tracts can be false negative if the organism is not part of the panel.

FOURNIER'S GANGRENE AS THE PRESENTING SIGN FOR PERFORATED RECTAL CANCER. A RARE PRESENTATION OF A HIGHLY FATAL PATHOLOGY

Alan Hifko; Jairo Espinosa, MD; Thomas Rohs, MD; William Curtiss, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; Borgess Medical Center, Department of Trauma Surgery; Borgess Medical Center, Department of Trauma Surgery

INTRODUCTION: Fournier's Gangrene is a necrotizing fasciitis of the perineum and perianal regions. Infection is typically polymicrobial with both anaerobes and aerobes present. Sources of infection typically initiate from the skin, urinary tract or anorectal tract. This case report describes the sixth case in the literature of perforated rectal carcinoma presenting as Fournier's gangrene. Co-occurrence of these conditions is rare, but potentially fatal, thus increasing physician awareness of the various presentations of rectal carcinoma is essential to improve patient outcomes.

CASE PRESENTATION: A 63-year-old male presented to the emergency department with a one-month history of perineal pain and erythema. He had seen his primary care physician multiple times and was diagnosed with cellulitis and treated with topical antibiotics. He presented with hemodynamic instability with elevations in white blood cell count, BUN, creatinine, lactic acid, and creatinine kinase. CT scan of the abdomen and pelvis revealed extensive subcutaneous air in the right lower abdominal wall and perineum extending through the right inguinal canal and involving the right testicle. He was taken emergently to the operating room for extensive radical debridement of necrotic tissue and a right orchiectomy. The operation ended prematurely with plans for further debridement due to worsening hemodynamic instability requiring multiple vasopressors. The patient was stabilized and returned to the operating room 18 hours later, where a diverting end sigmoid colostomy was performed. Debridement of the perineum during that operation revealed a necrotic and perforated rectum for which the patient underwent an abdominoperineal resection (APR) 24 hours later. Patient had a complicated hospital stay with multiple further debridement of his right lower extremity extending from his abdominal wall into the popliteal fossa. In addition, he developed multiple organ failure and on post-operatively day eleven from his index procedure he expired. Final pathology from the APR revealed an 8.2 x 5.4 cm perforated rectal mass consistent with a moderately differentiated adenocarcinoma extending through the muscularis propria into the subserosal tissues. 2/18 lymph nodes were positive for adenocarcinoma.

CONCLUSION: Fournier's gangrene is a severe infection of the perineum requiring emergency radical surgical debridement and broad-spectrum antibiotics. It has high morbidity and mortality rates with studies reporting an average of 20% mortality rate. Although, it is an emergent surgical condition it is imperative for both primary care physicians and surgeons alike to be cognizant of this condition, as timing of diagnosis and early operative debridement has been shown to have improve outcomes.

THALLIUM TOXICITY: COMPLEXITIES OF DIAGNOSIS AND MANAGEMENT

Emily Cordes, DO; Chris Di Felice, MD; Lauren Lamie, DO; Thomas Melgar, MD

WMU Homer Stryker M.D. School of Medicine, Department of Internal Medicine/Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Internal Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Internal Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Internal Medicine/Pediatrics

INTRODUCTION: Thallium is a heavy metal, best known as a rodenticide that is occasionally involved in intentional or accidental poisonings. On average, one case of thallium toxicity is reported each year. Classically, thallium toxicity presents acutely with gastrointestinal symptoms, and chronically as peripheral neuropathy with alopecia. Many cases result in neurologic impairment or death, due to delay in diagnosis. Several treatment regimens have been proposed for thallium toxicity, but no single approach has been advantageous. We describe a case of thallium toxicity with rising in-hospital thallium levels treated with Prussian blue and Continuous Renal Replacement Therapy (CRRT).

CASE: A 41 year old man originally presented with abdominal pain and bilateral lower extremity paresthesia. He was diagnosed with atypical Guillan-Barré Syndrome, received four days of intravenous immunoglobulin and was discharged to neurorehabilitation. He presented 10 days later with personality changes, hallucinations, abdominal pain and worsening bilateral lower extremity paresthesia. His physical exam was significant for plantar sensory loss, 4/5 strength in bilateral lower extremities, absent patellar and Achilles reflexes and alopecia. Initial workup, including heavy metal screen was negative. Electromyography demonstrated a subacute distal axonal peripheral neuropathy. After an extensive workup, a serum thallium level drawn seven weeks after symptom onset was noted to be elevated at 158 ng/ml (reference 0-1ng/ml). The serum thallium level increased to 197 ng/ml prior to initiation of CRRT and Prussian blue therapy. The patient received a total of 30 days of Prussian blue and 22 days of CRRT with neurologic improvement. After extensive investigation, the source of the thallium was not found.

DISCUSSION: Although well defined, thallium toxicity is extremely rare and therefore difficult to diagnose. Thallium is not routinely included in heavy metal screening. Although the source of thallium was not found in this case, we suspect that thallium was being surreptitiously administered in the hospital. The acute rise in serum thallium cannot be explained by mechanisms that cause tissue redistribution. Finally, CRRT with administration of Prussian blue was successful in treatment of chronic thallium toxicity. Success of CRRT is most likely due to the fact that in this case, thallium was already distributed into the tissues and not concentrated in the circulation, as in acute thallium toxicity. This case poses a diagnostic challenge for the internist who will need to have a high index of suspicion for thallium toxicity, as a delay in treatment may be life threatening.

NUTRITIONAL ASSESSMENT OF A CHARITABLE MEAL PROGRAM IN KALAMAZOO

Eleanor Yu; Janet Karpus; Melissa Olken, MD, PhD, FHM

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; Ministry with Community, Food Program; WMU Homer Stryker M.D. School of Medicine, Department of Internal Medicine

BACKGROUND: Food security is of large concern to low-income individuals. Soup kitchens aim to serve this population, but often operate under limited resources. Although each soup kitchen differs, literature shows that despite providing adequate protein and calories, they are often inadequate in fiber and micronutrients, which are obtained predominantly from fresh fruits and vegetables. These nutritional deficiencies place individuals at risk for anemia, poor wound healing, skin issues, osteoporosis, depression, and birth defects. In Kalamazoo, less is known about the nutritional quality of soup kitchen meals and the potential nutritional deficiencies in the population they serve.

STUDY PURPOSE: This study aims to analyze the nutritional content of meals offered at Ministry with Community (MwC), a non-profit soup kitchen and resource center for homeless and low-income individuals in Kalamazoo.

METHODOLOGY: Five meals were observed, weighed, and analyzed during a week in the summer of 2016. A nutritional assessment was completed using nutrition labels and the Nutritionix database, which pulls information from the USDA National Nutrient Database. Since MwC offered two meals per day, the observed lunches were compared to half the Recommended Dietary Allowances for a 2,000 calorie diet and 2015-2020 USDA Dietary Guidelines for Americans.

RESULTS: In addition to food cooked in-house from scratch, each of the lunch meals was supplemented by food donations from the local food pantry, grocery stores, fast food chains, catered events, or religious organizations with a certified kitchen. Each meal evaluated met 90% or greater of the daily caloric intake recommended for lunch. Cholesterol, vitamin A and vitamin C met daily intake requirements, but fiber, calcium, and iron were low. On days meals were supplemented by outside sources, saturated fats exceeded daily intake. Protein content was variable, but averaged 150% of the recommended daily value for lunch. Fats consistently exceeded daily intake. Sodium also exceeded daily intake, but exact values were difficult to quantify due to large batch cooking and individual addition. Micronutrients were not measured.

CONCLUSION: Adequate caloric intake alone does not ensure a full nutrient profile. While kitchen staff and client nutrition education are of modest benefit, limited resources and seasonal donations are the true drivers of nutrient content. Further research in this population is warranted to understand the long term health impacts for clients, especially for those with different nutritional needs such as children or pregnant women.

USE OF DOPAMINE IN A STATEWIDE EMERGENCY MEDICAL SERVICES SYSTEM

Jennifer E Raae-Nielsen, BS, E; William Fales, MD, FACEP, FAEMS

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Department of Emergency Medicine

BACKGROUND/INTRODUCTION: Dopamine is a potent, sympathomimetic medication used in emergency medicine and critical care to improve blood pressure (BP) in selected types of circulatory shock and to treat symptomatic bradycardia refractory to atropine and other interventions. While dopamine has been used by paramedics for many years, the prehospital experience in a statewide EMS system has not previously been reported.

OBJECTIVE/PURPOSE/RATIONALE: Describe the prehospital use of dopamine in a statewide EMS system.

MATERIALS & METHODS: This is a retrospective, observational study of records obtained through the Michigan EMS Information System (MI-EMSIS). MI-EMSIS was filtered for the use of dopamine during 2015. The narrative report was manually reviewed and data were abstracted. In addition to basic demographics, clinical data such as pre/post-dopamine vital signs were obtained as well as post-dopamine adverse effects. Records were excluded for inter-facility transfers, dopamine not given, and when insufficient data existed. Standard descriptive statistical analysis was used.

RESULTS & DISCUSSION: During the study period 1.6 million records were included in MI-EMSIS with 303,683 medications (excluding oxygen and intravenous fluids) administered. Dopamine was administered to 136 patients, with 22 patients excluded secondary to being inter-facility transports (18), having inadequate data (1), or no dopamine used (1), or other reason (2). There were 114 cases included for analysis representing <0.01% of all medications administered. The median (IQ) age was 67 (55,82) years and 57% were male. Cardiac arrest was the primary impression in 101 (88.6%) cases with 31 (27.2%) experiencing a post-dopamine cardiac arrest. The median (IQ) pre- and post-dopamine systolic and diastolic BPs were 79/51 (69/42, 101/64) and 93/58 (75/44, 114/74), respectively with the maximum post-dopamine BP 222/142. The median pre- and post-dopamine heart rate was 72 (55,91) and 81 (62, 103), respectively. The maximum post-dopamine heart rate was 179. Significant post-dopamine arrhythmias were noted in 9 (7.9%) patients with ventricular fibrillation (2, 1.8%), ventricular tachycardia (3, 2.6%), and atrial fibrillation (4, 3.5%) reported. A pre-dopamine fluid bolus was documented in 55 (48.2%) cases, with the median (IQ) volume of 500 (400, 1200) mL administered. Dopamine use was highly variable by county and not related to urban or rural location.

CONCLUSION: In a statewide EMS system, prehospital dopamine administration was rarely reported and most commonly associated with cardiac arrest. Post-dopamine improvements in BP and heart rate were common, although subsequent cardiac arrest was not infrequent. Serious post-dopamine arrhythmias and severe hypertension and tachycardia were uncommon.

SYMPTOMATIC GIANT BASILAR PSEUDOANEURYSM IN A YOUNG MALE

Aydin Tavakoli, MD, MSc; Zhen H. Geng, MD; Lauren S. Piper, DO; Jeffrey W. Miller, MD

WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family and Community Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Surgery/Neurosurgery

Brain aneurysms can go undetected for years and are usually asymptomatic. Approximately 3% of the population have them and live a full life with no associated comorbidities. Once hereditary and familial factors are excluded, the main risk factors associated with aneurysms and subarachnoid hemorrhage are hypertension, cigarette smoking, and alcohol. If diagnosed prior to a bleed, the prognosis and treatment of brain aneurysms depends most importantly on size and location. Cutting edge endovascular coiling or flow divertors have proven to improve clinical outcomes in some; otherwise medical management is the mainstay of therapy.

This is the case of a 36-year-old man who presented to the emergency department with mild dysarthria, dysphagia, and worsening headaches associated with cough, only to be diagnosed with a 3.5x3.0cm mid basilar giant pseudoaneurysm compressing his brainstem. He had a long-standing history of smoking 5-10 marijuana cigarettes per day alongside heavy tobacco and methamphetamine drug use.

His physical exam only revealed mild dysarthria and hypertension.

Because of dysphagia, a CT scan with contrast of the soft tissue of neck was performed. This revealed a vascular lesion adjacent to his midbrain and brainstem; subsequently, an MRI/MRA and cerebral arteriogram were performed to better characterize a giant basilar pseudoaneurysm. Neuroendovascular surgery consult was obtained which prompted discussions as to the significant morbidity, mortality, and prognosis of open surgical or endovascular repair. Typically, endovascular techniques are associated with improved clinical outcomes for ruptured and unruptured brain aneurysms. Because of our patient's aneurysm size and location, decision was made to treat via medical therapy with blood pressure goals of less than 120/80 and anticoagulation. Our patient was discharged with close follow up and instructions to avoid all smoking, illicit drugs, stimulants, and excessive straining in anyway.

This is the case of a common complaint with an uncommon cause. The advances in medical science were only of value to diagnose the reasons for this young man's complaints – not to cure them. The ethical dilemma to intervene with a high complication risk or to allow for the natural progression of the disease is complicated by his young age and lack of supporting data. He has a 10% survival rate for the next 5 years. Knowing about a diagnosis where there are no 'good' options for treatment is still valuable. He was given a chance to put his life in order and actively focus on the important things in his life.

CASE REPORT OF LATE-ONSET BIPOLAR DISORDER WITH EEG CHANGES AFTER LEFT TEMPORAL MENINGIOMA RESECTION

John Jacob, MD; Arslan Ahmed, DO; Peter Longstreet, MD

WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry

We discuss the development of a non-hereditary, late-onset bipolar illness (LOBI) in a patient with EEG changes post-meningioma resection. The patient also presented with viscosity and heightened social cohesion, as well as worsening deficits in working memory.

INTRODUCTION: The onset of Bipolar Disorder has a bimodal age distribution, with a second peak of approximately 10 percent of cases occurring in late adulthood, after the age of 50.^{2,3,10} LOBI is often more associated with neurologic illness and a greater extent of heterogenous presentations and disease course.^{1,3,9,11} Bipolar disorder is thought to be highly heritable, with most cases having some family history of affective disorders.⁶ Abnormal but non-specific EEG findings, which often present as left-sided small sharp spikes in mania, have been nearly exclusively tied to non-hereditary bipolar disorder.^{7,8} Viscosity, heightened social cohesion, and working memory deficits are more linked with temporal lobe epilepsy (TLE) than bipolar disorder.^{4,5}

CASE REPORT: 67-year-old Caucasian female, 2 weeks post left temporal lobe meningioma resection, admitted for manic symptoms after 6-month history of worsening behavior. She had a 3-month history of a decreased need for sleep. Over the course of the 2 months prior to admission, she had sent over 20,000 threatening emails to an individual which resulted in multiple visits from police as well as a personal protection order being filed against her. Her acute worsening in behavior was attributed an insidiously growing left-temporal meningioma, for which she had been followed by her neurologist for 5 years. This meningioma displayed slow growth and was associated with some spike and sharp wave epileptiform activity on EEG. 2 weeks prior to admission, meningioma was electively excised, but her behavior and epileptiform activity worsened. She also displayed significant impairment of working memory, viscosity, and heightened social cohesion. After admission to the floor, she was started on divalproex sodium with some improvement, but EEG abnormalities, working memory, and behavior markedly improved after the introduction of risperidone and journaling to deal with memory deficits. Condition on discharge was improved, but memory deficits were still prominent. Discussion This case has multiple organic components: recent excision of a temporal meningioma and LOBI with no family history of bipolar disorder. While she manifested discrete phenomena of mania, she showed several symptoms consistent with TLE.

CONCLUSION: LOBI in a patient who showed clinical traits of TLE and spike and sharp wave epileptiform required an antiepileptic mood-stabilizer with an atypical antipsychotic for management. Despite treatment, acute-onset memory deficits remained.

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A YEAR IN REVIEW: CLARIFYING THE STATE OF CHRONIC TRAUMATIC ENCEPHALOPATHY RESEARCH IN 2016

Patrick Albright; Dagan Hammar; Xavier Jean; Beau Prey; Nicholas Sweda; Brendan Tamm

WMU Homer Stryker M.D. School of Medicine, Medical Students Class of 2019

INTRODUCTION: Chronic traumatic encephalopathy (CTE) is a progressive neurodegenerative disease associated with repeated mild traumatic brain injury. In the past decade, CTE has raised concern regarding safety in athletics and has been subject to intense media coverage. The medical and lay community continue to debate its impact as it pertains to athletics, military trauma, and domestic abuse. Despite newfound focus in recent years, fundamental knowledge gaps persist in understanding CTE.

PURPOSE: To better understand the state of current CTE research, we performed a systematized review of publications from 2016. The study clarifies the manner in which CTE research has evolved over time, distinguishes the various areas of research as of 2016, and identifies knowledge gaps requiring further investigation.

METHODS: We completed a PubMed search with MeSH terms Chronic Traumatic Encephalopathy and CTE on publications released after January 1st, 2016. The search places priority on articles considered to have had the most impact in the past year based on their number of times cited and impact factor. The various papers are organized into categories based on their primary focus: Cellular and Molecular Mechanisms, Pathology and Pathophysiology, Antemortem Diagnosis, Suicide, Risk and Protective Factors, Review articles, and Controversy and Challenges in the diagnosis of CTE.

RESULTS: After applying inclusion criteria, 136 articles were identified and categorized. Efforts to identify impact articles from the overall search cohort are ongoing as of abstract submission in order to avoid study exclusion. Search results demonstrate the breadth of ongoing research and the areas in which researchers made particularly notable achievements in 2016. Of greatest note, a NINDS/NIBIB consensus panel (McKee et al. 2016) published a series of studies to standardize neuropathological criteria for post-mortem diagnosis of CTE and to distinguish CTE from other neurodegenerative tauopathies. Furthermore, significant research was published in the above categories including the development of biomarkers for antemortem diagnosis of CTE and the impact of cognitive reserve on the progression of symptomatic disease.

DISCUSSION: Despite increased awareness of CTE in the medical community, debate continues over the underlying pathogenic mechanism and its status as its own entity rather than as a subset of another neurodegenerative disease. A knowledge gap exists in the ability to make a definitive antemortem diagnosis of CTE and requires further research. Overall, this review accomplishes its primary aims of clarifying the state of current CTE research and identifying areas for future direction.

ALOPECIA: A LESS KNOWN BUT DEVASTATING SIDE EFFECT OF SEROTONIN REUPTAKE INHIBITORS

Kinza Tareen; Joshua Hekmatjah; Ruqiya Shama Tareen, MD

Michigan State University College of Human Medicine, College of Human Medicine; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2020; WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry

INTRODUCTION: Hair loss, especially diffuse scalp alopecia, is an uncommon but a very distressing side effect of many medications including some common psychotropic and serotonin selective reuptake inhibitors (SSRIs). Among the medications in this group Fluoxetine, Paroxetine and Sertraline are reported to be clearly linked with loss of hair. Fluoxetine is reported to have caused alopecia in 725 cases, Paroxetine in 30 cases, and Sertraline in 46 cases, while one case of alopecia each has been reported to be caused by Venlafaxine and Fluvoxamine. Swedish registry database search linked Citalopram to cause alopecia however, there is no case report of Citalopram induced alopecia reported in literature to our knowledge.

CASE REPORT: A 76 years old female with past medical history of hypertension, diabetes, COPD and renal failure. She was referred to psychiatry clinic by her nephrologist due to “bizarre behavior” leading her in ED 3 times in last 4 months. She had become irritable, argumentative, unable to sleep and insisted on cooking in the middle of night. She was started on Quetiapine 25 mg, with no improvement. She denied any symptoms of mood, anxiety or psychotic disorders, she scored 24/28 on Folestin examination and was diagnosed with Frontotemporal dementia with behavioral problems. Quetiapine was discontinued, replaced with Aripiprazole 5 mg daily. Her behavior improved, she started sleeping well, however she started feeling depressed. Citalopram 10 mg was added to regimen, which improved her mood. The following month she began complaining of hair thinning, which continued until she lost significant amount of scalp hair. Citalopram was tapered to discontinue. Patient noticed improvement in hair loss and experienced regrowth of hair, within a few months she regained significant amount of hair.

DISCUSSION: Pathologic alopecia is caused by exposure to certain medications, infections, endocrine imbalance, stress, trauma, or autoimmune disease. The principal underlying pathologic alopecia is the disruption of either the anagen effluvium or telogen effluvium phase of hair cycle. The exact mechanism by which SSRIs effect each phase of hair cycle is unknown, though SSRIs likely cause interruptions of the telogen phase. The best evidence linking alopecia to the use of SSRIs, is withdrawing medication resulting in reversal of alopecia, as was in our case.

CONCLUSION: SSRIs induced alopecia is a rare but devastating side effect for patients. Early recognition, and withdrawal of agent in conjunction with reassurance to patient that hair loss is reversible can help patient overcome this problem.

DEVELOPING A PERINATAL DEPRESSION CLINIC WITHIN A PSYCHIATRY RESIDENCY PROGRAM

Ruqiya Shama Tareen, MD; Catherine L. Kothari, PhD; Colleen L. MacCallum, MS; Remitha M. Charoth, BS, RN;
Suzanne M. Suchyta, MPA; Michael R. Liepman, MD

WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry; WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry; WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry

INTRODUCTION: About 12.7% of women screen positive for depression during pregnancy; this increases to 21.9% during the 12-month postpartum period. When identified, perinatal depression is amenable to a variety of treatment modalities including pharmacotherapy for severe cases. Despite the availability of effective treatment and the frequency of contact with medical providers, as many as 50 to 57% of women suffering from perinatal depression fail to get treatment they need due to barriers both within and outside the healthcare system. To improve the delivery of care to perinatal women in our community, a Women's Behavioral Health Clinic (WBHC), was established within Wmed psychiatry residency program. The WBHC was developed to (1) assess the feasibility of establishing a psychiatric clinic focused on treating perinatal women (2) determine if the WBHC treatment improves depression in perinatal women, and (3) to identify psychosocial factors that impact the success of treatment.

PURPOSE: To determine the effectiveness of combined psychopharmacological and supportive psychotherapeutic treatments in women with perinatal mood disorders, and the proportion benefitting from psychiatric care.

METHODS: The Mother's Mind Matters project, a community wide education effort about perinatal depression promoted early and frequent prenatal mood disorder screening by obstetrics providers and prompt treatment or referral for psychiatric services. While most women identified were referred for psychotherapy, more complex cases required psychiatric care. Over 33 months, 271 perinatal women were referred to the Women's Behavioral Health Clinic (WBHC) established within the psychiatric residency program of Western Michigan University Homer Stryker School of Medicine. One-hundred women had ≥ 2 visits, and 64 women had multiple Edinburgh Postnatal Depression Scale (EPDS) scores recorded.

RESULTS: Number of visits was 6 ± 4 (median=5, mode=3). Baseline EPDS mean score =20.5, and last measured EPDS mean score =7.7 ($p < 0.0001$). EPDS < 11 (remission) was achieved in 61%, EPDS < 13 in 73%. Average rate of score change =6.6 points/visit, averaging 3 visits to remission, and =1.6 points/week, averaging 2 months to remission. Race was the only variable significantly associated with EPDS reduction. About 1/3 showed no significant improvement in EPDS scores, either continuing to struggle under psychiatric care or dropping out altogether. Three women required hospitalization, primarily for psychoses.

CONCLUSIONS: Brief psychiatric intervention with appropriate use of psychotropic medications represents effective management for most of the severe cases of perinatal mood disorder in our community. Case management to keep women engaged in treatment may increase effectiveness, especially among those experiencing poverty and other social problems.

A RETROSPECTIVE REVIEW OF CLINICAL ADMISSIONS TO AFGHAN NATIONAL SECURITY FORCES HEALTHCARE INSTITUTIONS

Jairo Espinosa, MD; Christian Ertl, MD; David Royal, PhD

WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; WMU Homer Stryker M.D. School of Medicine, Department of Surgery; US Navy Reserves, Vanderbilt Brain Institute

BACKGROUND: Few published reports have examined the numbers of civilian injuries treated at Military Treatment Facilities in the Afghan Theater of Operations. However, review of Department of Defense Trauma Registry revealed a persistent percentage of civilians treated by NATO, and this study compares the proportion of civilians served by Afghan and Coalition military hospitals between 2009 and 2013.

METHODS: A retrospective review of records from Department of Defense trauma Registry for Coalition data, and Afghan data from the Office of the Inspector General. We assessed changes in the proportion of civilians served between 2009 and 2013 at Afghan and Coalition hospitals. Results- There was a significant percentage (21.55%) of civilians served at both Afghan and Coalition hospitals. While the total population of Afghan Nationals treated remained steady, the number of total civilians decreased over this time period. To account for this, the percentage of military personnel increased at Afghan military hospitals. In Coalition hospitals the civilian population increased between 2009 and 2011 and then decreased between 2011 and 2013.

CONCLUSIONS: For all hospitals, whether Afghan or Coalition hospitals, there was a persistent level of civilian admissions. A downward trend for civilian patients in the Coalition hospitals and a similar increase in Afghan hospitals was expected. However the numbers for Afghan hospitals instead showed a downward trend, potentially from the loss of logistical assistance provided by Coalition forces in transferring patients to Afghan hospitals. As evidenced by our data, future missions should plan to provide care for this civilian population, by allocating funding and appropriately training personnel. Additionally, logistical concerns of transferring to host-nation facilities and training host-nation providers will require foresight, planning and diplomatic overtures, not always included in tactical decision making.

PATIENT SAFETY REPORTING: IMPACT OF A NOVEL TRAINING PROGRAM ON MEDICAL RESIDENTS

Satya Dalavayi; Serena Chen, Amy Chonghasawat, Michael Behun, Cheryl Dickson, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Class of 2018; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Department of Health Equity & Community Affairs

INTRODUCTION: The importance of patient safety reporting in the practice of medicine has become evident since the Institute of Medicine (IOM) published “To Err is Human” in 1999. There have been previous studies that have identified the importance of reporting incidents regarding patients’ safety, however few have identified how to teach this topic effectively.

PURPOSE: We aim to identify components of an educational presentation that medical interns and residents consider beneficial for learning about the significance and role of patient safety reporting in medical practice.

METHODS: The design was a live, educational group experience using real patient cases. The participants were given real patient cases and divided into small groups to identify issues that affected patient safety. Participants had a large group discussion of the patient safety issues and the appropriateness of patient safety reporting led by a discussion leader. The session ended with step-by-step sample report submissions at local hospitals by discussion leaders. To assess the effectiveness of our efforts, we administered a questionnaire pre and post instruction and analyzed with a Fisher’s Exact test.

RESULTS: Our session had 26 total participants. We determined that following the session, residents could better identify when ($p < 0.001$) and how ($p < 0.05$) to file a patient safety report. There was no significant improvement in residents’ knowledge of what constitutes an error that could be submitted through a patient safety report. Participants opined that case-based discussion and mock report filing having the greatest impact on learning.

DISCUSSION: With increased recognition of the importance of reporting and learning from adverse events, there is a growing culture of improved patient safety during medical care. However, studies have shown that despite an appreciation for the significance of patient safety reporting, a minority of faculty and resident physicians actually report patient safety events. Previous studies have suggested that earlier training in recognizing and reporting medical errors may encourage improved event reporting later in a medical career. This knowledge may be used to encourage and improve curriculums regarding patient safety reporting education and its relevance in medical undergraduate and graduate education, allowing for better practices as full medical practitioners.

EXPERIMENTAL CHARACTERIZATION AND NUMERICAL SIMULATIONS OF SURGICAL KNOTS

Arz Y. Qwam Alden; Peter A Gustafson, PhD; Andrew G. Geeslin, MD; Jeffrey C. King MD

Western Michigan University, Department of Mechanical and Aerospace Engineering; Western Michigan University, Department of Mechanical and Aerospace Engineering; Borgess Medical Center, Department of Orthopaedics; Bronson Methodist Hospital, Department of Orthopaedics

INTRODUCTION: Suture strength and knot topology are two of the several factors impacting the strength of surgical repairs in soft tissue such as a tendon and skin. The measurement and comparison of the strength of knotted suture is complicated by the lack of consensus test methods. Several prior studies assess FiberWire and others sutures, however, they evaluate or compare only the gross structural response of specific sutures or their knots without direct investigation of the governing mechanics. Little has been reported about the constituents of the suture, the core and jacket separately, nor their impact on the knot strength and failure mechanisms.

PURPOSE: To develop a 3D finite element model of a surgical knot in order to determine the influence of knot topology and other factors governing the mechanics of surgical suture.

MATERIAL & METHODS: An experimental study No.2 FiberWire was performed to observe the governing mechanics and to obtain data for finite element model validation. FiberWire suture is composed of a core covered with a jacket; each was tested separately and together as manufactured. A finite element model was created consisting of one knot throw.

RESULTS: The maximum load of the core and jacket are approximately 65 N and 210 N respectively, and the maximum strain is 2.6% for the core and 9% for the jacket. The as-manufactured suture exhibited a failure mechanism akin to a child's "finger trap" toy, that is, the core failed several times prior to complete failure of the suture. The finite element results were consistent with the experiments. They explain that the knot's ~50% strength reduction relative to suture is due to the stresses from bending, twisting, and the stress concentrations from knot frictional contact.

CONCLUSIONS: Under tension, the braided jacket lengthens and narrows while the angle between the warp and weft threads changes. Therefore, the circumference shrinks with increases in tension and "traps" the core with compression. This permits shear load transferred between the core and the jacket after core failure. The finite element of the knot is qualitatively consistent with experimental results. Thus, the model can be used in additional investigations.

ANALYSIS OF APPROPRIATE INITIAL SHOULDER IMAGING BY REFERRING PHYSICIANS IN PATIENTS REFERRED TO AN ORTHOPAEDIC SURGEON FOR SHOULDER PAIN

Christopher Betzle, MD; Keith Kenter, MD

WMU Homer Stryker M.D. School of Medicine, Department of Orthopaedic Surgery; WMU Homer Stryker M.D. School of Medicine, Department of Orthopaedic Surgery

BACKGROUND: Shoulder complaints are one of the twenty principal reasons for outpatient physicians visits in the United States each year. Shoulder symptoms are one of the top four reasons individuals are seen by Orthopaedic surgeons each year. Appropriate initial evaluation of these complaints includes history, physical examination and appropriate radiographs, including an axillary lateral. In our study, we wished to evaluate that rate at which patients referred to Orthopaedic surgeons for shoulder symptoms had appropriate initial radiographic evaluation. We hypothesized, given our own antidotal observation, that there would be a high rate of inappropriate or incomplete radiographic work-up prior to referral.

METHODS: We performed a retrospective chart review of all consecutive new patients referred to a single surgeon's outpatient office from July 2016 – December 2016 for shoulder complaints. A total of 51 patients were identified and met inclusion criteria. We identified whether the patients were referred to the Orthopaedic office with an appropriate initial radiographic work-up, incomplete initial radiographic work-up and which view was missing, and no appropriate initial radiographic work-up. We also identified whether the referring provider was a primary care physician, primary care sports medicine physician, Orthopaedic surgeon, or other type of physician. Rates of appropriate initial radiographic evaluation were calculated between the different groups.

RESULTS: The rate of appropriate initial radiographic evaluation was 27.5% overall, 20.0 % for primary care providers, 63.6% for Orthopaedic surgeons, 33.3% for sports medicine primary care providers, and 0% for other providers. Rates of incomplete initial radiographic work-up was 43.1% overall, 40.0% among primary care providers, 36.3% for Orthopaedic surgeons, 33.3% among sports medicine primary care providers, and 86.0% for other providers. In all cases the radiographic series had omitted an axillary lateral. Percentage of patients with no initial radiographic evaluation was 27.5% overall, 40.0% for primary care providers, 0% for Orthopaedic surgeons, 33.3% for sports medicine primary care providers, and 14.2% for other providers.

DISCUSSION: These findings are important for many reasons. Most importantly, it demonstrates a gap between what is seen as appropriate work-up for shoulder complaints and what is actually occurring in clinical practice for both Orthopaedic surgeons and non-Orthopaedic surgeons. This would be an area of interest for further research in order to determine the root cause and why the axillary lateral is often omitted.

CONCLUSION: A majority of patients being referred to an Orthopaedic surgeon for shoulder symptoms are not being referred with appropriate initial radiographic evaluation.

PARTNER ABUSE CHANGES WITH PREGNANCY AND POSTPARTUM: A MIXED METHODS ANALYSIS

Catherine L. Kothari, PhD; Angie Moe, PhD, Grace Lubwama, MPH, DPPD

WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology & Biostatistics, Department of Biomedical Sciences; Western Michigan University, Department of Sociology; YWCA CEO

INTRODUCTION: Partner violence varies across the lifespan, with the highest rates in young adulthood, during peak childbearing years. A large body of research examines violence during pregnancy, but less data is available regarding the ebb and flow of violence from pregnancy to postpartum.

STUDY OBJECTIVE: The goals of the current investigation were to describe whether partner violence (emotional, physical and sexual) changes during pregnancy or postpartum (the perinatal period), and how women explain changes that may occur.

METHODS: This mixed methods analysis combined quantitative results from a community-based survey study of 326 postpartum women, supplemented by semi-structured interviews with 40 survey participants who disclosed partner violence. Survey participants were recruited from the hospital during their postpartum stay. Phone surveys were completed eight weeks later. Sixty-four women screened positive for abuse and 60 of them agreed to be contacted for an extended interview about their abuse experiences, and 40 interviews were subsequently completed. These were audio-taped and transcribed. Inductive thematic analysis of these interview transcripts was conducted.

RESULTS: Emotional abuse was universal, reported by all sixty abused women. It took a variety of forms (threats, insults, social isolation, financial abuse), was the first method of abuse and, among the sixteen women reporting perinatal abuse, escalated during this period. Physical abuse was common (47 of 60 abused women, 78.3%), taking the form of slaps or kicks more often than beatings. It was rare for physical abuse to begin in pregnancy (only 2 women) among this sample. Instead, most experienced a reprieve during pregnancy; with physical assaults stopping (7 of 16 perinatally-abused-women) or becoming milder. Women provided multiple explanations for the reduced violence, including increased placating of abusers to forestall violence. Others reported their partners weren't as worried about infidelity, a primary trigger for assault. Still others said their partners abstained for the sake of having a health newborn.

After delivery, emotional abuse continued, often involving the new child: threats to call CPS, threats to take custody, parenting insults, etc. For some women (5 of 16), physical (2) and sexual (3) abuse resumed, for the same reasons the abuse existed in initially (controlling, intoxication, etc), only now with the added stressor of caring for a newborn.

CONCLUSION: As with non-violent couples, a community-based sample of abused women report that pregnancy and birth often produce relationship changes, including the nature of abuse.

THE IMPACT OF SEXUALLY TRANSMITTED INFECTIONS ON THE BIRTH OUTCOMES FOR WOMEN IN KALAMAZOO, MICHIGAN BETWEEN 2008-2014

Laura Bauler, PhD; Catherine L. Kothari, PhD; Alyssa Woodwyk, MS; Duncan Vos, MS; Terra Bautista, BA

WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology & Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology & Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology & Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology & Biostatistics, Department of Biomedical Sciences; Kalamazoo County Health and Community Services, Healthy Babies Healthy Start

INTRODUCTION: Sexually transmitted infections (STI) pose a huge burden on the health of our society with more than 110 million infections currently in the United States. STIs are much more detrimental for women due to the risk of infertility and potential pregnancy complications. STIs can have many damaging impacts during pregnancy including stillbirth, premature rupture of membranes, preterm delivery and direct infections of the infant, or subsequent infant mortality. In Kalamazoo County the rates of STI infections are nearly double that of the state and nation. In addition, the rates of infant mortality in Kalamazoo County are also higher than state and national averages. To combat this public health epidemic, we conducted a case controlled retrospective study to examine the impact of STIs on the birth outcomes of women in Kalamazoo County.

MATERIALS & METHODS: The birth and death records from women who gave birth in Kalamazoo were examined using bivariate tests for associations, and multiple logistic regression to assess the impact of health and demographic variables on the birth outcomes of infants born between 2008-2014. Poor birth outcomes were defined as prematurity less than 37 weeks, low birth weight less than 2500g, and infant mortality.

RESULTS: Uninfected mothers had greater odds of having a good birth outcome than women with STIs, specifically Chlamydia infection (OR 1.82, 95% CI 1.55, 2.11), Gonorrhea infection (OR 2.14, 95% CI 1.62, 2.82) or Herpes infection (OR 1.3, 95% CI 1.13, 1.49). There is an increased rate of Chlamydia infections per 1000 women who were; between the ages of 13 and 24 (93 versus 27), of color (105 versus 31), not college educated (69 versus 7), not married (99 versus 12), or on Medicaid (89 versus 12). These patterns were also consistent for Gonorrhea infections, but not Herpes.

CONCLUSIONS: Data from this study indicates that STI infections in our community are increasing the risk of having a poor birth outcome. The factors that correlate with each STI to predict poor birth outcomes vary however. This research was undertaken in collaboration with community agencies, including Kalamazoo Community and Health Services, and our findings will help inform educational strategies to combat these problems within our community.

USING FOCUS GROUPS TO UNDERSTAND RACIAL DISPARITIES IN INFANT MORTALITY

Amy Damashek, PhD; Alison Geist; Kalamazoo College Students in Community and Global Health 210, Spring 2015, Ariel Berman, MA; Catherine Kothari, PhD

Western Michigan University, Department of Psychology; Kalamazoo College, Community and Global Health, Kalamazoo College, Community and Global Health; Western Michigan University, Doctoral Student Department of Psychology; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology & Biostatistics, Department of Biomedical Sciences

BACKGROUND: Infant mortality in the United States is a significant public health problem. Approximately 23,440 infants died in the year 2013 in the U.S., at a rate of 6 deaths per 1,000 live births (Centers for Disease Control and Prevention, 2015). Moreover, the burden of infant mortality disproportionately impacts African American infants. Cradle Kalamazoo, is a community initiative designed to reduce racial disparities in Kalamazoo. As part of that initiative, we used a qualitative approach to understand the phenomena from the perspective of community stakeholders.

STUDY OBJECTIVES: Our objective was to collect information from community members about the causes of racial disparities in infant mortality in our community as well as ways to reduce these disparities. We conducted focus groups with: low-income at-risk women in the community, women whose infants died; and health and social services providers who work with families during the perinatal period.

METHODS: A total of ten focus groups, with 59 individuals, were conducted:

- Two focus groups (n = 12) recruited at-risk women from the YWCA and from local home visiting services.
- Three focus groups consisted of community members who had experience with infant mortality (n =25) and
- Five were health professionals (n = 22) of various racial/ethnic and gender identities.

Participants drew upon their experiences to describe the scope and nature of the problem, including its determinants and consequences, and made recommendations for action.

RESULTS: Women and family members who had lost infants identified contributing factors at both the individual level (maternal and family health behaviors, lack of knowledge, unsafe sleep practices, domestic abuse, behavioral and mental health issues) and at the system level (inadequate or culturally inappropriate health care systems, poverty, racism, lack of health care coverage, lack of funding for quality programs). Providers identified much the same issues, with more of an emphasis on the lack of sex education and contraception.

CONCLUSION: This research affirms the importance of involving the women, families and neighborhoods most affected by black infant mortality in shaping efforts to address it. Both parents and providers identified similar themes regarding the causes of racial disparities in infant mortality. Themes suggest that there are multiple levels on which to intervene to reduce racial disparities in infant mortality. One of the themes that may be most relevant to the issue of racial disparity is racism embedded within health care provision. This is an important area to address in our local community.

PREGNANCY, CRIME, AND BIRTH OUTCOMES

Lauren Rosenthal, BA; Catherine L. Kothari, PhD; Thomas Duong; Xandie Gold, MD, MPH; Jeff Getting, JD; Alyssa Woodwyk, MS; Heather Rauch

Kalamazoo County, 8th District Court; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology & Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2020; Kalamazoo County Health and Community Services; Kalamazoo County, Chief Prosecuting Attorney Office of the Prosecuting Attorney; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology & Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology & Biostatistics, Department of Biomedical Sciences

BACKGROUND: There is a well-documented association between elevated maternal stress and the risk of adverse birth outcomes. This stress is caused by both biological and societal conditions, including poverty, racial discrimination, and lack of access to quality health care. Less examined is the impact of criminal justice involvement on these outcomes. This study aims to explore the relationship between maternal criminal justice involvement and poor birth outcomes.

METHODS: This is a secondary analysis of three existing databases: (1) Charging requests, (2) birth certificates, and (3) linked birth-death records. Criminal justice data included all Kalamazoo County charging requests, 2007-2010, involving a named victim. The Michigan Department of Community Health Vital Records birth and linked birth-death datasets consisted of all births within Kalamazoo County, 2008-2009, and any infant deaths (0 to age 1) occurring among this population. The birth dataset included information regarding maternal demographics, health risks and birth outcomes. The data were matched using Link Plus, a standalone, probabilistic record linkage program, using personal identifiers. Women delivering 2008-2009 constituted the study sample (N=6,217). Logistic regression was conducted, predicting the association of maternal crime-involvement with infant health (premature delivery, low birthweight or death within the first year).

RESULTS: In total, 6.1% of all women giving birth were crime-involved the years before, during, or after pregnancy. They were nearly twice as likely to be a victim as a perpetrator (4.9% vs 2.6%). The rate of victimization increased over time from 1.8% in the year prior to the pregnancy to 2.8% the year after.

Maternal criminal involvement was significantly associated with poverty (Wald Chi Square 152.993, $p < .001$) and prenatal smoking (Wald Chi Square 27.209, $p < .001$). After controlling for these variables, maternal criminal justice involvement during the perinatal period was a significant predictor of poor birth outcomes (Wald Chi Square 10.609, $p = .001$). The type of criminal involvement (whether as a victim, a perpetrator or both) did not have a significant impact upon birth outcome (Wald Chi Square 0.679, $p = .410$).

CONCLUSIONS: Maternal crime involvement is a significant and independent predictor of poor infant health. While additional research is warranted to further explore this relationship, our data have identified a potential upstream point at which at-risk individuals can be identified and connected to resources to improve birth outcomes and subsequent infant health.

ENGAGEMENT IN HOME VISITING SERVICES DURING THE PERINATAL PERIOD: FOCUS GROUP FINDINGS

Ariel Berman, MA; Amy Damashek, PhD; Catherine L. Kothari, PhD; Ann Miles, PhD

Western Michigan University, Doctoral Student Department of Psychology; Western Michigan University, Psychology; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology & Biostatistics, Department of Biomedical Sciences; Western Michigan University, Department of Sociology

INTRODUCTION/PURPOSE: The transition from pregnancy to postpartum is almost universally stressful. The first year of life is particularly important for at-risk mothers because of the increased risk of mortality during that period. Prior research suggests that home visiting programs prevent negative outcomes such as child maltreatment and infant mortality for mother-infant dyads during the perinatal period (Meghea, You, Raffo, Leach, & Roman, 2015). Yet, despite their effectiveness, many home visiting services suffer from client attrition. In this study, we attempted to gain a greater understanding of the factors that contribute to attrition and retention of at-risk mothers in home visiting services during the transition from pregnancy to postpartum. We used a mixed methods approach to gather both quantitative and qualitative data from home visiting clients and their providers. This presentation will focus on the qualitative data provided by home visitors and their supervisors.

METHODS: We conducted three focus groups with home visitors from three home visiting programs serving Kalamazoo County, MI. We also conducted interviews with supervisors from the home visiting programs as well. The staff responded to questions regarding strategies to retain families in services and obstacles to engagement, with a focus on the transitional period from pregnancy to postpartum. **Results:** Themes regarding barriers to participating during the transition from pregnancy to postpartum included: fatigue and stress; wanting privacy after the baby arrives; concerns about providers calling child protective services; clients returning to work or school and being too busy to participate; and feeling like services are no longer needed. One helpful strategy that was identified by providers was focusing on the baby's development and promoting parent-child activities.

CONCLUSIONS: There are many barriers to women staying engaged in home visiting services after they deliver their baby. Home visiting services should develop specific strategies to address these barriers during the transition from pregnancy to postpartum. Specific strategies may include flexibility in meeting frequency and scheduling and assessing what unique services can be provided to mothers that they would find valuable during the postpartum period.

A STOCHASTICALLY AND BIOMECHANICALLY ACCURATE FINITE ELEMENT APPROACH FOR PATIENT SPECIFIC MODELING OF CANCELLOUS BONE

Saif Alrafeek; James R. Jastifer, MD; Peter A. Gustafson, PhD

Western Michigan University, Department of Mechanical and Aerospace Engineering, College of Engineering and Applied Sciences; WMU Homer Stryker M.D. School of Medicine, Borgess Medical Center, Department of Orthopaedic Surgery; WMU Homer Stryker M.D. School of Medicine, College of Engineering and Applied Sciences Department of Medical Engineering

INTRODUCTION: Though cancellous bone has high porosity, most published computational models incorporate the use of geometrically homogenized continuum elements (i.e., elements which ignore the porous structure of the tissue). Though requiring only low resolution CT or MRI imaging as an input, required assumptions limit clinical generality. Recently developed high fidelity methods require detailed trabecula microstructure obtainable only with ex-vivo imaging. Thus, they have limited applicability in a clinical setting and may not be useful in personalized medicine.

RATIONALE: The purpose of this study is to develop a high fidelity finite element approach useful in personalized medicine to represent the biomechanics of patient specific trabecular tissue. The hypothesis is that a stochastic algorithm driving beam elements can accurately capture the trabecular biomechanics while requiring only conventional CT or MRI imaging.

MATERIAL & METHODS: Trabecular bone consists of a three-dimensional network structure mainly composed of rod-shaped and plate-shaped fundamental units named “trabeculae.” The trabeculae are modeled as beam elements created algorithmically and incorporating stochastic distributions that represent the dominant patient factors including bone density, nutritional status, and the biological response to activity level (leading to structural anisotropy). A strain field was imposed, and effective material properties were extracted.

RESULTS: The algorithmic approach resulted in an effective structural material property within published ranges of trabecular bone [1] while not requiring assumptions such as homogeneity which limit generality. The apparent densities of the current models are also within the published ranges, (1.625 ~ 1.18) g/cm³.

CONCLUSIONS: The proposed finite element modeling approach provides a stochastically accurate tissue response, incorporating the advantages of high fidelity models, while requiring only clinical imaging. Thus, it may be useful for patient specific musculo-skeletal biomechanical models.

REFERENCES: [1] Bartel, D.L. Orthopedic Biomechanics, Pearson Education, Inc., 2006.

RARE INTRAOPERATIVE FRACTURE OF INTRAMEDULLARY REAMER

Dart Newby; Nicholas Miladore, MD; Karen Bovid, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Department of Orthopaedic Surgery; WMU Homer Stryker M.D. School of Medicine, Orthopaedic Surgery

INTRODUCTION: Intramedullary nailing is a common technique used to treat long bone fractures, however there is ongoing debate as to the use of reaming in these procedures. In this case, intramedullary nailing was undertaken; however, there was an intraoperative failure of the reamer causing the reamer to fracture. While there are several well-documented risk factors associated with reaming, equipment failure is not commonly reported.

CASE SUMMARY: An 18-year-old male presented with a 2-year history of a right tibial stress fracture and pain with weight bearing. He elected to have an intramedullary nail placed with intraoperative reaming to stabilize the fracture and encourage healing. During the procedure the reamer fractured, and while the nail placement was ultimately successful the patient retained a small fragment of the fractured reamer within his tibia.

DISCUSSION: There are documented risk factors associated with intramedullary reaming, most notably with regard to the thermal effects on the bone during reaming and intramedullary pressure changes related to embolization, but reamer failure is not a commonly reported complication. While it has been shown that reamer failure has occurred in other cases, there is a lack of a standard quality assurance process to adequately assess the quality of the equipment prior to the procedure. Reamer damage of varying degree has been identified at other hospitals and attributed to wear produced during the reaming process, leading to increased strain on the reamer intraoperatively. The association of reamer dullness, fatigue failure, manufacturing/metallurgy defect, and monitoring cycles of use on complete reamer failure should be better characterized in order to create quality assurance standards.

CONCLUSIONS: Reamer failure is a rare complication of intramedullary nailing. In addition, there is a lack of clear recommendations as to how to manage patients that have a retained foreign body from intraoperative reamer failure. While clinical management of these patients will depend on the individual case, development of a clear quality assurance procedure for reusable surgical equipment could avoid negative outcomes resulting from intraoperative reamer fractures.

ORTHOPAEDIC TRAUMATOLOGIST PREFERENCE FOR USE OF REGIONAL ANESTHESIA IN FRACTURE MANAGEMENT. A SURVEY OF OTA MEMBERS.

Tyler Snoap, MD; Jason Roberts, MD; Robert Gorman, MD

WMU Homer Stryker M.D. School of Medicine, Department of Orthopaedic Surgery; Bronson Methodist Hospital, Department of Orthopedic Trauma; Bronson Trauma Foot and Ankle Specialists, Department of Orthopaedic Surgery

INTRODUCTION: Regional anesthesia (RA) is becoming more prevalent and mainstream as part of pain management protocols following operative procedures. Previous studies have documented the many advantages of its use including improved pain control, decreased opioid consumption, and shorter stays in the recovery room as well as the hospital. The specific use of RA in fracture care is controversial and the clinical decision as to which patients should receive this pain management technique is unclear. Often, orthopaedic trauma patients have evolving soft tissue injuries at the time of surgical intervention and therefore post-operative neurovascular function may need to be closely monitored. The question then arises; which patients with fractures can benefit from regional anesthesia while not putting the soft tissues at risk for adverse events such as compartment syndrome?

PURPOSE: To identify orthopaedic traumatologist preference for use of RA in fracture care. A secondary objective is to determine the prevalence of morbidity derived from regional anesthesia use in the trauma population.

METHODS: A prospective electronic survey was designed and a link placed on the Orthopaedic Trauma Association (OTA) website. OTA members went through thirteen clinical scenarios involving lower extremity injuries that detailed patient age, mechanism of injury, and fracture pattern. Based on the clinical scenario, surveyors were given options of using regional anesthesia as part of the pain management plan or forgoing its use. If regional anesthesia was selected for the given clinical scenario, participants then chose between the use of spinal anesthesia, one shot peripheral nerve injection, or continuous nerve catheter infusion. For the last portion of the survey, surveyors were asked to complete questions pertaining to their clinical experience with regional anesthesia masking compartment syndrome or leading to increased patient morbidity due to a delayed diagnosis.

RESULTS: Over 90% of OTA members viewed a high energy tibial plateau or tibial shaft fracture as a contraindication to any form of regional anesthesia. Preference for use of RA in other lower extremity fracture patterns varied significantly. Over 60% of respondents have seen the use of RA delay or mask the diagnosis of compartment syndrome resulting in patient morbidity.

CONCLUSION: The majority of OTA members viewed high energy tibial plateau and shaft fractures as contraindications to the use of regional anesthesia. The results have clinical as well as medico-legal implications in patient care and necessitates teamwork between anesthesiologists and orthopaedic surgeons appropriately risk stratify which patients can safely be administered RA.

POSTERIOR DISLOCATION OF A TOTAL KNEE ARTHROPLASTY WITH A POLYETHYLENE TIBIAL POST FRACTURE

Alexander Connaughton, MD; Mark Noffsinger, MD

WMU Homer Stryker M.D. School of Medicine, Department of Orthopaedic Surgery; Borgess Medical Center,
Department of Orthopaedic Surgery

INTRODUCTION: The incidence of Total Knee Arthroplasty (TKA) dislocation is rare and that in combination with a fracture of the polyethylene tibial post is even rarer. The literature cites an incidence of 0.15-0.5% of TKA dislocation and a 0.51-1.2% of polyethylene tibial post fracture. The purpose of this case report is to examine why certain TKA designs are more susceptible to polyethylene tibial post fractures and dislocations. We then review the treatments for this problem.

CASE: We present a rare case of a 70-year-old male patient who presented to the ED with a posterior dislocation of a right TKA. He was closed reduced in the ED under conscious sedation and placed into a knee immobilizer. The patient continued to have right knee instability and pain while weight bearing in a knee immobilizer following the reduction. Revision of the right TKA was performed where it was discovered that the tip of the posterior stabilized (PS) polyethylene tibial post was fractured off. The fractured polyethylene insert was replaced with a super stabilized insert that also had an increase in size restoring stability to the knee.

DISCUSSION: The implant used in our patient's initial procedure was the Journey BCS I PS TKA. The design of this implant has been aimed at achieving more natural knee kinematics and deeper knee flexion. However, this design could lead to higher dislocation rates. At greater degrees of knee flexion the femoral CAM rises higher on the polyethylene tibial post and also results in increased stretch on the soft tissues. The Journey I BCS implant also has a low jump distance due to its design making it more susceptible to dislocation. Polyethylene tibial post wear is another well-known complication that can lead to instability and dislocation in PS TKA implants. The Journey I BCS allows earlier femoral cam and tibial post engagement resulting in more natural knee kinematics, but it results in greater contact forces on the tibial post. While these designs attempt to compensate for the higher contact forces by spreading them out over a larger contact area it can still result in a higher risk for tibial post wear and fracture. Of the 30 tibial post fractures in the recent literature 20 of them were treated with an exchange of the polyethylene tibial insert, five were treated with revision of all components, one was removed arthroscopically, and four did not report treatment. Only one exchange failed.

LOWER EXTREMITY SURGICAL TREATMENT TO IMPROVE FUNCTION IN A PATIENT WITH GOLLOP WOLFGANG COMPLEX

Joshua M. Veenstra, MD; Karen Bovid, MD; Jason Habeck, MD

WMU Homer Stryker M.D. School of Medicine, Department of Orthopaedic Surgery

INTRODUCTION: Gollop-Wolfgang complex is a very rare limb malformation with a bifurcation of the distal femur associated with ipsilateral tibial aplasia.

CASE DESCRIPTION: Patient was an 18-month old male with Gollop-Wolfgang complex and VACTERL association. Orthopaedic manifestations included: left bifid femur with ipsilateral complete tibial hemimelia, hypoplastic bilateral thumbs, and right tarsal-type pre-axial polydactyly of the foot. No extensor mechanism was present at the left knee. The left foot had a varus and supination deformity. He had not started walking, crawling, or pulling to stand secondary to his deformity. The goal of treatment was to create a functional left leg. Given the absent tibia and extensor mechanism, bifid femur, and foot deformity the most predictable outcome was expected with a through-knee amputation with subsequent prosthetic fitting. The knee was disarticulated to allow continued growth of the femur. The non-functional branch of the bifid femur was resected. An osteotomy was performed to correct alignment of the remaining femur. An adductor myodesis was performed to allow for proper muscle balance at the hip. The pre-axial polydactyly was also excised from the contralateral foot. Tendon transfers to improve thumb function will be performed in the future. The patient was placed in a cast to allow for soft tissue and bone healing. Unfortunately, the patient developed a wound infection of his left leg. Multiple irrigation and debridement procedures with negative pressure wound therapy were performed. After the infection was cleared, a split thickness skin graft was performed without complication. A prosthesis was manufactured and he has been participating in physical therapy. He is currently 31 months old and is walking with a walker using a left prosthesis and right supramalleolar orthosis.

DISCUSSION: Gollop-Wolfgang complex was first described in 1980. It is classically treated with a knee disarticulation and prosthetic fitting. There are some reported cases of limb salvage secondary to absence of parental approval for amputation. Results have not been as predictable with salvage; especially if there is complete tibial aplasia and no extensor mechanism. This case reinforces the use of amputation as a viable treatment option for patients with Gollop-Wolfgang complex.

CONCLUSION: Through-knee amputation and prosthetic fitting can provide a functional limb for patients with a bifid distal femur, complete tibial aplasia, and no extensor mechanism.

ARRHYTHMOGENIC RIGHT VENTRICULAR CARDIOMYOPATHY ASSOCIATED WITH PEDIATRIC CARDIAC ARREST

Thomas Pott, MD

Helen Devos Children's Hospital, Pediatric Critical Care

INTRODUCTION: Arrhythmogenic right ventricular cardiomyopathy (ARVC) is one of the leading causes of arrhythmic cardiac arrest in young people and athletes; accounting for 4-22% of sudden cardiac arrest. This progressive, familial cardiac disorder is characterized by replacement of ventricular myocytes with fibrofatty tissue. Mutations in genes encoding cardiac desmosomal proteins located in the intercalated disks are responsible for electromechanical uncoupling and histopathological changes. These modifications to the cardiac myocytes affect activation and repolarization of the myocardium resulting in ventricular dysfunction and ventricular arrhythmias. This case highlights the importance for genetic testing when there is an inability to meet the criteria for diagnosis.

PATIENT DESCRIPTION: Previously healthy 17yo male who had a witnessed cardiac arrest event while at school. Patient had completed a work out consisting of running and weight lifting when he collapsed and was found to be pulseless by a teacher. An automatic external defibrillator was applied and one shock was delivered. Patient regained consciousness. Troponin, complete blood count, comprehensive metabolic panel, Magnesium, Phosphorus, blood gas, computerized tomography of the brain and chest radiograph were normal. Electrocardiogram revealed a normal sinus rhythm with a QTc of 398 milliseconds. Initial echocardiogram revealed a thin right ventricular myocardium with mild right ventricular enlargement, but normal systolic function. Patient was started on beta-blockade and admitted to the pediatric intensive care unit. During this admission the patient had multiple episodes of supraventricular tachycardia, which resolved spontaneously. Cardiac magnetic resonance imaging met the criteria for arrhythmogenic right ventricular cardiomyopathy, but no myocardial fibrofatty infiltration was noted. The patient underwent placement of a dual chamber implantable cardioverter defibrillator. Genetic testing revealed that he was heterozygous for two variants in the DSP gene. This gene encodes desmoplakin, a component of the desmosomal complex that makes up intracellular junctions. This variant has been identified in conjunction with additional cardiogenetic variants in individuals referred for cardiomyopathy / arrhythmia genetic testing.

CONCLUSION: Arrhythmogenic right ventricular cardiomyopathy has been estimated to account for up to 22% of sudden cardiac arrests in young people and adolescents. Sports activity increases the risk of sudden cardiac death among adolescents and young adults with ARVC. The subtle clinical manifestations of ARVC make the diagnosis challenging and often unrecognizable. This further supports the importance of genetic testing and follow-up when all aspects of the diagnostic criteria are not attained.

THROMBOELASTOGRAPHY FOLLOWING LIVER RESECTION

Brandon Tanner, MD; Gitonga Munene, MD, FACS; Steven Lu, MD; Richa Khatri, MD; Guston Zervoudakis

WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; Western Michigan Cancer Center, Department of Surgical Oncology; WMU Homer Stryker M.D. School of Medicine, Department of General Surgery;

WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018

BACKGROUND: This study was aimed at examining the predominant coagulation profile following liver resection.

OBJECTIVE: Study the TEG profile following liver resection.

METHODS: Patients undergoing liver resection were prospectively enrolled in the study. Perioperative variables were obtained and the TEG AND PT/INR were obtained preoperatively, post-operatively, and on POD# 1, 3, and 5.

RESULTS: 17 patients were enrolled with a median age of 61, 35.3 % were female undergoing resection for either primary or metastatic disease. 35.3% underwent major hepatectomy, median EBL was 350mL, and the median LOS was 6 days, with a morbidity of 35.3% and no mortality. Post-operatively the TEG profile demonstrated a hypercoagulable profile in 92.8%, 64.2%, 57.1% and 42.8% of patients immediately post-operatively, and on POD# 1, 3, and 5 respectively. Despite multiple elevations in PT/INR in all the time points there was no concordance with the TEG profile.

CONCLUSION: The TEG profile demonstrated a hypercoagulable profile in majority of patients undergoing liver resection despite an elevated PT/INR.

SUCCESS OF RETROGRADE TIBIAL ARTERY APPROACH IN LOWER EXTREMITY REVASCULARIZATION

Samuel H. Lai; Jordan Fenlon; Benjamin Roush; Krishna M. Jain, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; Western Michigan University Homer Stryker M.D. School of Medicine, Center for Clinical Research

OBJECTIVES: To evaluate the safety and efficacy of retrograde tibial approach in revascularization of lower extremity for treating ischemia in anatomically challenging patients. To identify the patency of access tibial vessels in follow-up.

METHODS: In this IRB approved retrospective study 56 patients underwent 60 procedures between 2012 to 2016, treating 112 vessels using retrograde approach due to flush occlusion, inability to cross lesion in antegrade fashion, failed bypass or hostile groin. All but 2 procedures were performed between 2014 and 2016. Demographic data, Rutherford classes, vessels treated, and the vessel approach were tabulated. Success of the procedure, type of procedure, complications, amputations, deaths, and patency of access tibial vessel and treated vessel were recorded. Technical success was defined as residual stenosis of <50%. Restenosis was categorized as two times increase in velocity at the site of previous treatment. Reintervention was performed when the patient became symptomatic and had restenosis of >50%. In follow up, access and treatment area patency were evaluated by both physical exam and ultrasound. Life table analysis was performed and Kaplan Meier curve was created.

RESULTS: There were 56 patients (34 males), average age 67 ± 11.3 years. Rutherford categories: class II (n=1), class III (n=39), class IV (n=5), class V (n=13), and class VI (n=2). Risk factors included diabetes (n=25), hypertension (n=45), smoking (n=46), and decreased renal function (n=25). Lesion crossing was successful in 59/60 limbs. In one patient, procedure was halted due to local dissection. Within 30 days of procedure, both Rutherford 6 patients (2/2) required major amputations, as well as one of 13 class 5 patients. There was no 30 day mortality. In 112 lesions treated, technical success rate was 105/112 (93.8%). In follow up, 63/112 (56.3%) vessels remained patent at 19 months (mean follow up 5.6 ± 5.2 months) without any further interventions. 16/112 vessels required reintervention with median patency of 6 months and 100% occlusion at 10 months (mean follow up 5.7 ± 4.8 months). In follow up, 32/37 (86.5%) of the AT, 19/21 (90.5%) of PT, and 2/2 (100%) of peroneal access groups remained patent. Occlusion caused no adverse outcome.

CONCLUSIONS: In this anatomically challenging patient group, tibial approach can be safely utilized with good medium term results. Retrograde approach rarely causes access vessel occlusion and results in no adverse outcome. Access vessel is not compromised for a future bypass. In Rutherford class VI patients, retrograde approach may not be advisable.

SUCCESS OF ATHERECTOMY IN LOWER EXTREMITY ISCHEMIA PERFORMED IN OFFICE BASED LAB

Benjamin Roush; Jordan Fenlon; Samuel Lai; Charles Brewerton; Krishna M. Jain, MD; John Munn, MD; Daniel Johnston, MD; Mark Rummel, MD; Syed Alam, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Center for Clinical Research; WMU Homer Stryker M.D. School of Medicine, Department of Surgery; WMU Homer Stryker M.D. School of Medicine, Department of Surgery; WMU Homer Stryker M.D. School of Medicine, Department of Surgery; WMU Homer Stryker M.D. School of Medicine, Department of Surgery

OBJECTIVES: To determine the safety and efficacy of infrainguinal artery atherectomy in office based lab To find the patency difference with or without secondary intervention. To assess patency based on Rutherford class.

METHODS: In this IRB approved retrospective study, between 2011-2016, 260 patients underwent interventions on 362 limbs and 615 vessels. Orbital atherectomy and Laser atherectomy was performed. Demographic data, Rutherford class, vessels treated, vessel approach, type of device used were tabulated. Success and type of procedure, complications, 30 day major amputations, and deaths were recorded. Technical success was defined as resolution of stenosis < 50%. Restenosis was categorized as 2x increase in velocity at treatment site. Reintervention was performed when the patient became symptomatic and the vessel had restenosis of >50%. In follow-up, treatment area patency was evaluated by both physical exam and ultrasound. Life table analyses were performed and Kaplan Meir curves were created.

RESULTS: Patient disease incidence: Smoking (35%), Diabetes (59%), Hypertension (77%), Hyperlipidemia (68%), Renal insufficiency (50%), Dialysis (16%), COPD (20%), CHF (21%), previous procedure on the same vessel (16%), previous bypass (12%). Rutherford class distribution: 2(n=8), 3(n=166), 4(n=41), 5(n=103), 6(n=11). There were 23 major amputations on 362(6%) limbs in Rutherford class 4(3/41), 5(17/103), 6(3/11). Mortality:0. Complications: perforation:3, abrupt closure:2, embolization:1. Technical success: 604/615(98%) vessels. Atherectomy device: Orbital (n=515) with patency of 91%, mean follow up 29(±31) months; Laser (n=100) with patency of 78%, mean follow up 33(±31) months. The difference was not statistically significant. Patency with angioplasty was 89% in 498 vessels, mean follow up 31(±31) months: In 106 vessels treated with angioplasty and stent 86%, mean follow up 23(±29) months. Total patency with or without secondary intervention was 84%, mean follow up 30 (±31) months. 503 vessels not needing secondary intervention had a patency of 90%, mean follow up 29(±31) months. 101 vessels in 57 patients needed secondary intervention because of recurrent stenosis and/or new symptoms with a patency of 67%, mean of 35(±33) months. In follow up, 143 vessels (23.3%) developed >50% stenosis; of those 91(64%) had no reintervention and 52(36%) received reintervention. Patients having reintervention had patency of 67% with mean follow up of 35(±33) months; compared to vessels having no intervention at 96% patency, mean follow up of 30(±28). Patency in different Rutherford class was comparable.

CONCLUSIONS: In medium term follow up, excellent patency is achieved using atherectomy and angioplasty with minimal complications in an office-based lab. Asymptomatic restenosis of >50% does not warrant reintervention. Procedure has comparable results among various Rutherford classes.

IMPACT OF SOCIOECONOMIC STATUS, RACE, AND INSURANCE PAYER ON OUTCOMES FOLLOWING ALLOGENEIC HEMATOPOIETIC CELL TRANSPLANTATION.

Nicole Foley; Aaron Logan, MD, PhD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; University of California San Francisco, Department of Hematology/Blood and Marrow Transplantation

BACKGROUND: Socioeconomic status (SES) and demographic variables have been demonstrated to influence treatment and outcomes across a wide range of health disciplines. The relationships between SES, race, insurance payer and outcomes following allogeneic hematopoietic cell transplantation (alloHCT), however, have not yet been clearly elucidated. To maximize the likelihood of treatment success, it is essential to determine the impact of these factors in alloHCT so that additional resources can be targeted to at-risk patients. Those patients who survive the initial period following alloHCT continue to be at risk for long-term complications such as graft-versus-host disease (GVHD), relapse, and secondary malignancies.

OBJECTIVE: This study strives to determine the effect of SES, race, and insurance payer on survival outcomes following alloHCT at the University of California, San Francisco (UCSF). Our findings have the potential to influence recipient selection, housing and caretaker requirements following transplant, and the provision of means-based assistance for at-risk individuals.

MATERIALS & METHODS: This retrospective single center study evaluated demographic and outcome data for all consecutive patients who received an alloHCT at UCSF between January 2012 and January 2016. Primary endpoints included progression free survival, relapse-related mortality, non-relapse mortality, overall survival, and the incidence and severity of GVHD.

RESULTS: During the period of study, 252 patients underwent alloHCT. Amongst transplant recipients, 165 (65.5%) were Caucasian, 45 (17.9%) were Hispanic/Latino, 29 (11.5%) were Asian, 8 (3.2%) were African American, and 5 (2%) were Hawaiian/Pacific Islanders. Matched related donors were used for 98 (38.9%), unrelated donors for 138 (54.8%), haploidentical donors for 9 (3.6%), and umbilical cord blood for 6 (2.4%). Non-relapse mortality (NRM) was more common in non-Caucasian minorities versus Caucasians — 37% versus 31% of deaths in each group (HR 1.19). Based on median income by zip code of primary residence, patients were grouped into low income (<\$55,000/yr) and high income (>\$55,000/yr), and those in the low income group exhibited increased risk of NRM (HR 1.34).

CONCLUSIONS: Our investigation demonstrated a trend toward increased NRM in non-Caucasian patients and in those with primary residences in low-income areas of Northern California. Additional investigation is underway to determine the influence of these and other variables, such as insurance payer and the use of philanthropic assistance such as grants-in-aid, on transplant-specific events such as GVHD, length of survival post-alloHCT, and causes of death in those who succumbed to non-relapse causes of death.

**TIMES OF PEAK INNATE AND ADAPTIVE IMMUNITY IN PERIPHERAL BLOOD SUBSETS:
POTENTIAL IMPLICATIONS FOR STUDY DESIGN, ASSESSMENT OF IMMUNE FUNCTION, AND
THERAPEUTIC INTERVENTION IN TYPE 1 DIABETES**

McKenzie Akers; Heather Rauch; Alyssa Woodwyk, MS; Thomas Blok, MD; Patrice Mason, RN; Daniel Perry, PhD; Todd Brusko, PhD; Clive Wasserfall, MS; Mark Atkinson, PhD; Craig Beam, PhD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Center for Clinical Research; WMU Homer Stryker M.D. School of Medicine, Center for Clinical Research; University of Florida, Diabetes Research Institute; University of Florida, Diabetes Research Institute; University of Florida, Diabetes Research Institute; University of Florida, Diabetes Research Institute; WMU Homer Stryker M.D. School of Medicine, Department of Biomedical Sciences

INTRODUCTION: Our current understanding regarding the potential influence of circadian rhythms on cellular immune populations thought key to type 1 diabetes (T1D) development is quite limited. Hence our objective for this study was to characterize normal daily fluctuations in both innate and adaptive immune cellular subsets. We hypothesized such efforts would improve our understanding of the pathogenesis of T1D, while indicating optimal times to sample peripheral blood mononuclear cells (PBMC).

METHODS: Venous blood samples (10 cc) were drawn from 10 healthy volunteers every 4 hours over a 24 hr inpatient period, followed by extensive flow cytometric phenotyping. The timing of peak peripheral blood frequencies was determined with a statistical method for fitting a cosine curve to 24 hr data (COSINOR).

RESULTS: We observed many major cell populations with significant ($p < 0.05$) circadian patterns. Such cell populations and their time of peak (military) were: CD4Tcell (00:30); Classical Monocytes (02:00); Treg(02:00); CD4+CD8+ (02:00); CD56bright NK (03:00); CD8Tnaive (03:00); CD8T (05.30); CD4Tnaive (06.30); CD4-CD8- (11:00); Monocytes (12:00); CD4Temra (12:00); CD8Temra (12:30); NKT(13:00); CD4Tem (13:00); CD8Tem (13:00); DC (14:00); CD56dim NK (15:00); NK-T (15:00); CD4Tcm (20:00); CD8Tcm (21:00); B-Cells (22:00); Monocytes (23:00).

CONCLUSIONS: We conclude there is appreciable heterogeneity in the times of peak of circulating immune cells measured by PBMC sampling. This heterogeneity suggests that T1D autoimmunity studies need to carefully consider PBMC timing as an important part of study design, and suggests the idea of multiple sampling throughout the day. These findings are also expected to have important implications for further studies and therapies. Future studies of pathways dysregulated in autoimmunity could consider circadian influence, while profiles of transcriptional genes could vary depending upon the time of day in which transcription is active. Additionally, in clinical practice, this heterogeneity could indicate optimal times to deliver immunomodulatory therapies or even suggest pre-disease alterations in the immune milieu.

ADVERSE REACTION TO NEBULIZED BUDESONIDE IN A PATIENT WITH MAST CELL ACTIVATION SYNDROME

Alissa Welsh, MD; Andrey Leonov, MD

WMU Homer Stryker M.D. School of Medicine, Department of Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Pediatrics/Allergy and Immunology

INTRODUCTION: Mast cell activation syndrome (MCAS) is a disorder with symptoms caused by inappropriate MC activation without inappropriate mast cell (MC) proliferation. Flairs of MCAS can make labeling of true allergies in these patients difficult. Anaphylaxis has been described in patients due to oral and IV corticosteroids, however this adverse effect has not been noted in their inhaled form. We present a case of an apparent mast-cell mediated reaction to nebulized budesonide in the setting of presumed MCAS. Rationale: Variability in presentation of MCAS may lead to misuse of medications and vague assignments of patients' allergies. Allergic reactions to nebulized budesonide have not been extensively described in literature.

CASE: An 18-year-old male with provisional diagnosis of MCAS based on urine PG D2 of 318 ng/24hrs (100-280 ng/24hrs) and consistent symptoms, was admitted with a prolonged severe dry cough. Imaging and laboratory workup were negative for infection or structural abnormality. Treatment included methylprednisolone, nebulized budesonide and albuterol. Acute lip angioedema and diffuse urticarial rash developed immediately after administration of nebulized budesonide on day three. No cardiovascular or respiratory instability was documented. Intramuscular epinephrine was administered with significant improvement. Patient was diagnosed with allergy to budesonide versus MCAS exacerbation. Nebulized albuterol and methylprednisolone were continued without recurrence of angioedema or urticaria. Drug allergy testing to evaluate the mechanism of reaction was not performed.

DISCUSSION: MCAS symptoms may lead to vague allergy assignments and use of medications for unclear indications. In this case epinephrine was used without documentation of systemic involvement, with only lip angioedema and urticarial rash noted. Allergy label was assigned based on assumption that budesonide triggered symptoms given proximity to treatment. Difficulty interpreting drug allergy tests in the setting of MCAS may preclude clarification of reaction mechanism. Conclusion: This case illustrates the complexities of management of drug reactions in patients with MCAS and potentially reports one of the first cases of early anaphylaxis to inhaled budesonide.

SUCCESSFUL DESENSITIZATIONS WITH CEFTRIAXONE AND AZITHROMYCIN IN A PATIENT WITH MAST CELL ACTIVATION SYNDROME

Patrick Staso, MD; Andrey Leonov, MD

WMU Homer Stryker M.D. School of Medicine, Department of Medicine-Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Pediatrics/Allergy and Immunology

Mast Cell Activation Syndrome (MCAS), has been defined by episodic symptoms consistent with mast cell mediator release affecting two or more organ systems which closely resemble anaphylaxis and may be triggered by multiple agents including medications. The development of rapid desensitization for the treatment of drug hypersensitivities is aimed at providing essential medications while protecting patients from severe reactions induced by anaphylactic and anaphylactoid mechanisms. We present the first reported case, to our knowledge, of a patient with MCAS and a history of anaphylactic reaction to cephalosporins and azithromycin who underwent successful desensitizations with ceftriaxone as empiric pneumonia therapy and azithromycin to treat *Chlamydia pneumoniae* infection after final culture.

BACKGROUND: Drug-induced type I hypersensitivity reactions, such as anaphylaxis, result from the release of mediators from IgE-sensitized mast cells. Anaphylactoid reactions in contrast, are not mediated by IgE, but still result in a release of inflammatory mediators such as histamine, serine proteases, heparin, prostaglandin D₂, and other cytokines. Desensitization is a method of preventing a negative immune response by providing successively increasing doses until a full therapeutic dose is achieved, thus providing basal and mast cell stabilization. Rapid desensitization protocols have been published for non-IgE-mediated reactions caused by chemotherapeutic and biologic agents, sulfonamides, and non- β -lactam antibiotics, but the mechanisms are still largely unknown. Many overlapping qualities exist between anaphylaxis and MCAS symptoms associated with the unregulated mast cell degranulation. As in the general population, patients with MCAS may also have true allergies to medications.

CASE: In our patient with *Chlamydia pneumoniae* infection and an allergy to azithromycin, a protocol consisting of progressive doses of azithromycin every 15 to 30 minutes until a full therapeutic dose was clinically tolerated. It is unclear if the desensitization acted upon the IgE or non IgE pathway.

RATIONALE: In patients with multiple drug allergies and MCAS it may prove in times of need that desensitization may be a therapeutic option.

CONCLUSION: Medication administration in the setting of MCAS is challenging as patients may react randomly. In our patient, desensitization provided a way to administer required medication in a safe manner and may be extrapolated in future cases.

GASTROCNEMIUS CONTRACTURE IN PATIENTS WITH RHEUMATOID ARTHRITIS

Adam Green, BS; James Jastifer, MD

Michigan State University College of Osteopathic Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine; Borgess Medical Center, Department of Orthopaedic Surgery

INTRODUCTION: Rheumatoid arthritis is a chronic disease affecting multiple joints of the body. More than 90% of patients affected by rheumatoid arthritis develop foot or ankle pain over the course of the disease. Prior studies in non-rheumatoid patients have demonstrated an association between an isolated gastrocnemius contracture (lack of ankle dorsiflexion) and foot and ankle pain. To date, no study has measured ankle range of motion in rheumatoid arthritis patients in a validated manner. The purpose of the current study is to report ankle dorsiflexion in rheumatoid arthritis patients as well as a control group utilizing a validated measurement instrument. Our hypothesis was that patients with rheumatoid arthritis would have similar measured ankle range of motion to controls.

METHODS: Institutional review board approval was obtained and a prospective case-control study was performed. We utilized a previously validated device to measure ankle range motion and isolated gastrocnemius contracture in 70 patients diagnosed with rheumatoid arthritis as well as 70 controls. The measurements were repeated three times with the knee extended to isolate the effect of the gastrocnemius muscle. We additionally performed a clinical examination and goniometer measurement of ankle range of motion. Patient history, severity of rheumatism, and demographics were also obtained.

RESULTS: The rheumatoid arthritis group had a mean dorsiflexion of 12.3 degrees compared to a mean of 17.3 degrees in the control group with the knee extended, a statistically significant difference ($p < 0.001$). The device was used three times on each patient with no significant difference between measurements, ($p > 0.05$). The difference in dorsiflexion was significantly less utilizing a goniometer than using the validated device, which may be due to measurement technique and external landmarks ($p < 0.001$).

CONCLUSION: Patients with rheumatoid arthritis had less ankle dorsiflexion than the control group with the knee extended. This is the first, and largest, study investigating ankle range of motion in patients with rheumatoid arthritis utilizing a validated measurement device as well as a control group. The clinical significance of this study is that it provides evidence that patients with rheumatoid arthritis have decreased ankle dorsiflexion despite a lack of foot and ankle pain. In light of the high lifetime incidence of foot and ankle pain in the rheumatoid arthritis population and previous studies which demonstrate decreased ankle dorsiflexion in patients with foot and ankle pain, this study provides some evidence that the decreased ankle dorsiflexion may be a contributing factor in foot and ankle pain, but further studies are needed.

HINDFOOT MOMENT ARM AND PES PLANOVALGUS RADIOGRAPHIC PARAMETERS IN THE ADULT ACQUIRED FLATFOOT AND NORMAL PATIENT POPULATIONS

Matthew Jaykel, MD; Adam Green, BS; James Jastifer, MD

WMU Homer Stryker M.D. School of Medicine, Department of Orthopedic Surgery; Michigan State University College of Osteopathic Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine; Borgess Medical Center, Department of Orthopedic Surgery

INTRODUCTION: The use of the hindfoot moment arm in the radiographic assessment of pes planovalgus (flatfoot) deformity is well described in the literature and commonly used for surgical planning of deformity correction. No study to the authors' knowledge has investigated the relationship between the hindfoot moment arm and other common pes planovalgus radiographic parameters in both the normal patient population and those with pes planovalgus. This concept is important because in the setting of an increased hindfoot moment arm, the choice of surgical procedure for pes planovalgus deformity correction may change.

PURPOSE: The purpose of the current study was to determine if there is a relationship between an increased hindfoot moment arm and a pes planovalgus deformity or a difference in hindfoot moment arm between pes planovalgus deformity and a control population.

MATERIALS AND METHODS: IRB approval was obtained. A retrospective chart review of 86 patients was performed from the senior author's clinical practice. Forty-three controls (no history of significant foot or ankle pain) as well as 43 patients with a clinical diagnosis of pes planovalgus deformity with complete foot, ankle and hindfoot alignment radiographs of the affected were included. On the lateral radiographs, the talar-first metatarsal angle, calcaneal pitch, talocalcaneal angle, medial column height, calcaneal-fifth metatarsal height, and lateral column height was measured. The hindfoot moment arm was calculated on hindfoot alignment radiograph. On the AP radiographs, talar-first metatarsal angle and talar head uncoverage was measured.

RESULTS: Forty-three patient with pes planovalgus deformity and forty-three normal patients were identified. There was a statistically significant difference between the pes planovalgus and control groups with respect to the talar-first metatarsal angle, calcaneal pitch, talocalcaneal angle, medial column height, calcaneal-fifth metatarsal angle, and hindfoot moment arm ($p < 0.001$, < 0.001 , 0.012 , < 0.001 , < 0.001 , < 0.001 respectively). The medial column height was correlated most strongly to the hindfoot moment arm (R squared – 0.48).

CONCLUSIONS: This study showed a statistically significant difference between patients with pes planovalgus group and a normal patient population with respect to the talar-first metatarsal angle, calcaneal pitch, talocalcaneal angle, medial column height, calcaneal-fifth metatarsal angle, and hindfoot moment arm. The clinical significance of this study is that in the setting of a pes planovalgus deformity, the clinician should consider obtaining a bilateral hindfoot alignment view in order to quantify the hindfoot deformity and ensure that the planned surgical procedure can correct the deformity.

CHRONIC REFRACTORY CANDIDA PARAPSILOSIS INFECTION THE PNEUMONECTOMY STUMP IN A PATIENT WITH CYSTIC FIBROSIS

Joseph Lamar, MD; Myrtha Gregoire-Bottex, MD; Lauren Vandebos; Mitchel Kardux; Teresa Bailey, PharmD

WMU Homer Stryker M.D. School of Medicine, Department of Medicine-Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Pediatric and Adolescent Medicine; Ferris State University, Pharmacy; Ferris State University, Pharmacy; Ferris State University, Pharmacy

BACKGROUND: Cystic Fibrosis (CF) is a multisystem disorder causing cycle of infection and inflammation, recurrent respiratory infection, progressive bronchiectasis leading to respiratory failure. These patients are often exposed to multiple courses of antibiotics and risk multi-drug resistant organisms. Complication like CF-related diabetes and steroids uses increased the risk for opportunistic infections. Candida species cause localized and invasive infection in immunodeficient patients or patient with vascular access. Lower airway infection can cause lung function decline by airway obstruction. We present the case of a patient with previous pneumonectomy and chronic infection due to Candida parapsilosis of the airway stump causing progressive obstructive lung disease. He responded to long term Caspofungin and Fluconazole.

CASE REPORT: A 12-year-old male with Cystic fibrosis diagnosed due to failure-to-thrive, CF with pancreatic insufficiency elevated sweat chloride of 94 meq/L, abnormal chest x-ray, and fecal elastase below 200 ig/g. By age 6 months, patient had bronchiectasis, sequentially had RML and RLL lobectomies at age 2 and to right completion pneumonectomy at age 4. Patient remained stable for two years followed by recurrent pulmonary exacerbations and declining lung function. His right pneumonectomy at an early age cause poor lung growth and significant chest wall deformity and scoliosis. Comorbid conditions include chronic sinusitis, CF-related diabetes, and CF-related liver disease.

His Chest CT showed fibrosis, nodules and cystic lesions on the remaining left lung. FEV1 decline from a baseline of 39% to a nadir of 25 % predicted. A bronchoscopy shows a whitish cheesy biofilm extending from the pneumonectomy stump to the left airways. Culture grew Candida parapsilosis. Patient had previously failed oral fluconazole, responded to Caspofungin for 4 months He was sent for transplant evaluation. However, his lung function significantly improved by the time of his evaluation. He was then switched to long term IV fluconazole which was discontinued due to rash. His lung function was 41% before discontinuation. Otherwise both drugs were well tolerated.

DISCUSSION: This case raise awareness of the risk for airway obstruction from lowered lung candida infection in patient with CF and particularly in patient with foreign body like a staple used for pneumonectomy. Proper Identification of candida species is important for management.

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VANCOMYCIN RESISTANT ENTEROCOCCAL ENDOCARDITIS PRESENTING AS SPONDYLODISKITIS

Meveshni Govender, MD; Larry Lutwick, MD; Yirong Zhu

WMU Homer Stryker M.D. School of Medicine, Department of Medicine-Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Medicine and Biomedical Sciences; MSU School of Medicine, Medical Student

INTRODUCTION: Enterococcal endocarditis generally manifests as classical subacute infection and when metastatic events occur, the embolic events are almost always bland in nature rather than causing metastatic infection. We present a patient with vancomycin-resistant *Enterococcus faecalis* (VRE) aortic valve endocarditis which presented with lumbar spondylodiskitis, a very unusual manifestation of enterococcal endocarditis.

CASE REPORT: A 87-year-old man with diabetes and a recent cerebrovascular event was evaluated for increasing lumbar spine pain without fever, chills or other constitutional symptoms. An outpatient MRI revealed fluid in the L2-L3 disk space with enhancement of the L2 and L3 vertebrae and bilateral adjacent psoas muscle. An Interventional Radiology-facilitated aspirate showed many PMNs on Gram stain and culture of the aspirate as well as 4 blood cultures revealed vancomycin-resistant *E. faecalis*. Retrospectively, the patient had had several urine cultures in the past 2 months which also revealed the same organism. He gave a history of IgE-mediated hypersensitivity to penicillin. Because of the unusual cause of the diskitis and multiple positive blood cultures, a trans-esophageal echocardiogram was performed which revealed a vegetation on the right coronary cusp of the patient's aortic valve. A diagnosis of VRE aortic valve endocarditis was made associated with secondary lumbar spondylodiskitis. He was begun on intravenous daptomycin and the blood cultures became negative. A review of the literature found only several cases of this scenario previously reported and none were linked to VRE as the etiology.

CONCLUSION: Extravalvular secondary infections associated with enterococcal endocarditis as in this case are quite rare. This case is the first known of endocarditis with secondary spondylodiskitis caused by VRE.

INFECTION OF ATRIAL SEPTAL DEFECT CLOSURE DEVICE: EVEN LOW TURBULENCE DEVICES GET INFECTED

Michelle L. Knapp; Larry Lutwick, MD; Janie Katarsky, DO

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Department of Medicine and Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Department of Medicine

INTRODUCTION: Most intravascular infections are associated with situations with high turbulence. Therefore, situations with only low turbulence such as atrial septal defects both before and after repair, pure mitral stenosis and inferior vena cava filters rarely are associated with infection. We present a case of methicillin-resistant *Staphylococcus aureus* (MRSA) infection of a atrial septal defect occluder device (ASDO) in a intravenous drug user.

CASE REPORT: A 38 year old IVDU was admitted with 2 days of fatigue and the abrupt onset of seizure-like activity and loss of consciousness. He was found to have a temperature of 41 C with peripheral leukocytosis and after blood cultures were obtained, he was begun on broad spectrum antimicrobials including vancomycin. Multiple blood cultures grew MRSA and a head MRI revealed multiple intracerebral emboli and hydrocephalus and an external ventricular drain was placed. Over several days, multiple blood cultures continue to grow MRSA and a TEE revealed large, multi-lobulated, mobile masses on both sides of the ASDO. Antimicrobials were switched to daptomycin, ceftaroline and rifampin. Cardiothoracic surgery intervention was initially deferred due to the instability of the patient. After modification of the antimicrobial therapy, blood culture became negative and the device was explanted 3 weeks later. Operative cultures were all no growth. After 7 weeks of antimicrobial therapy with 4 weeks of the course given postoperatively and continued negative blood cultures, the patient was transferred to a skilled nursing facility for further rehabilitation. A literature review resulted in a paucity of infections of ASDO devices.

CONCLUSION: Infection of an ASDO is rare which is likely related to the low blood flow turbulence existing in the area of the device. This rarity underscores the risk of intravascular infections in this and other low turbulence intravascular scenarios. Despite this, clinicians should continue to recognize that these infections may occur.

NON-HEMOLYTIC GROUP B STREPTOCOCCUS AS A CAUSE OF CHEMOTHERAPY PORT INFECTION

Ray-Young Tsao; Larry Lutwick, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2020; WMU Homer Stryker M.D. School of Medicine, Department of Medicine and Biomedical Sciences

INTRODUCTION: Lancefield group B streptococci (GBS) are common causes of infection in adult with diabetes as well as a classical cause of perinatal meningitis. The organism is a classical beta-hemolytic streptococcus. We present an unusual cause of human infection due to GBS, a chemotherapy port site with bacteremia with an organism without hemolysis (so-called gamma hemolysis), a rare phenotypic manifestation of GBS.

CASE REPORT: A 63-year-old male was admitted for fever, chills and altered mental status. He had been recently diagnosed with pancreatic carcinoma and had had a stent placed in his common bile duct. One week before admission, a chemotherapy port was placed and on admission had no local signs and symptoms of infection and had not started chemotherapy. He was febrile, his WBC was 15K and he had no clear focal findings on physical examination and chest and abdominal imaging. 2 blood cultures were positive for Gram positive cocci in pairs and chains which revealed a gamma (or non-) hemolytic streptococcus that was subsequently identified as a Group B streptococcus. In the absence of another source, the port was explanted and the patient recovered without further positive cultures.

CONCLUSION: We present an unusual case of GBS infection causing a infusion port infection with an organism that was nonhemolytic. Nonhemolytic GBS represent only 1-3% of GBS and are generally caused by mutations in a transporter that normally exports the hemolysin extracellularly. The mutation is also associated with the lack of GBS orange/red pigment production. These nonhemolytic GBS isolates are generally considered to be less virulent but not nonpathogenic. It is important to remember that nonhemolytic streptococci can be pathogenic and may be part of GBS that are usually beta-hemolytic.

SINGLE INCISION LAPAROSCOPIC RESECTION OF A GIANT OVARIAN MATURE CYSTIC TERATOMA

Hira H. Abidi, MD; Michael J. Leinwand, MD

WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; Bronson Methodist Hospital,
Department of Pediatric Surgery

BACKGROUND: Ovarian tumors in the pediatric population are a rare occurrence, with a yearly incidence of 2.6 cases per 100,000 girls. Ovarian teratomas are germ cell tumors classified as either mature or immature. Mature cystic teratomas are the most common ovarian neoplasms and are typically benign, whereas immature teratomas are malignant. Patients frequently present with increasing abdominal girth and pain. Diagnosis is commonly made by ultrasound or CT scan. Normal alpha-fetoprotein (AFP) and beta-human chorionic gonadotropin (BHCG) are characteristic of benign mature teratoma. Historically, resection has been performed via laparotomy, though the laparoscopic and Single Incision Laparoscopic Surgery (SILS) approaches have been well documented in the literature. We present a video demonstrating the use of the SILS technique for removal of a giant ovarian mature cystic teratoma in a child.

CASE REPORT: A 13-year old girl presented with a one-year history of abdominal fullness and a significantly protuberant abdomen on examination. Ultrasonography and CT scan demonstrated a 32 x 15 x 27 cm fluid-filled cyst with calcifications, suggestive of a left ovarian mature cystic teratoma. Given the patient's normal tumor markers and low risk of malignancy, a single incision laparoscopic resection was undertaken.

METHODS: Upon entering the abdomen using a single umbilical incision, the teratoma was immediately encountered and 8 liters of fluid suctioned from within. Once the cystic mass was decompressed, the abdomen was insufflated and the ovarian teratoma resected from the left mesovarium and ovarian ligament using electrocautery. The umbilical fascial incision was opened and the mass removed. Examination of the mass demonstrated three teeth within its wall. The patient tolerated the procedure well and was discharged home on the first postoperative day. Pathology demonstrated an ovarian mature cystic teratoma.

DISCUSSION: Compared with laparotomy, the laparoscopic approach to adnexal mass resection offers advantages of decreased pain, decreased hospital length of stay, decreased incidence of adhesion formation, and improved cosmesis. In a review of 19 pediatric patients with ovarian masses, the SILS approach utilized by Lacher and colleagues demonstrated the safety and feasibility of this technique. There were no complications, conversions to open, or readmissions.

CONCLUSION: In our patient, SILS resection was considered appropriate because the malignancy risk was very low due to the characteristic appearance on CT scan and negative tumor markers. This case is of particular interest given the impressive size of the cystic mass, and its successful resection via the SILS technique.

Award Winning Presentations

TREATMENT OF HEADACHE IN THE ED: HALOPERIDOL IN THE ACUTE SETTING (THE-HA STUDY)

Kim Aldy, DO, Jessica McCoy, MD, Elizabeth Arnall, DO, Joshua Petersen, Pharm.D

WMU Homer Stryker M.D. School of Medicine, Department of Emergency Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Emergency Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Emergency Medicine; Bronson Methodist Hospital, Pharmacy

BACKGROUND: Headache is the 4th leading complaint of patients presenting to the emergency department (ED). Treatment for headache varies, but patients are typically treated with a combination of nonsteroidal anti-inflammatory drugs (NSAIDs), metoclopramide, and diphenhydramine.

STUDY OBJECTIVE: To evaluate the efficacy and safety of a reduced dose of haloperidol in the treatment of undifferentiated headache in the ED.

MATERIALS & METHODS: A Randomized, double-blind, placebo-controlled trial performed at a single teaching hospital in Kalamazoo, Michigan. Patients who presented to the ED with benign headache between the ages of 13 and 55 were enrolled. Between October 2015 and June 2016, the ED enrolled and randomized 118 patients. Five patients were excluded due to early discharge, leaving 113 patients in the final analysis cohort. Of this cohort, 60 patients were randomized to receive placebo and 53 received 2.5 mg of haloperidol, both administered intravenously. Individuals who did not exhibit a fifty percent reduction of pain at 60 minutes received 30 mg of intravenous (IV) ketorolac as rescue. Akathisia was treated with 25 mg of IV diphenhydramine if indicated. The primary outcome measure was a reduction of pain from baseline based on a ten-point visual analog scale (VAS). Pain scores were reassessed at 30, 60 and 90 minutes from baseline. Patients were evaluated for adverse events at each data collection point and follow-up was conducted 24 hours post discharge from the ED. QT measurement was performed at baseline and at discharge.

RESULTS: Of the 113 patients included, 53 patients received haloperidol versus 60 receiving placebo. Statistical analyses on demographic data were not statistically different with the exception of a greater proportion of males in the haloperidol group compared to the control. Patients in the haloperidol group reported a -2.60 reduction in VAS at 30 minutes versus -1.27 in the control group. Later time points showed a -4.76 reduction in VAS at 60 minutes in the haloperidol group versus -1.87 in the control group. Rescue treatment with ketorolac was required in 78.3% in the control group versus 32.1% in the haloperidol group. The most common adverse events were anxiety, nausea, vomiting and restlessness. At discharge, no patients in the haloperidol group were found to have any lengthening of their QT interval.

CONCLUSION: This study presents new data that a low dose IV haloperidol is a safe and effective initial approach to managing benign headache in the ED.

ASSESSMENT OF THE ACCURACY AND EFFECTIVENESS OF PEDIATRIC DRUG DOSING TOOLS USED BY PARAMEDICS

Maria Willoughby-Byrwa, M.Ed, EMT-P, I/C; Donald Sefcik, DO, MBA; William Fales, MD, FACEP, FAEMS

WMU Homer Stryker M.D. School of Medicine, Simulation Center; Michigan State University, College of Osteopathic Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Emergency Medicine

INTRODUCTION/RATIONALE: Studies of prehospital emergency pediatric care report frequent miscalculation of drug dosing. The Broselow Tape, a medication dosing reference guide, is used during emergencies to predict children's weight according to their length. Dosing errors commonly occur when providers convert weight from pounds to kilograms, calculate dosages from a weight-based formula, or calculate volumes required to deliver specific medication doses. The Michigan Medication Emergency Dosing and Intervention Card (MI-MEDICard), a new dosing tool, reduces the need for multiple mathematical conversions. This study was designed to assess differences in dosing errors among paramedics when using the MI-MEDICard in comparison to the Broselow Tape during hypothetical pediatric emergency scenarios.

MATERIALS AND METHODS: Ninety-nine paramedics from five EMS agencies representing urban, suburban and rural response areas completed written tests utilizing the MI-MEDICard and the Broselow tape. Study subjects were randomly assigned into groups varying the order in which the tools were utilized. A crossover study design method was used. Analysis was conducted on the scores from each test and the order in which the dosing tools were used. Results: Average total errors were 5.63 (± 1.56) per study subject with using the Broselow Tape and 1.52 (± 1.61) using the MI-MEDICard. The maximum total number of errors possible was 9. Error rate reductions by dosing scenario were: epinephrine for cardiac arrest (52%), epinephrine for anaphylaxis (96%), dextrose 25% (94%), adenosine (38%), midazolam (58%), diphenhydramine (68%), morphine (83%), and fentanyl (66%).

DISCUSSION: Paramedics have to make decisions quickly, in extremely uncontrolled environments. Such environments are unstable due to, among other factors, emotional escalation, personal safety, scene safety and security, and time pressures. These factors increase stress on the provider and can reduce (or eliminate) clear thinking and skill retention needed for proper patient care. Pediatric medication dosing has been recognized as a high-error activity with the potential to cause serious harm. The MI-MEDICard was designed in hopes to reduce pediatric medication errors and has become a mandatory standard piece of equipment on each advanced life support vehicle in Michigan by MDHHS. However, requiring the use of the MI-MEDICard is only a first step toward assuring a reduction in pediatric medication errors.

CONCLUSION: The use of the MI-MEDICard produced a 73% reduction in pediatric drug dosing errors. The results of this study demonstrate that supplementing the Broselow Tape with MI-MEDICard should result in a reduction in pediatric medication dosing errors.

DESIGN AND EVALUATION OF A MORE REALISTIC TUBE THORACOSTOMY TASK TRAINER

Mark Williams; Richard Lammers, MD

WMU Homer Stryker M.D. School of Medicine, Simulation Center

INTRODUCTION: Tube thoracostomy (chest tube insertion) is a procedure taught to physicians during Advanced Trauma Life Support Courses and other procedure labs. Existing training models lack tactile and visual realism, and replacement skins are expensive.

PURPOSE: To develop a tube thoracostomy task trainer (“T4”) with readily available materials that has enhanced realism and lower cost than existing, commercial trainers.

MATERIALS/METHODS: A T4 model was created using inexpensive materials and spare parts from the Simulation Center. A window was cut into the side of a discarded plastic mannequin torso with a dremel tool, and a rod was threaded through holes drilled above and below the window. A slab of pig ribs was secured to this framework using the rod. Pig skin obtained from a local meat store was cut to size and secured to the ribs with bolts, washers, and wing nuts. This process was repeated on the opposite side. For added realism, an unused mannequin head and lungs were attached to the torso. Lungs were inflated and deflated through an endotracheal tube attached to a ventilator or bag/mask device.

The T4 model allows a learner to palpate intercostal spaces through skin, prep and drape skin, make an incision, palpate the moving lung, insert a chest tube, and suture the tube in place.

The T4 model was informally evaluated by learners, instructors and course directors after each use.

RESULTS: The new model was used during three procedure labs and five ATLS courses. Each side of the model accommodated 12 tube placements. Once thawed, the ribs and skin were useable for about 24 hours. The total cost of building the model, excluding mannequin parts, was \$54. Consumable costs (pig skin and ribs) were \$9 per side. Compared to commercial products, use of the trainer provided a total cost savings per ATLS Course of \$4,946.

Learners and instructors described the model as highly realistic and superior to a commercial task trainer (Trauma Man™) that was used previously. ATLS Course Directors have requested that the Simulation Center replace previous trainers with the T4 model for all courses during the past 16 months.

Problems associated with the new model include the need to store perishable components in freezers, thaw them in a timely manner, and assemble the model the day of the event.

CONCLUSION: A new tube thoracostomy task trainer is a satisfactory and cost-effective substitute for existing products.

A MULTIVARIABLE ANALYSIS OF RISK FACTORS AFFECTING LOW BIRTH WEIGHT INFANT MORTALITY IN KALAMAZOO COUNTY

Teresa Evans; Jennifer Kim; Samuel Lai; Dart Newby; Duncan Polot; Terra Bautista, BA; Duncan Vos, MS; Catherine L. Kothari, PhD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; Kalamazoo County Health and Community Services, Healthy Babies Healthy Start; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences

BACKGROUND: Kalamazoo County has one of the highest racial disparities in infant mortality in Michigan. Contributing to this, African Americans in Kalamazoo County are much more likely to deliver low birth weight (LBW) infants than Caucasians. However, whether there are racial differences in the survival rate of these vulnerable infants is unknown. This study assessed whether race, along with additional risk factors, were associated with infant mortality among this high-risk population.

METHODS: Kalamazoo County birth records and Kalamazoo County linked birth-death datasets from 2005 to 2014 were used to analyze associations between maternal variables of interest (n=13) and LBW infant mortality, defined as death within first year of birth. Variables ranged from demographics and medical history to health care status categories. Bivariable analyses of these relationships were assessed using Pearson Chi-Square or Fisher's exact tests for categorical predictors, and Student's t-test for continuous predictors. Odds ratios and their 95% confidence intervals were computed for variables with a p-value < 0.10.

RESULTS: Of the 1709 LBW births –during the study period, there were 106 (6.20%) infant deaths, consisting of 51/48% white, 37/34.9% black, 12/11.3% others, and 6/5.6% of unknown race. Maternal race was not associated with higher odds of death among LBW infants. Neither were maternal age, history of obesity or STI, high school graduation and Medicaid enrollment status. Factors that were significantly associated with infant mortality within first year included: prepregnancy diabetes OR 5.26 (95% CI 1.09, 33.33); having no prenatal visits OR 5.17(95% CI 2.68, 9.95); less than college education OR 2.37 (95% CI 1.31, 4.29); no father identified on the birth certificate OR 1.68 (95% CI 1.10, 2.57); unmarried OR 1.46 (95% CI 0.98, 2.19). Women with gestational diabetes were less likely to experience an infant death than women without gestational diabetes (OR 0.41, 95% CI 0.19,0.88).

DISCUSSION: Although maternal race was associated with greater likelihood of delivering an LBW infant, this risk does not extend further; African American LBW infants were just as likely to survive as Caucasian LBW infants. Some, but not all, of the known risk factors for LBW births continued to present risk for LBW infants, including prepregnancy diabetes, prenatal health care, post-secondary education and paternal involvement. Interestingly, gestational diabetes is associated with lower infant death; perhaps due to increased prenatal care for mothers with gestational diabetes.

DEAFFERENTATION AND DIRECT INJURY CAUSE DIFFERENT MICROGLIAL RESPONSE PROFILES IN THE ADULT ZEBRAFISH OLFACTORY BULB

Susanna R. Var; Christine A. Byrd-Jacobs, PhD

Western Michigan University, Department of Biological Sciences; Western Michigan University, Department of Biological Sciences

Brain disease and injury involve the activation of resident and peripheral immune cells to clear damaged neurons. The regenerative nature of the zebrafish olfactory system serves as a useful model for examining the response of immune cells following injury. Microglia are the resident immune cells of the central nervous system that respond to damage by migrating to the site of injury and phagocytizing neuronal debris. Preliminary data suggested that peripheral deafferentation and direct injury to the bulb result in activation of microglia, but the origin and pattern of microglial migration remains unclear.

We performed peripheral deafferentation and direct injury to the olfactory bulb in the whole fish and compared it to the isolated brain removed of all afferent input and peripheral influence. The olfactory bulbs of adult zebrafish were damaged by cauterizing the olfactory organ or directly injuring the bulb with a stab wound. Removal of afferent input and peripheral influence was performed by isolating and culturing the brain. Mouse monoclonal 4C4 antibody was used to label microglia.

Comparisons of whole fish treatment groups to controls showed a significant increase in activated microglia in the damaged bulb following peripheral deafferentation at 4, 12, 24, 48, and 72h post injury. Amoeboid profiles significantly increased between 1-4h, decreased between 4-12h, increased again at 12-24h, and decreased again at 24-48h. Following direct injury to the bulb, there was a significant increase in activated microglia in the ipsilateral and contralateral bulbs at 1 and 4h after injury. Following 4h after injury, there was a significant decrease in amoeboid profiles, which remained low until 72h. Comparisons of isolated brain treatment groups to controls showed significantly more activated microglia in the olfactory bulbs after 4 and 12h in culture. Isolated brains that received a direct injury showed significant increase in activated microglia after 1, 4, and 12h in culture. Isolated brains that received a direct injury also showed significantly less responsive microglia in the damaged bulb when compared to the direct injury to the bulb in the whole fish at 12h.

Peripheral deafferentation and direct injury to the olfactory bulb result in different microglial response profiles and suggest a temporal significance and selective phagocytosis during the resolution of inflammation. Microglia can respond to signals without afferent input or peripheral influence up to a certain time after injury. Further work is required to explore the origin and temporal sequence of the immune cells that respond to injury.

BURNOUT IN HEALTHCARE PROFESSIONS: REIGNITING THE FLAME

Tyler Gardner; Auditi Kundu; Amrith Shettigar; Daphne Darmawan; Yen-Yu Tina Chen

WMU Homer Stryker M.D. School of Medicine Medical Students Class of 2019

BACKGROUND: The term burnout has been used to describe the maladaptive response of individuals to severe stress and high ideals in helping professions.¹ The definition is broad and the lack of a good definition leads to only weak approximations of prevalence. However, information provided to the National Institutes of Health by a German institute suggests there are a few signs and symptoms associated with the condition such as exhaustion, alienation from activities, and reduced performance.¹ These symptoms overlap considerably with other psychological illnesses. Care should be used to rule out other causes, such as depression or anxiety disorders.

STUDY OBJECTIVE: We completed a literature review of burnout in healthcare professionals to identify the effects on their mental well-being and work performance, as well as techniques utilized to prevent burnout.

RESULTS: The prevalence of burnout significantly increased across all medical specialties in the U.S. from from 2011 (45.5%) to 2014 (54.4%). The greatest burnout rate is found in emergency medicine. Satisfaction of work-life balance significantly decreased among all medical specialties in 2014 (40.9% in 2014 versus 28.5% in 2011; n= 6880).² Burnout varies by career stages, with the highest rate of burnout among medical students and residents, which are on average 10% more prevalent compared to practicing physicians.³

Burnout can have significant negative effects on a person's mental and physical health, leading to depression and suicide. Untreated burnout can negatively affect a physician's ability to care for patients, leading to an increase in medical errors, hostile provider-patient interaction, and decrease in patient satisfaction.⁴

DISCUSSION: Evidence-based techniques used to prevent burnout, before onset include mindfulness activities⁵, work engagement⁶, extracurricular activities, mentorship, autonomy, Pass/Fail evaluation, and counseling.⁷ These prevention techniques appear more effective at eliminating burnout since there are fewer studies evaluating the effectiveness of interventions once burnout has set in. However, anecdotal evidence suggests that the following interventions may be effective⁶: participation in panel and group discussions, conferences, and retreats; self-care through rest and exercise; spending time with family; long-term stress management programs; and mindfulness-based interventions such as reflective writing, meditation, guided imagery, art, movement and music.⁸

CONCLUSION: Burnout compromises healthcare professionals' mental well-being and patient care. The negative implications on the healthcare system due to burnout calls for the development and initiation of evidence-based programs that cater to the prevention of burnout, as well as education on resilience strategies and coping.

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ISOLATED GASTROCNEMIUS CONTRACTURE IN PATIENTS WITH FOOT AND ANKLE PATHOLOGY: A PROSPECTIVE, CASE-CONTROL STUDY

Adam Green, BS; James Jastifer, MD

Michigan State University College of Osteopathic Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine; Borgess Medical Center, Department of Orthopaedic Surgery

INTRODUCTION: Prior studies have demonstrated that patients with foot and ankle pain have an associated isolated gastrocnemius contracture (decrease in ankle dorsiflexion). It remains unclear if this is a casual, or a causal relationship. The purpose of the current study is to report validated ankle dorsiflexion in both legs of patients with unilateral foot and ankle pain to provide some insight into the relationship between an isolated gastrocnemius contracture and foot and ankle pain. Our hypothesis was that patients presenting with foot and ankle pain would have similar measured ankle range of motion in both ankles despite having unilateral foot and ankle symptoms.

METHODS: Institutional review board approval was obtained and a prospective case-control study was performed. We utilized a previously validated device to measure ankle range motion and isolated gastrocnemius contracture in 32 patients diagnosed with foot and ankle pathology. Measurements were repeated three times on each side with the knee extended to isolate the effect of the gastrocnemius muscle. We additionally performed a clinical examination and goniometer measurement of ankle range of motion. Patient history and demographics were also obtained.

RESULTS: Mean dorsiflexion was 9.6 degrees in the extremity with foot and ankle pathology compared to a mean of 12.5 degrees in the unaffected limb, which was a statistically significant difference, ($p < 0.05$). Mean dorsiflexion was 17.6 degrees using the device in healthy controls. The device was used three times on each patient with no significant difference between measurements, ($p > 0.05$). The difference in dorsiflexion was significantly less utilizing a goniometer than using the validated device, which may be due to measurement technique and external landmarks, ($p < 0.001$). When compared to healthy controls, the affected foot and the contralateral foot demonstrated a statistically significant difference in mean ankle dorsiflexion, respectively, ($p < 0.001$, $p < 0.001$).

CONCLUSION: Previous studies have demonstrated a relationship between foot and ankle pathology and an ipsilateral isolated gastrocnemius contracture. It is unclear if the isolated gastrocnemius contracture is the cause of foot and ankle pathology, or vice-a-versa. This study provides evidence that patients with unilateral foot or ankle pain do not have symmetric ankle range of motion, which has several clinical implications. First, it is possible that foot and ankle pain may cause ipsilateral loss of ankle range of motion due to gait compensations or other abnormalities. Second, it makes intuitive sense that if foot and ankle pain is causing a loss in range of motion, then the contralateral side may be uninvolved. Third, further studies should be performed to study the relationship between and mechanism by which this difference develops in the setting of foot and ankle pain.

EFFECT OF VARIABLE ACTIVITIES ON THE ENGAGEMENT OF MEMORY CARE PATIENTS

Ai Yamasaki; Cheryl Dickson, MD; Patrick Albright; Tyler Gardner; Katherine Han; Brendan Tamm

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Department of Health Equity and Community Affairs; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019

BACKGROUND & OBJECTIVES: Studies demonstrate that social activities (e.g., church attendance, recreation, and group activities), productive activities (e.g., gardening, preparing meals, and shopping), and fitness activities (e.g., sports, walking, and exercise) are independently associated with survival of elderly persons even after functional disability. The Heritage Community of Kalamazoo focuses on activities such as bible study, music, pet therapy, and modified volleyball exercises to provide and maintain residents' spiritual appreciation, cognitive abilities, and quality of life. The purpose of the project is to identify any strengths and weaknesses in activity programming for memory care residents at Heritage Community through observation and reflection of resident engagement. Furthermore, ongoing student interaction with the residents provides the organization with the opportunity to reflect upon their experiences on how to better communicate with geriatric and dementia populations.

METHODS: Five medical students investigated the engagement of Heritage Community memory care residents in various activities from July 2016 to December 2016. Students attended organized activities at Amber Place twice per month for two hours per session. Activities include devotions, dog visits, and modified volleyball games involving hitting a balloon. During each session, students observed residents as they participated in the day's activities and recorded their observations. Student reflections were compiled to identify common themes between activities and attitudes.

RESULTS: Analysis of reflection notes demonstrate that most activities were effective in engaging residents with varying success. Activity effectiveness tended to vary by activity and day. It was not uncommon for residents to join and subsequently leave activities. Sometimes residents were not eager to engage initially, but with some persuasion and discussion, sat quietly and eventually participated. Activities involving music, singing, and devotions evoked general engagement. Residents enjoyed repetitive activities, such as dog visits and balloon games. However, residents most commonly lost interest in the balloon games during the activity.

CONCLUSIONS: Overall, Heritage Community utilizes effective activities to maintain a stimulating environment for memory care residents. Residents appreciated activity consistency and commonly recognized when activities would occur. Study limitations included the inability to measure activity effectiveness across differing days of the week, as well as limited sample size. There are numerous opportunities for further research into resident engagement and activity programming at Heritage Community. Activity impact on resident engagement and emotional health is a particularly important area to direct further research with quantitative measures.

INTRATHORACIC MESENTEROAXIAL GASTRIC VOLVULUS WITH MASSIVE GASTRIC NECROSIS REQUIRING TOTAL GASTRECTOMY AND ROUX-EN-Y ESOPHAGOJEJUNOSTOMY RECONSTRUCTION

Alan Hifko; Saad Shebrain, MD; Mathew Pryor, MD; Earl Norman, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; MSU College of Osteopathic Medicine, Department of General Surgery

INTRODUCTION: Acute gastric volvulus is a surgical emergency with high morbidity and mortality due to associated ischemic gastric necrosis, perforation, and severe cardiorespiratory compromise. It is characterized by abnormal rotation of the stomach of more than 180°. It is classified based on the axis of rotation into organoaxial and mesenteroaxial volvulus. Intrathoracic gastric volvulus occurs uncommonly in association with organoaxial rotation which draws the stomach through a defect at the hiatus, mesenteroaxial rotation has rarely been reported intrathoracically. We report a case of Intrathoracic Mesenteroaxial volvulus associated with a para-esophageal hernia presenting with gastric necrosis.

CASE REPORT: A 70-year-old female, with a complex medical history including a known type III hiatal diagnosed via CT scan two years prior, presented to the emergency room with acute onset abdominal pain, nausea, and inability to vomit. She describes the abdominal pain initially as intermittent that started in the lower left quadrant and had progressively worsened with radiation to the back and left shoulder. Initial laboratory tests showed leukocytosis, anemia and elevated lipase. A nasogastric tube was inserted, and 1 L of dark red fluid was retrieved. Concerns for acute abdominal vascular catastrophe called for A CT angiogram of the abdomen and pelvis, which showed pneumoperitoneum and subphrenic fluid collection with a large para-esophageal hiatal hernia and intrathoracic stomach with pneumatosis and disruption of the anterior gastric wall. An emergency celiotomy was performed. The entire stomach was noted to be frankly ischemic and gangrenous. A Damage Control Surgery (DCS) was utilized. A total gastrectomy without reconstruction was performed (phase I) to control contamination. The patient was taken to the surgical intensive care unit for resuscitation (phase II). After 24 hours, the patient underwent a definitive surgery (phase III) that included a Roux-en-Y esophagojejunostomy with jejunal pouch reconstruction and feeding jejunostomy tube. The patient was discharged 15 days after the inciting operation.

CONCLUSION: Gastric volvulus is a serious condition with a mortality rate ranging from 30 to 50%. Rarely a volvulus can present intrathoracically in the presence of a large hiatal hernia and should be considered a surgical emergency due to increased risk of ischemia. Giant hiatal hernia, in which >50% of stomach resides in the chest, should undergo surgical repair to prevent this potentially devastating complication. We present this case report to raise clinical awareness of intrathoracic gastric volvulus complicated with gastric necrosis.

IMPROVING PRODUCTIVITY THROUGH SCHEDULING AT THE WMED FAMILY MEDICINE RESIDENCY CLINIC

Alex Witte, MD; Susan Jevort-Eichorn, DO; Alison Radigan, MD; Larry Mann, DO; Jamie McCartney, MD; Aisha Shakoor, MD

WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family and Community Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine

INTRODUCTION: The Accreditation Council for Graduate Medical Education (ACGME) requires every family medicine residency program to have a practice site that supports, “continuous, comprehensive, convenient, accessible, and coordinated patient care”. The WMed Family Medicine Resident Clinic (Team Oakland), located within the Family Health Center (FHC) – Paterson location, has long been plagued by scheduling difficulties, as evidenced by high no-show rates, empty appointment slots, and frequent cancellations threatening the ability of our residents to achieve the required number of outpatient visits mandated by the Family Medicine Residency Review Committee (RRC) and the requirement for continuity from the ACGME. We believe many of these issues arise from the FHC’s open-access scheduling template, which heavily favors same day and walk in visits.

PURPOSE: This quality improvement project aims to assess the productivity of the Western Michigan Family Medicine Clinic through a scheduling analysis to determine how we can better meet the needs of our patients while also meeting the visit numbers required of the RRC for our residents.

STUDY DESIGN: This study is a retrospective scheduling analysis in which our no show rate and unfilled appointments will be considered. Scheduling data for Team Oakland was collected from December 1st, 2016 to January 31st, 2017 through customizable EPIC reports.

RESULTS: Data shown below exhibits the total number of appointment slots for Team Oakland broken down by the number of appointments filled, unfilled appointment slots and no show appointments. Data was subsequently broken down by day of the week and hour of the day. The fill rate for the 8:00 hour is 51% compared to 80-90% for most other hours.

Image Table 1. Scheduling data for Team Oakland December 2016 through January 2017

DISCUSSION: Literature review revealed conflicting evidence in support of open-access scheduling. We found limited alternative scheduling approaches and limited data specific to residency clinic productivity. Data analysis confirmed that we have a high proportion of appointments that go unfilled as well as a significant no-show rate. Proposed changes to the scheduling template include increasing the number of advanced scheduled appointments-particularly during early morning hours, obtaining an independent scheduler for the resident clinic, and a novel scheduling model targeted at filling no-show appointments with walk-in patients.

CONCLUSION: The current scheduling model used at the FHC does not adequately meet the needs of the Family Medicine Residency clinic and data-driven alternative scheduling models should be explored.

A CASE OF DIFFICULT-TO-TREAT ASTHMA DUE TO UNCONTROLLED ATYPICAL GASTROESOPHAGEAL REFLUX

Alissa Welsh, MD; Andrey Leonov, MD

WMU Homer Stryker M.D. School of Medicine, Department of Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Pediatrics/Allergy and Immunology

INTRODUCTION: In uncontrolled asthma, comorbid conditions should be treated in order to achieve better asthma control. The contribution of gastro-esophageal reflux (GER) may be overlooked when its presentation is atypical.

CASE REPORT: 11-year-old male with moderate persistent asthma and allergic rhinitis presented with persistent barky cough, diagnosed as spasmodic croup after bronchoscopy, esophagram, swallow study and magnified airway x-ray failed to show anatomical abnormality. Empiric proton pump inhibitor (PPI) treatment was started with improvement in cough. Patient was referred to Gastroenterology for evaluation of GER, despite lack of heartburn or vomiting. Endoscopy revealed esophageal candida infection which was treated. The cough however, was felt to be secondary to allergic rhinitis and reactive airway disease, thus PPI was discontinued. Impedance, pH probe or esophageal manometry were not performed. Off of PPI, patient developed frequent dyspnea, wheezing, increased requirement for albuterol and systemic corticosteroids. Bronchoscopy revealed edematous, friable, hyper-reactive airway mucosa, with negative bacteria and fungi cultures. PPI was re-started with significant decrease in wheezing, dyspnea and cough.

DISCUSSION: Uncontrolled allergic rhinitis, sinus disease and traditionally presenting GER are accepted comorbid conditions leading to poor asthma control. Empiric treatment of “silent GER” has remained a controversial issue. GER is a risk factor for increased severity of chronic rhinosinusitis and asthma. An association exists between neutrophilic asthma, chronic rhinosinusitis and GERD. History of GERD is among strongest predictive factors for early asthma readmissions. Atypical GER presentation should not deter consideration for treatment.

CONCLUSION: This case illustrates importance of treating GERD in uncontrolled asthma, even without traditional gastro-esophageal symptoms.

DEATH RELATED TO FISTULAS INVOLVING THE GASTROINTESTINAL AND CARDIOVASCULAR SYSTEMS

Allan Joseph Medwick, EdD; Joseph A. Prahlow, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2020; WMU Homer Stryker M.D. School of Medicine, Department of Pathology

BACKGROUND/INTRODUCTION: Gastrointestinal tract fistulas are relatively uncommon and can be congenital or acquired. Fistulas may communicate with a variety of anatomic locations, including body cavities, the skin, and other organ systems. Acquired fistulas which communicate with the cardiovascular system are of particular concern, as they may be associated with significant morbidity and mortality. This study reports on three cases of acquired, post-surgical fistula formation involving the gastrointestinal and cardiovascular systems.

CASE REPORTS: Case 1 - A 57-year-old man experienced sudden cardiac death shortly after having a permanent pacemaker placed for atrial fibrillation. Approximately two years earlier, he underwent surgical resection of his esophagus for cancer, and he had a diaphragmatic hernia repair several weeks before death. He also had hypertensive and atherosclerotic cardiovascular disease and emphysema. At autopsy, the cause of death was determined to be upper gastrointestinal tract hemorrhage due to a gastro-left atrial fistula which developed as a complication following the esophagectomy for esophageal cancer.

Case 2 – A 67-year-old female with severe chronic obstructive pulmonary disease (COPD), as well as a thoracic aortic aneurysm for which she had undergone aortic reconstruction with graft placement, presented to the hospital with massive hematemesis with associated breathing difficulties. Prior to dying, an upper endoscopy revealed a probable esophageal fistula thought to be communicating with the respiratory system. At autopsy, the fistula was found to be communicating with the aorta.

Case 3 – A 51-year-old woman was found unresponsive at home. All resuscitative efforts were unsuccessful. The case was referred for medicolegal autopsy. She had a past history of COPD, gastric bypass surgery, and relatively recent bacterial pericarditis, which required drainage and antibiotic therapy. Autopsy revealed the presence of a gastric fistula involving and traversing the left hemidiaphragm to involve the posterior wall of the left ventricle of the heart. Approximately 500-1000 mL of dark blood intermixed with gastrointestinal contents was present within the stomach and proximal small intestines, but no fresh-appearing hemorrhage was evident.

DISCUSSION/CONCLUSION: Postoperative gastrointestinal-cardiovascular fistulas are relatively rare but can result in significant morbidity and mortality. They may develop following gastrointestinal tract or cardiovascular surgery. Clinicians are advised to be aware of these rare, but often fatal, post-operative complications.

PSEUDOCYESIS PRESENTING IN A CASE OF BIPOLAR 1 DISORDER, MANIC WITH PSYCHOSIS

Arslan Wali Ahmed, DO; John Jacob, MD; Chaz Johnson, MD; Ramesh Bangalore, MD; Peter Longstreet, MD

WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry

INTRODUCTION: By DSM-5, pseudocyesis occurs in non-psychotic individuals whereas delusion of pregnancy occurs in psychotic patients. We present a case of pseudocyesis in a psychotic patient and discuss this presentation's ramifications on our clinical management. Pseudocyesis presents with signs and symptoms of pregnancy (abdominal distension, breast enlargement, menses cessation, lordotic posture, and weight gain) except for fetal confirmation. Delusional pregnancy is the fixed and false belief of being pregnant without any fetal confirmation, without any physical signs and symptoms of pregnancy, and may be a presenting symptom of a psychotic episode. Clinical management warrants a psychotherapeutic approach towards pseudocyesis and a psychopharmacological approach towards delusion of pregnancy.

CASE REPORT: 41 year-old Caucasian female, admitted involuntarily for physical aggression (assaulting police), suicidal ideation, grandiose delusions, claimed she was pregnant, manifested symptoms of pregnancy and declared the baby as the "savior of the world". Her pregnancy test was negative. On admission, her diagnosis was Bipolar 1 disorder, manic with psychosis for which she had been hospitalized multiple times. Prior to admission, she had been stable on quetiapine until it was lowered secondary to excessive "grogginess". She had a miscarriage in 2012 followed by a tubal ligation in 2013. Her most recent romantic relationship ended a few months prior to this admission. During her hospitalization, oral risperidone along with supportive psychotherapy were employed. She achieved clinical stability (including resumption of menses) on this combination and was discharged.

DISCUSSION: Certain psychological antecedents which include a loss of fertility (ie, secondary to tubal ligation) and loss in general (ie, the end of a romantic affair within months of presentation) have been strongly implicated in the development of pseudocyesis. The presence of these antecedents in our case allows us to argue for a psychosomatic etiology rather than a somatopsychic etiology and gave direction to our supportive psychotherapy. This case is unique as it challenged the distinction between delusion of pregnancy and pseudocyesis. This, in turn, had a profound effect on our clinical management wherein we combined supportive psychotherapy with psychotropic intervention by which she achieved clinical stability.

CONCLUSION: Pseudocyesis is managed clinically primarily by supportive psychotherapy while delusion of pregnancy is treated with neuroleptic agents. We offer a case of pseudocyesis in a psychotic patient which responded to the implementation of both psychotherapy and psychotropic agents. This case provided the use of separate interventions on a single patient to treat both conditions.

DELIVERY OF HEALTH EDUCATION IN ADOLESCENTS WITH BEHAVIORAL HEALTH CHALLENGES

Ashley Akkal; Ransome Eke, MD, PhD; Sulin Wu; Amy Rechenberg; Michael Madrid; Jose Lopez-Vera; Duncan Vos, MS

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology & Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology & Biostatistics, Department of Biomedical Sciences

BACKGROUND: Adolescents with behavioral health issues tend to have inadequate access to health education, and are thus less aware of the importance of personal and dental hygiene, exercise, and healthy diet and lifestyle habits. Due to this disparity, this population has been known to harbor a higher prevalence of STI's, drug and alcohol abuse, physical altercations, juvenile detention, and suicide attempts.

PURPOSE: The overall objective of this study was to examine the effect of integrating a health science curriculum in this population.

METHODS: Participants aged 5-17 years old were recruited and assigned to either control or science groups by Family and Children's Services (FCS). We created an 8-week health science curriculum to teach everyday life skills. A questionnaire was utilized to assess participants' comprehension of health information.

The effect of the curriculum on participants' behaviors was examined using a pre/post "Behavioral Insight" questionnaire. Non-parametric Mann-Whitney U test was utilized to determine whether there was a significant difference in behavioral goals and science based knowledge between the control and science groups.

RESULTS: We examined two measurements to evaluate the efficacy of delivering health science information to 23 participants in two science groups, compared to 20 participants in two control groups who did not receive the curriculum. The health knowledge assessment results demonstrated a marginally significant improvement of understanding and retaining health science, which was delivered to the science group in 8 independent sessions on a weekly basis ($p=0.0669$). We observed a statistically significant difference in participants' understanding of their behavioral deficits and how to improve primary behavior ($p=0.01$). There was no significant difference in either group regarding the extent to which participants understand the particular behavior to improve ($p>0.05$).

CONCLUSION: Findings from our study demonstrate that integration of an 8-week science curriculum into life skill training did not negatively affect participants' understanding of their own behaviors. Compared to the control group, we observed a marginally significant improvement in health knowledge assessment scores among students in the science group. Finally, the 8-week science curriculum, both active and passive learning components, was determined to be an effective delivery method for the content involved. Further study in a larger sample may be necessary to detect significant effects of the curriculum.

MYCOBACTERIAL DISEASE OVERLOOKED IN A FRAIL DIABETIC MALE TREATED FOR PNEUMONIA

Aydin Tavakoli, MD, MSc; Glenn V. Dregansky, DO

WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine

Mycobacterial disease has been characterized to cause human illness since the 1950's but practitioners whom address pulmonary disease can overlook its insidious presentation.

This case report documents the presentation of a mycobacterial illness treated as a severe pneumonia.

This is the case of a critically ill 43-year-old male, with poorly treated diabetes who presented with severe, long-standing respiratory distress in DKA. He had a history of weight loss, night sweats, decreased oral intake, and weakness for about a month. He was treated for euglycemia and his pulmonary disease was characterized as a bacterial pneumonia.

Common pathogens were ruled out in an RIDP and he was treated with broad-spectrum antibiotics and discharged. On hospital follow up, careful examination of imaging report and history taking consisted with a timely screening for TB. A quantiferon gold test was positive and our patient was admitted to isolation on our inpatient service for evaluation. His AFB smear being positive, he was started on RIPE therapy. He was discharged with three negative sputum smears on the same therapy with cultures pending final characterization.

This report documents a common treatment algorithm, based on a differential focused on typical culprits for pulmonary infection. Latent mycobacterial infections in our community are on the rise, especially in individuals whom are immunocompromised such as HIV+ or diabetics. First, these individuals must be identified using a screening tool such as a questionnaire. Second, obtaining screening labwork, even in non-compliant individuals are easily obtainable. Quantiferon gold assays could be administered to those identified as high risk even with no previous testing or prior negative test results. As these tests result, evaluation with a chest X-ray will stratify our groups to either further evaluation for latent mycobacterial infections or for treatment based on a positive chest X-ray.

There needs to be a focus on identifying patients at risk for exposure to TB and providing diagnosis and treatment for latent infection or active disease. This will decrease the spread of tuberculosis.

RETROSPECTIVE ANALYSIS OF THE EFFICACY OF THE VULNERABLE AND ELDERLY ASSESSMENT TOOL

Benjamin Roush; Carolyn Isaac, PhD; Nathan Welham; Kristina Le; Evan Kohler; Monte Bermeo; Joyce de Jong, DO; Joseph Prahlow, MD; Duncan Vos, MS

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Department of Pathology; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Department of Pathology; WMU Homer Stryker M.D. School of Medicine, Department of Pathology; WMU Homer Stryker M.D. School of Medicine, Department of Pathology; WMU Homer Stryker M.D. School of Medicine, Epidemiology and Biostatistics, Department of Biomedical Sciences

BACKGROUND: Elder abuse is common in the US, with an estimated 10% of adults over the age of 60 experiencing abuse or neglect by a caregiver annually. The Vulnerable and Elderly Assessment Tool(VEAT) is currently utilized by the Medical Examiners Office of WMed(MEOW) during death scene investigations, facilitating further investigation or autopsy by evaluating the risk factors associated with elders, such as physical signs of abuse. The VEAT has been implemented for the past 3 years to enhance communication between death scene investigators and forensic pathologists in the lab, and has yet to be analyzed.

PURPOSE: The purpose of this study is to determine the efficacy of the current VEAT in application.

METHODS: This retrospective analysis of MEOW cases includes elders for which a VEAT was completed at the death scene investigation. The judgment of the medical examiner is ultimately decisive, but our completed study will include a comparison of how the VEAT screening tool guides the death scene investigator's evaluation of the incident. Our completed study will include a comparison of how the VEAT screening tool guides the death scene investigator's evaluation of the incident.

Data collection will be done in two parts. The first is a survey to be given to forensic pathologists to evaluate the subjective priority given to each VEAT indicator. The second is a collection of collection of decedent data including VEAT scores from the MEOW database for the past two years.

The preliminary VEAT methodology scoring is not standardized and should not be considered validated. Output should be considered exploratory only. The VEAT results are described as a range between (-)15-(+)15 with a positive number indicating a greater presence of "red flags". Scores entail positive(+1), negative(-1) or unevaluated (0).

RESULTS: Pathologist survey results are pending.

Mean VEAT results by category: Overall(n=2016): mean -10.43(\pm 4.10). Females(n=884): mean -9.94(\pm 4.16), Males(n=1177): mean -10.81(\pm 4.03).

Manner of Death: Accident(n=283): mean -8.77(\pm 4.15), Homicide(n=7): mean -7.57(\pm 5.56), Indeterminate(n=15): mean -8.67(\pm 4.55), Natural(n=1669): mean -10.69(\pm 4.04), Pending(n=8): mean -8.50(\pm 2.45), Suicide(n=66): mean -11.89(\pm 3.43).

Autopsy procedure type: External(n=102): mean -10.22(\pm 4.28), Full(n=160): mean -9.42(\pm 4.36), Hospital(n=2): mean -13.50(\pm 0.71), Limited(n=12): mean -12.42(\pm 2.11), None(n=1706): mean -10.54(\pm 4.06), Storage(n=65): mean -9.92(\pm 4.57).

CONCLUSION: Because the VEAT is an original formula, our study is limited by the lack of statistical significance. The goal of this analysis is to correlate VEAT findings with the pending surveys of pathologists, which will ultimately determine evaluation of the screening tool.

CALCANEUS FRACTURES: A POSSIBLE MUSCULOSKELETAL EMERGENCY

Cayla Williams, MD; Tyler Snoap, MD; Matthew Jaykel, MD; Jason Roberts, MD

WMU Homer Stryker M.D. School of Medicine, Department of Emergency Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Orthopaedics; WMU Homer Stryker M.D. School of Medicine, Department of Emergency Medicine; Bronson Methodist Hospital, Department of Orthopedic Trauma

BACKGROUND: Calcaneal fractures are commonly seen and treated in the Emergency Department. There are subsets of calcaneal fractures that pose a high risk to the adjacent soft tissue of the heel and can result in full thickness tissue necrosis if not managed appropriately.

OBJECTIVE: To identify which calcaneal fractures need to be managed within hours and triaged to the orthopaedic team and which can be temporized in a neutral or plantarflexed ankle splint and seen on an outpatient setting.

METHODS: A clinical review of the Emergency Medicine and Orthopaedic Surgery literature was reviewed in detail regarding the management of calcaneal fractures. The classification of calcaneal fractures, mechanism of injury, and key points of the history and physical exam were determined. Based on this culmination of information, the acute management pathway for treatment was determined to help guide physicians to appropriately triage this injury. Finally, a review of the complications from mismanagement of these injuries was reported.

DISCUSSION: Tongue type calcaneal fractures and tuberosity fractures must be triaged within the first few hours of presentation to prevent skin compromise. This requires the emergency physician to understand the radiographic morphology of the fracture as well as the clinical signs of skin compromise. Communication with the orthopaedic surgery service is essential and splinting in a specific manner is important to stabilize the soft tissue envelop.

CONCLUSION: Recognizing the calcaneal injury pattern and implementing the correct treatment strategy is paramount to having successful patient outcomes. A delay or error in treatment can turn a closed fracture into an open fracture.

THE IMPACT OF AN ELECTRONIC SYSTEM ON BEHAVIORAL SCREENING COMPLIANCE IN A PEDIATRIC CLINIC

Charles Brewerton; Roger Apple, PhD; Peter Hoeksema; Beau Prey; Stephanie Van Alsten; Grace Parikh-Walter

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Department of Pediatric and Adolescent Medicine; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019

BACKGROUND: Despite the abundance of studies addressing the impact of Electronic Health Records on patient care and billing, little data exists surrounding the specific impact of electronic screening tools. Additionally, developmental and behavioral screening has been chronically overlooked and is an area of active concern for improvement of patient care nationwide.

STUDY AIM: To determine if an electronic screening tool improves the percentage of pediatric patients who receive routine mandatory screening tests for identification of possible developmental and behavioral conditions.

METHODS: This is a retrospective, longitudinal study using billing data from the Western Michigan University Homer Stryker M.D. School of Medicine Pediatric Clinic to analyze clinician compliance with routine developmental and behavioral screening tests required at particular ages for well child exams. The data retrieved consisted of three billing codes connected to routine screening tests (ASQ, MCHAT, Edinburgh, PSC-17) between the years of 2013 to 2017. Using this data, we calculated the proportion of patients who received appropriate screening tests at the required age of administration.

RESULTS: This study is on-going while the electronic screening tool is being implemented in the clinic. Preliminary results will be presented.

CONCLUSIONS: Early intervention and treatment of developmental and behavioral conditions in children is key to improving outcomes. Thus, early identification of such conditions is paramount, and this is often done by administering developmental and behavioral screening tests. This study will show whether or not electronic screening tools prove helpful in ensuring that developmental screeners are administered, thus improving early identification of developmental and behavioral conditions in children.

ARIPIPRAZOLE VS LURASIDONE IN THE TREATMENT OF A PATIENT WITH CAPGRAS SYNDROME

Chaz Johnson, MD; Arslan Ahmed, DO; John Jacob, MD

WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry

ABSTRACT: Under DSM 5 criteria, Capgras Syndrome is currently classified as a Delusional disorder, Unspecified type. It is a complex psychotic phenomenon that may arise in the context of neurological or psychiatric pathology. We present a patient with Capgras syndrome and the effectiveness of treatment with Aripiprazole vs Lurasidone

INTRODUCTION: Capgras Syndrome is characterized by misidentification of one or more people and by the delusional belief that the misidentified person has been replaced by a double, an imposter who is generally perceived as a persecutor. Currently there is a dearth of recent scientific literature on the subject and treatment of Capgras syndrome. There are no formal guidelines delineating the standards for assessment or treatment of this syndrome. There is a plethora of pathogenic hypotheses for the cause of Capgras syndrome. With no current treatment guidelines for the disorder, we offer a case study on the effectiveness of treatment with Aripiprazole vs Lurasidone.

CASE REPORT: Patient is a Single 54-year-old Caucasian female with a past Psychiatric history of bipolar depression who was admitted involuntarily for paranoid delusions, disorganized behavior, delusions of grandeur and threatening statements. Multiple delusional persecutory beliefs of hitmen and “shape-shifters from another planet” coming to kill her, son and son’s girlfriend replaced by “morphs”, and pregnant with a shapeshifter. Believes sons girlfriend has tried to poison her. Patients first psychiatric admission with no recent psychiatric care. Aripiprazole was started and titrated to a therapeutic level. Patient saw no improvement in her delusions. Lurasidone was started and titrated to a therapeutic dose. Patient saw a great improvement in her delusions. At time of discharge she no longer believed any of her bizarre delusions stating “I don’t believe that crazy stuff anymore”.

DISCUSSION/CONCLUSION: Capgras syndrome generally occurs as part of a psychiatric disorder, most often during paranoid schizophrenia. Current research recommends treatment of cooccurring psychiatric, substance use or medical disorder. The utility of this case report is vital due to the lack research on the appropriate treatment of Capgras syndrome. Limited case reports have shown favorable responses with: Olanzapine, trifluoperazine, clorazepate, and pimozide. Although Aripiprazole has been shown to have greater efficacy over Lurasidone in treating psychosis, we show vastly greater symptom improvement with Lurasidone. This case shows efficacy of newer atypical antipsychotics in treating Capgras. With a lack of research on treatment, it is our aim to fill the void of reports on effective treatment of Capgras syndrome.

THE EFFECT OF HEALTH FAIR ATTENDANCE ON ATTITUDES TOWARD HEALTH

Cheryl Dickson, MD; Elizabeth Kinsella; Michael Chavarria; Daphne Darmawan; Auditi Kundu; Lakshmi Ramachandran

WMU Homer Stryker M.D. School of Medicine, Department of Health Equity and Community Affairs; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019

INTRODUCTION: Health census data from the past decade demonstrates high rates of cardiovascular disease, diabetes, and obesity in Kalamazoo County. In order to understand opportunities for bettering the health of Kalamazoo County, we assessed the impact of local health fairs on individuals' intent to improve their health.

OBJECTIVE: To assess the effect of health fair attendance on individuals' attitudes towards their own health.

METHODS: We administered a pre- and post- survey to attendees of the Boys and Girls Club's Be Fit Health Festival. Upon entry to the fair, attendees completed a survey detailing their health behaviors and attitudes. Participants completed a second survey when exiting. The exit survey addressed participants' intent to positively change health behaviors and barriers to health. A number identifier administered to each participant allowed pairing of entry and exit survey responses. SAS 9.4 was used to perform all statistical analyses. Survey items were compared pre- and post-health fair using McNemar's analysis, and Chi-square test of independence was used to compare items within the post-survey. Wilcoxon rank sum test was used to compare median number of barriers with likelihood to see a doctor.

RESULTS: 75 total people completed the pre-fair survey, and 56 total people completed the post-fair survey. 19 exit surveys were missing, resulting in 56 total paired survey sets. Based on the McNemar's Test, no significant difference (p value > 0.05) was found between participants' responses upon entering and exiting the health fair, including items that addressed: self-rated health, intention to improve diet and exercise, intention to reduce tobacco and alcohol, and intention to visit a doctor.

CONCLUSION: Health Fairs are utilized in a variety of populations for a number of reasons, including to screen, educate, and increase awareness of community resources. However, their true benefit is varied and inconsistently documented. In this study, participants of the Be Fit Health Festival completed pre- and post-fair questionnaires on their health attitudes and intentions. Health Fair attendance did not have a significant impact on attendees' intent to change health behaviors including diet, exercise, tobacco use, alcohol use and/or intention to visit a doctor. To improve the efficacy of health fairs for a particular community, educational information, screening tools, and participating community organizations and services should be targeted to the health needs and disparities of the population at hand.

LONGSTANDING ESOPHAGEAL FOREIGN BODY MISDIAGNOSED AS CROUP

Daniel Zindrick, MD; Philip Pazderka, MD

WMU Homer Stryker M.D. School of Medicine, Department of Emergency Medicine

INTRODUCTION: More than 100,000 cases of foreign body (FB) ingestion are reported each year in the United States and 80% of cases occur in children. Patients may be asymptomatic or have only transient symptoms at the time of ingestion. We report the case of a 1 year old female with longstanding esophageal FB after roughly 2 months of ongoing stridor that was misdiagnosed as croup.

CASE: 1 year old healthy female presented to the ED for intermittent stridor with crying. On initial evaluation by PCP 2 months prior, patient had concomitant upper respiratory infectious symptoms and was diagnosed with croup. She improved with steroids and humidified oxygen. Five weeks from the initial diagnosis, parents returned to the PCP with ongoing concern though patient was asymptomatic on evaluation. A soft tissue neck X-ray was obtained and interpreted as normal and routine follow up with ENT was planned. Three days later, parents present to the ED complaining of worsening stridor over the past 48 hours and have not yet been evaluated by ENT. Exam in the ED is notably for biphasic audible stridor that is loudest with inspiration. Decadron and nebulized epinephrine were administered. A two view chest X-ray was obtained and interpreted as normal. However, ED team was concerned for narrowing of the mediastinal trachea on lateral view chest X-ray; the pediatric service was consulted recommending CT chest with IV contrast that showed edema in the superior mediastinum centered around the esophagus and tracheal flattening above the carina with 2 mm AP diameter. She was started on IV Zosyn and flexible bronchoscopy and esophagoscopy were performed. Visualization of the esophagus demonstrated a plastic piece with jagged edges seen at the upper esophagus with mucosal folds surrounding it. The trachea had only mild inflammatory changes but was otherwise without injury. The FB was removed and the patient recovered completely.

DISCUSSION: Esophageal FBs occur most commonly in children aged 6 months to 3 years and tend to lodge in areas of physiologic narrowing, including the upper esophageal sphincter, level of the aortic arch, and the lower esophageal sphincter. Patients may be asymptomatic, or may present with dysphagia, refusal to eat, wheezing, choking or stridor. Longstanding esophageal FBs may lead to recurrent aspiration pneumonias and can damage the esophageal mucosa leading to strictures. They may also erode through the esophageal wall creating a fistula with the trachea or other nearby structures.

SURVIVING AS A CANCER SURVIVOR: A CASE REPORT OF RADIATION-INDUCED AUTONOMIC DYSFUNCTION

Daphne Sy; Mark D. Schauer, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Department of Medicine

While radiation and chemotherapy have achieved high rates of cure for Hodgkin lymphoma, the medical community is only now starting to characterize the long-term effects of treatment on these young cancer survivors, many decades later. Mantle radiation has been implicated in significantly increased cardiovascular risks, pulmonary fibrosis, other cancers, and thyroid disease over the patient's lifetime. However, new syndromes are still being discovered within this population as they age. The purpose of this case study was to consider the unique health issues of cancer survivors, and how their treatment history should prompt us to broaden our differentials. Our patient presented emergently with what seemed like classic unstable angina and heart failure, which were already being treated by outside physicians, despite a plethora of puzzling diagnostic evidence to the contrary. She also carried a diagnosis of postural orthostatic tachycardia syndrome (POTS) after what was interpreted to be a positive tilt table test earlier that year. After careful research and complete reconsideration of her diagnostic findings over the year, it was discovered that an unusual syndrome of autonomic dysfunction has been recently characterized within this population, distinct from any issues of cardiac dysfunction, and would explain her episodes of autonomic instability. Specialized long-term follow up with providers knowledgeable about the issues of cancer survivors may be ideal to maintain optimal functional status in this population. Additionally, a search for medications to prevent the gradual progression of fibrosis from radiation therapy may become relevant as more people survive cancer diagnoses.

INJECTION-ASSOCIATED MYCOBACTERIUM FORTUITUM INFECTION

Dennis T. Huang; Larry Lutwick

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2020; WMU Homer Stryker M.D. School of Medicine, Department of Medicine and Biomedical Sciences

INTRODUCTION: Mycobacterial species are unusual causes of skin and soft tissue infections and can be difficult to diagnose in the absence of consideration as they often require specific culture media and longer incubation times. We report a *Mycobacterium fortuitum* subcutaneous abscess in a diabetic related to medication injection that was initially diagnosed without specialized media or prolonged incubation times.

CASE REPORT: A 48 year old diabetic female developed a progressive subcutaneous swelling in the tissues of the right lower abdominal wall where she had been injecting liraglutide. Because of continued enlargement "to almost egg size" with pain, she was empirically treated with cephalexin and trimethoprim/sulfamethoxazole without effect. Subsequently, a formal I&D was performed producing non-foul smelling purulence. The Gram stain showed many WBCs without any organisms seen and the culture revealed a Gram positive rod subsequently identified as *M. fortuitum* by the Michigan Department of Health and Human Services.

She was referred to out-patient Infectious Diseases clinic. when seen, neither before or after drainage had she complained of any fever, chills sweats, unintentional weight loss or other constitutional symptoms. On examination, there was a 2 mm opening without drainage at the inferior-lateral aspect of the otherwise healed I&D incision.

The patient was prescribed oral SXT and clarithromycin to be continued for 6 months. On therapy, the incision completely healed and two months following the end of the therapy, she was totally asymptomatic.

CONCLUSION: *M. fortuitum* is one of the species of mycobacteria that grows rapidly upon culture and can be found during the time that a routine bacterial culture is incubated growing on standard culture media. These organisms are more often identified when the clinician suspects a more unusual etiology of infection because of poor response to standard antimicrobial therapy. In this case, the microbiology laboratory was able to isolate the pathogen without requiring specialized media leading to more rapid and curative therapy.

CHALLENGES IN THE DIAGNOSIS AND MANAGEMENT OF PEDIATRIC PULMONARY TUBERCULOSIS IN MADAGASCAR

Emily Cordes, DO; Richard Roach

WMU Homer Stryker M.D. School of Medicine, Department of Medicine-Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Medicine

INTRODUCTION: Tuberculosis (TB) remains an important cause of morbidity and mortality in Madagascar. According to the World Health Organization (WHO), in 2015, the estimated incidence of TB was 57,000 and 11,000 of those cases were of patients less than 14 years old. Of the reported cases, 89% were bacteriologically confirmed. However, it is well established that bacteriologic confirmation of TB in children is especially difficult. Therefore, the incidence of TB in the pediatric population in Madagascar, and likely worldwide, is under estimated. We report a case of a 4-year-old male that illustrates the challenges in diagnosis and management of TB in Madagascar.

CASE REPORT: A 4-year-old male presented to a hospital in northern Madagascar with five months of chronic, non-productive cough and cachexia. Past medical and family history was unremarkable, with no sick contacts. On exam, the patient was cachectic, in severe respiratory distress and had diffuse rhonchi bilaterally. Initial laboratory data revealed a hemoglobin of 7.0. Chest radiograph demonstrated diffuse infiltrates. Due to concern for TB, an acid-fast bacilli (AFB) culture was attempted via early morning nasogastric aspirate and induced sputum. Due to concern for *Pneumocystis pneumonia*, trimethoprim/sulfamethoxazole was ordered, but administration was delayed for 36 hours due to resource constraints. AFB of the nasogastric aspirate and sputum were negative. Treatment of TB was not initiated due to local guidelines recommending a positive AFB prior to treatment. The patient's respiratory status declined and the patient expired before a positive AFB culture was obtained.

DISCUSSION: The pediatric population with suspected pulmonary TB is challenging to manage in Madagascar. A positive AFB culture is required to initiate treatment for TB; however, obtaining a positive AFB in children is unlikely. Unreasonable expectations of diagnostic accuracy are hindering initiation of treatment. Like many countries, Madagascar has minimal resources for TB treatment. Although treatment is government funded, a documented positive AFB is required first. Otherwise, parents are asked to cover the expense of the medications, which is rarely a feasible option. Finally, there is little public health effort to trace TB transmission in rural communities. The WHO cites that roughly 14% of the cases of TB in Madagascar are in patients less than 14; however, given the current means of diagnosis and reporting, this is a gross underestimate. This case is one of many that demonstrates the obstacles in diagnosing and treating TB in the pediatric population in Madagascar.

WIDENING THE DIFFERENTIAL: A CASE OF HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS DISGUISED AS A FEVER OF UNKNOWN ORIGIN

Emily Cordes, DO

WMU Homer Stryker M.D. School of Medicine, Department of Medicine-Pediatrics

INTRODUCTION: Hemophagocytic lymphohistiocytosis (HLH) is an under recognized, aggressive inflammatory disease characterized by excessive activity of histiocytes and lymphocytes. According to the HLH-2004 guidelines, five of the following eight criteria must be met to diagnose HLH: fever $>38.5^{\circ}\text{C}$, splenomegaly; cytopenias affecting two cell lines; hypertriglyceridemia/hypofibrinogenemia; evidence of hemophagocytosis in the bone marrow, spleen or lymph nodes; hyperferritinemia; low NK cell activity; or high levels of soluble CD25. Once a diagnosis of HLH is established, investigations for infectious, malignant or autoimmune etiologies must be pursued. We report a case of fever of unknown origin (FUO) that presented multiple times prior to the diagnosis of HLH, which was determined to be secondary to ALK-positive anaplastic large cell lymphoma (ALK-ALCL). This case highlights the importance of searching for an alternative diagnosis in cases of FUO when initial workup is unrevealing.

CASE: A 38-year-old man with no significant past medical history initially presented with fever and abdominal pain. He subsequently had an appendectomy that revealed minimal inflammation in the appendix. He presented again with continued fever, but a definitive diagnosis was not made. Upon his third admission due to recurrent fevers, he was found to have hepatosplenomegaly, and was diagnosed with atypical mononucleosis secondary to Epstein-Barr virus. He presented a fourth time with recurrent fevers and respiratory distress. His exam was significant for bilateral rhonchi, hepatosplenomegaly and a truncal rash. An extensive workup revealed a ferritin of 3681 ng/ml and triglycerides of 310 mg/dL. Five of the eight criteria for HLH were met with fever, splenomegaly, anemia with thrombocytopenia, hypertriglyceridemia, and elevated ferritin. He was ultimately diagnosed with ALK-positive anaplastic large cell lymphoma via lymph node biopsy and underwent CHOP-E chemotherapy.

DISCUSSION; HLH is a rare condition that is challenging to diagnose because it presents with common clinical signs. HLH can mimic septic shock due to severe systemic inflammation and can quickly progress to organ failure; therefore, a high index of suspicion is required to diagnose HLH. New scoring systems, such as the 2016 bone marrow (BM) score, can assist the clinician in early detection of HLH. Furthermore, simultaneous investigation into the etiology of HLH must be pursued. ALK-ALCL is a common etiology of HLH in pediatrics, but remains extremely rare in adults. Our patient's diagnosis of HLH secondary to ALK-ALCL that presented multiple times with fever highlights the importance of considering HLH when identifying etiologies of fever of unknown origin.

A CASE OF NATIVE VALVE STAPHYLOCOCCUS EPIDERMIDIS ENDOCARDITIS WITH CARDIAC ABSCESS FORMATION

Emily Cordes, DO; Chris Jacob, DO; Mark Loehrke, MD

WMU Homer Stryker M.D. School of Medicine, Department of Medicine-Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Internal Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Medicine

INTRODUCTION: Staphylococcus epidermidis is the most common commensal bacteria of the skin; however, it can be pathogenic and is the most frequent cause of medical device associated endocarditis. It is also a well-known cause of endocarditis in IV drug abuse (IVDA). However, in individuals without obvious disruption of the skin barrier, it is a relatively rare, but emerging entity of native valve endocarditis. Coagulase negative staphylococci account for only 1-5% of community acquired native valve infective endocarditis and most resolve with treatment. We report a case of a 56-year-old male with an aggressive strain of community acquired Staphylococcus epidermidis acute endocarditis of a native aortic valve.

CASE REPORT: A 56 year-old non-IVDA male presented to the emergency department with low back pain and encephalopathy. Past medical history was significant for alcoholic chronic liver disease and aortic stenosis. On exam, he was found to be hypotensive with a 3/6 previously noted systolic murmur. He also had tenderness of the L4-L5 spinous processes, splinter hemorrhages of the nails and subconjunctival hemorrhages. Initial laboratory data revealed leukocytosis and thrombocytopenia. Blood cultures were obtained and vancomycin was initiated. Within hours of admission, he suffered an anterior wall myocardial infarction. Initial blood cultures were positive for methicillin resistant Staphylococcus epidermidis. To rule out alternative diagnoses, an MRI of the spine, head CT and CT abdomen/pelvis were obtained, all were negative. Finally, due to continued Staphylococcus epidermidis bacteremia, a transesophageal echocardiogram was obtained, which showed that all three cusps of the aortic valve were encased in large vegetations (the largest measured 1.3cm x 1.3cm) and echolucency in the sinus of Valsalva, indicative of abscess. Serial blood cultures while treating with vancomycin were positive for methicillin resistant Staphylococcus epidermidis. Due to end-stage liver disease with subsequent thrombocytopenia, the patient was not a candidate for valve repair. The patient subsequently sustained a ventricular tachycardia arrest and expired.

DISCUSSION: Staphylococcus epidermidis is a well-known etiology of prosthetic valve endocarditis and emerging etiology of native valve endocarditis. Previous cases reported in the literature of Staphylococcus epidermidis endocarditis have been successfully treated with antibiotic therapy. Typically, coagulase negative staphylococcus is considered a contaminant of blood cultures; and true infection is not difficult to treat. However, in the correct clinical setting, it should be recognized as a formidable pathogen. This case demonstrates the aggressive nature of Staphylococcus epidermidis native valve acute endocarditis with abscess formation.

STRIDOR OF TWO MONTHS DURATION IN A TWELVE MONTH OLD

Garrett Koon, DO; Scottie Paitl, MD; Aaron Lane-Davies, MD; Michelle Halley, MD

WMU Homer Stryker M.D. School of Medicine, Department of Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Pediatrics; Bronson Methodist Hospital, Department of Pediatrics; Bronson Methodist Hospital, Department of Pediatric Critical Care

Stridor is the classic high-pitched sound typically associated with an upper airway obstruction caused by a partial or complete obstruction and results from turbulent airflow through narrowed airways. By understanding the anatomic association for each phase of stridor we as clinicians may be better able to focus a differential diagnosis, ultimately leading to the correct final diagnosis sooner. Chronicity of stridor should incite clinicians to delve deeper into its etiology. The purpose of this case is to highlight impressive imaging, assisting in the diagnosis, and focus on the characterization of stridor as this can help with identifying the location of abnormality. We present the case of a 12 month-old previously healthy and thriving female presents to the emergency department with stridor of two months duration. Parents note the stridor to be progressive, occurring with both inspiration and expiration now. Vitals show tachycardia and oxygen saturation of 99% in room air. Exam reveals a child that appears distressed and cries on exam. There is an audible biphasic stridor, loudest with inspiration. Chest X ray shows tracheal narrowing. Given the chronicity of stated symptoms computed tomography scan of the neck obtained to hopefully characterize the anatomic structures of the neck which ultimately showed para- and retro-esophageal inflammation, tracheal stenosis, and mediastinitis. Esophogram was obtained showing a filling defect within the esophagus, concerning for foreign body, but importantly there was no contrast extravasation, decreasing the likelihood of perforation. Bronchoscopy and esophagogastroduodenoscopy were performed yielding a piece of plastic within the esophagus and no involvement of the bronchial tree. Following removal of this foreign body, symptoms dramatically improved with child being discharged the following day without need for continuance of steroids, both inhaled and systemic. As described in our case, an esophageal foreign body highlights the intrathoracic manifestation of biphasic stridor. The inflammatory process secondary to the presence of the foreign body pushing on the airway is creating the stenosis which gives rise to stridor. There are instances where the pathology is primarily located within the respiratory tract and not due to external compression or mass effect. It may take quite some time for the inflammatory insult to worsen to the point of outward symptomatology, mainly, stridor. This is seen even when patients are verbal and able to communicate the ingestion let alone when exacerbated by a patient population without communication ability as evident in our case.

TRAUMATIC STAB WOUND TO THE CHEST – A RARE CAUSE OF PITUITARY APOPLEXY

Jairo Espinosa, MD; Tim Wysozan; Chris Sloffer, MD

WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; Bronson Methodist Hospital, Department Neurosurgery

INTRODUCTION: Pituitary apoplexy is an uncommon condition that results from infarction and hemorrhage of an established pituitary adenoma. Based on our review of the literature, this is the first description of pituitary apoplexy presenting after a knife stab wound to the deltopectoral region.

CASE PRESENTATION: A 44-year-old male presented to the trauma bay as a tier 1 trauma activation status post stabbing to the left deltopectoral groove. The patient was found to be hypotensive, tachycardic and actively exsanguinating from the stab wound. He was taken to the operating room where the wound was explored and the left cephalic vein was ligated. Patient tolerated the procedure well and was discharged two days post-operatively. Patient returned to the hospital on post-operative day four with a severe frontal headache. While in the emergency room, the patient quickly decompensated and was found to have ptosis on the left, abducens nerve palsy and anisocoria. MRI displayed a large pituitary macroadenoma with intra-mass hemorrhage filling the suprasellar cistern and invading the left cavernous sinus. Patient underwent an emergent transsphenoidal endoscopic pituitary resection. The post-operative course was unremarkable and the patient was found to have only mild symptoms of hypogonadism at his one month follow up which were successfully treated with hormone replacement.

CONCLUSION: Pituitary apoplexy is a rare complication of a pituitary adenoma. This case report exhibits an extremely rare occurrence of pituitary apoplexy after a penetrating traumatic event to the chest that was successfully treated via transsphenoidal endoscopic pituitary resection.

GALLBLADDER DUPLICATION: CASE REPORT OF A RARE CONGENITAL ANOMALY TREATED BY SINGLE-INCISION LAPAROSCOPIC CHOLECYSTECTOMY IN A PEDIATRIC PATIENT

Jairo Espinosa, MD; Peter White; Michael Leinwand, MD

WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; Bronson Methodist Hospital, Department of Pediatric Surgery

INTRODUCTION: Gallbladder duplication is a rare congenital anomaly. Preoperative diagnosis is essential for prevention of intra operative complications. Based on our review of the literature, this is the first description of gallbladder duplication treated with single-incision laparoscopic surgery (SILS) in a pediatric patient.

CASE PRESENTATION: A 14-year-old girl presented to the pediatric surgery clinic with a 4-month history of right upper quadrant abdominal pain, nausea, and low- grade fevers. Preoperative imaging revealed gallbladder duplication. The single incision laparoscopic technique was employed. Intra operative findings included two gallbladders that appeared to share a common wall. There were two parallel cystic ducts that inserted separately into the common hepatic duct. Gross pathology revealed two adjacent gallbladders separated by a thin septum, each with its own cystic duct. The postoperative course was unremarkable, and the patient was without symptoms at the 1-month follow-up visit.

CONCLUSION: Gallbladder duplication is a rare congenital anomaly. This case report demonstrates successful treatment by excision using the single incision laparoscopic approach.

MIXED GOBLET CELL CARCINOID-ADENOCARCINOMA – A CASE SERIES

Jairo Espinosa, MD; Timothy Truong; Julia Miladore, MD; John T. Collins, MD, FACS; Saad Shebrain, MD FACS; Gitonga Munene, MD, FACS

WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; Borgess Medical Center, Department of Vascular Surgery; WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; Western Michigan Cancer Center, Department of Surgical Oncology

INTRODUCTION: Mixed goblet cell carcinoid-adenocarcinoma (GCC) tumors are a group of rare heterogenous neoplasms of the appendix accounting for < 5% of all primary appendiceal tumors. They are characterized as an intermediate between classic carcinoid tumors and appendiceal adenocarcinomas, exhibiting both neuroendocrine and glandular/mucinous morphology that most commonly presents in Caucasian females in the fifth and sixth decades. We present three cases of mixed GCC presenting as acute appendicitis.

CASE PRESENTATION: Case #1 A 65-year-old male presented with RLQ pain, nausea, emesis, and leukocytosis. CT of the abdomen revealed perforated appendicitis. The patient underwent a laparoscopic appendectomy. Pathology revealed a high-grade adenocarcinoma ex goblet cell carcinoid, signet ring type extending through the muscularis propria into the mesoappendix measuring >3cm. The patient subsequently underwent a colonoscopy that revealed diverticulosis, but was otherwise normal. Patient then underwent a right hemicolectomy and partial omentectomy. Pathology revealed normal ileal, omental, and colonic tissue without evidence of carcinoma. 0/12 nodes were positive.

Case #2 A 49-year-old male presented with periumbilical pain, nausea, emesis, and leukocytosis. CT of the abdomen revealed appendicitis. The patient underwent a laparoscopic appendectomy. Pathology revealed a high-grade, poorly differentiated, adenocarcinoma ex goblet cell carcinoid invading through the muscularis propria into the periappendiceal soft tissue measuring 1.5cm. The patient subsequently underwent a colonoscopy that revealed diverticulosis, but was otherwise normal. Patient then underwent a laparoscopic right hemicolectomy. Pathology revealed normal ileal and colonic mucosa without evidence of carcinoma. 0/14 nodes were positive.

Case #3 A 70-year-old female presented with periumbilical pain. CT of the abdomen revealed appendicitis. The patient underwent a laparoscopic appendectomy. Pathology revealed a high-grade adenocarcinoma ex goblet cell carcinoid extending through the muscularis propria into the mesoappendix measuring 4cm. Patient then underwent an exploratory laparotomy with a right hemicolectomy. Pathology revealed normal ileal and colonic mucosa without evidence of carcinoma. 0/21 nodes were positive.

CONCLUSION: Mixed GCC tumors are rare tumors that tend to present at an advanced stage and most commonly spread via direct extension. Surgical resection with a right hemi-colectomy after an appendectomy has been shown to improve the prognosis. HIPEC and adjuvant chemotherapy are other therapeutic options, but have not been shown to improve survival. In the current age of increasing rates of managing acute appendicitis non-operatively we strongly encourage surgical appendectomy in patients older than 45 years of age to avoid missing this important diagnosis and the opportunity to treat it in a timely manner.

RARE PRESENTATION OF HIGH GRADE RETROPERITONEAL ANGIOSARCOMA IN A PATIENT STATUS POST ENDOVASCULAR AORTIC REPAIR (EVAR)

Jairo Espinosa, MD; Alan Hifko; Julia Miladore, MD; John T. Collins, MD, FACS

WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Department of General Surgery; Borgess Medical Center, Department of Vascular Surgery

INTRODUCTION: Primary angiosarcoma of the aorta is a rare malignancy arising from the aorta's endothelial lining. The most common presentation is claudication, however in the presence of an endograft a tumor originating in the aneurysmal sac may remain undetected and mimic common graft pathology. Diagnosis is typically delayed due to vague clinical presentation and imaging being indistinguishable from common complications of endografts such as leaks, infections or hematomas. We report a case of primary angiosarcoma of the aorta after endovascular repair of an abdominal aortic aneurysm. This case report describes the sixth case in the literature of primary angiosarcoma arising after the placement of an endovascular stent.

CASE PRESENTATION: A 75-year-old male with a previous history of endovascular aortic repair for a AAA six years prior presented to the emergency room with signs and symptoms concerning for bowel obstruction. He elicited abdominal pain, nausea, emesis, obstipation and was anemic and had leukocytosis. A CT angiogram of the abdomen and pelvis displayed a large mass encasing the infra-renal aorta, without active extravasation, that was externally compressing the second portion of the duodenum and causing a gastric outlet obstruction. The mass extended into both iliac arteries with extension into a known right iliac artery aneurysm. Review of the patient's chart revealed that this mass was not present six months prior. Patient was treated non-operatively with placement of a nasogastric tube. Concerns for a Type I or III Endoleak delayed the eventual CT-guided biopsy of the mass. Pathology revealed a malignant spindle and pleomorphic mass with extensive hemorrhage and necrosis consistent with high grade angiosarcoma. Specimen tested positive for vimentin, CD68, ERG, and CD31 on immunohistochemical staining. Patient did not wish to undergo aggressive treatment of his condition and was discharged to a hospice facility where he expired days later.

CONCLUSION: Angiosarcoma is a rare malignancy representing 2% of all soft tissue sarcomas; associated with a poor prognosis with a median survival time of seven to eight months in advanced tumors. Tumors larger than 5cm and those located in the retroperitoneum, such as in the case report that we present, are associated with a poor prognosis. Doxorubicin is the mainstay of treatment for locally advanced tumors. Paclitaxel has also been shown to be effective. We present this care report to increase cognizance of this rare entity in the setting of a previously placed aortic endograft and avoid unnecessary surgical interventions.

THE ROLE OF NUTRITIONAL EDUCATION FOR THE HOMELESS

Jen Raae-Nielsen; Claire Cameron-Ruetz; Chandler Vondy; Michael Krafft; Audrey Jensen; Cheryl Dickson, MD; Catherine Kothari, PhD; Ransome Eke, MD, PhD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Department of Health Equity and Community Affairs; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences

BACKGROUND AND PURPOSE: Lack of nutritional knowledge in navigating limited dietary options is a major problem for homeless populations. Previous efforts have been focused on encouraging dietary changes by providing basic nutritional information. Still, the homeless have difficulty making these changes due to a lack of choices. This study implemented nutrition fairs at the Kalamazoo Gospel Mission, a homeless shelter and soup kitchen in downtown Kalamazoo, to inform homeless and transient population about nutrition and making healthier food choices.

METHODS: The nutrition fair comprised of 4 booths, each providing information about caloric intake, recommended portion size, healthy choices and nutrition labels. The main focus is to arm participants with the skills to make the most out of their food options. Each participant was administered a survey before (pretest) and after (posttest) attending the nutrition fair. The survey assessed how respondents' dietary choices or satisfaction changed after attending the nutrition fair. There were similar six questions written in plain language with pictures, in both pre-and post-survey. Data was collected over six session and we conducted descriptive statistics.

RESULTS: Thirty-two adult participant completed the pre-and post-surveys. The study revealed a statistically significant improvement in nutrition knowledge after receiving information. About 65% of the study subjects did not report any significant change in knowledge. Within this group, several (30%) had perfect scores on the pretest, though this was insignificant. There were also some respondents (9.4%) who scored lower on the posttest than the pretest. We found that lack of education was not a major barrier to healthy eating. However, most of the participants identified insufficient quantities of food to maintain their energy level and weight as a major problem the homeless population encounter. In addition, lack of money was a critical problem and attempts to educate participants to purchase inexpensive produce rather than prepackaged or otherwise unhealthy options were somewhat inconsequential.

CONCLUSIONS: Our study suggests that nutrition fair could be an efficient method for improving the nutritional knowledge of the homeless population. Rather than healthy choice food, majority of the study participant were concerned about lack of sufficient quantities of food to maintain their energy level and weight. Future nutritional education programs should focus on using items in locally prepared meals to encourage homeless population to make healthier food choices.

KEYWORDS: homeless, nutrition, fairs, education, healthy, options, improvement

A CASE SERIES OF ANTEROGRADE AND RETROGRADE VASCULAR BULLET EMBOLIZATION

Jennifer Chao; Joseph Prahlow, PhD; Joyce de Jong, DO; Jeffrey Barnard, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Department of Pathology; WMU Homer Stryker M.D. School of Medicine, Department of Pathology; University of Texas Southwestern, Department of Pathology

BACKGROUND/INTRODUCTION: Deaths related to firearms are common within the United States with most cases having conspicuous bullet wounds found at autopsy. Individual gunshot wounds may be perforating, having both entrance and exit wounds, or penetrating, having only an entrance wound, with the projectile remaining within the body. In most cases with penetrating wounds, projectiles are relatively easily found by following the bullet pathway on internal examination. However, vascular embolization of a bullet is an uncommon occurrence that should be suspected with a penetrating bullet wound when there is failure to discover the bullet in the expected region. The occurrence rate is approximately 0.3% in penetrating trauma. Arterial bullet embolization can result from penetrating wounds originating from the left ventricle, pulmonary vein, thoracic aorta, abdominal aorta, and peripheral arteries that occur in most of the cases, while 20% of the cases involve venous embolization. Anterograde movement may be a frequent finding; however, paradoxical bullet emboli, or emboli that occurs against the flow of blood, may occur with the effects of gravity and should be considered as well.

STUDY PURPOSE: We present details regarding three cases of bullet embolization at autopsy, and discussion will focus on the current literature and review of vascular bullet embolization and the trajectories that may take form.

MATERIALS AND METHODS: The cases are selected from the cases of Dr. Joseph A. Prahlow, a practicing forensic pathologist. The first two cases demonstrate bullet emboli that travel in an anterograde fashion, whereas the final case demonstrates bullet emboli that travel in a retrograde fashion.

CASE REPORTS: In the first case, a 10-year-old child is found dead along with his mother and another female in a burning trailer. He is shot beforehand, with radiographic images demonstrating shotgun slugs within the posterior cranial cavity and his right neck. The wound path passes through the scalp, skull, and brain, with a fragment of the bullet subsequently embolizing to his jugular vein. In the second case, a teenage boy dies as the result of complications from a gunshot wound of the trunk, with the injury reportedly occurring one month prior to death. The bullet perforates his aorta, which creates a large hematoma adjacent to the defect in the aorta. The bullet then enters the aorta and embolizes into his proximal left internal iliac artery. The hematoma ruptures into his left chest cavity causing extensive bleeding and death. In the third case, a young man suffers eight gunshot wounds, with one bullet in particular entering his inferior vena cava and embolizing in a retrograde fashion into his hepatic venous system.

DISCUSSION/CONCLUSION: A penetrating bullet generally follows a straight course, either exiting the body or being recovered from the surrounding tissues. Usually, conspicuous bullet wounds are found on external examination of the body. However, vascular embolization of a bullet is an uncommon occurrence that should be suspected with a penetrating bullet wound when there is failure to discover the bullet in the expected region, radiologically or surgically. Depending on the trajectory of the bullet, it may travel in an anterograde or retrograde fashion through the arterial or venous system.

PHEOCHROMOCYTOMA WITH IVC INVASION: CASE REPORT & SYSTEMATIC REVIEW OF LITERATURE

Jennifer Kim; Gitonga Munene, MD, FACS; David Schutter, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; Western Michigan Cancer Center, Department of Surgical Oncology; WMU Homer Stryker M.D. School of Medicine, Department of General Surgery

Surgical management and outcome of pheochromocytoma with invasion of the inferior vena cava (IVC) has not been thoroughly reported or widely available in the literature. As determining the malignancy of pheochromocytoma has yet to be clearly defined and the experience of surgical resection of this condition is underrepresented, we include a case report and a systematic literature review on this condition. A literature search in PubMed was performed based on a recent review article by Kassahun et al. (2016). The search yielded 13 case reports between 1988 and 2014 from which data was extracted based on the following variables: patient's age, gender, comorbidities, laboratory tests for pheochromocytoma diagnosis, size and laterality of the tumor, diagnostic test for IVC invasion, preoperative treatment and imaging, perioperative procedures, and oncological outcomes. The mean age of the patients was 49.4 years, with 38.5% being female (n=5) and 53.3% being male (n=8). 92% (n=12) of the cases were right-sided pheochromocytomas that invaded the IVC, with only one case of pheochromocytoma localized in the organ of Zuckerkandl. Only 46.7% (n=7) of the cases reported using laboratory tests to diagnose pheochromocytoma while only 53.3% (n=8) specifically reported using imaging techniques (CT, MRI, ultrasound, CTA, inferior venacavogram, MIBG-scintigraphy) to diagnose IVC invasion. Four of the surgical cases were performed without cardiopulmonary bypass while three specifically mentioned the use of the bypass technique. There was also further variance in surgical approach as some were performed via sternotomy, thoracophrenolaparotomy, or thoracoabdominal approach to completely resect the tumor and IVC, or to perform a cavotomy with no reconstruction of the IVC necessary. Follow-up of only 8 patients were noted, all of which revealed no evidence of disease, although at different time points post-op. The lack of a thorough and consistent report on pheochromocytoma cases with IVC invasion makes it difficult to compare the management of this condition. We hope a comprehensive review of these patient cases provides greater insight into the diagnosis of pheochromocytoma with IVC invasion and the characteristics and surgical procedure of this tumor invasion that would eliminate recurrence.

NEW ONSET MOOD DISORDER AND SEIZURE DISORDER IN THE PEDIATRIC PATIENT AFTER UNDERGOING CARDIOPULMONARY ARREST

Joseph Lamar, MD; Matthew LaCasse, DO

WMU Homer Stryker M.D. School of Medicine, Department of Medicine-Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry

This is the case of a 15 yo male who presented to ER breaking his arm during a high school wrestling match. The patient received unknown doses of Ativan, propofol, ketamine, morphine, and Dilaudid. The patient then went into a respiratory arrest and then cardiac arrest which required chest compressions, bag-valve-mask ventilations and then ultimately the patient needed to be intubated. Patient was able to weaned from the vent and librated without difficulty then he was sent home. Around this time, the patient started to have difficulty concentrating in school. Patient noted that his teachers would be talking and then he would “zone out.” Patient was unsure how long these episodes would last but noted that he when he was in math class, the teacher would be working a problem and then he would wake up and then the teacher would either be finished with this problem or two or three steps ahead. The patient’s grade started to suffer. This was unique because the patient was previously a fantastic student was in honor’s courses at his local high school. Patient never had any previous mood disorders or seizure activity. Patient had an EEG obtained, which revealed generalized spike-waces and polyspike wave epileptiform discharges. Patient had never had a generalized tonic clonic seizure in the past. However, in 2009, patient did experience a pseudoseizure in which he noted there was a lot stress going in his life. Since this time the patient is no in regular classes. He reports that he is often chronically depressed. In July of 2015, this patient had a suicide attempt. The patient over dosed on his Depakote medication. Patient was admited to the hospital and when medically stable was released to an inpatient psychiatric facility.

FIRST 100 CASES OF BLS FIRST RESPONDER ADMINISTERED NALOXONE IN A STATEWIDE EMS SYSTEM

James Markman, MBA; Tyler Koedam, MD; Joshua Mastenbrook, MD; William Fales, MD, FACS

Michigan State University College of Human Medicine; Avera Medical Group, Department of Emergency Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Emergency Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Emergency Medicine

BACKGROUND: In October 2015, a midwestern state law mandated that all BLS first responder (FR) agencies be trained and equipped to administer naloxone to suspected opioid-overdose patients. Although well intentioned, several questions have arisen: does naloxone use displace emphasis on early positive pressure ventilation (PPV), is naloxone being appropriately administered, and does the mandate affect patient outcome. The purpose of this study is to evaluate the first 100 cases of FR administered naloxone (FR-naloxone) for administration appropriateness and state protocol adherence which calls for intranasal naloxone after PPV initiation and when ALS is delayed by >5 minutes.

METHODS: A retrospective chart review was performed utilizing the statewide EMS information system, filtering on “naloxone” as a medication administered. Beginning with the implementation date of 10/15/2015, the first one-hundred first-responder naloxone administrations were reviewed by a three-investigator panel. Data were abstracted from each case, including initial impression of mental and respiratory status, airway interventions performed, known history of opioid abuse, and timing of ALS arrival. Data were analysed using standard descriptive statistics.

RESULTS: Of the first 100 patients, 71% were male, and the median age was 35.5 (18-89) years. Seventy-five percent of naloxone administrations were provided to patients with pulses and inadequate respirations. PPVs were given prior to naloxone in 51.3% of patients with inadequate respirations. History of prior drug use was reported by the FR in 66% of cases. FRs initiated PPV in 39.4% of known drug abuse patients versus 61.7% in those without known abuse ($p=0.0337$). ALS reportedly arrived within 5 minutes of FR arrival in 38% of cases, >5 minutes in 17% of cases, and in 57% of cases there was no reference to ALS response time.

CONCLUSION: Adherence to the state naloxone protocol appears poor among FRs. Based on initial patient evaluation, the majority of patients given naloxone had an inadequate respiratory effort. Pre-naloxone PPV was frequently not reported in patients with decreased respirations. A history of known drug abuse was associated with less frequent PPV. ALS arrived within 5 minutes of FR-naloxone in at least one-third of patients.

MECHANICAL LOADING AS POTENTIAL TREATMENT FOR WNT INHIBITOR INDUCED BONE LOSS

Juraj Zahatnansky, MD; Daniel Dick; Gabrielle Foxa; Robert Baker, MD; Bart Williams, PhD

WMU Homer Stryker M.D. School of Medicine, Department of Sports Medicine; Van Andel Research Institute, Cell Signaling and Carcinogenesis; Van Andel Research Institute, Cell Signaling and Carcinogenesis; WMU Homer Stryker M.D. School of Medicine, Department of Orthopaedic Surgery; Van Andel Research Institute, Cell Signaling and Carcinogenesis

The Wnt signaling pathway has been shown to play a role in bone homeostasis and carcinogenesis. On the one hand, a decrease in signaling has been associated with a decrease in bone mass, on the other, an increase in signaling with cancer development. LGK974 is a Wnt signaling inhibitor currently being investigated as a potential cancer therapeutic agent. This molecule inhibits Porcupine, a transmembrane protein necessary for Wnt ligand secretion. In light of the above and based on our preliminary data, treatment with LGK974 leads to bone mass loss. Our investigation aims to address whether such bone loss can be prevented by mechanically inducing stress to the bone during the treatment. We treated twelve 16-week old C57Bl/6J male mice with LGK974 (chemical Porcupine inhibitor) and twelve with a vehicle (0.5% Methyl Cellulose, 0.5% Tween-80 in water) on weekdays for two weeks. During that time, under isoflurane-induced anesthesia, all animals underwent right forearm mechanical loading at 60 cycles per day for 3 consecutive days using a 2-Hz haversine waveform at a peak force of 2.4 N. The non-loaded left forearm served as an internal control. Both loaded and control limbs were harvested 15 days post first loading day and processed for micro-computed tomography (microCT). Also, for dynamic histomorphometry (quantitative study of the microscopic organization and structure of the bone), we injected a small group of animals with two doses of 1% calcein solution on two different days to allow for measurement of bone formation rate and matrix apposition rate (a measure of the amount of bone matrix deposited per osteoblast cluster). All procedures performed in this experiment were in accordance with the Van Andel Research Institute Institutional Animal Care and Use Committee guidelines. So far, we have analyzed half of the collected ulnas, and even though, at this point, our results have not reached statistical significance, we see a trend of increased bone area, as well as cross sectional thickness in the loaded ulnas. We are currently in the process of analyzing the rest of the samples in order to determine if, all combined, our results reach statistical significance. If not, the next step would be processing the samples for histomorphometry. In conclusion, we have successfully established a mechanical ulnar loading model in order to study if mechanical loading can offset drug induced bone loss.

A REVIEW OF TRANSCATHETER ABLATION FOR THE TREATMENT OF AVNRT IN CHILDREN

Keegan Colletier, Sulin Wu, Stephanie Van Alsten, Brittany Chow

WMU Homer Stryker M.D. School of Medicine, Medical Students Class of 2019

BACKGROUND: Atrioventricular nodal reentrant tachycardia (AVNRT) is an arrhythmia due to re-entrant rhythm within the region of the atrioventricular (AV) node, which accounts for most supraventricular tachycardia (SVT) cases in children. There are two main pathways involved for the re-entrant rhythm, slow and fast pathways, with different anatomic locations and involvement in the circuit associated with AVNRT. AVNRT is rare in newborns, but an increase of prevalence throughout childhood was previously reported.

STUDY OBJECTIVE/PURPOSE: Currently, Radiofrequency (RF) ablation is the primary method for the treatment of AVNRT in pediatrics. However, multiple modalities with varying efficacies can also be utilized. In this study, we attempt to review indications and complications of the gold-standard use of RF compared to newer modalities for the ablation treatment of AVNRT in the pediatric population.

RESULTS/DISCUSSION: Currently there are two transcatheter ablations methods widely applied as AVNRT treatment: RF ablation and Cryoablation (Cryo). Indications for these methods vary with blood flow in the target area, duration of procedure, and risk of recurrence of AVNRT. Both methods have success rates >90% in AVNRT children, with a 3% complication rate. AV block is the most common complication of RF ablation cases, while Cryo, being a newer technology, requires further investigation. Factors that complicate ablation in AVNRT include anatomical and electrophysiological variations between individuals. Fluoroscopic visualization and 3D-voltage mapping of pathways can provide markers for catheter ablation in AVNRT cases to expedite ablation success and enhance safety. Other predictors of success include: reduced fluoroscopy time, lower patient weight, the ability to induce junctional rhythm in the patient during the procedure, and the utilization of image-based guidance and ice-mapping during the ablation.

CONCLUSION: Radiofrequency catheter ablation remains the highly successful gold standard for the treatment of AVNRT in children, with low complication rates. Cryoablation and other advanced techniques are emerging as new methods tailored to the accessory pathways and more sophisticated structural variations underlying AVNRT in children.

THE IMPACT OF WMED FAMILY MEDICINE OBESITY CLINIC ON WEIGHT LOSS AND PATIENT'S OVERALL HEALTH IN THE FAMILY HEALTH CENTER, KALAMAZOO, MI

Latifa Pacheco, DO; Abigail Annan, MD, FAAFP, Dipl. ABOM

WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family and Community Medicine

BACKGROUND: Obesity is an epidemic that afflicts approximately 37% of U.S adults. Based on race - 48% of blacks, 43% of Hispanics and 35% of whites. The causes of obesity are complex and multi-factorial and associated with several comorbidities including hypertension, diabetes mellitus, and dyslipidemia in addition to a decreased life expectancy. Most patients receive minimum or no education from their primary care providers on nutrition and exercise. Treatment and management of obesity is most successful when tailored to the individual patient.

OBJECTIVE: The primary objective of this study is to evaluate the effect of medically directed weight loss on weight, hypertension, pre-diabetes, type 2 diabetes mellitus and dyslipidemia after three and six months.

METHODS: This is a retrospective chart review of patients who were treated for overweight and obesity with customized dietary plan, daily exercise and the adjunct of weight loss medications when indicated. The study consists of 76 patients enrolled into the program from January 1st to December 31st, 2016. Information was gathered from the EMR database at the Family Health Center, Kalamazoo, MI. Selected patients were overweight with a BMI of 25 or greater with at least one diagnosed co-morbidity; including pre-diabetes, type 2 diabetes mellitus, hypertension, and dyslipidemia. The difference in weight loss, hemoglobin A1C (HA1C), blood pressure (BP), and lipid panel were evaluated at 3 and 6 months intervals.

RESULTS: An average of 15 and 25 pounds weight loss was noted by the third and sixth months respectively. Patients reaching the 10% weight loss goal experienced a minimum of 10 and 5 mmHg drop in systolic and diastolic BP respectively. A 1.3% decrease in HA1C was noted with 5% weight loss and an overall improvement in lipid profiles was recorded with a minimum of 3% weight loss.

CONCLUSION: Medically directed and managed weight loss yielded an average weight loss of 5-10% with a reduction in the progression of pre-diabetes to type 2 diabetes mellitus, improvement in HA1C in diabetics, a decrease in BP with resultant discontinuation/ decrease in the doses of anti-hypertensive agents and improved lipid profiles. This retrospective study underlines the importance of training and equipping primary care physicians with the knowledge and skill-set needed to direct successful weight loss.

ACUTE HYPOXIC RESPIRATORY FAILURE AS A COMPLICATION OF A URINARY TRACT INFECTION DURING PREGNANCY: A CASE PRESENTATION

Manpreet S. Narwal, MD; Susan Jevort-Eichorn, DO; Narinder Nina Clair, MD

WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family and Community Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine

Urinary tract infections (UTI), as well as asymptomatic bacteriuria, have the potential to cause serious morbidity during pregnancy making it imperative to identify and treat them promptly. If left untreated, a UTI can lead to pyelonephritis and sepsis. More importantly, UTIs are independently associated with intrauterine growth restriction (IUGR), premature rupture of membranes (PROM), preterm delivery, pulmonary edema, acute respiratory distress syndrome (ARDS), preeclampsia, and cesarean delivery. We report the case of NC, a 19 year old G1P0 at 36 weeks and 3 days GA who presented to the hospital with concern for rupture of membranes with associated back and abdominal pain. She was febrile to 100.3 and tachycardic on initial presentation. Her prenatal history was significant for recurrent E.coli bacteriuria and non-compliance with antibiotic therapy. The admitting resident was concerned for pyelonephritis and possible bacteremia so, the patient was started on broad spectrum antibiotics. She progressed in labor and delivered a healthy female via vacuum extraction for non-reassuring fetal heart tones. Subsequently, blood cultures came back positive for E.coli. Her postpartum course was complicated by elevated blood pressures and proteinuria with concerns for pre-eclampsia. She received appropriate treatment with magnesium sulfate and anti-hypertensive therapy. Her clinical picture worsened with the development of hypoxemia and pulmonary edema concerning for pre-eclampsia with severe features versus ARDS from her bacteremia. She improved with aggressive diuresis and was discharged home in stable condition. Acute pyelonephritis secondary to ongoing UTI affects 1-2% of women and has, in some cases, been shown to increase the risk of pulmonary edema. In contrast, acute pyelonephritis in non-pregnant women is rarely associated with ARDS. In this case it is almost impossible to know whether the pulmonary edema was a manifestation of preeclampsia or ARDS from the UTI or a combination of both. Nonetheless, this case serves as a reminder of the importance of treating asymptomatic bacteriuria in pregnancy and the potential sequela including preterm delivery, ARDS and preeclampsia. It is important that we, as physicians, continue to educate our patients about the importance of treating asymptomatic bacteriuria and UTIs in pregnancy given the morbidity associated with it.

FEASIBILITY STUDY TO ASSESS MEDICAL STUDENT VISITS TO DEVELOPMENTALLY DISABLED ADULTS

Maria Mason; Ransome Eke, MD, PhD; Brittany Chow; Xavier Jean; Sarah Khalil; Megan Cibulas

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019

INTRODCUTION: The Probate Court of Kalamazoo appoints guardians to minors removed from the custody of their parents and to legally incapacitated or disabled adults. The state mandates that any child under age six placed into a guardianship be visited at least once a year to ensure proper care of the child, but there is no such mandate for the approximately 300 developmentally disabled (DD) adults under the care of the Probate Court. The purpose of this ongoing study is to determine the feasibility of annual visits to DD individuals conducted by volunteer medical students.

METHODS: In this feasibility study, the parameters which involve medical students include the number of visits conducted to DD adults, time spent reviewing cases, travel time to and from the visitation site, time spent conducting the visit and completing the required court paperwork, and safety. For the Probate Court Staff, we assessed the time spent training students, and preparation time prior to and after visitation.

RESULTS: We collected data over 17 months, visiting DD wards on six separate occasions, totaling 32 DD adults in 12 homes. On average, we spent 38.4 minutes per location. Over the six occasions, we spent a total of 7.7 hours traveling, 6.1 hours preparing, 6.9 hours visiting wards, and 21 minutes finalizing reports, for a total of 21 hours to complete 32 visits. The average safety rating for these visits was 9.3/10, with a minimum safety of 7/10. Despite the short study, our results indicate that this is a feasible and worthwhile program. We were able to conduct 32 DD visits, which would not have been conducted without our participation. While the court needed 73.3 hours to prepare and review the cases, we saved the Probate Court at least 21 hours of home visitation time. Safety was not a major concern for a large majority of the homes, in part because of the use of a buddy system.

CONCLUSION: We believe that continuing program would be a valuable contribution to Probate Court. We suggest that this project continues as a longitudinal, comprehensive study that will assess not only feasibility, but outcomes and benefits of using medical students in particular. In the future we anticipate that the amount of hours contributed by medical students will increase, as a significant portion of our time was spent designing the study and defining its parameters.

PATIENT DEMOGRAPHICS AND IN-HOSPITAL COMPLICATIONS ASSOCIATED WITH OPERATIVE SCHEUERMANN KYPHOSIS IN PEDIATRIC PATIENTS

Matthew Jaykel, MD; Karen Bovid, MD

WMU Homer Stryker M.D. School of Medicine, Department of Orthopaedic Surgery

BACKGROUND: Scheuermann kyphosis (SK) is a structural kyphotic deformity of the spine. Although typically managed conservatively, spinal fusion can be performed for refractory symptoms. Complications associated with spinal fusion for SK have been studied in the literature, although the in-hospital complication rate has not been described. Our study attempts to describe the patient demographics and in-hospital complication rate in pediatric patients undergoing spinal fusion for SK and compare this to pediatric patients undergoing spinal fusions for other diagnoses.

MATERIALS AND METHODS: Pediatric discharges (age<18) from 2002 to 2013 were selected from the HCUP National Inpatient Sample. For each discharge, demographics data were collected in addition to information on comorbidities and post-operative complications. Comparisons between patients with SK who underwent spinal fusion (fusion+SK) and those who did not have SK but underwent spinal fusion (fusion without SK) were performed using the Chi-square test of independence with significance set at $\alpha < 0.05$. Simple logistic regression models were performed predicting complication (yes/no) with gender, comorbidity, primary payer, age group, and hospital bed size.

RESULTS: From 2002 to 2013, a total weighted sample size of 115,002 patients had a spinal fusion. Of those patients, 1,839 had SK. Of the discharges with fusion+SK, 7.96% had at least one complication. Of the discharges with fusion without SK, 11.63% had at least one complication ($P=0.0205$). Of the discharges with fusion+SK, 34% were female, while 64% of those with fusion without SK were female ($P < 0.0001$). There is statistically significant evidence that the proportions of discharges for the three primary payers differs for those with fusion+SK and those with fusion without SK ($P=0.0044$). Of the discharges with fusion+SK, the primary payer was Medicare/Medicaid in 19%, private/HMO in 73%, and other in 7%, compared 27% Medicare/Medicaid, 66% private/HMO, and 7% other for fusion without SK. The proportion of discharges with fusion+SK and for fusion without SK that were of white race was 85% and 65% respectively ($P < 0.0001$). The simple logistic regression model with comorbidity, primary payer, age, gender, or hospital bed size predicting complication was not statistically significant.

CONCLUSIONS: The in-hospital complication rate for pediatric patients undergoing spinal fusion for SK was 7.96%. Compared to all pediatric patients undergoing spinal fusion, patients undergoing spinal fusion for SK were more likely to be white, male, and have private insurance as their primary payer. Overall, the in-hospital complication rate in patients undergoing operative correction of SK is comparable to pediatric patients undergoing spinal fusion for other diagnoses.

DETERMINING BEST PRACTICES OF PEER MEDIATION METHODS IN KALAMAZOO PUBLIC SCHOOLS

Melanie Bourgeau; Dagan Hammar; Neil Hughes; Sarah Kemp; Sydney Spitler; Catherine Kothari, PhD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences

BACKGROUND: Peer mediation is a method of conflict resolution in which a conflict between two people or groups is guided by a fellow student in order to reach an agreement. Peer mediation has been shown to be an effective tool in helping students resolve conflict and how to respond to future conflicts. This has led to a reduction in school violence and suspensions in schools that have adopted this method. Several methods have been employed in the implementation of peer mediation. However, the two most common methods are the whole school and the cadre approach. The whole school approach requires everyone at the school to be trained, while the cadre approach only requires a few to be trained.

PURPOSE: The purpose of this study is to explore the various forms of peer mediation and determine best practices for peer mediation in Kalamazoo Public Schools.

MATERIALS AND METHODS: An online survey was distributed to eligible educators and administrators throughout the Kalamazoo public elementary schools that currently have a peer mediation program. Survey included questions on their opinion regarding the effectiveness of peer mediation program currently in place and if there were any barriers to successfully implementing the program.

RESULTS: 16 Surveys were completed by the study participants at multiple schools in the Kalamazoo area. Overall, the survey respondents found the peer mediation program to be somewhat beneficial to the students (3.69/5; 5 being most beneficial). The results show that the greatest barriers to using the peer mediation program are student willingness (50%) and time (38%). Respondents also feel there is not enough school-wide support for the program (2.94/5)

CONCLUSION: One of the main barriers to the peer mediation program is having school-wide engagement in the program. Evidence from literature show that the most effective way to implement peer-mediation is through the school-wide approach. Findings from our study show that peer mediation program could be a effective intervention for conflict resolution, however, this is not currently functioning at its full potential. The best way to improve the program, without going to the full school approach, would be to increase awareness and participation at all levels.

LEFT CAROTID ARTERY THROMBOSIS DUE TO THROMBOANGIITIS OBLITERANS

Melanie Bourgeau; Joseph Prahlow, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Department of Pathology

BACKGROUND/INTRODUCTION: Thromboangiitis obliterans (TAO, Buerger's Disease) is a rare, segmental, non-atherosclerotic vasculitis that causes thrombosis and occlusion of the small and medium sized vessels of the distal extremities. However, it can, in rare cases, affect vessels in the gastrointestinal, cerebrovascular, coronary, and renal systems. The etiology of TAO is unknown, but there is a strong association with smoking in the development and the progression of the disease. The purpose of this study is to discuss diagnosis and complications of thromboangiitis obliterans, including a rare manifestation of the disease found in a 42-year-old woman with TAO.

CASE REPORT: A 42-year-old homeless Caucasian female was found dead, outdoors, near her campsite. Records show she was assaulted five days prior and she sustained a broken nose and a concussion from that incident. Her medical history was significant for a post-traumatic seizure disorder related to a closed head injury that occurred over two decades prior to death, alcoholism, Buerger's disease, hypertension, COPD, hepatitis C and remote breast cancer.

Although initial investigation suggested that the death might be related to trauma, autopsy revealed no significant trauma. However, the autopsy did reveal a thrombus occluding her left carotid artery. Microscopic examination revealed multifocal areas of acute inflammation within vessel walls as well as atherosclerosis and intraluminal thrombosis. Corresponding brain tissue showed softening of the area supplied by the left internal carotid artery, which microscopically was determined to be due to acute ischemic necrosis. In addition, examination of the lungs was consistent with COPD. It was concluded that thromboangiitis obliterans, likely precipitated by smoking, was the cause of the thrombus, and thus her cause of death.

DISCUSSION/CONCLUSION: Thromboangiitis obliterans, though a relatively rare disease, can cause significant complications, including ulceration, gangrene and life threatening thrombosis. Proper diagnosis, though hindered by conflicting diagnostic criteria, is the first step in preventing these complications. As the present case reveals, manifestations beyond the extremity vessels can be life-threatening, so it is important that physicians be aware of these possible complications when treating patients with TAO.

PEER-LED DIABETES SELF-MANAGEMENT PROGRAM FOR PATIENTS WITH GLYCATED HEMOGLOBIN VALUES GREATER THAN 7%

Michael A. Behun; McKenzie J. Akers; Peter J. White; Amy O. Chonghasawat; Yen-Yu Tina Chen; Thu N. Nguyen; Grant M. Finlayson; Catherine L. Kothari, PhD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences

INTRODUCTION: Type II diabetes mellitus is the 7th leading cause of death in Kalamazoo County. Glycated hemoglobin (HbA1c) is a biomarker used to evaluate blood glucose control spanning a 3-month period; a value $>7\%$ indicates poorly controlled diabetes over the past 3 months.

PURPOSE: To determine the effectiveness of a free diabetes self-management program when implemented in Kalamazoo County.

METHODS: Nineteen individuals (5 males, 14 females, average age 58 years, range 39 to 82 years) with type II diabetes mellitus and a self-reported HbA1c $>7\%$ enrolled in the study. These individuals began a 6-week diabetes self-management program, during which participants met in small groups for 2.5 hours each week. The focus of this program was for participants to build skills that enabled them to better manage their chronic disease by improving problem solving, nutrition, blood glucose monitoring, and working with healthcare providers. HbA1c values were obtained via medical records prior to program completion (baseline) and 3-months post-program. Surveys that evaluated subjective information were also obtained at baseline and 3-months post-program.

RESULTS: Nearly 950 members of the Kalamazoo community with type II diabetes mellitus were contacted to participate in this free self-management program. Recruitment was a challenge as only 99 verbally agreed they would attend the program, of which 48 attended the first session and 19 of those enrolled in the study. Five participants were excluded due to medical-record-documented HbA1c values $<7\%$, 6 did not complete the program, and 1 was lost to follow-up. Of the 7 participants who completed their 3-month follow-up, most variables exhibited desirable trends from baseline to 3-months post-program, and those that remained unchanged were already within a desirable range at baseline. The variables closest to significance were an increase in median self-efficacy score (49 to 78 using a 0-80 scale, $p = 0.062$) and a decrease in median HbA1c (10.2% to 8.5%, $p = 0.31$).

DISCUSSION: Despite limited statistical power due to small sample size, this program provided valuable education to many community members who may be considered underserved and have HbA1c values as high as 14%. Future work is needed to analyze the healthcare barriers these individuals endure and how they may be overcome. Facilitation of healthcare provider referral to the program may be an option that encourages both participant adherence and expansion of this low-cost diabetes education model throughout the community.

HISTORY OF ANTICOAGULANTS

Michael Chavarria; Melanie Bourgeau; Elizabeth Kinsella; Michelle Knapp; David Lee; Raphael Szymanski;
Kimberly Wells

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019

INTRODUCTION: Arterial and venous thromboembolisms are major causes of morbidity and mortality across the world. They are the leading cause of death and disability in high-income countries and are increasing in middle- and low-income countries. Pharmacological approaches have become pivotal in both prevention and treatment of thromboembolisms. As our understanding of hypercoagulability increased throughout the 20th century, anticoagulants have become a frontline therapy in preventing and reducing adverse outcomes for thromboembolic patients. The progressive discovery of these anticoagulants and their contribution to our evolving understanding of coagulation illustrate the importance of basic science and translational research.

RATIONALE: This review provides a historical perspective of anticoagulants with a focus on their initial discovery, mechanism of action, and clinical uses in a way that allows one to appreciate the evolution of pharmacological intervention on coagulation.

MATERIALS & METHODS/REVIEW OF LITERATURE: Using PubMed, we searched for primary sources and review articles for the following compounds, their development and discovery: heparin, rivaroxaban, dabigatran, warfarin, hirudin and bivalirudin, streptokinase and urokinase, and platelet inhibitors. In total, 144 sources were used.

RESULTS: The first anticoagulant, heparin, was discovered in 1916 by Jay McLean. In the late 1940s and into the 1950s, a compound that inhibited the synthesis of vitamin K-dependent clotting factors X, IX, VII, and II was developed and named Warfarin. In the 1950s, hirudin, an anticoagulant compound produced by leeches, was isolated and used to develop bivalirudin, a potent thrombin inhibitor. Fast forwarding several decades, research in the 1980s identified specific compounds in the coagulation cascade, including Factor Xa, the activated form of Factor X. Since the discovery of Factor Xa, several new anticoagulants targeting it have been developed, including dabigatran, rivaroxaban, and the newest compound, apixaban.

CONCLUSION: The century-long development of anticoagulants has made an incredible impact on medicine. The elucidation of the mechanisms of coagulation since the initial discovery of heparin demonstrates how one scientific discovery can catalyze others, which not only included generations of anticoagulants, but parallel advancements in antiplatelet and fibrinolytic therapies.

CRYPTOCOCCAL EMPYEMA: A RARE MANIFESTATION OF DISEASE

Mohamed Mortagy, MD; Larry Lutwick, MD; Stephen Breisach

WMU Homer Stryker M.D. School of Medicine, Department of Internal Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Medicine and Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2020

INTRODUCTION: Cryptococcus neoformans is a pathogenic yeast that is generally acquired by man from the environment via the respiratory route. Despite this route of acquisition, overt pulmonary infection is uncommonly diagnosed and the disease is usually manifest as a subacute meningitis which is mostly manifest in individuals who are cellularly immunoincompetent such as those on cancer chemotherapy, receiving anti-solid organ rejection medications and those with HIV/AIDS. Infection of the pleural space with *C. neoformans* is quite uncommon. We report a non-immunosuppressed man who was found to have infection of the pleural in the wake of bacterial empyema who was successfully treated with fluconazole.

CASE REPORT: A 66-year-old man was referred to Infectious Diseases clinic in the wake of an admission for Streptococcus intermedius right sided thoracic empyema which was treated with appropriate antimicrobial therapy and chest tube drainage as well as a decortication of the right pleura. The pathology of the pleural peel showed acute and chronic inflammation and the pleural fluid and pleural tissue cultures were negative at the time of discharge. After discharge, the pleural peel culture grew *C. neoformans* and the patient was referred to ID. At the time of the visit, he complained as being generally fatigued but without fever, chills, sweats or cough. He also denied headache, stiff neck, nausea, vomiting or photophobia. A review of the pleural peel pathology showed no direct evidence of cryptococcosis. A serum cryptococcal antigen was ordered and he was begun on oral fluconazole for a planned 6-month course. The cryptococcal antigen was positive at 1:80 and serial assays performed during the treatment course. Date Serum Cryptococcal Antigen Aug2016 1:80 Sep2016 1:20 Dec2016 1:5 Jan2017 Non-reactive. He remains asymptomatic following the therapeutic antifungal course.

CONCLUSION: *C. neoformans* pleural peel infection was diagnosed from a pleural decortication procedure performed in the wake of *S. intermedius* bacterial empyema. Infections of the pleura or pleural space with Cryptococci are quite uncommon. The patient was successfully treated with fluconazole.

IT'S ALL IN THE FLOW-VOLUME CURVE: KOMMERELL DIVERTICULUM PRESENTING AS PSEUDO-ASTHMA

Musunkumuki Kadochi, MD; Myrtha Gregoire-Bottex, MD; Joseph Lamar, MD; Rose Archemetre, MD

WMU Homer Stryker M.D. School of Medicine, Department of Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Pediatrics and Adolescent Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Medicine-Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Medicine-Pediatrics

Asthma causes episodic bronchoconstriction due to bronchial hyper reactivity and contraction of the smooth muscle. Further inflammatory cascade lead to inflammation and mucus hyper secretion. Symptoms include cough, wheezing and dyspnea at rest or on exertion. These symptoms are also present in a number of condition including post nasal drip, cystic fibrosis or reflux in case of cough, vocal cord dysfunction, partial airway obstruction or by a mass, foreign body aspiration or from airway malacia; hyperventilation, anxiety and deconditioning in case of dyspnea. For patient Exercise-induced asthma is rarely exist without other respiratory symptoms at rest namely, cough and wheezing. for patient old enough to perform spirometry, or a challenge can help diagnose asthma by demonstrating a significant change in flows. Vascular anomaly causes obstruction of the central airway and malacia and no response to bronchodilator, a hallmark is the variable intra-thoracic obstruction appreciated in the flow-volume curve. We present a patient with dyspnea on exertion and pseudo asthma.

This 11-year-old male presents with progressive dyspnea on exertion, “sounds wheezy” . He has no syncope. He failed to respond to Albuterol used before exercise and for shortness of breath. There is no exacerbation with viral illnesses or exposure to allergens. He reports sialorrhea during exercise. There was positive family history atopy. The environment is significant for rabbit. Allergy panel was negative.

A previous Exercise testing was reported normal, but review of the flow volume curve showing a significant flattened expiratory loop suggested malacia from vascular ring. An exercise challenge was not contributory, patient had obstruction at baseline and did not reached the 85% of maximal heart rate, but continue showing the F-V curve abnormally. A Chest CT shows mild bronchial wall thickening with no bronchiectasis and right-sided aortic arch with aberrant left subclavian artery and prominent diverticulum of Kommerell's and compression of the posterior esophagus, but only mild contour deformity of the adjacent trachea. Echo cardiogram shows no other cardiac abnormality. The patient underwent surgical division of a ligament arteriosum for a right aortic arch with aberrant L subclavian artery and plication of the Kommerell's diverticulum to the posterior chest. He was well at return and follow up spirometry shows unchanged FEV1 with persistent flattened expiratory flow.

CONCLUSION: Vascular ring and Kommerell's diverticulum can be symptomatic and present as pseudo-asthma. The NIH guidelines recommend spirometry for diagnosis, assess severity and control. The flow-volume curve need to be assessed.

IMPLEMENTATION OF A COLLABORATIVE CARE MODEL TO PREVENT, ASSESS AND TREAT ANXIETY AND DEPRESSION IN CYSTIC FIBROSIS PATIENT

Myrtha Gregoire-Bottex, MD; Polly Hollenbeck, RTR; Sally Bonnema; Andrea Caskey, MSW

WMU Homer Stryker M.D. School of Medicine, Department of Pediatric and Adolescent Medicine; WMU Homer Stryker M.D. School of Medicine, Pediatric Subspecialties Clinic; Bronson Methodist Hospital, Dietician; WMU Homer Stryker M.D. School of Medicine, Department of Nursing

Cystic Fibrosis (CF) patients and caregivers have multiple risks factors for depression and anxiety as previously reported. Up to mid-2016 in our medical home, all patients 12 years and above were screened with the PHQ-2 and a follow up PHQ-9 if needed. Parents or caregivers were not formally screened or referred. In 2015, the Cystic Fibrosis Foundation and European Cystic Fibrosis Society published a consensus statements for prevention, screening and treatment of depression and anxiety.¹ In 2015, only 3 of the 32 patients served during the year were diagnosed and only one was receiving psychotherapy and pharmacotherapy for depression and anxiety.

AIM: In June 2016 we started a Quality Improvement project to implement the Cystic Fibrosis Foundation and European Cystic Fibrosis Society consensus statements for screening and treating depression and anxiety. Using the PHQ-9 and GAD-7, CF patients age 12 years through adulthood, and of caregivers of children from birth to 17 years of patients were screened. The aim is to screen, treat or refer at least 80% of patient and at least one caregivers as needed. Results: Before implementation, 1 patient was already receiving treatment and 1 had declined. In this first quarter of the implementation (Q32016) of the 31 patients, 12 were seen for their quarterly visits, 5/12 were 12 year and above and screened. One patient scored “high” and was referred and was seen by psychiatrist, started on medication and psychotherapy. Of the caregivers seen the same quarter, 14 were screened and 7 (50%) of them scored high and were referred. 2/6 have started medication though their PCP and one is awaiting to be seen, 4 declined to address the problem. Correlation with patient demographic and financial data are being made.

CONCLUSION: Anxiety and depression were found in several patients and caregivers in the first 3 months of the mental health guidelines implementation. A competitive grant was awarded for a clinical psychologist for ongoing intervention to patient and caregivers.

REFERENCE: International Committee on Mental Health in Cystic Fibrosis: Cystic Fibrosis Foundation and European Cystic Fibrosis Society consensus statements for screening and treating depression and anxiety. Crossan A., Riekert K., Gartner S., Uluer A., Gerlach M., Zirbes J., Rounds J., (...), Reno K. (2016) *Thorax*, 71 (1) , pp. 26-34.

OF PLUGS AND CASTS: A CASE PLASTIC BRONCHITIS IN A 17-YEAR-OLD PATIENT WITH “MILD” ASTHMA

Myrtha Gregoire-Bottex, MD; Musunkumuki Kadochi, MD; Rose Archemetre, MD

WMU Homer Stryker M.D. School of Medicine, Department of Pediatric and Adolescent Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Pediatrics; WMU Homer Stryker M.D. School of Medicine, Department of Medicine-Pediatrics

Plastic bronchitis or simply bronchial casts are rare cause of obstructive lung disease, cough, chest pain, respiratory failure and death. They are related to cyanotic congenital heart disease as a mucinous or lymphatic cast or inflammatory cast in atopy or a fibrinous cast in sickle cell disease. In atopy, cast are usually described with abundant eosinophilic and Charcot-Leyden crystals with fibrinous framework. These is different from the mucus plug seen during asthma exacerbation. Therapy usually target inflammation but no standard of care exists. Mortality rate range from 0-60%. We present a case discovered during a routine visit for sport physical.

This 17-year-old with asthma and environmental allergies to dust mites diagnosed at age 3, was kept on Albuterol as needed use infrequently twice a year. Has not been on any long term anti-inflammatory medication. Few month before he presented to the pulmonary clinic, he had wheezing and rhonchi. He had no viral illness, no fever and no sick contact. No recent travel. A CXR was done and shows LLL opacity and he was treated with antibiotics including Zithromax, Augmentin, Doxycycline, several prolonged courses of oral steroids, started on inhaled corticosteroids. Multiple CXR and a CT scan shows persistent retrocardial opacity suggesting atelectasis or pneumonia. He started to expectorate “stuff” before his pulmonary visit, reported as many eosinophil with normal flora. On treatment, he started complaining of chest pain and shortness of breath. Flexible bronchoscopy reveals mucinous/tissue-like materials in the RML and posterior sub segment of the LLL initially thought to be food pieces. The gelatinous/fibrinous material was tightly attached to the airway wall. During a 4-hours process using biopsy forceps, a grasper and Fogarty catheter, through a 2.0 channel of a 5.2 Bronchoscope, the casts was removed. The airway was inflamed. Pathology as for the expectorated cast shows fibrinous material with abundant eosinophils and Charcot-Leyden crystals. Further work up ruled out ABPA Patient continue to expectorate smaller cast. Azithromycin and airway clearance device were added.

This is the first incidental presentation plastic bronchitis related to atopy discovered at sport physical on a patient with mild asthma. This confirm that plastic bronchitis may be underreported.

CHILDHOOD IDIOPATHIC PULMONARY HYPERTENSION: A CASE REPORT

Nathaniel Balmert; Joseph Prahlow, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Department of Pathology

INTRODUCTION: Pulmonary arterial hypertension (PAH) is characterized as average pulmonary artery pressure of greater than 25mm Hg at rest. Childhood idiopathic pulmonary hypertension (CIPH) is distinguishable from PAH by the absence of family history or underlying disease. Symptoms of CIPH include dyspnea, exercise limitation, and syncope. Common organ-specific changes include right ventricular hypertrophy and right ventricular strain. We present the case of a 6-year-old girl presenting with idiopathic pulmonary arterial hypertension aggravated by esophageal intubation.

METHODS: This case is from the files of one of the authors, a forensic pathologist.

CASE REPORT AND DISCUSSION: Diagnosed with pulmonary arterial hypertension when she was six years old, this patient had a history of syncope on exertion. She was readmitted to the hospital shortly afterward with seizures secondary to pulmonary hypertensive crisis and hypoxia. Two months later, after another seizing episode, the patient's mother called EMS, who began chest compressions at the scene. While under EMS care, the patient was intubated and subsequently became pulseless and asystolic. She was pronounced dead in the Emergency Department. The case was then referred to the coroner.

Autopsy findings include marked right ventricular dilation and hypertrophy and lung microscopic features consistent with CIPH. The endotracheal tube was found with its tip in the distal esophagus with the cuff inflated and surrounded by blanched underlying mucosa, all indicative of esophageal intubation, which was considered a contributory cause of death.

The case serves as an excellent example of CIPH. In addition, the esophageal intubation allows for discussion of complications related to medical procedures.

A CASE OF SUCCESSFUL TREATMENT OF SKIN EXCORIATION DISORDER WITH N-ACETYL CYSTEINE

Nauman Khan, MD; Priya Mahajan, MD; Sadia Shaukat, MD; Matthew LaCasse, DO; Mark Kanzawa, DO

WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry

INTRODUCTION: We present a case of a middle age patient with skin excoriation disorder since age 15 who experienced significant improvement with augmentation of her treatment regimen with N-acetyl cysteine. This improvement occurred despite a recurrence of her depression, alcohol use disorder, and stimulant use disorder.

CASE PRESENTATION: A 59-year-old-female with 44 years of unsuccessful treatment of self-excoriation disorder presented with symptoms of unspecified depression, OCD and stimulant use disorder. She was referred by her surgeon who had to postpone a revision of her hip replacement as she was self-excoriating the right axillary lymphadenectomy site. Initial administration of PHQ-9 revealed a score of 20. She was diagnosed with right breast cancer over 10 years ago, status post radical mastectomy of the right breast. She had episodes of extended sobriety and still had skin picking. She had been using cocaine and alcohol for the past couple of years, even though she was involved in out-patient treatment. It was difficult to cope with her current psychosocial situation which made it difficult for her to maintain sobriety. She continued to pick on her surgical site, which caused her wounds to remain fresh and sore. She self-reported that she struggled with efforts not to pick her skin and even attempted to wear gloves on her hands at bedtime to prevent herself from picking through the night. The patient had been taking paroxetine 60mg per day which she reported had helped. This medication was therefore continued as previously prescribed. We initiated N-acetyl cysteine as it has been shown to have improved skin picking in patients. (1) N-acetyl cysteine was initiated at 1200mg per day, titrating this to 2400mg per day. Also, the patient was referred for CBT and was continued for outpatient cocaine addiction treatment. Given this combination of treatment, the patient showed significant improvement in of her skin picking. She self-reported doing well, going on for months without picking at of her wound. On examination, her wound appeared to be healing significantly and there was noticeable improvement compared to initial examination. There has been significant improvement on the surgical site as observed during the subsequent three monthly follow ups.

CONCLUSION: In light of limited treatment options, the trial of N-acetyl cysteine in patients that suffer from this significantly stressful condition would be beneficial.

REFERENCES: 1. Psychopharmacology: N-Acetylcysteine May Help Patients Resist Urge to Pick Skin Nick Zagorski Published online: April 01, 2016

TRAUMATIC LACERATION OF THE POSTERIOR TIBIAL TENDON TREATED WITH NOVEL TECHNIQUE

Nicholas Miladore, MD; Robert Gorman, MD

WMU Homer Stryker M.D. School of Medicine, Department of Orthopaedic Surgery; Bronson Trauma Foot and Ankle Specialists, Department of Orthopaedic Surgery

INTRODUCTION: Posterior tibial tendon (PTT) insufficiency is a common entity, and can result in chronic tendon disruption. Acute disruption is a rare occurrence, but has been described in the literature. Most reported cases are associated with ipsilateral ankle fractures. Laceration of the posterior tibial tendon has also been described, typically in the operative setting as a result of iatrogenic injury.

CASE REPORT: A 15 year old male presented to the clinic with complaints of right ankle pain and weakness. 2.5 months prior, he had sustained a laceration to the posteromedial ankle. He was diagnosed with a laceration that was treated with repair. His pain improved but did not go away despite use of NSAIDs and taping by his athletic trainer. He reported difficulty with running and cutting particularly with push-off. An MRI performed before his evaluation demonstrated disruption of the PTT with several centimeters of retraction and fluid within the sheath. The chronicity of his injury suggested that primary repair would not be a viable option. Given his young age and lack of baseline pathology, a conventional reconstruction with PTT debridement and flexor digitorum longus tendon (FDL) transfer was sub-optimal. Consent was obtained for secondary reconstruction with options to include autograft, allograft, or tenodesis.

OPERATIVE TECHNIQUE: The posterior tibial musculature was mobilized. The stump ends were debrided back to a level demonstrating vascularity. A decision was made to perform a “split” FDL transfer to use as an intercalary graft while still preserving much of the toe plantarflexion function of the native tendon. A longitudinal split was made in the tendon from proximal to a level plantar to the navicular bone. The medial limb was transected at that distal level (leaving the lateral limb intact). A segment of the split FDL traversed the defect as an intercalary graft, and then a Pulver-Taft weave was performed distally through the distal PTT stump. Non-absorbable suture was used for fixation at the Pulver-Taft junction sites, and absorbable suture was used to augment the repair in an “epitendinous” fashion. Fibertape was wrapped around the repair to provide augmentation and protection.

CONCLUSIONS: To our knowledge, this is the first written report of a PTT laceration treated with a split flexor digitorum longus tendon transfer. The technique described in this case has resulted in a good functional outcome at 2 years. This may be a viable treatment option for practitioners facing a similar clinical scenario.

FOOD INSECURITY IN KALAMAZOO

Nicholas Sweda; Cheryl Dickson, MD; Jeffrey Friedman; Michelle Knapp; David Lee; Vina Tran

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Department of Health Equity and Community Affairs; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019

INTRODUCTION: Food insecurity is both an inconvenience and problem. As of 2013, over 16 million children in the USA were food insecure. The consequences of food insecurity include health issues from nutritional deficits, developmental difficulties, and behavioral problems that manifest in educational, personal and professional challenges. Overall, food insecurity and its impact on individuals and families is under-recognized. Additionally, the extent to which physicians play a role in helping patients secure access to food assistance programs remains unclear.

OBJECTIVE: The objective of this study was to assess the efficacy and methodologies of current healthcare practices based in Kalamazoo County, MI, in identifying pediatric patients who are food insecure. Results will help local assistance resources, such as Kalamazoo Loaves and Fishes, improve outreach efforts and re-focus their programs. Furthermore, results could impact physician practices regarding identifying those who are food insecure.

METHODS: The American Academy of Pediatrics (AAP) developed a 2-question survey with 97% sensitivity for identifying food insecurity. The questions are: "Within the past 12 months, we worried whether our food would run out before we got money to buy more" and "Within the past 12 months, the food we bought just didn't last and we didn't have money to buy more." Using these questions as a foundation, we developed an electronically distributed 20-question survey that assessed awareness of food insecurity among Kalamazoo pediatric and family medicine physicians. Survey questions covered years of practice, usage of the AAP questions, level of formal training on food insecurity, mid-level and support staff, and resources recommended to patients.

RESULTS AND DISCUSSION: The 25 responses were analyzed for differences between groups. Although no significant relationships were found, 76% of respondents believed food insecurity directly related to their patient's illness, though only 52% ask direct questions about food insecurity. Women, Infants and Children (WIC) program referrals were common and almost all respondents were willing to include the two AAP-validated food insecurity screening questions in their practice. A consensus emerged that a list of local resources would be helpful in addressing food insecurity.

CONCLUSION: Kalamazoo pediatricians and family medicine physicians believe food insecurity directly relates to the problems affecting their patients. However, only half of physicians ask patients about food insecurity. Future work should focus on expanding physician-patient conversations about food insecurity, addition of validated food insecurity questions to patient questionnaires, and compiling a list of local resources for distribution to local providers.

16-YEAR-OLD BASEBALL PITCHER PRESENTING WITH GRADUAL WORSENING OF POSTEROLATERAL RIGHT ELBOW PAIN AND NEGATIVE MRI FINDINGS

Nithin Natwa, MD; Reema Sheth, DO; Nisha Sheth, BS

WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; McLaren Lansing, Department of Internal Medicine; American University of Antigua, Medical School

BACKGROUND: Elbow pain is a common presenting symptom in repetitive motion performing athletes. Due to the popular use of prolonged conservative therapy in elbow pain, and the importance of early surgical intervention in Elbow Synovial Fold Syndrome, proper and prompt diagnosis is essential. In our case report, a 16 year old male right hand-dominant baseball pitcher presents with gradual onset of posterolateral right elbow pain over 4 months.

PURPOSE: This study helps reflect the correct timeline in imaging along with the appropriate duration of conservative management. After reviewing this study the reader will be better able to differentiate between Lateral Epicondylitis and ESFS reducing the incidence of missed diagnosis and irreversible injury. It also exhibits the positive outcome of surgical intervention following the failure of conservative therapy.

METHODS: A comprehensive literature search was performed on the internet including textbooks and journals on the topic of Elbow Synovial Fold Syndrome and elbow pain. Information was scarce and we were unable to find any meta-analysis studies on the condition indicating the opportunity for further research in this topic. Pertinent information was included on our retrospective case report.

RESULTS: High-definition ultrasound in conjunction with MR arthroscopic examination of the joint in conjunction will provide a definitive diagnosis of ESFS in a patient presenting with persistent elbow pain. First line treatment is conservative therapy for a period of 8 weeks to no greater than 6 months. At this point arthroscopic excision of the pathologic plica is performed to avoid irreversible articular cartilage degeneration. Outcomes after arthroscopic resection, focal fibrosis, and repair of chondral defects are excellent

CONCLUSION: Elbow synovial fold syndrome can be found in athletes, especially those in sports that require repetitive motion of the elbow. It can be easily misdiagnosed. As in our case, even an MRI may show negative findings early on. CT or MR arthrography, along with dynamic US, are helpful in diagnosing ESFS and considered superior to MRI in this specific instance. A short course of conservative therapy is appropriate, however, If conservative therapy fails, then prompt arthroscopic excision is appropriate. As was noted in our literature search, cases on ESFS are lacking and the topic would benefit from retrospective data collection over large populations and a broad time period.

BENEFIT OF ULTRASOUND CURRICULUM DEVELOPMENT FOR FAMILY MEDICINE RESIDENTS

Nithin Natwa, MD; Uzair Munshey, MD; Duncan Vos, MS; Robert Baker, MD

WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Department of Orthopaedic Surgery

INTRODUCTION/PURPOSE: Musculoskeletal problems comprise some of the most common reasons for ambulatory care encounters in the United States, accounting for 8.3% of the 1.2 billion visits per year according to the CDC. Musculoskeletal Ultrasound use has become more common in primary care for diagnosis and therapeutics. In Family Medicine Residency (FMR) Programs there is a deficiency of a structured, competency-based musculoskeletal ultrasound (MSK US) training despite its growing popularity. Currently, there is no formalized requirement for Ultrasound education as in other residency programs in spite of its benefit.

METHODS: We received a positive response on our needs analysis survey for incorporating MSKUS in FMR. 96% (24/25 residents surveyed) reporting they would be interested in receiving MSK US education. Following this, Family Medicine residents and medical students currently rotating in Family Medicine were recruited. A Sports Medicine attending with expertise in MSKUS supervised curriculum-design, exam question assessment and post lecture competency assessment. A structured curriculum was developed for 2 lectures starting with “Introduction to MSKUS”, followed by a focused lecture on “MSKUS of the Shoulder”. This included educational material, reserved practice time, a pre- and post-test for each lecture, and a practical following the second lecture.

RESULTS: Twelve residents and eight medical students completed the course series and evaluation. Using SAS Enterprise Guide 7.1 for analysis, we found sufficient evidence of a significant positive change in self-reported MSKUS knowledge from pre to post for both medical students ($p=.03125$) and residents ($p=.0039$). We also found a significant positive change in self-reported MSKUS of the Shoulder knowledge from pre to post in both medical students ($p=.0156$) and residents ($p=.0010$) as well as a significant increase in MSK US comfort level from pre-curriculum to post-curriculum ($p<0.0001$).

CONCLUSION: The data shows that a curriculum as short as 2 lectures with accompanying practical skills training improves proficiency, clinical and academic knowledge along with confidence in MSK US use. Though a longitudinal curriculum is most beneficial to Residents in Training, an US Block incorporated into the MSK curriculum is a good starting point. This can be supplemented by POC Cardiac, Pulmonary, Abdomen and OB as well to increase familiarity and pertinence. As the ultrasound use in the primary care setting becomes standard of care it would be prudent to establish a formal yearly curriculum in ultrasound earlier rather than later so as to stay competitive with other FMR programs.

ATYPICAL PRESENTATION OF TRISOMY 13 IN THE CONTEXT OF MATERNAL AMPHETAMINE AND BENZODIAZEPINE ABUSE

Patrick Staso, MD; Theotonius Gomes, DO

WMU Homer Stryker M.D. School of Medicine, Department of Medicine-Pediatrics

ABSTRACT: An atypical case of Trisomy 13 (47,+13) with three independent copies of Trisomy 13 identified by Microarray Analysis confirmed with limited chromosomal analysis.

CASE: A term appearing infant later confirmed to be of 38 weeks gestational age was delivered in the pre-hospital setting via spontaneous vaginal delivery to a 33 year old G4P1022 mother with no prenatal care in ambulance en route to hospital. She had meconium stained amniotic fluid, ruptured at delivery with unknown GBS status. APGAR scores were noted at 3 and 6 at 1 and 5 minutes, respectively. Mother was unaware of her current pregnancy and had a history of preeclampsia, 2 prior spontaneous abortions, and depression. There was no history of maternal medication use; however, a urine drug screen was positive for amphetamines, methamphetamines and benzodiazepines. Mother's history was also significant for prior previous term twin delivery. The child presented to the Neonatal Intensive Care Unit and was found to have an un-ruptured omphalocele (beside reduced at 9 hrs of life), postaxial polydactyly of bilateral hand and toes, partial syndactyly of bilateral halluxes, and dysmorphic facial features. A portable CXR was obtained which showed meso/dextrocardia. A 3/6 loud systolic murmur was noted and a cardiac echo demonstrated a small secundum ASD, large mal-aligned VSD or possible double outlet right ventricle (DORV) and moderate sized PDA with mild biventricular hypertrophy.

DISCUSSION: Patau syndrome has a prevalence between 1:7,000-29,000 depending on the source and is the third most common autosomal trisomy. The average length of survival is approximately 9 months with 90% of patients dying before the age of 1 year. Methamphetamines have only been mentioned in one other case report as a possible cause and no association of benzodiazepines were found. As well, an omphalocele is not common to Patau, but rather, is associated with Edward Syndrome (Trisomy 18). Most cases of trisomy 13 result from nondisjunction and have a low chance of recurrence. Overall, the low prevalence of this disorder, distinct abnormalities to this case, and possible etiologies from illicit substances makes this case important to share with the medical community.

ATYPICAL NEUROLEPTIC MALIGNANT SYNDROME: A CASE PRESENTATION

Philip McCarthy; Matthew LaCasse, DO

Michigan State University School of Osteopathic Medicine, Medical Student; WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry

INTRODUCTION: Neuroleptic malignant syndrome (NMS) is an emergent, often fatal, medical condition associated with the use of dopamine receptor antagonist medications. Fever, muscle rigidity, autonomic instability and altered mental status are known to be the hallmarks of the disease. In contrast with the typical presentation, Atypical NMS often presents with a different set of symptoms, making diagnosis difficult. It is important to use clinical acumen to make a timely and efficient diagnosis of NMS. We present a case of Atypical NMS in a 21-year-old male.

CLINICAL CASE: Pt is a 21-year-old African American male with previous psychiatric history of schizophrenia, bipolar disorder, acute dystonia, and tardive dyskinesia. Pt was transferred from county jail to the emergency room with decreased activity, drooling, howling, and altered mental status. During this time patient was in isolation for previously erratic behavior. Per jail records this was an ongoing process for 2-3 days prior to transfer. Conversations with staff at jail state that pt was tachycardic and hypertensive at times during this episode yet when asked for full records they declined and explained they “don’t keep” charts or records. Jail nurses were also able to tell us his medications include haldol decanoate, oral haldol and artane yet had been refusing medications in recent days to weeks. They were unable to tell us anything about PRN medications given during this period of time. On admission to the hospital he was in pain, moderately stiff, bradykinetic, unable to phonate secondary to oral bradykinesia and minimally encephalopathic. Vital signs including temperature were unremarkable on admission and throughout hospitalization. Lab findings indicated elevated creatinine kinase of 18,963 IU/L. Due to components of the history and physical exam, laboratory and imaging studies, it was determined that this patient was presenting with atypical NMS and bromocriptine therapy was initiated. The patient steadily improved back to baseline over a 22-day admission, much of which was spent waiting for placement.

DISCUSSION: It is essential to recognize NMS to prevent associated mortality. Recognition of this disease process can often be difficult as presentations may vary. There is established literature on atypical presentations of NMS; presentations without hallmark signs and symptoms such as fever, muscle rigidity, autonomic instability and altered mental status. It is the goal of this case to discuss NMS pathogenesis, variations in presentation of NMS, the differential diagnosis, and associated treatment.

RUPTURE OF LEFT VENTRICULAR ANEURYSM LEADING TO HEMOPERICARDIUM AND SUBSEQUENT DEATH FROM CARDIAC TAMPONADE

Raphael M. Szymanski; Joseph A. Prahlow, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Department of Pathology

BACKGROUND/INTRODUCTION: Left ventricular aneurysms (LVAs) are an uncommon but important complication of myocardial infarctions (MIs), taking place in 3-15% of acute MIs. In turn, 90% of MIs involve the obstruction of an atherosclerotic coronary artery. While atherosclerosis is predominantly asymptomatic, occlusion of the arterial vasculature can lead to ischemia and organ-specific clinical manifestations. Amongst other risk factors, untreated mild to moderate hypertension is associated with a 30% risk of atherosclerotic disease. Since 75 million people in the United States suffer from hypertension, and approximately half of them have poor control of their blood pressure, these are relevant diseases to consider in the discussion of LVAs.

STUDY PURPOSE: This study discusses the role of hypertension and atherosclerosis in predisposing a patient with a myocardial infarct to develop a ruptured left ventricular aneurysm, which ultimately caused his death as a result of a cardiac tamponade due to hemopericardium.

CASE REPORT: A 55-year old Caucasian male with a history of HTN, alcohol use and tobacco use collapsed on the counter while attempting to grab a cup of coffee at work. All resuscitative efforts failed and he was referred for medical autopsy. The decedent had normal development and build (BMI = 25.8). External examination was unremarkable except for abdominal obesity. Internal examination revealed 500 cc of liquid and clotted blood in the pericardial cavity. A lateral left ventricular wall aneurysm with associated mural thrombus was also noted. A 3x3 area of pericardium was adhered to the underlying endocardium in a location immediately lateral to the aneurysm. The aneurysmal wall ranged from < 1mm to 3 cm in thickness, with a 0.5 cm defect through the aneurysmal wall. Multiple areas of atherosclerosis were noted throughout the coronary vessels.

DISCUSSION/CONCLUSION: Hypertension and atherosclerotic disease are extremely common medical conditions, frequently unmanaged, and capable of developing into a wide array of conditions, from chronic ones with an insidious course to acute exacerbations with life-threatening consequences, including LVAs. Cardiac catheterization is the gold standard of diagnosis of LVA, but echocardiography is also a highly sensitive and specific detection technique. While small LVAs can be targeted with pharmaceutical treatment, larger LVAs may require surgical resection, and even then, only under certain circumstances. Managing risk factors and screening patients with pertinent medical history and physical exam findings is therefore an essential component in the prevention of LVA complications or death.

ASSESSING THE UTILITY OF THE HEALTHWISE PROGRAM IN SUBSTANCE ABUSE AND MENTAL HEALTH SERVICE PROGRAMS

Raphael M. Szymanski; Kimberly Wells; Nathaniel Balmert; Keegan Colletier; Hiba Samaha; Ransome Eke, MD, PhD; Lisa Graves, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Department of Faculty Affairs

INTRODUCTION: Increasing recognition is being given to comorbidities in individuals with severe mental illness. A report from Kalamazoo Community Mental Health and Substance Abuse Services (KCMHSA) has shown that, compared to the general population, there is a higher prevalence of comorbidities among those with mental illness in Kalamazoo county, Michigan. In addition, this population is less likely to visit a primary care provider and receive preventative care. To improve provision of health information to clients and enhance appropriate use of health care, KCMHSA has recently considered the use of Healthwise, a health information database.

PURPOSE OF THE STUDY: The purpose of the study is to assess the utility of the Healthwise program in providing medical information to participants in substance abuse and mental health service programs.

METHODOLOGY: This is an observational study conducted at the Kalamazoo Community Mental Health and Substance Abuse Services. Five medical students assigned to this service center examined the utility of the Healthwise application among clients with mental illness who were receiving care at the center. Students' reflections during this period were compiled. The reflections include time spent with patient; utility of app in addressing patient level of engagement, accessibility, patient satisfaction and barriers to implementation of the application. A thematic analysis was conducted.

RESULTS: Findings from the thematic analysis show that clients were generally satisfied with the process of using Healthwise to provide health information. The estimated time, based on observation, for using the application ranged from 30 minutes to one hour. Also, the reflections showed that clients were highly engaged during the process as rated by the interviewers and the application was easy to use. Some of the observed barriers that may impact implementation were population vulnerability, support for client access to app, inconsistent and small client population, and limited medical knowledge. No overt effects of gender and race were observed.

DISCUSSION: Findings from this study suggest that the Healthwise application is a useful tool for providing relevant medical information among populations with mental illness. Study participants were satisfied with the process of using this application. However, some limitations identified with the process include unstable client population, nonsupport for client access to application, limited medical knowledge and number of encounters.

CASE PRESENTATION: PAUCI-IMMUNE GLOMERULONEPHRITIS AND AUTOIMMUNE HYPOTHYROIDISM

Rheanne Maravelas, MD; Elizabeth Doherty, MD

WMU Homer Stryker M.D. School of Medicine, Department of Medicine-Pediatrics

BACKGROUND: Our patient is a 51-year-old woman who presented to the emergency department due to new low back pain and hematuria in the setting of worsening fatigue and exercise tolerance over the past few months. Additional concerns include metomenorrhagia for a few years. She has lost 20 pounds over the past 2 months, although she notes changing her diet to try to lose weight. She has been feeling very fatigued. No fevers, chills, recent pharyngitis, sick contacts, or travel.

PURPOSE: Examine the known relationship between these conditions. Materials and Methods: PubMed search of literature using MeSH subject headings.

DISCUSSION: This patient presented with symptoms characteristic of both kidney disease and hypothyroidism, and her diagnoses were confirmed by laboratory results. The simultaneous presentation with pauci-immune pANCA glomerulonephritis and autoimmune hypothyroidism raises the question of whether these are linked or merely coincidental. Pauci-immune glomerulonephritis occurs 3.1 cases/million/year in the US. The rates are higher for caucasians, males, and age greater than 65 years (Lionaki and Boletis). Autoimmune thyroid dysfunction is the most common cause of hypothyroidism in areas not iodine deficient, and occurs at about a rate of 1-2% of the population, more common in women and with increasing age (Vanderpump). This patient being female, Caucasian, and in her 50s was at an increased risk for hypothyroidism. Chronic kidney disease is commonly associated with hypothyroidism, with either primary disorder able to lead to the other (Iglesias et al). Notably, however, the kidney impairment caused by hypothyroidism is generally reversible with treatment (Iglesias et al). Interestingly, a recent European study found that among patients with CKD, subclinical hyperthyroidism raised the risk of disease progression compared to subclinical hypothyroidism (Chaker et al). Granulomatosis with polyangiitis with elevated thyroid peroxidase antibody has been reported 5 times in the literature (Rosmarakis et al). There is an additional report of subacute thyroiditis preceding GPA (Mukae). A cohort of 180 patients with granulomatosis with polyangiitis found significantly higher rates of pre-existing thyroid dysfunction among those with severe kidney disease (Stone et al). Proposed mechanisms include common damage due to immune deposits or sharing an underlying autoimmune predisposition (Iglesias et al).

CONCLUSION: Although the biological mechanism of the overlap between pauci-immune glomerulonephritis and autoimmune hypothyroidism requires additional research, the clinical overlap has been demonstrated to be more than random.

SUDDEN DEATH CAUSED BY HYPONATREMIA RELATED TO PSYCHOGENIC POLYDIPSIA

Rohan Kedar; Joseph Prahlow, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Department of Pathology

BACKGROUND/INTRODUCTION: Psychogenic polydipsia (PPD), a type of primary polydipsia, is a common occurrence among inpatient psychiatry patients that can present with headache, confusion, and lethargy. PPD is a diagnosis of exclusion characterized by excessive thirst and overconsumption of water in the context of a psychiatric illness, especially schizophrenia. In the context of water intoxication or renal damage, PPD can progress to hyponatremia, brain edema, seizures, coma, and death if untreated. PPD patients have significant morbidity and mortality when compared to patients with similar psychiatric diagnosis without PPD.

STUDY PURPOSE: The purpose of this study is to discuss psychogenic polydipsia and its role in the sudden deaths of two schizophrenic males.

MATERIALS AND METHODS: The cases review the autopsy reports and pertinent medical records of two schizophrenic Caucasian males who were concluded to have died as a result of PPD.

CASE REPORTS: Case #1: A 48-year old mentally-handicapped Caucasian male was found in distress while in bed at his group home. Upon arrival of the emergency medical services, he was found in asystole and all resuscitative efforts failed. The decedent's medical history was significant for paranoid schizophrenia, epilepsy, and renal insufficiency due to damage from lithium. The decedent had several psychiatric hospitalizations and aggressive outbursts at his group home. He was noted to have PPD within his medical records and was placed on fluid restriction. Autopsy was relatively unremarkable though the right kidney weighed 90 g (normal 125-175 g). Ancillary analysis of vitreous chemistry showed evidence of severe dilution of electrolytes with sodium at 78 mEq/L (normal: 135-150) and chloride at 58 mEq/L (normal: 105-135).

Case#2: A 47-year old Caucasian male was found in bed in asystole. The decedent's medical history was significant for schizophrenia and obesity. Upon autopsy, he was noted to have cardiomegaly with biventricular hypertrophy and dilation and mild to severe atherosclerotic cardiovascular disease in the aorta, coronary arteries, and cerebral arteries. Ancillary analysis of vitreous chemistry showed evidence of severe dilution of electrolytes with sodium at 85 mEq/L.

DISCUSSION/CONCLUSION: These cases show that PPD is a dangerous component of psychiatric disease, especially schizophrenia, that can potentially lead to death and results in high number of years of potential life lost.

SUBSTANTIAL RECOVERY GAINS SEEN BY UTILIZING MENTAL HEALTH COURT IN TREATING AND MAINTAINING RECOVERY IN PSYCHIATRIC PATIENTS

Ruqiya Shama Tareen, MD; Catherine L. Kothari, PhD; Megan Maas, MD; John Jacob, MD; Bob Butkiewicz, MA, LPC; Jeff Getting, JD

WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry; WMU Homer Stryker M.D. School of Medicine, Division of Epidemiology and Biostatistics, Department of Biomedical Sciences; WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry; WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry; Kalamazoo Community Mental Health and Substance Abuse Services; Kalamazoo County, Chief Prosecuting Attorney Office of the Prosecuting Attorney

INTRODUCTION: The recovery concept within the mental health field means empowering individuals to assume control over their mental health. Maintaining recovery is particularly difficult for patients with dual diagnosis. Recovery is a central focus of Kalamazoo's Mental Health Recovery Court (MHRC). In addition to intensive court supervision and case management, MHRC includes a voluntary peer-support component, Wellness Recovery Action Plan (WRAP).

STUDY OBJECTIVE: To measure the gains in recovery associated with MHRC and the contribution of WRAP to these gains. Our hypotheses were:

- i. Post-MHRC Recovery scores would be higher than pre-MHRC scores,
- ii. WRAP participants would have greater gains than non-WRAP participants.

METHODS: This quasi-experimental study utilized a pre-post test design. Data was collected retrospectively through secondary analysis of MHRC administrative records. Recovery scores were available for 190 individuals. The Recovery Assessment Scale-Revised is a 24-item scale, with strong internal consistency ($\alpha = 0.93$), test-retest reliability ($r=0.88$) and concurrent validity with other recovery-related scales. Recovery scores range from 24 to 120; the higher the score, the greater the recovery.

STATISTICAL ANALYSES: Multivariable analyses (generalized estimating equation (GEE) regression) was conducted with two-tailed significance level set at $p < .05$.

RESULTS: There was no statistically significant difference in Recovery scores between those enrolling in MHRC and those not enrolling in MHRC. Among enrollees, post-MHRC Recovery scores were statistically significantly higher than the pre-MHRC scores, 100.7 and 89.1 respectively (Wald Chi Square 51.618, $p < .001$). The greatest gains were in the Recovery sub-scale "not dominated by symptoms," with an average 29% gain. WRAP-participants started out with significantly higher Recovery scores, but stratified analysis illustrated that all MHRC enrollees saw Recovery gains, regardless of WRAP-participation (pre-post WRAP scores averaged 92.6 to 102.9, while pre-post scores of non-WRAP graduates averaged 82.8 to 94.9).

CONCLUSION: Our hypothesis that MHRC was associated with gains in Recovery scores was confirmed, while our hypothesis that WRAP participants would see greater gains was not. In sum, all saw gains, regardless of where they started. WRAP may help those who are further along the recovery path realize even greater gains, while those who chose not to participate in WRAP may not have been ready for this additional challenge.

IS IT CONVERSION DISORDER OR CREUTZFELDT JAKOB DISEASE, PSYCHIATRIC PRESENTATION

Sadia Shaukat, MD; Perry Westerman, MD

WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry

INTRODUCTION: Cruetzfeldt Jakob disease is a form of nervous and mental illness associated with progressive central nervous system degeneration, first described by Creutzfeldt and Jakob in the early 1920s. CJD principally affects the grey matter of cerebral cortex, brainstem and molecular layer of cerebellum. It is believed to be caused by histologically unconventional infectious agents called PRIONS. It is uniformly fatal and the annual incidence rate is 1-2 per million worldwide. Most cases are sporadic, but 5-15% of cases have a genetic basis and have been clustered within families, inherited as an autosomal dominant trait with variable penetrance. Despite isolated case reports of accidental human to human transmission of CJD (following human growth hormone therapy, corneal transplantation, brain transplantation and contaminated EEG electrode implantation). Researchers believe that direct inoculation of the agent remains the only proven mechanism of transmission. Forty-one percent of the cases begin as gradually progressive mental deterioration evidenced by psychiatric disturbances; 36% initially present with nonspecific neurological symptoms only; and the remaining 23% of cases present with both neurological and psychiatric prodromal features. With the exception of brain biopsy, there are no specific tests for CJD. Here we report a case of CJD with a complicated initial presentation which led to an initial possible diagnosis of Conversion disorder and psychiatric admission. Patient presented with rapid decline in vision which was presumed to be conversion disorder, as patient had a significant history of neurotic disorders.

CASE DESCRIPTION: A 73-year-old married female who was referred by her primary care physician to the Emergency department for further evaluation of poor vision and personality changes. Patient's initial symptoms began over a course of 4-5 months, starting in July 2014, where she was noted to be forgetful and "clumsy", bumping into furniture while walking. Her family noticed significant changes from being a happy and outgoing person to recently describe as withdrawn and irritable. She was an exceptional "knitter" but noted to be undexterous and buttered finger. She had a stressful relationship with her daughter, whom she hasn't seen in years. Pt had a history of depression which was diagnosed in June 2006 close to her retirement. She was being treated with SSRI, Sertraline and treated intermittently with Alprazolam for anxiety. Pt had developed few panic attacks in the context of significant stresses with her step children and therefore treated with alprazolam. She had no history of panic attacks or conversion in the past. By October 2014 patient's symptoms had progress and now she was experiencing staring blankly into space and occasional flinging movements of her arms and legs. These symptoms were ignored by the family as they believed "her throwing a tantrum". During this time patient's daily activities became increasingly chaotic. She was seen by her primary care where she was prescribed an increase dose of antidepressant along with scheduled dose of anxiolytic. Her husband noted that patient complained of vision disturbances and was referred to an ophthalmologist by her primary care. She was seen by an ophthalmologist twice who failed to find any ocular pathology but documented visual losses by perimetry testing. On 13th November patient was referred to Emergency room by her ophthalmologist as she had left hemianopia and complete loss in her right eye. Psychiatry was consulted from the ER where patient had an initial CT scan and basic labs which were non revelatory. Finally, patient was admitted under psychiatry service with a differential diagnosis of 1) Conversion disorder; 2) Adjustment disorder or atypical depression. On mental status exam patient was cognitively compromised and appeared to be significantly depressed. Once again, complete laboratory workup was unremarkable. Physical exam showed poor visual acuity and posturing in upper extremity. Pt was given 2mg Ativan IM for possible conversion disorder but showed no effect. Patient was deteriorating, incoherent, agitated and depressed. She repeatedly said "there is no point". EEG was grossly abnormal and revealed periodic lateralizing epileptiform discharges (PLEDS). Pt was transferred to ICU for non-convulsive status epilepticus. CSF studies were unremarkable. Tentative diagnosis of encephalopathy was made, CSF was sent for 14-3-3 protein and NMDA receptor antibody. Her hospital course was rapidly downhill until her death in December 2014.

DISCUSSION: This case illustrates patient with CJD, whose complexity of prodromal presentation obscured the early diagnosis. The major factors that led the physicians to consider alternative psychiatric diagnosis during early stages of illness were: 1) history of depression; 2) stressors and variability of neurological symptoms, reinforcing the possibility of primary psychiatric illness. We conclude that psychiatric symptoms are common in CJD and many times precede the onset of neurological deficits and raise the suspicion for a neurologic rather than a psychiatric etiology.

ZOLPIDEM IN TREATMENT OF REFRACTORY CATATONIA

Sala V. Sadaps, MD; Michael Redinger, MD; Jessica Ramsay; Meagan Maas, MD; Peter Longstreet, MD

WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry; WMU Homer Stryker M.D. School of Medicine, Department of Medical Ethics, Humanities and Law; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry; WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry

INTRODUCTION: Catatonic Disorder Due to Another Medical Condition is described as a behavioral syndrome characterized by disruption in normal movement, generally associated with many psychiatric illnesses. DSM-5 criteria require the patient to present with symptoms dominated by three or more of the following: stupor, catalepsy, waxy flexibility, mutism, negativism, posturing, mannerism, stereotypy, agitation, grimacing, echolalia and echopraxia.

The following report demonstrates a case of stuporous refractory catatonia that ultimately responds to a trial of zolpidem. Increasingly more cases are demonstrating use of zolpidem as a promising therapeutic alternative to lorazepam and ECT.

CASE DESCRIPTION: A 59 y.o. Caucasian male was admitted for resistant catatonia and worsening depression since the passing of his wife 2 months prior. Patient presented primarily with stupor, mutism, and negativism for the last 1 week. The rest of the physical exam and labs on admission were within normal limits.

Intramuscular and oral lorazepam resulted only in transient responsiveness, with symptoms being worse in the morning. Repeated trials of lorazepam and amantadine failed to provide results. On day 19, we began a trial of zolpidem at bedtime in addition to daily lorazepam, leading to resolution of the catatonic symptoms. This allowed us to better treat his underlying mood disorder and taper him off of the lorazepam, discharging him on only quetiapine for his mood and zolpidem for long-term treatment of his benzodiazepine-refractory catatonia.

DISCUSSION: Traditionally, catatonia has been treated with lorazepam and electroconvulsive therapy (ECT). Recently, catatonia has been treated with zolpidem, a GABA A-alpha-1 subunit agonist, which results in increased chloride conductance, neuronal hyperpolarization, inhibition of the action potential, and a decrease in neuronal excitability leading to sedative and hypnotic effects.

Initially, lorazepam was trialed for this patient. While we did see fleeting responses in our patient after oral benzodiazepines, response was only temporary and patient reverted to his catatonic state. Much of the treatment focused on treating the underlying mood.

Likely, the short-acting nature of lorazepam, last dose given at night, was the reason for the patient's symptoms presenting worst in the morning. After all other therapies failed, patient was trialed on zolpidem which helped with nighttime sleep and catatonia.

CONCLUSION: While benzodiazepines continue to be the mainstay in short-term treatment, zolpidem may prove to be an effective adjunct while treating the underlying mood or thought disorder, a more permanent solution.

RELEVANCE OF NEUROSCIENCE SEMINAR TEACHING TO DAY-TO-DAY CLINICAL PRACTICE OF PSYCHIATRY

Sala V. Sadaps, MD; Perry Westerman, MD

WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry

INTRODUCTION: In training psychiatry residents, there is an emphasis on getting the correct diagnosis and providing the most efficacious treatment. Over the past 10-20 years there has been an explosion of basic neuroscience research. Its application to psychiatry (translational medicine) has been slow.

A survey of psychiatry residency training directors noted that only 39% of the programs felt that they had faculty with adequate training to teach on this area. A second study of residents showed that 13% felt that they had more than adequate or excellent knowledge of the topics of neuroscience and that they were relevant to their training. We are replicating a portion of their survey in our study. Just three years ago, the ACGME added training in neuroscience as a core curriculum requirement. This is an attempt to bring learner-centered teaching methods into the development of a new course in neuroscience for the second year psychiatry residents.

OBJECTIVE: The aim of this study is to understand the perceptions psychiatry residents have of the utility and relevance of neuroscience in their day-to-day practice as psychiatrists. It is also an attempt to demonstrate an effective method to teach neuroscience that could be generalized to other psychiatry training programs in the US.

MATERIALS AND METHODS: During the second year of training, the psychiatry residents have 14 sessions, 1.25 hours each, that cover concepts of neuroscience. The course began in January 2017 and will end in mid April 2017. We obtained IRB approval and gave the residents two surveys (pre-tests)—the first on specific content topics to be covered in the course and the second on perceptions of the relevance of neuroscience. A second set of surveys will be administered at the end of the course (post-tests).

Data will be scored numerically. Each content topic will be scored from 1-4 (for level of comfort in each topic) and averaged (for the five residents). The average difference between post seminar and pre-seminar comfort levels and knowledge, ideally improvements, will also be reported. Relevance of neuroscience will also be reported on a 1-5 scale score and differences from post to pre-tests will be reported.

RESULTS AND DISCUSSION: This poster will present the changes in the pre and post surveys for content knowledge and perceived relevance of neuroscience for these five residents. Final data will be available in April. The analysis is to be straightforward t-test.

PIMAVANSERIN FOR PARKINSON'S DISEASE PSYCHOSIS

Sala V. Sadaps, MD; Perry Westserman, MD; Arslan Ahmed, DO

WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry

INTRODUCTION: Parkinson's disease is a progressive neurodegenerative disease involving the basal ganglia affecting dopamine-secreting nigrostriatal pathway. It is diagnosed clinically by the presence of any combination of: Bradykinesia, Resting Tremor, Rigidity, Gait instability. Psychosis occurs in 20 to 40 percent of drug-treated patients with PD, and visual hallucinations are the most common psychotic symptom. Parkinsonian Psychosis treatment (with neuroleptics/antipsychotics blocking Dopamine in the mesolimbic pathway) had been a clinical challenge because it risks exacerbation of motor symptomatology. On 4/29/16, FDA approved Pimavanserin, a 5HT-2A inverse agonist, a novel antipsychotic, that addresses psychosis independently of the Dopamine pathways after successful completion of a phase 3 placebo-controlled trial. We report a case of Parkinsonian psychosis which responded well to Pimavanserin.

CASE REPORT: 72-year-old Caucasian female with a history of Parkinson's; motor symptoms previously stable on Carbidopa-Levodopa (Sinemet) but developing visual hallucinations secondary to Sinemet and consequently being weaned off of it by outpatient neurologist in anticipation of being initiated on Pimavanserin. Admitted for acute agitation, mild paranoia and worsening visual hallucinations (VH) with dementia ongoing for the past year. During her inpatient stay, she was completely weaned off of Sinemet and was started on Pimavanserin 17 mg bid (well-tolerated). Target psychosis symptoms (paranoia and visual hallucinations) resolved secondary to 3 days of Pimavanserin at starting dose and motor symptoms did not deteriorate after 3 days of not being on any Sinemet and she was discharged.

DISCUSSION: Parkinson's Disease psychosis is the strongest predictor of nursing home placement as well as mortality. The psychosis is hypothesized to represent an imbalance between the dopamine and serotonin systems. Treatment in the past was more difficult secondary to limited pharmacological options. Interestingly, Parkinson's disease was treated primarily with dopaminergic agents to reduce motor symptoms but these agents often worsened the psychosis. Similarly, Psychosis was treated primarily with antipsychotic agents, which in turn, worsened the motor symptoms. Pimavanserin, a selective serotonin 5 HT2A inverse agonist, has potent actions on 5HT2A without any dopaminergic activity/affinity.

CONCLUSION: Due to these actions, Pimavanserin was able to significantly reduce psychotic symptoms in patients with moderate to severe Parkinson's disease, achieve efficacy without worsening motor symptoms, achieve efficacy without significant safety concerns in our patient. Our patient tolerated this medication well, showed clinically meaningful improvement in psychotic symptoms, and reduced the caregiver burden on his family.

THE CRIPPLING STIGMA OF PSYCHIATRY

Sala V. Sadaps, MD; Bangalore K. Ramesh, MD; Nicole J. Baker

WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry; WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018

INTRODUCTION: Psychiatry is a field that by its nature must consider not only a patient's symptomatology, but also their environment and sociocultural framework. Studies have shown that patients who themselves hold personal stigma against mental illness are more likely to have less recovery at one and two years of follow-up. These personal stigmas are often shaped by the viewpoints of the patient's family.

Despite tremendous ongoing progress in the United States in overcoming the stigma associated with mental illness, it remains a very challenging part of the practice of psychiatry. Many cultures continue to approach the causes, treatments, and aftermath of psychiatric disorders in ways that are not always beneficial to the suffering patient. Unfortunately, these cultural practices can cause patients to fear their families will turn their backs on them and hinder recovery.

CASE DESCRIPTION: This case study is centered around a 31-year-old Asian American who was admitted several times with worsening depression and suicidal ideation. Hospitalization was precipitated, to a large degree, by lack of acceptance by his family and friends. His major symptoms all relate back to guilt and shame over his sexuality and mental illness. The patient feared that his parents, Chinese citizens, would disown him if he were to share his sexual preferences with them because of the cultural prohibitions against homosexuality. He also feared they would not accept his mental illness or appreciate his struggle.

Unfortunately, his lack of familial support and the strong stigma against homosexuality and mental illness in the Asian culture has contributed to multiple readmissions to our facility.

DISCUSSION: The healing process in mental health is multi-factorial and a large part depends on the support of family and loved ones. Stigma can often carry such a burden that it makes the healing process in a family much more difficult and prolonged. These issues came to light during the treatment team meetings with this patient's family, who reacted to the news with denial. Our patient, and many others across the world, struggle with the lack of support from their loved ones and family, with the stigma of others tainting and enforcing stigma of their own.

CONCLUSION: While the stigma and approach to psychiatry has come a long way since the era of isolating patients with mental illness, this case is one example of how there is still much work to be done in normalizing the field of mental health.

PRIAPISM AFTER EPIDURAL OR SPINAL ANESTHESIA

Sarah Khalil; Kelly Quesnelle, PhD; Jeffrey Friedman; Audrey Jensen; Duncan Polot; Sydney Spittler

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Department of Biomedical Science; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019

INTRODUCTION: Preoperative epidural and spinal anesthesia improves patient outcomes by reducing potential side effects due to prolonged treatment with general anesthesia as well as mitigating postoperative pain. Rarely, patients receiving epidural and spinal anesthesia develop priapism secondary to administration of the anesthetic agent. Little is known about the development of this complication and its management following onset.

RATIONALE: A case of priapism following administration of epidural anesthesia in Kalamazoo, MI, at Bronson Methodist Hospital, prompted a search of the literature into the etiology, pathophysiology, and management of such cases.

REVIEW OF LITERATURE: A search of two databases was conducted, including keywords “priapism, anesthesia, epidural, humans” among others. This search produced 305 unique articles. Priapism cases due to underlying conditions, such as sickle cell anemia, were excluded. All cases of non-spinal and non-epidural anesthesia were excluded. In total, 36 articles from the search were included in this review. Subsequently, a hand review of the selected articles produced an additional 121 new papers which are currently under review and may be included in our final review.

RESULTS: Priapism appears to be a rare complication of anesthesia, but cases are often unreported and real incidence is unknown. Overall incidence of priapism in the United States is 0.2-0.3 cases/100,000. Etiology and contribution of medical, genetic, and environmental factors are unclear. Bolus doses of bupivacaine were involved in multiple reported cases. Interestingly, epidural anesthesia can both cause and treat priapism, suggesting that pathophysiology involves an imbalance of the parasympathetic and sympathetic tone of the penile vasculature. Timing of erection onset complicates treatment of this side effect. Preoperatively, the inciting agent is generally withdrawn and the procedure is postponed until other anesthetic options are explored. Postoperatively, another anesthetic is administered for pain relief. Intraoperatively, the appropriate course of action is multifactorial, depending patient’s underlying health status and variables inherent to the procedure. No long-term adverse effects, such as erectile dysfunction or dysuria, were reported. During the episode patients experienced distress at the inability to urinate and acute pain from the prolonged erection.

CONCLUSION: Priapism due to epidural and spinal anesthesia remains a mysterious phenomenon. Bupivacaine has been suggested as a causative agent, perhaps selectively inhibiting sympathetic tone to the penile vasculature. There are many factors to consider when treating this complication, including procedural and patient characteristics.

CONVERSION DISORDER IN A CHILD WITH PENTASOMY X: A RARE PRESENTATION OF A RARE GENETIC SYNDROME

Sarah Myer, DO; Ruqiya Shama Tareen, MD

WMU Homer Stryker M.D. School of Medicine, Department of Psychiatry

BACKGROUND: Pentasomy X or 49, XXXXX is a rare syndrome, which was originally described in 1963. This genetic condition, which affects only females, is thought to result from failure of disjunction in meiosis, resulting in 3 additional X chromosomes. Penta X presents with a constellation of symptoms, including mild to moderate mental retardation (MR), short stature, and craniofacial malformations, along with other physical abnormalities. Children with MR are known to have a higher incidence of emotional and behavioral dysregulation, including anxiety and aggression. This is believed to be the first case presenting with complex conversion disorder symptomatology.

CASE PRESENTATION: Patient was a 13-year-old female who was traveling from her mother's home in Chicago to her father's home in Kalamazoo, when she developed severe, generalized tremors affecting most of her body. She was rushed to the hospital and admitted with concerns of a seizure disorder. Following a thorough work up, patient was cleared medically and Neurology ruled out neurological disorders, including seizures. Therefore, Psychiatry was consulted. Patient was observed to have tremors off and on affecting her arms and body, becoming worse when discussing certain issues and easing with a change in topic or distraction. The psychiatric interview revealed that patient was under significant stress, having recently learned of her mother's impending divorce. Other significant stressors included recently switching her psychiatrist and ongoing difficulties at school. The patient was diagnosed with acute Conversion Disorder with abnormal movements due to psychological stressors, and Disruptive Mood Dysregulation Disorder (DMDD). She was started on Hydroxyzine 5 mg QID for better management of physical symptoms of anxiety, which helped ease her tremors.

DISCUSSION: Penta X is a rare syndrome characterized by distinctive facial characteristics, with visual, ENT, cardiac, musculoskeletal, renal, and genitourinary anomalies. These children also show different degrees of developmental delay with mild to moderate intellectual difficulties. Psychiatric difficulties have been reported in a few cases, mostly mood dysregulation and anxiety, sometime negatively impacting behavior. It is important to investigate possibility of psychiatric diseases in such children as early diagnosis may lead to proper treatment and improvement in quality of life for these children and their care providers.

CONCLUSION: Children with rare genetic disorders are more vulnerable to psychosocial stressors. Their ability to deal with changes may be much more limited and may cause a major disturbance in their internal equilibrium, resulting in acute psychiatric difficulties like conversion disorder.

SMALL BOWEL OBSTRUCTION SECONDARY TO LARGE GALLSTONE

Satya Dalavayi; Saad Shebrain, MD

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2018; WMU Homer Stryker M.D. School of Medicine, Department of Surgery

INTRODUCTION: Gallstone ileus is uncommon complication of chronic calculous cholecystitis that presents commonly with distal mechanical small bowel obstruction in elderly patients. It results from eroding the gallstone to the second part of the duodenum, creating a cholecystoduodenal fistula. The stone, usually those >2.5cm, will not pass through the gastrointestinal tract and results in mechanical obstruction, commonly in the terminal ileum. Management is focused initially on fluid resuscitation to restoring the patient's intravascular volume. Because of the nature of this process, surgical intervention is almost always indicated to remove the stone from the small bowel with or without addressing the cholecystoenteric fistula at the initial operation.

CASE REPORT: A 65-year-old female with prior medical history of Hepatitis C and opioid addiction presented with a 1-week history of intermittent lower abdominal pain, nausea, and vomiting that became more frequent and colicky in nature within 24 hours of reporting to the Emergency Department. A computed tomography (CT) scan of the abdomen and pelvis identified abnormally dilated loops of proximal small bowel with a transition to normal caliber secondary to a hyperdense structure and a similar structure in the gallbladder with minimal adjacent presumed free air, suggesting a gallstone ileus with a cholecystoenteric fistula. The patient underwent an exploratory laparotomy, removal of a large fragment of gallstones (2.7x2.8 cm) from the small bowel through a small enterotomy. Due to the higher incidence of recurrent small bowel obstruction within 30-days, in the presence of the other half of the gallstone in the gallbladder, the decision was to proceed with subtotal cholecystectomy, removal of the stone fragment and closure of cholecystoduodenal fistula and Jejunostomy feeding tube placement. One week after surgery, an upper GI study showed no evidence of leak at fistula site. Diet was advanced as tolerated and the patient was discharged home on post-op day 11.

CONCLUSION: Gallstone ileus is an uncommon condition that can present with mechanical small bowel obstruction. After resuscitation, surgical intervention is almost always required to remove the obstructing stone from the bowel. Cholecystectomy and closure of fistula are not necessary at the first operation if no residual stones in the gallbladder. This patient required multiple procedures due to her unusual presentation. Therefore, evaluation for gallstone ileus is crucial to determine the management strategy.

SOCIAL DETERMINANTS - IMPACTING OR CAUSING DISPARITIES IN PATIENT CARE?

Shaena Faye Freeman, MD; Kristi VanDerKolk, MD

WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family and Community Medicine

Health disparities secondary to social factors including socioeconomic status, race, gender and ethnicity are well known to the health community and are a troubling issue in the United States. Social determinants are defined by the WHO as the structural “conditions people are born, live, grow, work and age in...determined by wealth distribution and available resources...that are mostly responsible for health inequalities.” We present here the case of TL, a 49-year-old African American female who presented to the emergency department three times with atypical coronary disease symptoms in the setting of recent NSTEMI with subsequent 3 vessel CABG. At the time of her third presentation she was admitted for emergent stenting. This case is a good illustration of the effects of social determinants of health. Not only is TL an African American of low socioeconomic status, she is also deaf and communicates only via lip reading and written word. She does not use American sign language. Her communication difficulties and socioeconomic status likely greatly contributed to the delay in her care.

ENHANCING CHILDREN'S SOCIAL-EMOTIONAL LEARNING SKILLS THROUGH MINDFULNESS PRACTICES

Shun Yi (Felix) Wan; Stephanie Chang; Jordan Fenlon; Amrith Shettigar; McKenzie Johnson; Sam Lealofi

WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; WMU Homer Stryker M.D. School of Medicine, Medical Student Class of 2019; Eastside Youth Strong, Site Advisor

BACKGROUND: The Kalamazoo Eastside neighborhood has been subject to a great deal of economic and functional instability, particularly impacting the youth. Local demographic studies indicate that 90% of children are eligible for free or reduced lunch due to low income, 58% of households are single-female households, and 29% of parents do not have a high school diploma. Eastside Youth Strong (EYS) is a local organization focused on improving the lives of these children. This study will be investigating the EYS afterschool program's mindfulness initiative.

PURPOSE: Social and emotional learning were chosen to be studied because these skills are critical for children's success in academic environments and personal lives. We hypothesize that implementing mindfulness practices at EYS will improve social and emotional learning outcomes because feasible outcomes were reported at other afterschool programs with similar interventions.^{1,2,3}

MATERIALS AND METHODS: This retrospective study explores the benefits of mindfulness techniques conducted on EYS children as measured through the Devereux Student Strengths Assessment (DESSA). The DESSA is a standardized measurement of competencies and social-emotional needs of each participating child compared to similarly aged children nationally. EYS staff were trained by a mindfulness expert on how to administer 10-minute mindful immersion, breathing exercises, body scanning, and meditation sessions Monday-Wednesday during the afterschool program. The DESSA is administered at the beginning (September), middle (March), and end (May) of the school year. We will analyze the data with the help of the WMed Biostatistics team.

RESULTS: In the first DESSA administration, 20 children were evaluated, and their ratings of the social-emotional composite were 0 Strength (0%), 7 Typical (35%), and 13 Need (65%).

CONCLUSION: The results and data for this project are still in progress, but the upcoming DESSA results from March and May of the 2016-2017 school year will be analyzed and compared to the initial data. Furthermore, students' progress over the year can be compared to students from past years. From the initial data and anecdotal observations of the EYC staff, there has been improvement in students' overall attention span and patience in the afterschool program after the implementation of mindfulness; however, statistical improvement will be determined when all DESSA surveys have been completed.

ANTEGRADE ENDOSTEAL FIBULAR STRUT AUGMENTATION FOR PERIPROSTHETIC FEMUR FRACTURE ABOVE STEMMED TOTAL KNEE ARTHROPLASTY

Tyler Snoap; Jason Roberts; Matthew Jaykel

WMU Homer Stryker M.D. School of Medicine, Department of Orthopaedic Surgery; Bronson Methodist Hospital, Department of Orthopedic Trauma; WMU Homer Stryker M.D. School of Medicine, Department of Orthopaedic Surgery

INTRODUCTION: The management of peri-prosthetics fracture around total knee replacements is technically challenging. The options for operative fixation become more limited if the femoral component is stemmed, which often is the case after revision arthroplasty procedures. The goals of surgery for peri-prosthetic fractures above knee replacements are to provide a rigid construct to promote healing, allow immediate knee range of motion, and allow weight bearing during the healing process.

PURPOSE: The purpose of this study is to describe the indication and the technical steps for placement of an antegrade, endosteal fibular strut used to augment lateral plate fixation for a peri-prosthetic fracture above a stemmed total knee replacement system.

METHODS: The surgical indications and steps are exemplified in the case of a 93-year-old female that sustained a pathologic, diaphyseal femoral fracture above a stemmed total knee replacement. The surgical positioning, approach, selection of size and length of the fibular strut, and method of insertion are detailed and illustrated based on the case example.

DISCUSSION: The use of an endosteal fibular strut in fracture management is not a novel idea. This type of allograft support has been used in other fracture patterns, most notably the proximal humerus and the distal femur. Biomechanical studies and case series have validated the results of endosteal fibular strut use in these other anatomic areas. The described technique that the authors propose adds to the literature and gives the orthopaedic surgeon another option for the management of fractures above a stemmed total knee replacement.

CONCLUSION: Antegrade, endosteal fibular strut augmentation for fractures above a stemmed total knee replacement is a viable option for surgical management of this complex problem. The use of appropriate indications and sound surgical technique is paramount for the patient to achieve a satisfactory result. The goal of treatment is to provide fixation that allows the extremity to maintain length, alignment, and rotation while allowing the patient to begin range of motion and immediate weight bearing.

THE CADAVER MEMORIAL: AN OPPORTUNITY TO INCORPORATE MEDICAL HUMANITIES IN THE WMED ANATOMY CURRICULUM

Wendy Lackey-Cornelison, PhD

WMU Homer Stryker M.D. School of Medicine, Department of Biomedical Sciences

PURPOSE: The cadaver memorial is a time-honored tradition at many medical schools and offers an ideal avenue to integrate elements of the arts into the anatomy curriculum. This presentation describes how the cadaver memorial provides opportunities to integrate medical humanities into the undergraduate medical student anatomy curriculum.

METHODS: Incorporation of medical humanities as it pertains to anatomy and the donor memorial is structured longitudinally over M1 and M2 years at WMed. The cadaver memorial occurs in the fall and attendance is required of all M2 students. Components of the medical humanities are, however, introduced during the M1 year. M1 students receive instruction on reflective writing with specific examples taken from the anatomy experience prior to entering the anatomy lab for the first time. Included in these exemplar reflections are student artwork and poetry specific to anatomy. As M2 students, they are responsible for creating and performing the visual and musical components of the ceremony. Additionally, students are encouraged to write a personal reflection about the donor gift and what it has meant to their education and ultimately their future as a physician.

RESULTS: Students have successfully created the artistic portion of the cadaver memorial at WMed for the last two years. Students have expressed significant satisfaction reflecting on the anatomy experience, communicating their gratitude to donor families, and collaborating to create memorable artistic representations of that gratitude to be shared with the community.

CONCLUSIONS: The cadaver memorial offers a concrete avenue for students to embrace components of the medical humanities, particularly visual arts, creative writing, and music into their professional development. These aspects of the arts can be easily integrated into the anatomy curriculum via student participation in the donor memorial ceremony. The design and implementation of required student participation in the donor memorial provides a practical example of how the medical humanities can be incorporated into the anatomy curriculum.

ACQUIRED CRANIOSYNOSTOSIS IN A PATIENT WITH IATROGENIC VITAMIN D INTOXICATION

Wesley Eichorn, DO; Kristi VanDerKolk, MD

WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family and Community Medicine

INTRODUCTION: Craniosynostosis, which refers to premature fusion of cranial sutures, is an uncommon diagnosis in the pediatric patient, occurring with an incidence of approximately 1 in 2,000 individuals. It is most often associated with X-Linked hypophosphatemic rickets. The implications of craniosynostosis, especially with a delayed diagnosis, are severe.

CASE REPORT: MJ is an African American male born at term via cesarean section with an unremarkable immediate postnatal period. He was diagnosed with rickets at the age of 7 months but treatment was not immediately initiated. He presented again at age 9 months with an upper respiratory infection and failure to thrive and was admitted to the hospital. He had a 1-month hospital stay at that time and was started on appropriate treatments for hypertension, failure to thrive, hypophosphatemia, hypocalcemia, and Vitamin D deficiency. At age 11 months his serum Vitamin D had normalized at 38 ng/ml. At age 14 months he was diagnosed with iatrogenic Vitamin D intoxication with serum Vitamin D greater than 120 ng/ml. His mother had overconcentrated his Vitamin D and was giving excessive supplementation inadvertently. Vitamin D supplementation was discontinued and the level normalized again. When he presented for his 18 month well child exam it was noted that his head circumference was at the 3rd percentile for his age and growth had stagnated over the past several visits. His sutures were not mobile and a bony prominence was noted at the site of the anterior fontanelle. Subsequent workup revealed craniosynostosis of the coronal, metopic and bilateral squamous sutures. Cranial vault reconstructive surgery was done at age 28 months. He is currently awaiting further genetic testing.

DISCUSSION: Acquired craniosynostosis is most commonly found in association with X-linked hypophosphatemic rickets. This patient demonstrated the clinical findings of this condition and is currently awaiting further testing to confirm this. As Vitamin D plays such an important role in bone growth, it is possible the vitamin D intoxication contributed to the development of craniosynostosis. Review of literature did not reveal any cases of Vitamin D intoxication alone causing craniosynostosis. Vitamin D intoxication in pediatrics is rare, but the exact incidence is not known. The cause is normally inadvertent administration of large doses of Vitamin D.

CONCLUSION: This case illustrates the importance of serial well child examinations where growth abnormalities can be detected. It also illustrates the importance of patient education on medication administration.

UTILITY OF FERN TEST TO DETERMINE RUPTURE OF MEMBRANES

Wesley Eichorn, DO; Susan Jevort-Eichorn, DO

WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D. School of Medicine, Department of Family and Community Medicine

INTRODUCTION: The fern test was first described by Kardos and Tamasi in 1955 as a test used to determine rupture of amniotic membranes. The test is done by collection of fluid from the vagina which is then allowed to dry for 10 minutes on a slide. The slide is then inspected with microscopy for evidence of ferning. Accurate determination of rupture of membranes is important due to its significant implications on the management of obstetrical patients.

CASE: EC is a 23 year old G1P0 at 40 and 3/7 weeks gestation who presented to an outpatient facility with a chief complaint of vaginal fluid leaking. Approximately 12 hours prior she had leaked sufficient vaginal fluid to wet her underwear, but not sufficient to soak through her pants. She denied loss of vaginal fluid since then. A speculum exam revealed a small amount of pooling in the vaginal vault. A sample of this fluid was obtained. Fern test was negative and vaginal pH was 4.5. Her history was concerning for premature rupture of membranes (PROM) so she was further evaluated with an Amnisure test which was positive. She was subsequently admitted with PROM for induction of labor.

DISCUSSION: The fern test has been noted to have a sensitivity as high as 100%, with most studies reporting a sensitivity at least 90% or greater. These statistics can be very misleading as most of these studies were done in patients who were in labor. The sensitivity of the fern test is much lower in patients who are not in labor. A more recent study reported a sensitivity of 51% and a specificity of 70% for detecting PROM in patients who were not in labor. It was noted that sensitivity was slightly higher and specificity slightly lower for medical students and residents when compared to gynecologists. The sensitivity of the Amnisure test has been reported to be 98% to 99% with specificity ranging from 88% to 100%. Rupture of membranes has previously been diagnosed either by visualization of fluid leaking from the cervical os or having 2 of the following: vaginal pooling, positive fern test, or positive nitrazine test.

CONCLUSION: The fern test is only one of several methods that can be used to assess rupture of membranes. Base on this recent study, ferning should not be relied on to rule out rupture of membranes in a nonlaboring patient with clinical history suspicious for PROM.

EVALUATION OF INJURY SEVERITY DIFFERENCES IN INTOXICATED BLUNT TRAUMA

Zachary Brady, MD; John Walsh, MD, MPH; Sheri L. Vandenberg, RN, MS

WMU Homer Stryker M.D. School of Medicine, Department of Emergency Medicine; Bronson Methodist Hospital, Department of Trauma Surgery and Emergency Care; Bronson Methodist Hospital, Department of Trauma Surgery and Emergency Care

BACKGROUND: Alcohol use in America is prevalent and is responsible for nearly half of all trauma deaths and nonfatal injuries. Drivers with a blood alcohol level 0.08 g/dL or higher account for 31% of all driving fatalities. There have been previous studies demonstrating a potentially ‘protective effect’ of alcohol in critically injured patients.

OBJECTIVE: Assess the impact of alcohol consumption on injury severity by comparing patients with blunt trauma and positive blood alcohol levels to those without alcohol.

MATERIALS AND METHODS: Following IRB approval, patients were identified by trauma registry review between 2014-2016. 1000 patients who met inclusion criteria with complete data elements were included in the study. Charts were retrospectively reviewed and stratified by the presence of alcohol intoxication and Glasgow Coma Score. Data points included age, gender, injury severity score, blood alcohol level (zero, low (0.01-0.100 mg/dl), medium (0.101-0.230 mg/dl), high (>.230 mg/dl), length of stay, mechanism of injury, discharge disposition, and mortality rates. Patient characteristics and related outcomes were summarized using descriptive statistics.

RESULTS: 1000 patients were reviewed; 714 males (71.4%), 286 females (28.6%), with age range 16-92 years, mean 41.4, mortality 5.5%. Injury severity score ranged from 1-75, mean 14.16 (SD ± 10.66) with length of stay ranging from 1-75 days, geometric mean 3.37 days (SD ± 10.08). Positive blood alcohol levels were present in 346 (34.6%), ranging 0 – 0.44, mean 0.063. Patients with GCS ≤8 had an average BAL of 0.082, GCS >8 0.059. The difference between these groups is significant, $p < 0.05$.

Primary mechanism of injury was MVC (42.1%), fall (18.9%), motorcycle (13.1%), pedestrian (7%), other 18.9%. Patients were discharged to home (58.3%), in-patient rehabilitation (18.6%), other (12.9%), and long term care facility (10.2%).

DISCUSSION/CONCLUSION: While other studies have shown a reported protective effect on alcohol in blunt trauma, this study does not show a correlation overall between level of ISS and EtOH level for all 1000 patients (correlation coefficient -0.07). There is a statistically significant increased ISS in the most intoxicated patients (High Group >0.230) compared to the non-intoxicated group ($p < 0.05$). The low and medium intoxicated groups were not statistically different in ISS compared to the non-intoxicated group.

A HIGHLY UNUSUAL CASE OF METASTATIC PANCREATIC ADENOCARCINOMA

Zachary Koehn, DO; Lauren Piper, DO

WMU Homer Stryker M.D. School of Medicine, Department of Family Medicine; WMU Homer Stryker M.D.
School of Medicine, Department of Family and Community Medicine

INTRODUCTION: Pancreatic cancer is a rare malignancy, with nearly a 100% mortality rate. The strongest risk factor for pancreatic cancer is advanced age; the median age of diagnosis is 70. Here we discuss a case of pancreatic cancer in a 32-year-old woman.

CASE DESCRIPTION: S.R. is a 32-year-old female presenting with new-onset jaundice. Two months prior to presentation, she reported vomiting and LUQ pain, and was treated for *H. pylori*. Her symptoms improved, but she developed anorexia, RUQ pain, 35 lb weight loss and clay-colored diarrhea. Her medical history is negative except for 10-pack-year smoking history. Exam revealed a cachectic, jaundiced woman with hepatomegaly and scleral icterus. Labs revealed hyperbilirubinemia of 18.3, and an alkaline phosphatase of 1102. Abdominal CT showed innumerable hypodense lesions throughout the liver and ill-defined pancreatic margins. Liver biopsy was consistent with CA19-9-positive metastatic pancreatic adenocarcinoma. She underwent palliative chemotherapy and died four weeks later.

DISCUSSION: Younger patients with pancreatic cancer are often diagnosed at more advanced stages with lower survival rates. Smokers have almost a twofold increased risk compared with nonsmokers, and risk increases with cumulative exposure. Additionally, *H. pylori*, a proven bacterial carcinogen, has been linked to pancreatic cancer. In a Finnish study of male smokers, participants who tested positive for CagA *H. pylori* strains were twice as likely to develop pancreatic cancer compared to their seronegative counterparts. Our patient's strongest risk factors were her smoking history and *H. pylori* infection. Therefore, one should consider pancreatic cancer even in younger patients with classic symptoms. Moreover, further investigation is needed to help identify those at risk of developing pancreatic cancer at a young age.

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