



**44th Annual Kalamazoo Community
and Health Sciences**

Research Day

*Translating Discovery into Practice:
From Lab to Clinic, From
Classroom to Implementation*



April 2, 2026 | 8:00 a.m. - 5:00 p.m.

W.E. Upjohn M.D. Campus

KEYNOTE SPEAKER

Jayne E. Locke, MD, MPH, FACS, FAST

Making the ImPossible Possible: The Road to Clinical Trials in Xenotransplantation

Dr. Locke is a nationally and internationally respected abdominal transplant surgeon who has dedicated her career to studying chronic disease prevention and reversal and access to and outcomes after transplantation through policy change and translating innovative therapies from bench to bedside, including the development of the Parsons Model which has catapulted xenotransplantation into the realm of reality.

She is also an accomplished leader and mentor known for building highly effective teams defined by a collaborative spirit, discovery-driven learning, and integrative decisions. Her prolific career has directly impacted the field of transplantation, improving the lives of countless patients.



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ACKNOWLEDGMENTS

We extend our grateful acknowledgment to the following members of WMed and WMU professionals.

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WMed W.E. UPJOHN M.D. CAMPUS FLOOR PLANS



WMed W.E. Upjohn M.D. Campus First Floor



-  Entrance
-  TBL Hall 1
-  Lobby
-  Classroom 111
-  Auditorium

WMed W.E. Upjohn M.D. Campus Second Floor



-  TBL Hall 2
-  Classroom 211

PROGRAM

Thursday, April 2, 2026

8:00 a.m. – 8:40 a.m.	Check-in	1 st Floor Lobby
8:40 a.m. – 9:00 a.m.	Welcome Address J. Adrian Tyndall, MD, MPH, FACEP <i>The Hal B. Jenson, MD Dean, President and CEO</i> Robert Sawyer, MD <i>Senior Associate Dean, Research</i> Gregory Vanden Heuvel, PhD <i>Associate Dean, Foundational Research</i> Keynote Speaker Introduction Colleen McKay <i>MD Class of 2028</i> Nayana Bhatnagar <i>MD Class of 2028</i>	Auditorium
9:00 a.m. – 10:00 a.m.	Keynote Address Jayme E. Locke, MD, MPH, FACS, FAST <i>Vice President, Medical Department Xenotransplantation United Therapeutics Professor of Surgery, NYU</i> Making the ImPossible Possible: The Road to Clinical Trials in Xenotransplantation	Auditorium
10:00 a.m. – 10:15 a.m.	Break	
10:15 a.m. – 11:45 a.m.	Oral Presentations <u>Session A</u> Featuring: Kevin Ault, MD <i>Professor Department of Obstetrics and Gynecology</i> <u>Session B</u> Featuring: Ali Vural, PhD <i>Associate Professor Department of Biomedical Sciences</i> <u>Session C</u> Featuring: Peter Vollbrecht, PhD <i>Associate Professor Department of Biomedical Sciences</i>	Auditorium TBL Hall 1 TBL Hall 2

Kelsey Grellinger, PhD
Assistant Professor
Department of Biomedical Sciences

11:45 a.m. – 1:00 p.m.	Lunch	Campus Cafe - Fireplace Area Level 1
12:00 p.m. – 1:00 p.m.	Breakout Sessions AI Outbreak: The Prompt Lab Challenge	Classroom 110
	Research with ROI: Navigating Entrepreneurship in Academia	Classroom 112
	Surgical Sciences Department	TBL Hall 1
1:00 p.m. – 2:00 p.m.	Poster ODD numbers e-Poster Presentations – Session 1	1 st & 2 nd Floor Lobby Classroom 111 & 211
2:00 p.m. – 3:30 p.m.	Oral Presentations <u>Session D</u> Featuring: Tjasa Hranjec, MD <i>Associate Professor</i> <i>Department of Surgical Sciences</i>	Auditorium
	<u>Session E</u> Featuring: Frederick Stull, PhD <i>Associate Professor</i> <i>Department of Chemistry</i> <i>Western Michigan University</i>	TBL Hall 1
	<u>Session F</u> Featuring: Nichol Holodick, PhD <i>Associate Professor</i> <i>Investigative Medicine</i>	TBL Hall 2
3:30 p.m. – 4:30 p.m.	Poster EVEN numbers e-Poster Presentations – Session 2	1 st & 2 nd Floor Lobby Classroom 111 & 211
4:30 p.m. – 5:00 p.m.	Refreshment break Student Research Awards and Farewell	Auditorium

Save the Date!
Next WMed Research Day
Thursday April 1, 2027

ORAL PRESENTATIONS SESSIONS

SESSION A

AUDITORIUM Moderator:
Morgynn Putman

10:15 a.m. – 10:45 a.m. **Featured Oral Presentation**
The HPV Vaccine - Two Decades of Cancer Prevention

Kevin Ault, MD

10:45 a.m. – 11:00 a.m. **Abstract #131**
Psychological Flexibility in Perinatal Mental Health: A Culturally Responsive, Process-Based ACT Protocol

Morgan Palmer, Scott Gaynor

11:00 a.m. – 11:15 a.m. **Abstract #132**
Pelvic Fixation and Risk of Deep Infection in Adult Spinal Deformity: A Comorbidity-Aware, Matched Cohort Study

Omar Shaikh, Mohammed Abdul Muqith, Ankit Mehta

11:15 a.m. – 11:30 a.m. **Abstract #133**
Understanding Fall Risk After Gluteus Medius Repair: A 90-Day Postoperative Analysis

Manuel Romero-Padron, Nicholas Kossoff, Nihal Nagesh, Adam Alakhras, Joshua Everhart

11:30 a.m. – 11:45 a.m. **Abstract #134**
Impact of Mechanical Circulatory Support on Outcomes in Patients with Peripartum Cardiomyopathy Complicated by Cardiogenic Shock: A National Inpatient Sample Analysis (2003-2022)

Nayana Bhatnagar, Melissa Lu, Grace Filipiak, Maninder Randhawa, Kirsten Hickok, Tara Subrahmanyam, Gerrit Bouma, PhD

SESSION B

TBL 1 Moderator:

Janelle Quick

10:15 a.m. – 10:45 a.m. **Featured Oral Presentation**

AGS3 Biomolecular Condensates: A New Layer of Regulation in Cellular Signaling and Stress Responses

Ali Vural, PhD

10:45 a.m. – 11:00 a.m. **Abstract #135**

Effect of Corona Plasma Treatment on the Wettability of Strontium-Doped Bioceramics for Orthopaedic Applications

Maia Newkirk, Hanna Sorensen, Adil Akkouch, PhD

11:00 a.m. – 11:15 a.m. **Abstract #136**

Advancing GME Well-Being: A Qualitative Needs Assessment of Residents at WMed

Adam Ayoub, Cynthia Lai, Alexandra Bayer, Christopher Haymaker, PhD

11:15 a.m. – 11:30 a.m. **Abstract #137**

Program Perspectives on Expanding Access to EMS Fellowships with Part-Time Pathways

John Neeley, Christina LaPrease, David Afienko, Michael Gendreau, Michael Dailey, Joshua Mastenbrook, PhD

11:30 a.m. – 11:45 a.m. **Abstract #138**

Nuclear Localization of Activation Induced Deaminase Corresponds with Cysts and DNA Damage in Autosomal Dominant Polycystic Kidney Disease.

Jackson Goudreau, Shane Kim, Agata Parsons, PhD, Tyler Rosey², Leslyn Hanakahi, Greg Vanden Heuvel, PhD, Erik Larson, PhD

SESSION C

TBL 2 Moderator: K. Weber

10:15 a.m. – 10:45 a.m. **Featured Oral Presentation**

Building a Culture of Medical Education Scholarship

Peter Vollbrecht, PhD; Kelsey Grellinger, PhD

10:45 a.m. – 11:00 a.m. **Abstract #139**

Professional Boundaries and Conflicts: Doulas, Providers, and Clients in Kalamazoo

Nossin Kha¹, Lilian Asamoah-Barnieh, Swathi Nair Kavitha Sukesh, Ruth Butters, Cynthia Bane, Vaishali Patil, PhD, Fernando Ospina, PhD

11:00 a.m. – 11:15 a.m. **Abstract #140**

Publication Inflation: Medical Students' Perspectives on Research Participation in the Pass/Fail Era

Jesse Kooistra, David Richter, Morgan Smeltzer, Peter Vollbrecht, PhD

11:15 a.m. – 11:30 a.m. **Abstract #141**

Can Surgery Program Directors Detect Artificial Intelligence-Generated Residency Application Personal Statements?

Rami Madani, David Richter, Yaqub Ahmedfigi, Bradley Christensen, Jay Henriquez, Robert Sawyer, MD, Saad Shebrain, MD

11:30 a.m. – 11:45 a.m. **Abstract #142**

Women's Resistance to DCIS Overtreatment: A Pilot Study

Chien-Juh Gu

SESSION D

AUDITORIUM Moderator:
Morgynn Putman

2:00 p.m. – 2:30 p.m.

Featured Oral Presentation

When Progress Outpaces Acceptance: Why Persistence Matters in Scientific Discovery

Tjasa Hranjec, MD

2:30 p.m. – 2:45 p.m.

Abstract #143

Impact of Normothermic Machine Perfusion Pump Duration on Liver Transplant Outcomes

John Henriquez, Katherine Davanzo, Michael Chaney, Kapila Kommareddy, Luckshi Rajendran, Adhnan Mohamed

2:45 p.m. – 3:00 p.m.

Abstract #144

15,242 ways to Die: Performance Comparison of Rule-Based Natural Language Processing and Large Language Models for Information Extraction from Medical Examiner Notes

Ayse Erva Mangan, Alvina Najor, Theresa McGoff, Shamsi Daneshvari Berry, PhD

3:00 p.m. – 3:15 p.m.

Abstract #145

Number of Patient-Reported Allergies and Other Mental Health Measures Correlate with Symptom Severity at Time of Hip Arthroscopy for Femoroacetabular Impingement Syndrome

Joshua Finerty, Nicholas Kossoff, Allison Garden, Joshua Everhart

3:15 p.m. – 3:30 p.m.

Abstract #146

Caregiver Knowledge, Beliefs, and Practices Related to Child Sexual Abuse Prevention

Cassandra Dukes, Andres Beltran, Morgan Palmer, Amy Damashek

SESSION E

TBL 1 Moderator:
Evelyn Oliveira

2:00 p.m. – 2:30 p.m.

Featured Oral Presentation

Exceptions to the Oxidase Paradigm of the Flavoprotein Amine Oxidase Superfamily

Frederick Stull, PhD

2:30 p.m. – 2:45 p.m.

Abstract #147

From Research to Implementation: Evaluation Approaches for Structural Health Equity Interventions

Valerie Marshall

2:45 p.m. – 3:00 p.m.

Abstract #148

Futility in Colectomy

Maya Hammoud, Nicholas Stevens, Clayton Wyland, Kayla Flewelling, Marc Downing, Saad Shebrain, MD, Laurence Mccahill, MD

3:00 p.m. – 3:15 p.m.

Abstract #149

Toxicological Profiling of Liberian Local Remedies: Implications for Health and Safety

Oren Lerner, DiAngelo Gonzalez, Noemi Mangiamele, Prentiss Jones, PhD, Marc Downing

3:15 p.m. – 3:30 p.m.

Abstract #150

Modulation of Osteogenesis by GLP-1RAs in Lipid-Rich Environments

Norbert Fernandez, Lyndsay Kluge, Mitchell Kenter, Adil Akkouch, PhD

SESSION F

TBL 2 Moderator:
Clay Linson

2:00 p.m. – 2:30 p.m.

Featured Oral Presentation

Characterization of the B1 Cell Repertoire in Sickle Cell Disease Pre- and Post-Pneumococcal Vaccination

Nichol Holodick, PhD

2:30 p.m. – 2:45 p.m.

Abstract #151

Medicaid Reimbursement and Access to Care

Michelle Vu, Shireen Husami, Priscilla Woodhams, MD

2:45 p.m. – 3:00 p.m.

Abstract #152

Fabrication, Characterization and in Vitro Evaluation of Porous PEEK for Orthopaedic Application

Bailey Doucette, Kathryn Harvat, Mitchell Kenter, Alimohammad Haji Adineh, Massood Atashbar, Adil Akkouch, PhD

3:00 p.m. – 3:15 p.m.

Abstract #153

Comparison of the Efficacy of Neuromodulation Therapies in Schizophrenia: A Systematic Review and Network Meta-Analysis

Rajasumi Rajalingam, Samantha Dorrance, Marissa Khury, Daryna Hodgson, Vinay Patel, Aaryan Kapoor, Christine Sun, Aiswarya Lakshmi Nandakumar, Eric Achtyes, MD

3:15 p.m. – 3:30 p.m.

Abstract #154

Intervention for Pediatric Iron-Deficiency Anemia in Low-Resource Settings: Leaf-shaped Iron Ingots in Cooking in Rural Telangana, India

Drew Frase, Lacey Burke, Jennifer Lee, Kayla Grooters, Taylor Elshaw, Shireen Husami, Caitlin Tremewan, Priscilla Woodhams, MD

**ORAL
PRESENTATIONS
LIST OF ABSTRACTS**

Number of Patient-Reported Allergies and Other Mental Health Measures Correlate with Symptom Severity at Time of Hip Arthroscopy for Femoroacetabular Impingement Syndrome

Joshua Finerty^{1,2}, Nicholas Kossoff^{1,3}, Allison Garden^{1,4}, Joshua Everhart¹

¹Department of Orthopaedics, Indiana University School of Medicine, Indianapolis, IN. ²University of Kentucky College of Medicine, Lexington, KY. ³Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ⁴Edward Via College of Osteopathic Medicine- Carolinas, Spartanburg, SC

Abstract

Introduction: This study aims to determine whether patient-reported allergies (a proposed indirect measure of mental health) or direct measures of mental health are associated with preoperative symptom scores as measured by the 12-item International Hip Outcome Tool (iHOT-12) in patients undergoing hip arthroscopy for femoroacetabular impingement syndrome.

Methods: This retrospective study analyzed prospectively collected data from consecutive patients undergoing outpatient hip arthroscopy for femoroacetabular impingement syndrome by a single surgeon. Patients completed the iHOT-12 pre-operatively. Number of allergies, medication classes with allergic reactions, and reaction types were documented. Mental health was assessed via pre-existing psychiatric diagnoses, EQ-5D-5L anxiety/depression score, and Mental Health Inventory-5 (MHI-5) score. Associations between mental health measures (including allergies) and iHOT-12 scores was determined using bivariate and multivariate regression with forward selection.

Results: Ninety-one patients were included (69.2% male, 30.8% female), with a mean age of 36.6 (\pm 13.7) years. In bivariate analysis, mental health measures associated with lower iHOT-12 scores were: number of allergies (-1.91 per allergy, SE = 0.62, p = 0.002), MHI-5 score (+0.87 per point, SE = 0.38, p = 0.03), EQ-5D-5L anxiety/depression score (-3.87 per point, SE = 1.71, p = 0.03), and non-physiologically appropriate allergic reactions (-3.78 per reaction, SE = 1.72, p = 0.03). Independent predictors of iHOT-12 scores in multivariate analysis were number of allergies (-1.16 points per allergy, SE = 0.58, p = 0.04), EQ-5D-5L anxiety/depression score, (-3.68 per 1 point increase, SE = 1.51, p = 0.02), and UCLA activity score (2.83 per 1 point increase, SE = 0.71, p = 0.001).

Conclusions: Number of self-reported allergies is a simple, easily accessible measure that clinicians can use as a proxy measure of mental health that is predictive of patient-reported outcome measures prior to hip arthroscopy.

Level of Evidence: Level III, retrospective cross-sectional study

Key words: hip arthroscopy, symptom severity, patient reported allergies, femoroacetabular impingement

IRB Approval:

Protocol #: 22178

Protocol Title: Indiana University Hip Preservation Outcomes Study (Retrospective Enrollment)

Protocol #: 22175

Protocol Title: Indiana University Hip Preservation Outcomes Study

Medicaid Reimbursement and Access to Care

Michelle Vu, BS M3¹, Shireen Husami, BS M3¹, Priscilla Woodhams, MD, FAAP, CGH²

¹ Western Michigan University Homer Stryker M.D. School of Medicine, Medical Student, Kalamazoo, MI. ² Western Michigan University Homer Stryker M.D. School of Medicine, Department of Pediatric and Adolescent Medicine, Kalamazoo, MI

Abstract

Introduction: Medicaid policies and social responsibility influence access to primary care. This study examines challenges of Medicaid primary-care delivery in Southwest Michigan and the importance of adequate reimbursements to ensure equitable and sustainable access.

Methods: This cross-sectional qualitative quality improvement study utilizes semi-structured interviews with healthcare administrators in Southwest Michigan via Teams from October 2024 through December 2025. Participants were recruited via email. Responses to questions regarding how Medicaid reimbursements influence decision-making in primary-care access for Medicaid patients were audio-recorded, transcribed, and de-identified.

Results:

Federally Qualified Health Center: Enhanced Medicaid reimbursements are supplemented annually via resource intensive cost-based analysis. Reimbursements are the same regardless of visit complexity, placing unsustainable pressure on providers to deliver care rapidly. Ideally, universal healthcare would eliminate administrative burden, allowing equitable access.

Private practice: Medicaid reimbursements insufficiently cover costs, paying half of commercial insurances. A federally funded program bridges the payment gap in exchange for teaching medical students. Federal policy changes to decrease payments necessitates discontinuing future acceptance of Medicaid patients to maintain financial viability. Ideally, Medicaid reimbursement equivalent to commercial insurances would facilitate equitable access.

Medical school health system: Medicaid reimbursements insufficiently cover costs. Strong mission-driven commitment to equitable access and high-quality care results in access for all. Yet financial losses limit staffing, service expansion, innovation, and sustainability. Medicaid policy instability likely will result in patients losing coverage leading to care delay and worsening health outcomes. Ideally, the administrator would like universal healthcare.

Nonprofit hospital system: Medicaid reimbursements insufficiently cover the costs in pediatrics and women's health, exacerbating financial strain present across primary care. Michigan's Average Commercial Rate currently maintains access for patients with Medicaid. However, uncertainty regarding the continuation of the program threatens sustainability and community health investments. The administrator supports holistic care models, while noting that current Medicaid reimbursement remains poorly aligned with these approaches.

Conclusion: Across all settings, Medicaid reimbursement was insufficient to cover care costs. Supplemental federally funded mechanisms helped sustain access; however, anticipated reductions threaten access to care. Findings highlight the misalignment between current Medicaid policies and the delivery of equitable, sustainable primary care, emphasizing the need for reforms.

Program Perspectives on Expanding Access to EMS Fellowships With Part-Time Pathways

John Neeley¹, Christina LaPrease¹, David Afienko², Michael Gendreau¹, Michael Dailey², Joshua Mastenbrook¹

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Albany Medical Center, Albany, New York

Abstract

Introduction: Emergency Medical Services Fellowships (EMSFs) are conventionally structured as one-year full-time programs. There is a paucity of literature on barriers to pursuing EMSF training, although research in pediatric emergency medicine suggests financial and family obligations play a role. Previous work has outlined steps for developing part-time (PT) 24-month fellowship training in geriatrics. Such an approach might prove advantageous for EMSF recruitment. We aimed to assess the knowledge and attitudes held by EMSF program directors regarding implementing a PT curriculum.

Methods: An anonymous online cross-sectional survey of Accreditation Council for Graduate Medical Education (ACGME)-accredited EMSFs was conducted. Two survey requests were emailed to program directors one week apart. Responses related to program characteristics, PT model familiarity, perceived need, and implementation barriers were collected. Data were analyzed using descriptive statistics.

Results: Of the 81 eligible EMSF programs, 29 (35.8%) responded. Most programs have been accredited for 6+ years (23, 79.2%), have 2 accredited slots (17, 58.6%), fill >50% of their slots on average (23, 79.3%), and have had at least 1 fellow each year (15, 51.7%). Funding sources reported include Graduate Medical Education (21, 72.4%), clinical shifts (19, 65.5%), and alternative means (8, 27.6%). Twenty-five (86.2%) programs required their fellow(s) to work clinically in their primary specialty. Most fellows obtain prehospital exposure via a fellowship response vehicle (17, 58.6%) or agency ride-alongs (11, 37.9%). Two (6.9%) programs currently offer a PT fellowship option, 6 (20.7%) have considered it, and 12 (41.4%) have not but are open to the idea. Ten (34.5%) programs agree or strongly agree on the need for a PT option, 9 (31%) are neutral, and 10 (34.5%) disagree or strongly disagree. The most common barriers to a PT option cited were funding challenges (21, 72.4%), ACGME accreditation concerns (18, 62.1%), and scheduling logistics (18, 62.1%).

Conclusion: Among respondents, there was an even divide between support and non-support for PT fellowship necessity, although most programs indicated current or potential future consideration. Funding, accreditation, and logistical concerns were commonly identified barriers. The 35.8% survey response rate limits the generalizability to all EMSFs regarding a PT curriculum option.

Women's Resistance to DCIS Overtreatment: A Pilot Study

Chien-Juh Gu

Department of Sociology, Western Michigan University, Kalamazoo, Michigan

Abstract

Introduction: DCIS, or ductal carcinoma in situ—also known as stage 0 breast cancer—accounts for approximately 20 percent of newly diagnosed breast cancer cases. Although DCIS is non-invasive, its treatment typically mirrors that of invasive cancer. Whether DCIS is overtreated remains controversial, even among medical professionals. In recent years, a growing number of women diagnosed with DCIS have advocated for removing the cancer label and declined the standard of care (SOC) recommended by medical providers. This study analyzes discussions within a Facebook group representing this health movement to understand the rationale behind their resistance and alternatives they adopt for managing their condition.

Reasoning: The medical community has increasingly emphasized the importance of shared decision-making (SDM) in clinical practice because of its demonstrated benefits in improving physician-patient communication, reducing decisional conflict, and enhancing patient satisfaction. In the case of DCIS, practicing SDM requires medical professionals to develop a deeper understanding of patients' perspectives, including those who decline the SOC. This pilot study provides valuable insights for providers by highlighting discrepancies in risk perceptions between physicians and patients and documenting the clinical experiences of DCIS patients. Its findings have important implications, encouraging physicians to reflect on how they explain cancer risks and treatment options during medical encounters, respond to patients' questions and emerging distrust, and ultimately strengthen shared decision-making in DCIS treatment.

Conclusion/Clinical significance: The findings suggest that these women hold contrasting views on cancer risk compared to their healthcare providers. While doctors focus on the potential for DCIS to progress to invasive cancer, the women emphasize the higher likelihood of non-progression. Their considerations of alternative treatments are often dismissed by medical professionals, heightening the stress of an already anxiety-inducing diagnosis. This online community provides affirmation and support to those who choose holistic approaches to manage their condition. However, rejecting the SOC shifts the responsibility for healing onto the individual. These women must engage in vigilant self-surveillance, maintain strict healthy lifestyles, and uphold an optimistic outlook—demands that require significant physical discipline and emotion work. This case carries important implications for both sociological research and medical practice.

(WMU IRB-2024-219) Exempt

Advancing GME Well-Being: A Qualitative Needs Assessment of Residents at WMed

Adam Ayoub¹, Cynthia Lai², Alexandra Bayer³, Christopher Haymaker³

¹Western Michigan Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Family Medicine, Western Michigan Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ³Medical Education, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Resident well-being is increasingly recognized as a core determinant of patient care quality and sustainability of the physician workforce. Across training environments, residents face high intensity, long and unpredictable work hours, and administrative burdens that can erode professional fulfillment.

Resident well-being is shaped by both shared institutional factors and specialty-specific demands, yet few studies directly compare the individualized needs of surgical and non-surgical trainees within a single academic center. We conducted a qualitative needs assessment across residency programs at WMed to identify common and program-specific drivers of well-being and professional satisfaction, and to surface actionable opportunities for institutional support beyond compensation and time off.

Objectives:

1. Identify Shared and Unique Needs
2. Examine Factors Impacting Well-Being
3. Inform Institutional Support Strategies

Methods: Utilizing snowball sampling, investigators conducted 13 semi-structured interviews with current WMed residents across the institution. De-identified transcripts were coded by three independent researchers. Codes were then coalesced into themes for analysis.

Results: Researchers identified 5 overarching themes: community engagement/cohesion, operational support, workload and hours, "feeling seen," and working conditions. Two of the most frequently mentioned themes were workload and hours and operational support.

Conclusions: Results from this study identified multiple opportunities to inform WMed's efforts in supporting resident well-being and fulfillment. While residents participating in these interviews recognize the inherent challenges of residency, problems within the workload, working conditions, and operational support themes most often represent tactical hindrances rather than meaningful educational challenges. Residents generally want to grow their abilities to handle meaningful professional challenges, but grow disillusioned when workflow and equipment do not support their aspirations for patient care.

Residents across the institution described a desire to feel connected to their program co-residents, residents in the wider WMed community, and WMed as a whole. To address the identified need for 'feeling seen,' residencies could create specific strategies to recognize the exemplary efforts that our residents make to improve the lives of patients and to acknowledge the challenges that they successfully overcome.

Publication Inflation: Medical Students' Perspectives on Research Participation in the Pass/Fail Era

Jesse Kooistra¹, David Richter¹, Morgan Smeltzer¹, Peter Vollbrecht²

¹Medical Student, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Associate Professor of Biomedical Sciences, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Medical student research output has risen sharply in recent years. This study explored students' motivations for conducting research and the value they assign to their scholarly work. The objective was to better understand the drivers of "publication inflation" from the medical student perspective, with particular emphasis on the relative importance of publication quantity versus quality in preparing a competitive residency application in the post-Step 1 pass/fail era.

Methods: In this multi-institutional study, U.S. allopathic medical student involvement in, and motivations for conducting, research were evaluated via survey

Results: Most medical students surveyed had engaged in research, often for perceived impacts on career advancement. The perceived importance of scholarly output differed significantly across academic years ($P=.003$) and was highest among students pursuing competitive specialties ($P<.001$). The perceived importance of publication quantity versus quality also varied by year ($P=.016$). Students reported that the transition of USMLE Step 1 to pass/fail increased the importance of having research experience on residency applications.

Conclusion: This study suggests that extrinsic pressures, rather than intrinsic scholarly curiosity, are a primary motivating factor driving medical student involvement in the creation of scholarly products such as conference abstracts, presentations, and publications.

IRB WMed-2025-1261

Caregiver Knowledge, Beliefs, and Practices Related to Child Sexual Abuse Prevention

Cassandra Dukes, Andres Beltran, Morgan Palmer, Amy Damashek
Western Michigan University, Kalamazoo, Michigan

Abstract

Introduction: Child sexual abuse (CSA) affects 1 in 4 girls and 1 in 13 boys before age 18, resulting in significant long-term physical, emotional, and social consequences. Caregivers play a crucial role in preventing CSA by providing education and supervision to their children. Thus, it is important to understand caregivers' beliefs and practices regarding CSA prevention. The present study examined caregivers beliefs, attitudes, and behaviors regarding CSA prevention strategies.

Methods: Participants (n = 53) were caregivers of children ages 3-11 attending well-child visits at a university-affiliated pediatric clinic in Michigan. Participants completed a survey about their perceptions of CSA risk, beliefs about the importance of prevention, comfort and willingness to discuss CSA, intention to engage in preventive conversations, and engagement in preventive behaviors. Data were drawn from of a randomized controlled trial investigating the efficacy of an intervention to reduce risk of CSA.

Results: Most caregivers (84.9%) believed that CSA prevention is important, and 47.2% agreed that they were concerned about sexual victimization of their child. More than half of caregivers (66%) reported having spoken to their children about CSA prevention, while 34% of participants reported never having spoken to their child about CSA. Of those that had not spoken to their child about CSA prevention, commonly reported reasons were that they had not thought about it (33%) or believed their child was too young (44%). In addition, 5.7% reported that they were not comfortable speaking to their child about CSA prevention, and some participants reported that they were only somewhat (9.4%) willing or not willing (1.9%) to do so. The most reported preventative behaviors caregivers engaged in were related to supervision, including monitoring their child's technology (90.6%), location (96.2%), and who they spend time with (98.1%).

Conclusion/Clinical significance: Results reveal a gap in caregiver engagement with CSA prevention behaviors and underscore the need for accessible dissemination of information to caregivers about children's risk for CSA and strategies to reduce children's risk. Primary care settings represent a promising and underutilized venue for delivering CSA prevention education to reach caregivers who might not otherwise participate in traditional prevention programs.

WMed-2025-1224

Toxicological Profiling of Liberian Local Remedies: Implications for Health and Safety

Oren Lerner¹, DiAngelo Gonzalez¹, Noemi Mangiamele², Prentiss Jones³, Marc Downing^{2,4}

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ² Western Michigan University Homer Stryker M.D. School of Medicine, Department of Surgical Sciences, Kalamazoo, MI. ³ Western Michigan University Homer Stryker M.D. School of Medicine, Department of Pathology, ForenTox, Kalamazoo, MI. ⁴ Western Michigan University Homer Stryker M.D. School of Medicine, Department of Pediatric and Adolescent Medicine, Kalamazoo, MI

Abstract

Introduction: Traditional medicines remain central to healthcare across sub-Saharan Africa, where cultural reliance, accessibility, and affordability drive widespread use. Despite their importance, safety is often assumed rather than verified. Prior studies document contamination and compositional variability. This study evaluated twenty-five Liberian local remedies for the presence of pharmacologically active drugs of abuse (DOA) using multiple analytical toxicology platforms. A secondary aim was to contextualize the findings within the existing literature on herbal medicine safety.

Methods: Twenty-five samples were acquired from herbalists and retail outlets. Solid samples were homogenized in three solvents (H₂O, 50:50 MeOH:H₂O, and <5% ACN), while liquid samples were analyzed directly. Analysis included broad-panel and narrow-panel ELISA assays, liquid chromatography-tandem mass spectrometry (LC-MS/MS) for high-specificity confirmation of DOA, headspace gas chromatography (HS-GC) for volatile identification and quantification, and gas chromatography-mass spectrometry (GC-MS) for constituent identification.

Results: Several remedies indicated stimulant, opioid, or benzodiazepine-class immunoassay signals. LC-MS/MS repeatedly confirmed xylazine in an “everlasting leaf” sample obtained through an authorized intermediary, while a sample harvested directly from its native soil consistently tested negative. Multiple liquid remedies contained measurable ethanol content, including products labeled “nonalcoholic.”

Conclusion: This multi-assay evaluation identified DOA-class signals, xylazine contamination, and undeclared alcohol content in several Liberian local remedies. Immunoassay results should be interpreted cautiously due to potential cross-reactivity from structurally similar constituents. Xylazine’s detection in an “everlasting leaf” herbal supplement mirrors its emergence in illicit drug supplies, with discrepancies between samples suggesting supply-chain contamination rather than intrinsic plant chemistry. While the contamination source is unknown, these findings are consistent with global literature. The detection of xylazine is particularly concerning, given reports of “everlasting leaf” being used for neonatal umbilical stump care. Further, elevated alcohol content poses risks for children, pregnant individuals, and patients with comorbidities. These findings highlight the need for regulatory oversight, public health collaboration, and expanded toxicological surveillance of traditional medicines while preserving their cultural value.

The authors thank the Toxicology Department and the Department of Surgery at Western Michigan University Homer Stryker, M.D. School of Medicine for funding this research project.

From Research to Implementation: Evaluation Approaches for Structural Health Equity Interventions

Valerie Marshall

The Evaluation Center at Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. InterDisciplinary PhD Program in Evaluation, Kalamazoo, Michigan

Abstract

Introduction: Over the last two decades, structural-level interventions have received increased attention in public health literature, with recent research suggesting that they have a broader impact on population-level health outcomes than initiatives focused on individual behavioral change (Frieden, 2010). Despite calls to advance the science of evaluating structural-level interventions to advance health equity in the USA, the evaluation methods used in practice remain unclear, leaving health care systems, administrators, and practitioners with little guidance on assessing and translating this evidence to inform their own initiatives and practice. The objective of this qualitative study was to elucidate the evaluation methods used in structural-level interventions, empowering public health professionals and advocates to support systems change in their own communities.

Methods: A systematic search of peer-reviewed and grey literature on structural-level health equity interventions in the USA was conducted to identify relevant evaluations. For peer-reviewed articles, the Scopus database was used to search two peer-reviewed public health journals and six peer-reviewed evaluation journals. Grey literature was searched on the Robert Wood Johnson Foundation's website.

Results: Eleven evaluations published between 2020-2025 were included in the final sample. A majority used non-experimental methods, incorporated multiple levels (e.g., communities, individuals, institutional) to target individual and system outcomes, and used varied evaluation methods (e.g., theory of change, logic models) to assess health equity.

Conclusion/Clinical significance: This is one of the first reviews of its kind to focus specifically on evaluation methods used in these initiatives. Results indicate that additional research and evaluation methods are needed to capture the complexity of health equity and the structural determinants of health, and to effectively assess and improve the impact of structural-level interventions. Medical and health care communities would benefit from this work by not only understanding the role of structural determinants of health in clinical practice, but also by learning how to support similar health equity initiatives.

Fabrication, Characterization and in Vitro Evaluation of Porous PEEK for Orthopaedic Application

Bailey Doucette¹, Kathryn Harvat¹, Mitchell Kenter², Alimohammad Haji Adineh³, Massood Atashbar³, Adil Akkouch²

¹Medical Student, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Surgical Sciences, Division of Orthopaedic Surgery & Division of Medical Engineering, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI.

³Department of Electrical and Computer Engineering, Center for Advanced Smart Sensors and Structures, Western Michigan University, Kalamazoo, MI

Abstract

Introduction: Polyether ether ketone (PEEK) is a thermoplastic that biomechanically mimics bone and is commonly used in orthopedic implants. However, applications of PEEK are limited by its bio-inert nature, which limits osteoblast adhesion and differentiation. Methods of surface modification have been attempted to improve cell adhesion but require costly equipment. In this study, we propose a cost-effective method to enhance roughness and cell adhesion on PEEK by adding sodium chloride (NaCl) as a pore-forming agent without compromising mechanical strength. NaCl crystals will be incorporated into PEEK powder, later dissolved into water, leaving behind pores mimicking osteoclast resorption pits. Pore size and distribution will be adjusted by controlling NaCl grain size and amount.

Methods: Pellets were made of PEEK granules mixed with NaCl as porogen. This mixture included 1%, 2.5%, 5%, 10%, 25%, 50% NaCl by mass. The NaCl crystal size was 30 μ m, which was collected using standardized sieves. The pellets were pressed and sintered at 380°C for 10 minutes before the NaCl was dissolved in deionized water. Wettability was measured via water contact angle. Surface roughness was evaluated using a 3D optical profilometer. Mechanical compression testing was performed, and samples morphology was evaluated using scanning electron microscopy. Cell adhesion, proliferation, and differentiation were assessed using human osteoblasts. Statistical analyses were performed using the t-test, with statistical significance set at $P < 0.05$.

Results: The wettability of porous PEEK varied with the percentage of NaCl in the mixture. Samples with 50% NaCl exhibited the highest contact angle. The addition of NaCl particles resulted in increased roughness and osteoblast adhesion on the surface of PEEK discs. NaCl concentrations of $\geq 5\%$ showed significantly enhanced cellular adhesion at 16 hours compared to lower NaCl percentages.

Conclusions: Enhancing porosity and roughness of PEEK-based implants can improve osteoblast adhesion to the implant. Future work on this project would include expanding the range of NaCl granule sizes; investigating how the size of the NaCl granule, and therefore the resultant pore, affects osteoblast adhesion and proliferation. Clinically, these data may have significance in improving the osseointegration of PEEK in orthopedic implants.

Comparison of the Efficacy of Neuromodulation Therapies in Schizophrenia: A Systematic Review and Network Meta-Analysis

Rajasumi Rajalingam¹, Samantha Dorrance², Marissa Khury³, Daryna Hodgson⁴, Vinay Patel¹, Aaryan Kapoor⁵, Christine Sun⁶, Aiswarya Lakshmi Nandakumar⁷, Eric Achtyes¹

¹Department of Psychiatry, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Edmond J. Safra Program in Parkinson's Disease and Morton and Gloria Shulman Movement Disorders Clinic, University Health Network, Toronto, Ontario. ³Queen's University, Kingston, Ontario. ⁴Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ⁵Tbilisi State Medical University, Tbilisi, Georgia. ⁶Queen's University School of Medicine, Kingston, Ontario. ⁷Nevada Mental Health, Las Vegas, Nevada

Abstract

Introduction: Schizophrenia is a chronic and disabling psychiatric disorder affecting approximately 1% of the global population. Although antipsychotic medications are the primary treatment for schizophrenia, many patients experience persistent symptoms or side effects resulting in non-adherence. Neuromodulation therapies including electroconvulsive therapy (ECT), repetitive transcranial magnetic stimulation (rTMS), transcranial direct current stimulation (tDCS), theta-burst stimulation (TBS), transcranial random noise stimulation (trNS), transcutaneous vagus nerve stimulation (tvNS), magnetic seizure therapy (MST), and deep brain stimulation (DBS) have emerged as potential adjunctive or alternative interventions, however, their relative efficacy remains unclear. The objective is to compare the efficacy of neuromodulation therapies for schizophrenia using a systematic review and network meta-analysis.

Methods: This systematic review and network meta-analysis follows PRISMA-NMA guidelines and is registered in PROSPERO (CRD420251237506). PubMed, MEDLINE, Embase, APA PsycINFO, Web of Science, and CINAHL were searched from inception through November 9, 2025. Eligible studies include English-language randomized controlled trials evaluating neuromodulation therapies as monotherapy or adjunctive treatment in individuals with schizophrenia spectrum disorders. The primary outcome is change in overall symptom severity measured using validated psychiatric rating scales. Secondary outcomes include changes in positive symptoms, negative symptoms, and cognitive functioning. Risk of bias will be assessed using the Cochrane RoB 2 tool, and certainty of evidence will be evaluated using the CINeMA framework. A frequentist random-effects network meta-analysis will be conducted using the netmeta package in R.

Results: The initial search yielded 3,839 unique articles after removal of duplicates. Title and abstract screening, full-text review, and data extraction are currently in progress. Final comparative efficacy estimates and treatment rankings will be presented at the 44th Annual Kalamazoo Community Medical and Health Sciences Research Day.

Conclusions: This study will provide the first comprehensive comparative synthesis of neuromodulation therapies for schizophrenia, informing clinical decision-making and future research.

Intervention for Pediatric Iron-Deficiency Anemia in Low-Resource Settings: Leaf-shaped Iron Ingots in Cooking in Rural Telangana, India

Drew Frase^{1,2}, Lacey Burke^{1,2}, Jennifer Lee^{1,2}, Kayla Grooters^{1,2}, Taylor Elshaw^{1,2}, Shireen Husami^{1,2}, Caitlin Tremewan^{1,2}, Priscilla Woodhams^{3,4}

¹ Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Institute for Rural Health Studies, Telangana, India, Telangana, India. ³Department of Pediatric and Adolescent Medicine, Division of General Pediatrics, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ⁴ Telangana, India.

Abstract

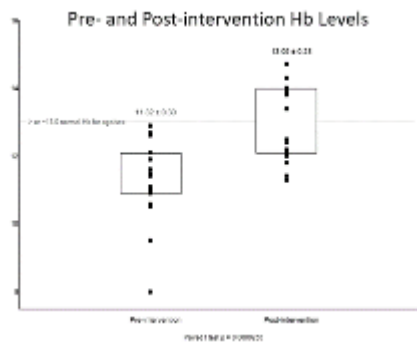
Introduction: Iron-deficiency anemia remains a major cause of morbidity among children living in low-resource settings, particularly in rural India where access to supplementation and dietary iron is limited. Novel, low-cost interventions that can be sustainably integrated into daily practices are needed. Leaf-shaped iron ingots added during cooking have been proposed as a culturally acceptable and sustainable method to increase dietary iron intake. This pilot project evaluated the effectiveness and feasibility of an iron ingot cooking intervention among children in rural Telangana, India.

Methods: This pilot intervention assessed hemoglobin changes and adherence following distribution of leaf-shaped iron ingots in two settings: (1) a low-income residential boys' school and (2) rural village households. Children aged 12 months to 18 years with anemia were identified through screening. In residential school, cooks incorporated iron ingots into daily meal preparation over a 10-month period. Hemoglobin levels were measured pre- and post-intervention using paired t-test analysis. In village settings, iron ingots were distributed to caregivers, and follow-up interviews and hemoglobin measurements were attempted approximately 10 months later to assess adherence and outcomes.

Results: In the residential boys' school, a paired t-test analysis of 17 boys demonstrated a significant increase in hemoglobin levels following the intervention. Mean hemoglobin increased from 11.32 ± 0.30 g/dL pre-intervention to 13.05 ± 0.28 g/dL post-intervention ($p = 0.000225$), approaching or exceeding normal reference values for adolescent males. In village settings, 53 iron ingots were distributed; however, follow-up was limited due to population displacement during a regional pilgrimage. One child was successfully reassessed, showing a hemoglobin increase of 0.6 g/dL to 12.0 g/dL after partial adherence.

Conclusion: Use of leaf-shaped iron ingots in institutional cooking settings was associated with clinically and statistically significant improvements in hemoglobin levels among children living in extreme poverty. While adherence and follow-up in village households were limited, preliminary findings suggest potential benefit. Further evaluation is warranted to assess effectiveness and sustainability in family-based settings.

Acknowledgement: Funding was provided through a WMed Research Pilot Grant. We would like to also thank the Institute for Rural Health Studies in Telangana, India who supported the project.



Can Surgery Program Directors Detect Artificial Intelligence-Generated Residency Application Personal Statements?

Rami Madani¹, David Richter¹, Yaqub Ahmedfiqi¹, Bradley Christensen¹, Jay Henriquez², Robert Sawyer², Saad Shebrain²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Western Michigan University Homer Stryker M.D. School of Medicine, Department of Surgical Sciences, Kalamazoo, MI

Abstract

Introduction: Recent advances in generative artificial intelligence (AI) have enabled creation of human-like text in response to user prompts, often making it difficult for readers to distinguish between human- and AI-generated content. Accordingly, some have raised concerns regarding the use of AI to generate personal statements for residency applications. This study evaluated the ability of surgical residency program directors (PDs) to detect AI-generated personal statements and explored their perspectives on its use.

Methods: Two personal statements were created using ChatGPT (version 4.5); one statement underwent no alterations, while the other was edited for correctness. The statements were distributed to PDs via email, who evaluated the statements and answered associated questions. Data was analyzed using Wilcoxon Signed-Rank or Chi-Square Goodness-of-Fit, as appropriate.

Results: Data collection is ongoing with an 11% response rate (n=76/690; 62 with complete data). Most respondents were from general (n=35, 56.5%) or orthopaedic (n=17, 27.4%) surgery programs. There were no differences in PDs' suspicion of AI use between statements (p=.557). Overall, PDs detected AI use with a sensitivity of 62%. Most PDs (n=59, 95.1% indicated that non-generative AI use would not affect their perception of applicants (p<.001). 77.4% (n=48) of PDs indicated they believe applicants currently employ generative AI, and 88.7% (n=55) view such use negatively (p<.001).

Conclusion: Preliminary data suggest most PDs believe applicants use generative AI, yet they are inconsistent in their ability to detect it. It remains unclear whether post-editing conceals AI use. Further research is needed to protect the integrity of the match process.

WMed-2025-1219

Effect of Corona Plasma Treatment on the Wettability of Strontium-Doped Bioceramics for Orthopaedic Applications

Maia Newkirk¹, Hanna Sorensen², Adil Akkouch^{2,3}

¹Medical Student, Department of Surgical Sciences, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Division of Orthopaedic Surgery, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ³Division of Medical Engineering, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Strontium-containing bioceramics have demonstrated osteogenic benefits through enhanced osteoblast differentiation and proliferation, inhibition of osteoclast formation, and immunomodulation toward a pro-regenerative M2 macrophage phenotype. These properties have led to increasing interest in strontium-doped bioceramics for use in 3D printed bone scaffolds. Surface modification techniques that improve wettability and bioactivity may further enhance bone–implant integration. The objective of this study was to evaluate whether corona plasma treatment can modify the surface wettability of strontium-doped bioceramics and thereby enhance surface properties associated with improved cell attachment and bioactivity at the bone–implant interface

Methods: Three bioceramic compositions containing 0, 5, or 10 mol% strontium were synthesized in the $\text{SiO}_2\text{--Al}_2\text{O}_3\text{--P}_2\text{O}_5\text{--MgO--Na}_2\text{O--K}_2\text{O--(Ca}_{1-x}\text{Sr}_x\text{)O--CaF}_2$ system. Sequencing of methods included melting ceramic powders twice at 1200 °C for three hours, quenching in deionized water, crushing and sieving the powder to a particle size of 50 µm or less. Discs were prepared by pressing the powders using a press machine, followed by sintering at 800 °C for one hour. Discs were exposed to corona plasma for incremental durations ranging from 1 to 3 seconds, with contact angle measurements obtained before and after each exposure interval, using a drop shape analyzer

Results: As fabricated discs exhibited a clear Strontium dependent increase in water contact angle. The contact angle increased from approximately 90 degrees for 0% discs to about 110 degrees for 5% discs and about 140 degrees for 10% discs. Corona plasma treatment decreased the contact angle for all compositions in a time dependent manner. Contact angles dropped rapidly with increasing exposure time, reaching near complete water absorption (0 degree) at different time points depending on Strontium content: approximately 1 s for 5% discs, 2 s for 0% discs, and 3 s for 10% discs, with progressive intermediate reductions observed at earlier time points

Conclusions: These findings demonstrate that corona plasma treatment is an effective surface modification technique for strontium-doped bioceramics. By improving surface wettability, this approach has the potential to enhance cell attachment and bioactivity at the bone–implant interface, thereby supporting improved osseointegration and healing in orthopaedic applications.

Table 1: Ceramic Powder Compositions (mol%):

Sr Content (mol%)	0	5	10
SrO	0.0	5.0	10.0
CaO	24.0	19.0	14.0
P ₂ O ₅	5.0	5.0	5.0
MgO	21.2	21.2	21.2
Na ₂ O	2.3	2.3	2.3
K ₂ O	3.8	3.8	3.8
Al ₂ O ₃	0.8	0.8	0.8
SiO ₂	31.5	31.5	31.5
CaF ₂	11.2	11.2	11.2

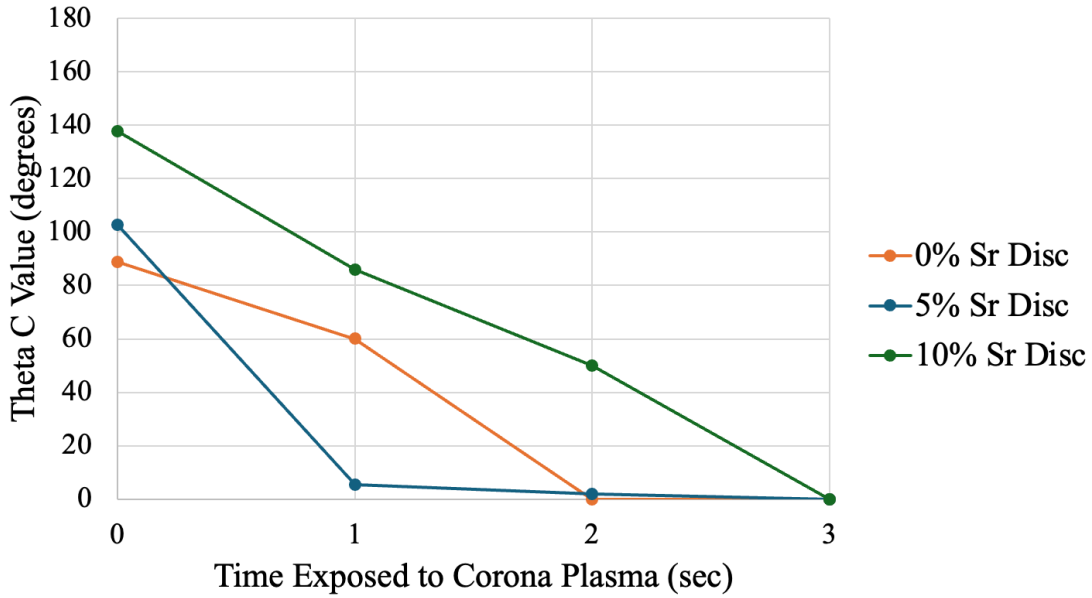


Figure 1: Time

Exposed to Corona Plasma (sec) vs Theta C Value of Water Droplet (degrees)

Nuclear Localization of Activation Induced Deaminase Corresponds with Cysts and DNA Damage in Autosomal Dominant Polycystic Kidney Disease.

Jackson Goudreau¹, Shane Kim², Agata Parsons², Tyler Rosey², Leslyn Hanakahi², Greg Vanden Heuval², Erik Larson²

¹ Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ² Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Background: ADPKD is a severe renal disease that results from inheritance of a pathogenic PKD1 allele; however, it is a somatic second hit inactivation of the normal allele that initiates cyst development. Although similar to human PKD1 in gene sequence and function, Pkd1-/+ heterozygous mice do not naturally develop ADPKD. We have recently shown that human PKD1 sequences adopt four-stranded DNA conformations called G4 DNA. Those sequences are sparse in the mouse or rat Pkd1 genes. Activation induced cytidine deaminase (AID) is a G4-binding protein expressed in B lymphocytes where it regulates antibody diversification. It is highly regulated, and cellular localization is controlled, in part, by cAMP. Nuclear mislocalization of AID results in genome mutations and lymphomas, so we reasoned that it could affect ADPKD.

Methods: Using AID-specific antibodies, we evaluated AID expression in human ADPKD kidneys and in kidneys from Pkd1 mutant mice. A Rapid Assay for DNA Damage (RADD) was used to visualize deoxyuracil content in renal cells. We also examined the influence of cyclic AMP on AID localization by treating human renal cells with Forskolin.

Results: In human ADPKD tissue, we find that AID protein is primarily nuclear in cells lining cysts but was restricted to the cytoplasm in normal human kidneys. Elevated cAMP promotes retention of AID in kidney nuclei. AID co-localizes with both DNA breaks and deoxyuracils in ADPKD, suggesting a connection between the nuclear accumulation of AID, genome instability, and somatic inactivation of PKD1.

Conclusion: Our results suggest that AID is misregulated and localizes to the nucleus in ADPKD where it binds G4 structures in the human PKD1 gene and deaminates nearby cytidines. The resulting mutations and DNA breaks are precursors for PKD1 inactivation and cyst initiation.

Impact of Mechanical Circulatory Support on Outcomes in Patients with Peripartum Cardiomyopathy Complicated by Cardiogenic Shock: A National Inpatient Sample Analysis (2003-2022)

Nayana Bhatnagar, Melissa Lu, Grace Filipiak, Maninder Randhawa, Kirsten Hickok, Tara Subrahmanyam, Gerrit Bouma
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Peripartum cardiomyopathy (PPCM) is a rare but severe form of heart failure occurring during late pregnancy or the postpartum period and may progress to cardiogenic shock. In these cases, mechanical circulatory support is often required; National data comparing utilization patterns and outcomes between PPCM-related cardiogenic shock and cardiogenic shock from other causes remains limited. This study evaluates differences in management strategies and in-hospital outcomes between these populations.

Methods: We conducted a retrospective cohort study using the National Inpatient Sample from 2003 through 2022, to identify hospitalizations of female patients age 15 to 49. Hospitalizations with a concurrent diagnosis of PPCM and cardiogenic shock were compared against hospitalizations with only cardiogenic shock. A one-to-one propensity score match was performed using demographic, socioeconomic, hospital, and comorbidity variables, resulting in 636 hospitalizations per cohort. Odds ratios with 95% confidence intervals were reported.

Results: Patients with PPCM and cardiogenic shock had higher odds of receiving mechanical circulatory support compared with cardiogenic shock alone (OR 1.93, 95% CI 1.51–2.48, $p < .0001$), driven by increased use of ventricular assist devices (OR 4.11, 95% CI 2.74–6.15, $p < .0001$) and extracorporeal membrane oxygenation (OR 1.69, 95% CI 1.07–2.68, $p = .0229$). In-hospital mortality was significantly lower in the PPCM cohort (OR 0.38, 95% CI 0.28–0.50, $p < .0001$), including among patients receiving mechanical circulatory support (OR 0.59, 95% CI 0.35–0.98, $p = .0404$). PPCM hospitalizations were associated with longer length of stay (14 vs 18 days, $p = .0046$), higher total hospital charges (\$425,197 vs. \$315,911, $p = .0039$), more favorable discharge dispositions, defined as higher likelihood of routine discharge or with home health care and lower likelihood of in-hospital death or transfer to skilled nursing facilities ($p < .0001$), and lower rates of renal replacement therapy (OR .39, 95% CI .26–.57, $p < .0001$).

Conclusion: PPCM-related cardiogenic shock is associated with greater use of advanced mechanical circulatory support, yet lower in-hospital mortality compared with cardiogenic shock from other causes. However, outcomes appear more favorable, suggesting a distinct and potentially reversible disease trajectory that supports early aggressive management in specialized centers.

Pelvic Fixation and Risk of Deep Infection in Adult Spinal Deformity: A Comorbidity-Aware, Matched Cohort Study

Omar Shaikh¹, Mohammed Abdul Muq̄sith², Ankit Mehta²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan.

²University of Illinois College, Department of Neurosurgery, Chicago, Illinois

Abstract

Introduction: Pelvic fixation is often used in scoliosis surgery to enhance distal stability but may increase deep infection risk due to expanded dissection and increased subfascial dead space over the sacrum. This study compares the incidence of deep surgical site infection (dSSI) between patients with and without pelvic fixation (PF) and identifies independent predictors of infection in patients undergoing scoliosis surgery.

Methods: Patients within the Scoliosis Research Society Morbidity & Mortality Database were divided into a PF and non-PF cohort to assess for baseline differences in patient characteristics and complications. After splitting into posterior-only and non-posterior approaches, we utilized 20 patient characteristic variables to propensity-score match the cohorts and re-assessed for complications. A multivariate logistic regression was performed to find independent predictors of dSSI.

Results: In the baseline cohort (n=6645), dSSI occurred in 24.8% with PF vs 13.2% without PF (p<0.001). After matching, posterior-only cases showed higher dSSI with PF (16% vs 8.9%, p<0.018), as did non-posterior cases (24% vs 14%, p<0.001). Upon performing regression, PF was independently associated with dSSI (OR 1.69, 95% CI 1.42–2.02). Posterior approach was protective (0.48, 0.38–0.60), as was osteotomy (0.67, 0.57–0.80). Several co-morbidities were strong independent predictors, including neurologic disease (4.35, 3.29–5.73), cancer (4.15, 2.10–8.34), diabetes (3.80, 2.48–5.81), collagen vascular disease (3.37, 1.14–9.99), smoking (2.94, 1.66–5.14), obesity (2.69, 1.97–3.67), pulmonary disease (2.66, 1.96–3.61), anemia (2.25, 1.23–4.09), hypertension (2.08, 1.48–2.90), heart disease (1.57, 1.05–2.34), and osteopenia (1.44, 1.07–1.92).

Conclusion: PF is associated with increased dSSI risk and is independently predicted by several co-morbidities. These findings support careful consideration of pelvic fixation to reduce deep infection risk in scoliosis surgery patients with significant comorbidity burden.

Psychological Flexibility in Perinatal Mental Health: A Culturally Responsive, Process-Based ACT Protocol

Morgan Palmer, Scott Gaynor

Western Michigan University, Department of Psychology, Kalamazoo, Michigan

Abstract

Perinatal mood and anxiety disorders are highly prevalent, especially among Latine communities, and are associated with serious consequences for birthing parents and infants when left untreated. Existing empirically supported interventions, such as Cognitive Behavioral Therapy and Interpersonal Psychotherapy, have been shown to be successful in reducing symptoms. However, they are rarely tailored to the cultural and contextual processes that shape each person's perinatal experience. This project aims to pilot an individualized, culturally responsive Acceptance and Commitment Therapy (ACT) protocol that is guided by frameworks of Process Based Therapy (PBT) and the Shifting Cultural Lenses (SCL) model. Perinatal participants with clinically elevated depression or anxiety symptoms will complete a multi-stage baseline that includes a computerized assessment of nine process-based dimensions, a culturally focused SCL interview, and a semi-structured clinical interview to collaboratively identify two primary processes to target in treatment. Participants will then receive five individualized ACT sessions that directly target these processes with ongoing daily and weekly assessments of the ACT processes, perinatal mood and anxiety systems, working alliance, and perceived cultural competence. Single case analytic methods such as TAU-U analyses, will be used to evaluate within person change in process and symptom scores from baseline to post treatment and follow-up. Primary outcomes include feasibility and perceived cultural responsiveness of the assessment and intervention procedures, as well as improvement in the two target processes for each participant.

Keywords: perinatal, psychological flexibility, process-based therapy, acceptance and commitment therapy, pregnancy, postpartum

Understanding Fall Risk After Gluteus Medius Repair: A 90-Day Postoperative Analysis

Manuel Romero-Padron¹, Nicholas Kossoff^{1,2}, Nihal Nagesh¹, Adam Alakhras¹, Joshua Everhart¹

¹Department of Orthopaedic Surgery, Indiana University, Indianapolis, Indiana. ²Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Background: Gluteus medius (GM) tears are increasingly recognized as a cause of lateral hip pain and functional impairment, and surgical repair is commonly performed in patients with persistent symptoms. Despite known postoperative vulnerabilities, the incidence and risk factors for falls after GM repair (GMR) remain poorly understood. This study aimed to determine the incidence of falls within 90 days after GMR and identify patient-related factors associated with these events.

Methods: A retrospective review of prospectively collected data was conducted for all patients who underwent open GMR by a single surgeon from January 2021 to June 2025. Demographic, clinical, and perioperative variables were extracted from electronic medical records. Falls and near falls were identified through comprehensive chart review. Bivariate analyses were performed to evaluate associations between predictive variables and fall status, followed by multivariate logistic regression using forward selection.

Results: Among 263 patients, 9.5% (n=25) experienced a fall or near fall within 90 days postoperatively. Nearly half of events occurred within the first month. One-third of fall events led to additional injuries, though none resulted in repair failure or revision surgery. On bivariate analysis, movement disorder was the only variable significantly associated with fall status (p=0.019). In multivariate modeling, movement disorder remained the only independent predictor (OR 5.362; 95% CI, 1.275–19.328; p=0.024). Endocrine and opioid dependence disorders showed trends toward significance but were not independent predictors.

Conclusion: Falls are relatively common in the early postoperative period after GMR, with nearly 1 in 10 patients affected. Movement disorders significantly increase fall risk, while other comorbidities may also contribute. Given the frequency and potential consequences of these events, targeted fall-prevention strategies and closer monitoring are warranted—particularly for patients with underlying neurologic conditions. Further research is needed to validate these findings and optimize perioperative care.

Modulation of Osteogenesis by GLP-1RAs in Lipid-Rich Environments

Norbert Fernandez¹, Lyndsay Kluge¹, Mitchell Kenter², Adil Akkouch²

¹ Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Surgical Sciences, Division of Orthopaedic Surgery & Division of Biomedical Engineering, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Glucagon-like peptide-1 receptor agonists (GLP-1RAs) are widely used to treat type 2 diabetes and obesity; conditions often linked to poor bone health. While preclinical studies suggest GLP-1RAs enhance early osteoblast activity, clinical studies regarding skeletal outcomes remain inconsistent. Furthermore, in diabetes and obesity, both low density lipoprotein (LDL) and, more critically, oxidized low density lipoprotein (ox-LDL) levels are typically elevated. Obesity causes chronic inflammation and increased LDL oxidation, while diabetes further intensifies this oxidative stress. Our goal is to determine how GLP-1RAs modulate early versus late osteogenic processes in the presence of LDL and ox-LDL.

Methods: Human osteoblast-like cells were cultured in normal or osteogenic media under four conditions: control, GLP-1RA alone, GLP-1RA + LDL (50 mg/dL), and GLP-1RA + ox-LDL (50 mg/dL) for up to 3 weeks. We measured alkaline phosphatase (ALP) activity, mineralization by Alizarin Red staining, lipid accumulation by Oil Red O staining, and gene expression by RT-qPCR for COL1A1, RUNX2 and LPL ($p < 0.05$).

Results: LDL suppressed ALP activity compared to control, particularly at day 3, while ox-LDL had minimal effect. GLP-1RA increased ALP activity across all conditions and time points in both normal and osteogenic media, restoring ALP levels in lipid-treated cultures. Under growth conditions, GLP-1RA reduced COL1A1 and RUNX2 expression. Under osteogenic conditions, GLP-1RA continued to suppress COL1A1 while altering RUNX2 and increasing LPL; LDL and ox-LDL partially restored RUNX2 without normalizing COL1A1. Despite increased ALP activity, GLP-1RA reduced late-stage mineralization. Twenty-one-day Alizarin Red staining showed decreased calcium deposition with GLP-1RA compared to osteogenic controls, with partial recovery in LDL- and ox-LDL-treated cultures.

Conclusion/Clinical significance: GLP-1RA treatment demonstrated a dissociation between early osteoblast activation and late-stage mineralization. Persistent suppression of collagen matrix formation and increased intracellular lipid accumulation were associated with incomplete mineralization. Lipid-dependent partial recovery suggests lipid signaling modifies GLP-1RA-driven osteoblast differentiation without restoring normal osteogenic outcomes. Our findings highlight differential regulation of osteogenic processes and suggest lipid status may influence skeletal responses to GLP-1RA therapy.

Impact of Normothermic Machine Perfusion Pump Duration on Liver Transplant Outcomes

John Henriquez¹, Katherine Davanzo², Michael Chaney¹, Kapila Kommareddy¹, Luckshi Rajendran³, Adhnan Mohamed³

¹Western Michigan University Homer Stryker M.D. School of Medicine, Department of Surgical Science, Kalamazoo, Michigan. ²Wayne State Medical School, Detroit, Michigan. ³Henry Ford Health, Department of HPB and Transplant Surgery, Detroit, Michigan

Abstract

Introduction: Normothermic machine perfusion (NMP) is a promising development that enables the prolonged preservation of procured organs. NMP was FDA-approved for liver preservation in 2021 for up to 12 hours; however, centers across the country have reported success with use for longer periods. There is no existing literature outlining the effect of prolonged NMP preservation on outcomes after liver transplantation. In this study, we aim to characterize the complication profile of patients who receive such organs.

Methods: We retrospectively analyzed patients who underwent liver transplantation at our institution from 2021 to 2024. The primary outcome was early rejection (within 90 days of transplantation). Secondary outcomes included biliary stricture, length of hospital stay after transplantation, and 30-day readmission. Correlational analyses were performed comparing the duration on NMP (<12 hours vs >12 hours) and postoperative outcomes.

Results: Of the 371 included patients, NMP was utilized in 141 (38%) with an average pump time of 12 hours and 19 minutes. Of the organs that utilized NMP, 72 (51%) were stored on the pump for greater than 12 hours. Patients who received an organ that used NMP had a mean (SD) length of stay of 13.3 (11.4) days, compared with 15.9 (13.2) days for those who did not use NMP ($p=0.06$). Chi-squared analysis showed no difference in early rejection ($\chi^2 0.98$, $p=0.32$) or biliary stricture ($\chi^2 0.84$, $p=0.36$). Of the organs utilizing NMP, there was no difference in LOS between groups with <12 hours of NMP (11.7 days; SD 8.0) and >12 hours (15.0 days; SD 13.8; $p=0.09$). We also found no difference in the rate of early rejection ($\chi^2 0.83$, $p=0.36$) or biliary stricture ($\chi^2 0.36$, $p=0.54$) between these groups.

Conclusion: Utilization of NMP for the storage of livers longer than 12 hours does not appear to increase the rate of post-operative complications. These data suggest that such use beyond the FDA-approved storage time can safely be done.

Futility in Colectomy

Maya Hammoud, Nicholas Stevens, Clayton Wyland, Kayla Flewelling, Marc Downing, Saad Shebrain, Laurence McCahill

Western Michigan University Homer Stryker M.D. School of Medicine, Surgery, Kalamazoo, Michigan

Abstract

Objective: Urgent and emergent (U/E) colectomies are among the most common procedures performed in acute care

surgery. We have observed that patients with a preoperative concern for nonsurvival often elect operative intervention. Many of these patients succumb to the disease or their families withdraw support in the early postoperative period. We believe the ability to predict futility, defined here as death within 10 days of U/E colectomy, could be valuable in pre-operative counseling.

Methods: Deidentified data from patients who underwent U/E colectomy between January 2013 and December 2025

were analyzed. Two study groups represent patients who died within 10 days of the index procedure and patients who survived greater than 10 days. Both groups were compared regarding demographics, comorbidities, ASA class, and clinical characteristics. Correlation analyses assessed the association of mortality within 10 days with potential predictors. Univariate and multivariable logistical regression of the relevant predictors produced odds ratios.

Results: Of the 653 patients who underwent U/E colectomy, 37 (5.6%) died within 10 days of the index operation. These

37 patients had statistically older age, higher ASA class, higher creatinine levels, lower albumin levels, lower functional status, and higher likelihood of sepsis requiring vasopressors (table 1). Multivariable logistic regression demonstrated increased likelihood of death within 10 days of the index surgery for ASA-IV (OR=4.72), ASA-V (OR=9.35), preoperative sepsis requiring vasopressors (OR=3.65), elevated creatinine (OR=3.2), and age >65 (OR=3) (table 2). The area under the ROC curve was 0.867 (95% CI, 0.812 to 0.922), indicating excellent discrimination of mortality within 10 days.

Conclusions: Our model strongly predicts death within 10 days of U/E colectomy based on factors routinely available

preoperatively. Subsequent development of a futility risk calculator for U/E colectomy may be useful in counseling patients and diminishing futile surgeries.

WMed-2025-1290

Professional Boundaries and Conflicts: Doulas, Providers, and Clients in Kalamazoo

Nossin Khan¹, Lilian Asamoah-Barnieh¹, Swathi Nair Kavitha Sukesh¹, Ruth Butters², Cynthia Bane², Vaishali Patil³, Fernando Ospina²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan.

²Biomedical Sciences Department Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ³Anusandhan Trust, Maharashtra, India

Abstract

Introduction: Doulas are a non-clinical role that provide birth support through information, client advocacy, and physical and emotional support. Previous research findings suggest that doula support improves the birthing experience; lowers cesarean rates; reduces incidence of low birthweight and prematurity (both predictors of infant mortality); and reduces health inequity. Despite shared goals of positive birth outcomes, doula and clinician roles can come into conflict due to diverging priorities, lack of understanding, and differences in authority. As part of a study examining the state of professional roles and experiences of doulas in Kalamazoo County, researchers interviewed doulas about their perceptions of the doula role and challenges that arise in doula-clinician and doula-client relationships. This study asks, what are doulas' perceptions of their role boundaries, and what tensions do role boundaries create in practice?

Methods: Researchers interviewed 14 doulas and analyzed transcripts on two dimensions: 1) Role Boundaries: thematic coding of how doulas define their role, and 2) Boundary Conflicts: "versus coding" to identify doulas' perceptions of conflicts between their role and a) other clinical roles and b) clients' expectations.

Results: Doulas described their role as including informational, social, and physical support and client advocacy, while explicitly excluding medical advice. Preliminary findings suggest a changing landscape for doulas in Kalamazoo with increasing, though uneven, acceptance of doulas in clinical spaces. Doulas reported greater acceptance among midwives and nurses and less acceptance among physicians. Doulas described tensions with medical providers arising from conflicts over doula prioritization of client autonomy and lack of understanding of the doula role (e.g., providers interpreting advocacy efforts as inappropriate). Doulas perceived clients' limited understanding of the doula role as creating conflicting expectations of responsibilities (e.g., clients expecting doulas to do household tasks).

Conclusion/Clinical significance: Role conflicts impinge on the effectiveness of the doula-provider relationship. Findings suggest conflicts that could be addressed with a shared understanding of the doula role, contributing to increased collaboration. State policy funding doula care will likely increase doula-clinician and doula-client contact, warranting efforts to effectively integrate doulas into the health care system.

Acknowledgments: Kalamazoo Community Foundation provided funding for the larger Kalamazoo Doula Landscape study.

WMed-2025-1297

15,242 ways to Die: Performance Comparison of Rule-Based Natural Language Processing and Large Language Models for Information Extraction from Medical Examiner Notes

Ayse Erva Mangan, Alvina Najor, Theresa McGoff, Shamsi Daneshvari Berry
Western Michigan Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Medical examiner databases contain substantial unstructured narrative text that is difficult to use for research without manual review. Rule-based Natural Language Processing (NLP) can extract variables from text, but development and maintenance of rules can be time-intensive and may not generalize to novel wording. Large language models (LLMs) may offer a flexible alternative, but its accuracy and reliability compared to rule-based NLP has varying results. This study seeks to compare the performance of LLMs with a rule-based NLP approach for determining the body location described in autopsy reports into predefined categories.

Methods: Medical examiner data were obtained from a decedent image database, the New Mexico Decedent Image Database (NMDID). Rule-based NLP was performed using Canary software, a free open-source tool created at Harvard University. A HIPAA-compliant LLM, BastionGPT, was evaluated under two predefined model response modes offered by the platform, Exact and Analytical, with identical instructions. The prompt included explicit category definitions and exception handling derived from iterative review of the model's responses. In addition, a zero-shot approach was also tested using a minimal instruction prompt that specified only the possible body location categories without providing task-specific rules or exceptions. The results were compared against the gold standard manual review, and performance was summarized using accuracy and F1 score.

Results: F1 and accuracy scores demonstrate that rule-based NLP works well on the sample; however, LLMs outperform them. When compared to the gold standard of manual review, rule-based NLP had an F1 of 0.835 and an accuracy of 0.814. The exact prompt, when compared to the gold standard, produced an F1 of 0.9307 and accuracy of 0.777. The analytical prompt produced higher values, with F1 at 0.957 and accuracy at 0.946. The zero-shot prompt did perform well (F1=0.92477, accuracy=0.9087); however, it required extensive cleaning of hallucinated cases.

Conclusion/Clinical significance: Although LLMs reduced the need for explicit rule construction, effective use required iterative prompt refinement to address unanticipated failures and auditing for hallucinations. Despite these considerations, these findings demonstrate proof of concept that HIPAA-compliant LLMs can perform comparably to rule-based natural language processing.

Reference:

Edgar, HJH; Daneshvari Berry, S; Moes, E; Adolphi, NL; Bridges, P; Nolte, KB (2020). New Mexico Decedent Image Database. Office of the Medical Investigator, University of New Mexico. doi.org/10.25827/5s8c-n515.

**POSTER
PRESENTATIONS
SESSIONS**

2	E-Poster	Classroom 111	1:00-2:00 pm
4	E-Poster	Classroom 111	1:00-2:00 pm
5	E-Poster	Classroom 211	1:00-2:00 pm
6	E-Poster	Classroom 211	1:00-2:00 pm
8	E-Poster	Classroom 111	1:00-2:00 pm
11	E-Poster	Classroom 111	1:00-2:00 pm
12	E-Poster	Classroom 211	1:00-2:00 pm
15	E-Poster	Classroom 111	1:00-2:00 pm
18	E-Poster	Classroom 211	1:00-2:00 pm
28	E-Poster	Classroom 111	1:00-2:00 pm
29	E-Poster	Classroom 211	1:00-2:00 pm
31	E-Poster	Classroom 111	1:00-2:00 pm
37	E-Poster	Classroom 211	1:00-2:00 pm
41	E-Poster	Classroom 111	1:00-2:00 pm
43	E-Poster	Classroom 211	1:00-2:00 pm
46	E-Poster	Classroom 111	1:00-2:00 pm
49	E-Poster	Classroom 211	1:00-2:00 pm
51	E-Poster	Classroom 211	3:30-4:30 pm
52	E-Poster	Classroom 111	3:30-4:30 pm
53	E-Poster	Classroom 211	3:30-4:30 pm
54	E-Poster	Classroom 111	3:30-4:30 pm
56	E-Poster	Classroom 211	3:30-4:30 pm
59	E-Poster	Classroom 111	3:30-4:30 pm
60	E-Poster	Classroom 211	3:30-4:30 pm
63	E-Poster	Classroom 111	1:00-2:00 pm
64	E-Poster	Classroom 211	1:00-2:00 pm
65	E-Poster	Classroom 111	3:30-4:30 pm
69	E-Poster	Classroom 211	1:00-2:00 pm
73	E-Poster	Classroom 211	3:30-4:30 pm
76	E-Poster	Classroom 111	3:30-4:30 pm
81	E-Poster	Classroom 211	3:30-4:30 pm
82	E-Poster	Classroom 111	3:30-4:30 pm
83	E-Poster	Classroom 111	1:00-2:00 pm
85	E-Poster	Classroom 211	3:30-4:30 pm
87	E-Poster	Classroom 111	3:30-4:30 pm
89	E-Poster	Classroom 211	3:30-4:30 pm
107	E-Poster	Classroom 111	3:30-4:30 pm
108	E-Poster	Classroom 211	3:30-4:30 pm
120	E-Poster	Classroom 111	3:30-4:30 pm
121	E-Poster	Classroom 211	3:30-4:30 pm
130	E-Poster	Classroom 111	3:30-4:30 pm

**POSTER
PRESENTATIONS
LIST OF ABSTRACTS**

2 (ePoster)

A Case of Benign Transient Eosinophilia with Exanthematous Eruption in Patient Treated with Clozapine

Christopher Nwoke, Anna Sampson, Geetha Dhatreecharan

Department of Psychiatry, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Benign transient eosinophilia, sometimes accompanied by exanthematous eruption, is a rare but recognized adverse effect of clozapine therapy. Most notably, clozapine is known for the serious side effects of agranulocytosis, myocarditis, and seizures. Even with the known side effects of clozapine, it remains an important tool in treatment-resistant schizophrenia. This case describes a rare manifestation of clozapine-induced eosinophilia and highlights how combined clinical observation and laboratory monitoring informed clinical decision-making.

Case presentation: A 38-year-old Caucasian male with a history of schizophrenia who presented with complaints of a rash after an increased dose of clozapine. Physical examination revealed small and raised papules throughout the chest and back. Laboratory studies demonstrated the onset of eosinophilia 18 days after initiating clozapine therapy. The rash appeared two weeks later on day 32, following a dose increase from 100 mg twice daily to 125 mg twice daily. Physical examination revealed small, pink-red raised papules throughout the chest and back. The patient did not experience respiratory symptoms or pruritus and therefore did not require antihistamine therapy. The clozapine dosage was maintained at 125 mg twice daily, and both eosinophilia resolved (Day 54), followed by the rash resolving (day 63) without intervention.

Discussion: The occurrence of a rash accompanied by eosinophilia is a benign and uncommon reaction to clozapine. While most hematologic side effects of clozapine involve neutrophils, leading to agranulocytosis, this case demonstrates an eosinophilic response instead. The temporal association between eosinophilia onset and clozapine initiation, along with the appearance of a rash after a dose escalation, supports clozapine as the likely cause. In similar cases, clinical symptoms should guide management; isolated eosinophilia and a mild rash after starting clozapine may not warrant intervention.

Conclusion: This case illustrates a benign side effect of the administration of clozapine in the treatment of schizophrenia. Recognizing this possible presentation may give clinicians greater insight into identifying similar cases in which a clozapine-induced rash resolves spontaneously and does not require discontinuation of therapy. Clinical objectives include ongoing monitoring of absolute white blood cell counts and observing of any additional sequelae.

4 (ePoster)

Symptomatic Parvovirus B19-induced Glomerulonephritis Mimicking C1q Nephropathy

Henry Zou, Akram Alnounou, Scott McGuire, Musa Yehya, Ross Driscoll

Western Michigan University Homer Stryker M.D. School of Medicine, Internal Medicine, Kalamazoo, Michigan

Abstract

Background: Parvovirus B19 is a single-stranded DNA virus that selectively infects erythroid progenitors and has been implicated in renal injury via immune complex deposition. We present a case of symptomatic parvovirus B19-induced glomerulonephritis initially mimicking C1q nephropathy.

Case Report: An 18-year-old male with obstructive sleep apnea presented with 2-3 days of progressive, non-pruritic petechiae on all four extremities and bilateral leg weakness hindering ambulation. He was found to have pancytopenia and a mild acute kidney injury (AKI) which improved with intravenous fluids. Further workup was positive for parvovirus B19 antibodies and low complement, and renal biopsy showed proliferative glomerulonephritis with endothelial injury. His symptoms improved with supportive care and he was discharged in stable condition.

Significance: Parvovirus B19 can induce postinfectious glomerulonephritis mediated by immune complex deposition and complement activation, which can initially mimic C1q nephropathy based on laboratory values. This case highlights the value of renal biopsy in reaching a definitive diagnosis, as well as the need for further research and systematic screening for this widely underdiagnosed condition.

5 (ePoster)

When Cholecystitis Isn't Cholecystitis: Hepatic Infiltration Revealing Symptomatic Progression of Chronic Lymphocytic Leukemia

Akram Alnounou, Henry Zou, Harry Boamah

Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Background: Chronic lymphocytic leukemia (CLL) is the most common adult leukemia in the United States. CLL can infiltrate the liver parenchyma and less commonly sinusoids, rarely manifesting symptomatically as hepatic outflow obstruction and/or acute hepatic failure. This makes the complications and progression of CLL-induced hepatic infiltration difficult to recognize. We describe a patient with symptomatic, non-obstructive cholestatic liver injury due to CLL infiltration.

Case Description: A 53-year-old man with Rai stage 0 CLL not requiring treatment presented with 10 days of fever up to 103°F (39.4°C), cough, chills, myalgias, nausea, vomiting, and diarrhea. Examination significant for fever 39°C and right upper quadrant tenderness. Laboratory testing showed WBC 60.4 x 10⁹/L, AST 47 U/L, ALT 106 U/L, total bilirubin 3.5 mg/dL, and alkaline phosphatase 298 U/L. RUQ ultrasound revealed gallbladder wall thickening. CT was significant for splenomegaly measuring 20.7 cm and diffuse lymphadenopathy. Broad-spectrum antibiotics were started without improvement. MRCP was negative for cholelithiasis or biliary obstruction. Antibiotics were discontinued after an extensive infectious workup was negative. The hospital course was complicated by worsening leukocytosis and elevation in inflammatory markers (ferritin, CXCL9). Liver biopsy demonstrated portal and sinusoidal infiltration by small mature lymphocytes, consistent with CLL infiltration. The patient was discharged on hospital day 8 after improvement with pulse-dose dexamethasone and allopurinol. Combination therapy with obinutuzumab and venetoclax was initiated for Rai stage III CLL.

Conclusions: Symptomatic manifestations of CLL-induced hepatic infiltration are extremely rare, and there is a lack of systematic research on this complication. Our case demonstrates the importance of considering malignant etiologies in acute liver injury, the value of liver biopsies in achieving definitive diagnoses, and the need for further research into such sequelae.

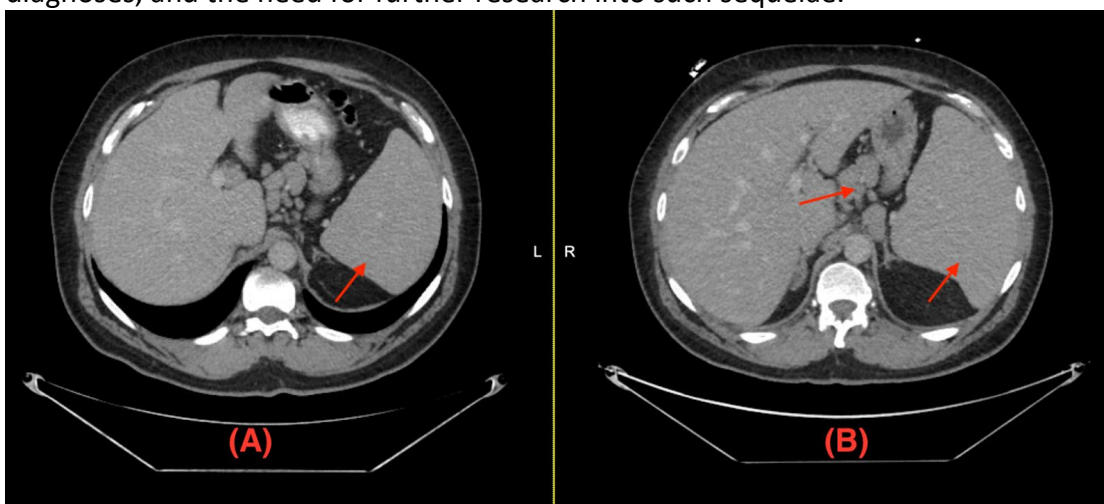


Figure 1:

(A) CT abdomen 4 months prior showing moderate splenomegaly (arrow).

(B) CT abdomen at admission showing progression of splenomegaly (arrow) and bulky porta hepatis lymphadenopathy (arrow).

Abstract #6 (ePoster)

Atypical Neuroleptic Malignant Syndrome: A Unique Case Presentation

Skylar Ketteler¹, Michelle Vu¹, Tara Subrahmanyam¹, [Anna Sampson](#)², Geetha Dhatreecharan²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Western Michigan University Homer Stryker M.D. School of Medicine, Department of Psychiatry, Kalamazoo, MI

Abstract

Introduction: Neuroleptic malignant syndrome (NMS) is a rare but potentially fatal reaction to anti-dopaminergic medications, most commonly first-generation antipsychotics. NMS is classically characterized by hyperthermia, rigidity, autonomic instability, and elevated creatine kinase. Atypical presentations marked by minimal hyperthermia, subtle neuromuscular signs, or subacute progression create diagnostic challenges and delay treatment. This case involves an atypical form of NMS (aNMS) following multiple sequential second-generation antipsychotic trials in a medically complex patient. It highlights how aNMS may mimic medication side effects, deconditioning, or neurologic decline and therefore may be missed.

Case Presentation: A 38-year-old woman with bipolar I disorder who was prescribed risperidone, quetiapine, and duloxetine presented to the ED for mania and delusions after medication non-adherence. Her medical history included chronic iron-deficiency anemia, PCOS, and prior thalamic hemorrhagic stroke with residual encephalomalacia.

Her hospitalization was complicated by severe iron-deficiency anemia requiring transfusion. On Day 6 of hospitalization, haloperidol, lithium, paliperidone, and lorazepam were initiated and the patient sustained a witnessed ground-level fall. Progressive neck and back pain followed, along with difficulty walking, gait instability requiring a walker, stiffness, urinary incontinence, profound fatigue, hypersomnia, diaphoresis despite normal temperature, HTN, and tachycardia. Head CT post-fall was unrevealing. Initial symptoms were attributed to sedation, deconditioning, and pain from the fall. Paliperidone and later lithium and haloperidol were discontinued, but symptoms persisted. Aripiprazole was initiated on Day 15 for mood stabilization. Internal medicine consultation on Day 19 noted rigidity, hyperreflexia, autonomic instability, and CK of 500 U/L, leading to concern for aNMS. Aripiprazole and duloxetine were discontinued, resulting in rapid clinical improvement. Over the following week, rigidity and weakness resolved, gait normalized, and she was discharged with a stable mood without antipsychotics.

Discussion: This case underscores the diagnostic complexity of aNMS when hallmark features are absent and that aNMS can present gradually and mimic diverse medical or psychiatric conditions. Polypharmacy, multiple antipsychotic changes, neurologic vulnerability from prior stroke, and autonomic instability from anemia and hormonal imbalance likely contributed to risk and diagnostic complexity. Greater awareness of subacute presentations and refined diagnostic criteria may reduce morbidity by prompting timelier evaluation and management.

Abstract #8 (ePoster)

Atypical Neuroleptic Malignant Syndrome: A Unique Case Presentation

Skylar Ketteler, Michelle Vu, Tara Subrahmanyam, Anna Sampson, Geetha Dhatreecharan
Department of Psychiatry, Western Michigan University, Homer Stryker M.D. School of Medicine,
Kalamazoo, MI

Abstract

Introduction: Neuroleptic malignant syndrome (NMS) is a rare but potentially fatal reaction to anti-dopaminergic medications, most commonly first-generation antipsychotics. NMS is classically characterized by hyperthermia, rigidity, autonomic instability, and elevated creatine kinase. Atypical presentations marked by minimal hyperthermia, subtle neuromuscular signs, or subacute progression create diagnostic challenges and delay treatment. This case involves an atypical form of NMS (aNMS) following multiple sequential second-generation antipsychotic trials in a medically complex patient. It highlights how aNMS may mimic medication side effects, deconditioning, or neurologic decline and therefore may be missed.

Case Presentation: A 38-year-old woman with h/o bipolar I disorder who was prescribed risperidone, quetiapine, and duloxetine presented to the ED for mania and delusions after medication non-adherence. Her medical history included chronic iron-deficiency anemia, PCOS, and prior thalamic hemorrhagic stroke with residual encephalomalacia.

Her hospitalization was complicated by severe iron-deficiency anemia requiring transfusion. On Day 6 of hospitalization, haloperidol, lithium, paliperidone, and lorazepam were initiated and the patient sustained a witnessed ground-level fall. Progressive neck and back pain followed, along with difficulty walking, gait instability requiring a walker, stiffness, urinary incontinence, profound fatigue, hypersomnia, diaphoresis despite normal temperature, HTN, and tachycardia. Head CT post-fall was unrevealing. Initial symptoms were attributed to sedation, deconditioning, and pain from the fall. Paliperidone and later lithium and haloperidol were discontinued, but symptoms persisted. Aripiprazole was initiated on Day 15 for mood stabilization. Internal medicine consultation on Day 19 noted rigidity, hyperreflexia, autonomic instability, and CK of 500 U/L, leading to concern for aNMS. Aripiprazole and duloxetine were discontinued, resulting in rapid clinical improvement. Over the following week, rigidity and weakness resolved, gait normalized, and she was discharged with a stable mood without antipsychotics.

Discussion: This case underscores the diagnostic complexity of aNMS when hallmark features are absent and that aNMS can present gradually and mimic diverse medical or psychiatric conditions. Polypharmacy, multiple antipsychotic changes, neurologic vulnerability from prior stroke, and autonomic instability from anemia and hormonal imbalance likely contributed to risk and diagnostic complexity. Greater awareness of subacute presentations and refined diagnostic criteria may reduce morbidity by prompting timelier evaluation and management.

Abstract #11 (ePoster)

Multi-Modal Maintenance Treatment for Refractory Catatonia: A Case Report

Zawar Raza, Tom Cheng, Geetha Dhatreecharan

Western Michigan University Homer Stryker M.D. School of Medicine, Department of Psychiatry, Kalamazoo, Michigan

Abstract

Introduction: In patients with catatonia, lorazepam and electroconvulsive therapy (ECT) are the gold standard treatment options [1], [2]. In patients with relapsing catatonia, indications for pharmacological versus procedural maintenance therapy [3] can benefit from further exploration.

Case Presentation: A 24-yr female with a history of bipolar disorder with psychotic features, with multiple hospitalizations, presented to the inpatient unit in the spring of 2025 with an ongoing manic episode with psychotic features.

Patient was treated on admission with mood stabilizers including valproate and lithium, but her lingering agitation was later recognized as excitatory catatonia per the Bush-Francis scale [3]. She improved initially with a lorazepam challenge; the patient's gradual regression prompted ECT to be started per past successes from the chart review.

The patient showed improvement with ECT. After 7 sessions, she had 2 missed sessions along with increased post-procedural confusion requiring termination of ECT. With improving symptoms, underlying delusions began to manifest, requiring switch from olanzapine to ziprasidone. Soon after terminating ECT, the patient started to decline and became catatonic, unresponsive to oral benzodiazepines. Due to the ongoing shortage of IV lorazepam, other trials of benzodiazepines including oral clonazepam [4], IM midazolam, and methylphenidate [5], were tried but remained ineffective.

They were later restarted on ECT with plans to give concomitant IV lorazepam. This combination was effective in breaking the catatonia. The patient required a total of 26 ECT sessions and slow titration of lorazepam from IV to oral. She was discharged on oral doses of lorazepam and clozapine to help with psychosis and continues to remain in remission with outpatient maintenance ECT.

Discussion: The case discussed above is an example of a patient who presented with multiple episodes of catatonia while on maintenance of lorazepam, who responded well to ECT. The patient showed improvement during her inpatient stay with a combination of ECT and lorazepam. She continues to be in remission with maintenance ECT. There is a limited literature review on the use of ECT as an option for maintenance therapy in patients with relapsing catatonia, in addition to benzodiazepine use only. This requires more research into the topic.

Abstract #12 (ePoster)

Language Regression as a Manifestation of Cerebral Hypoperfusion in Severe Iron-Deficiency Anemia: A Case Report

Jacob Forstrom¹, Tessa Kravchenko¹, Kevin Hughes², Kathryn Redinger²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan.

²Emergency Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Background: Severe anemia can cause hemodynamic compromise, but chronic physiologic compensation may mask symptoms and delay recognition of life-threatening disease. The effects of anemia-related cerebral hypoperfusion have been described previously, but language regression as a presenting clue has not been reported. We present a case of a woman with chronic severe iron-deficiency anemia whose language regression served as an unexpected clinical marker of cerebral hypoperfusion.

Case Presentation: A Spanish-speaking woman in her 50s with no known medical history presented to the emergency department with two weeks of abdominal pain and fatigue. She was alert and oriented, with diffuse pallor, mild epigastric tenderness, and 3+ lower extremity pitting edema. Empiric blood transfusion was initiated after finger stick blood glucose sample showed pale blood. Laboratory testing confirmed a critically low hemoglobin level of 1.8 g/dL. After receiving three units of packed red blood cells, she began speaking English, her second language, after initially communicating only in Spanish. Further evaluation showed microcytic anemia with elevated lactate, indicating significant tissue hypoperfusion. Additional workup for hemolysis, disseminated intravascular coagulation, inherited blood conditions, and mechanical causes proved unremarkable. Endoscopy demonstrated severe ulcerative esophagitis, Cameron erosions and a hiatal hernia consistent with chronic occult gastrointestinal blood loss as the likely etiology of her anemia. She received five total units of packed red blood cells, intravenous pantoprazole, and three doses of intravenous iron sucrose. She was discharged on hospital day seven with hematology and gastroenterology follow-up.

Discussion: This case highlights the importance of early clinical recognition when physiologic compensation obscures critical illness. Prompt transfusion based on bedside findings rather than delayed laboratory confirmation likely prevented further decompensation. The key lesson for emergency physicians is that subtle neurologic or communication changes, particularly in bilingual patients, may signal cerebral vulnerability before overt collapse occurs. Viewing language changes as clinical findings rather than barriers promotes culturally sensitive care and aids in diagnosis. By linking severe anemia to language regression, this case introduces a novel perspective with implications for neurologic assessments in emergency medicine and supports further investigation and validation of language function as a potential biomarker of cerebral hypoperfusion.

Abstract #15 (ePoster)

An Atypical Presentation of c-ANCA Vasculitis: A Case Report

DiAngelo Gonzalez, Grace Manske, Grace Wang, Amar Mitnala

Department of Internal Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Background: Anti-neutrophil cytoplasmic antibody (ANCA) associated vasculitis such as granulomatosis with polyangiitis (GPA) is a systemic autoimmune disease that classically involves the lungs and kidneys. With its non-specific symptoms, it can be frequently misdiagnosed due to overlap with other infectious, pulmonary, renal, or cardiogenic processes. We present an atypical case of PR3-cANCA vasculitis in which diagnosis was complicated by confounding factors.

Case Presentation: A 42-year-old woman presented with a week of dyspnea and dark colored urine. She was discharged a week prior following treatment for congestive heart failure (CHF). She was found to be hypoxic and had a significant acute kidney injury (AKI) with a creatinine of 3.7 compared to her baseline of 0.8, for which intermittent hemodialysis was initiated. CT showed dense multifocal bilateral airspace opacities most consistent with multifocal pneumonia, moderate right renal hydronephrosis with a large staghorn calculus, and bilateral renal stones. Urine studies were positive for protein, hemoglobin, and leukocyte esterases, with a negative urine culture. At the time, the AKI was suspected to be acute tubular necrosis in the setting of over diuresis from previous CHF exacerbation, and hematuria was attributed to the kidney stones. She was treated with antibiotics for pneumonia, a ureteral stent for hydronephrosis, and dialysis for fluid overload. Despite treatment, pulmonary infiltrates did not improve, and there was no recovery of kidney function. Additionally, her hemoglobin level continued to decrease without a known source of bleeding. Ultimately, labs resulted positive for c-ANCA and PR3 antibodies, suggesting cANCA vasculitis with pulmonary hemorrhage. Kidney biopsy confirmed rapidly progressing glomerulonephritis (RPGN). She was treated with IV steroids, plasmapheresis, and rituximab with slow recovery of renal function and resolution of hypoxia.

Conclusion: Due to the fact that GPA is a multifactorial disease, its presentation can be confused with other diagnoses, such as obstructive renal calculi, ATN, pneumonia, and CHF, as seen in this patient. Given this, careful consideration is required to differentiate vasculitis organ involvement from other similar pathological processes. In patients with rapidly decreasing renal function and pulmonary hemorrhage, ANCA-associated glomerulonephritis should be considered, as early initiation of immunosuppressive therapy significantly improves outcomes.

Abstract #18 (ePoster)

Pembrolizumab-induced Type 1 Diabetes Mellitus

Penny Bowser, DO, Renee Woo, MD, Stephanie Ellwood, DO

Department of Family and Community Medicine, Western Michigan University Homer Stryker M.D.

School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Pembrolizumab is an immune checkpoint inhibitor cancer therapy that targets program death receptor 1 (PD-1), a receptor on T lymphocytes that helps limit immune activity in peripheral tissues. (1,2) Many tumors express the PD-L1 or PD-L2 ligands that bind PD-1 and suppress T-cell activation, allowing cancer cells to evade immune surveillance. Pembrolizumab can lead to immune-related adverse effects due to heightened immune activation, including endocrine complications such as hypothyroidism and diabetes, and uncommonly, diabetic ketoacidosis (DKA) in approximately 0.9–2% of patients receiving PD-1 inhibitors.(3,4)

Case Presentation: 42-year-old female with recently diagnosed Stage IIIC versus IVA squamous cell carcinoma of the cervix presented with altered mental status and drowsiness. The patient was currently undergoing chemoradiation treatment, which included pelvic radiation and cycles of cisplatin and pembrolizumab. She switched from cisplatin to carboplatin due to tinnitus. She received only one dose of pembrolizumab. She had no past medical or family history of endocrine disorders. Social history includes tobacco use, history of marijuana, methamphetamine, and oxycodone use and unhoused sheltered living. On examination, the patient was drowsy but arousable, tachycardic with dry mucous membranes, positive Kussmaul respirations, and no focal neurological deficits. Initial labs supported the diagnosis of new onset autoimmune diabetes in DKA. Treatment included intravenous (IV) insulin, IV fluids, and electrolyte replacement. Pembrolizumab was discontinued; treatment of cervical cancer continued with radiation and carboplatin.

Discussion: Pembrolizumab has shown a clinically relevant survival benefit to patients with persistent, recurrent, or metastatic cervical cancer, demonstrated in the KEYNOTE-826 trial.⁽⁵⁾ However, pembrolizumab comes with the risk of developing immune-related adverse effects. Previously published case reports have shown that DKA can occur anywhere from immediately after starting immune checkpoint PD-1 inhibitors (76% of patients), up to 12 months of treatment, and even after treatment is stopped. (3,6,7) In our case, the patient developed DKA shortly after only one dose of pembrolizumab when it more commonly occurs after 4 or more cycles, stressing the importance of educating patients on DKA, regular monitoring of plasma glucose levels up to 6 months post treatment⁽⁸⁾, and early treatment of Diabetes Mellitus Type I. IRB- WMED-2025-1325

Abstract #28 (ePoster)

Longitudinally Extensive Transverse Myelitis and Lupus Encephalitis in a Patient With Mixed Connective Tissue Disease: A Case Report

Kari Beth Watts, Layth Lewis, Afrah Al-Sharaby, David Huan, M Danial Shah
Western Michigan University Homer Stryker M.D. School of Medicine, Family Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

This case presents a 35-year-old female with mixed connective tissue disorder (MCTD) who presented with fever, nausea, urinary retention, followed by progressive weakening of both legs. Though rare, nervous system involvement can arise in lupus related conditions MRI of the spine revealed multifocal, longitudinally extensive T2 hyperintense lesions involving the cervical, thoracic, and lumbar spinal cord, while brain MRI demonstrated additional T2/FLAIR hyperintensities in the hypothalamus and dorsal medulla. Despite thorough infection workup, CSF testing and screening for Lyme disease, no pathogens were identified. Instead features pointed towards an immune-driven process affecting multiple neural regions. The patient was diagnosed with SLE-associated transverse myelitis and lupus encephalitis and treated with high-dose intravenous corticosteroids, resulting in substantial neurological improvement. This case highlights the importance of early recognitions of symptoms of autoimmune myelitis in those with connective tissue disorders, and illustrates the need for urgent immunosuppressive therapy.

Abstract #29 (ePoster)

Impact of Neoadjuvant Cemiplimab in the Surgical Management of High-Risk Cutaneous Squamous Cell Carcinoma and Need for Adjuvant Therapies- A Case Series

Marina Cox¹, Taylor Elshaw¹, Clayton Wyland, DO², Laurence McCahill, MD^{2,3}

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Surgery, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ³West Michigan Cancer Center, Kalamazoo, MI

Abstract

Objective: Cutaneous squamous cell carcinoma (cSCC) is the second most common skin cancer worldwide. Patients with locally advanced or recurrent disease often require extensive surgery and post-operative adjuvant radiation and/or systemic therapy to reduce recurrence risk. Programmed death-1 (PD-1) inhibitors are increasingly used in advanced but resectable cSCC and may reduce the need for anticipated radiation. This study evaluated outcomes of neoadjuvant cemiplimab in a community cancer setting, with a focus on pathologic response, surgical outcomes, and overall treatment burden.

Methods: We conducted a retrospective review of patients with advanced cSCC referred to surgical oncology between January 2022 and December 2025, managed with neoadjuvant cemiplimab followed by surgical resection. The primary endpoint was pathologic complete response (pCR). Secondary endpoints included clinical response, change in extent of required surgery, pathologic margin status, disease-free survival time, and estimated avoidance of post-operative radiation therapy and adjuvant cemiplimab. A point-based system derived from NCCN guidelines for radiation use in cSCC was utilized to estimate avoidance of radiation therapy if patients underwent initial surgical resection.

Results: Ten patients, 7:3 male:female, median age of 82.5 years (range: 43–89) were identified. Seven had primary cSCC (mean size 4.3 cm), two had axillary nodal recurrences, and one had both a scalp tumor (7 cm) and cervical nodal disease. Among the ten patients, all experienced a clinical response with a mean tumor size reduction of 63%. The extent of surgical resection was diminished in seven patients. One with a clinical complete response did not undergo surgical resection. Eight of nine (88.9%) had a pCR and 100% had pathologic clear margins. At a mean follow-up of 307 days (range: 44-981), there have been no local or distant recurrences. One patient received adjuvant immunotherapy. No patients required adjuvant radiation therapy. Based on NCCN criteria, we estimate that 9/10 (90%) patients avoided anticipated radiation.

Conclusion: For patients with locally advanced, resectable cSCC, neoadjuvant cemiplimab demonstrated a high clinical response rate and diminished extent of surgery in 70%, with a pCR in 88.9%. All patients avoided post-operative radiation, and 90% avoided adjuvant immunotherapy, markedly diminishing total burden of care.

Abstract #31 (ePoster)

Translating Evidence into Practice: Managing Recurrent Falls in a High-Risk Elderly Patient with Polypharmacy

Omolola Okunromade, Olaitan Akinboboye, Holly Schmidt

Department of Family and Community Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Background: Recurrent falls in older adults are a major cause of morbidity, functional decline, and repeated hospitalization. They are often multifactorial, with medication burden playing an important but frequently underrecognized role. Centrally acting medications, including opioid analgesics, muscle relaxants, and benzodiazepines, can contribute to weakness, dizziness, and impaired balance, particularly in individuals with multiple chronic conditions. This case report highlights the role of polypharmacy in contributing to recurrent falls in the elderly with multiple comorbidities.

Case Presentation: A 78-year-old woman with advanced chronic kidney disease, hypertension, stroke, monoclonal gammopathy of undetermined significance, and marginal zone B-cell lymphoma presented for outpatient follow-up after a hospitalization and subsequent skilled nursing facility admission for recurrent falls and progressive generalized weakness. Her admission was prompted by multiple falls associated with worsening lower extremity weakness and instability. Inpatient evaluation identified medication-related adverse effects as a contributor. At discharge, several sedating medications were recommended to be held; however, the patient continued to use them after leaving the facility. Despite rehabilitation, she experienced two additional hospital admissions for falls over the subsequent month, at outpatient follow up, she reported unsteady gait, difficulty rising from a seated position, instability upon standing, and episodic lower extremity stiffness that limited mobility and increased fall risk. Medication review revealed concurrent use of lorazepam, oxycodone, gabapentin, cyclobenzaprine, and methocarbamol from multiple prescribers. Alternative etiologies such as neurological disease progression, deconditioning, and musculoskeletal weakness were considered; however, the persistence of symptoms in the context of continued sedating medication use supported a medication-related cause. After detailed counseling regarding the impact of polypharmacy on falls and functional decline, the patient agreed to gradual reduction and discontinuation of sedating medications.

Discussion: This case highlights the impact of polypharmacy and sedating medications on recurrent falls in older adults with complex medical conditions. Its uniqueness lies in the persistence of falls despite prior hospitalization and rehabilitation, until structured deprescribing and counseling were implemented. Following these interventions, the patient has remained fall-free for three months, with improved lower extremity stability and no subsequent hospital admissions, emphasizing the value of routine medication review and targeted fall-prevention strategies.

Abstract #37 (ePoster)

Beyond the Usual Suspects: Native Tricuspid Valve Endocarditis from *Corynebacterium pseudodiphtheriticum*

Kayla Setzer, DO, Harry Boamah, MD

Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Background: *Corynebacterium* species are commonly regarded as non-pathogenic constituents of the normal skin and mucous membrane flora and are frequently dismissed as culture contaminants (3). However, certain species, including *Corynebacterium pseudodiphtheriticum*, can act as true pathogens and rarely cause infective endocarditis (IE) (2). Reported risk factors for *Corynebacterium* IE include pre-existing cardiac disease, prosthetic valves, and intravascular devices (2). These organisms account for only 0.2–0.4% of native valve IE cases, with a predominance of left-sided involvement and male patients (2). This report describes an atypical case of right-sided native valve endocarditis caused by *C. pseudodiphtheriticum* in a female patient with an indwelling Port-A-Cath.

Case Description: A 48-year-old woman with a medical history of cyclic vomiting syndrome, gastroparesis, postural orthostatic tachycardia syndrome, and opioid dependence presented with generalized weakness, vomiting, and a seizure-like episode. Laboratory evaluation revealed leukocytosis, thrombocytosis, lactic acidosis, and acute kidney injury. She was admitted for management of intractable vomiting and suspected sepsis. Peripheral blood cultures grew *C. pseudodiphtheriticum* in one of two bottles, while cultures drawn from the Port-A-Cath yielded *Pseudomonas putida*. Transthoracic and transesophageal echocardiograms demonstrated tricuspid valve vegetations consistent with right-sided IE. The Port-A-Cath was removed, and the patient completed a six-week course of intravenous vancomycin via a peripherally inserted central catheter, with marked clinical improvement following therapy and source control.

Conclusions: This case is notable for its unusual presentation—right-sided native valve involvement in a female patient without structural heart disease or prosthetic valves. The concomitant isolation of *C. pseudodiphtheriticum* and *P. putida* presented diagnostic challenges; however, clinical findings and the patient's response to therapy supported *C. pseudodiphtheriticum* as the primary pathogen. This report underscores the need to recognize *Corynebacterium* species as potential true pathogens in patients with compatible clinical features, particularly those with indwelling intravascular devices. Early echocardiographic evaluation, prompt removal of infected hardware, and targeted antimicrobial therapy are essential for optimal management and favorable outcomes in these rare infections.

Abstract #41 (ePoster)

Optical Coherence Tomography Angiography Findings in Autologous Retinal Transplantation for Macular Hole

Nuha Mahmood¹, Jad Madani², Matthew Hartwig¹, Matthew Cohen¹, Rami Madani¹, Tarek Alasil³

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Ecology and Evolutionary Biology University of California, Los Angeles, Los Angeles, CA. ³Vitreoretinal Surgery, Retina Institute of California, Pasadena, CA

Abstract

Introduction: Autologous retinal transplant has recently emerged as a viable alternative for refractory full-thickness macular holes that have failed prior techniques. Despite evidence of long-term structural integration, there are very few reports which utilize optical coherence tomography angiography to evaluate the restoration of vascular function within the retinal graft. The present case report describes unique fluorescein angiography and optical coherence tomography angiography findings after autologous retinal transplant for refractory macular hole. By offering layer-specific insights into graft vascularization, our findings seek to contribute to the growing literature on the prognostic implications of autologous retinal transplant for macular hole.

Case Presentation: A patient in his 70s presented with refractory macular hole, which had failed prior inner limiting membrane peel and gas tamponade. The axial length of the macular hole was 23.17 mm, and the basal diameter measured 1500 microns. The patient underwent pars plana vitrectomy, autologous retinal transplant with short-term perfluoro-n-octane heavy liquid, followed by gas tamponade. The patient was followed for 4 years post-operatively. Optical coherence tomography showed complete anatomic closure of the macular hole. Restoration of the outer retina and integration of the neurosensory retinal flap were observed. The best corrected Snellen visual acuity was counting fingers before intervention and improved postoperatively to 20/100. Epiretinal membranes were observed over the graft. Fluorescein angiography showed vascularization within the graft. Optical coherence tomography angiography demonstrated evidence of vascularization within the graft at the superficial capillary plexus.

Discussion: This case demonstrates that a transplanted peripheral retinal graft can both structurally integrate and vascularize over a refractory macular hole. While fluorescein angiography indicated graft vascularization with no leakage, optical coherence tomography revealed perfusion was limited to the superficial capillary plexus, with no detectable flow in the deep capillary plexus. However, the ellipsoid zone layer and external limiting membrane were restored, which has not been reported in previous literature. Such differential vascularization may indicate that outer retinal phototransduction remains intact despite impacted inner retinal synaptic transmission. Larger-scale studies examining layer-specific vascularization with optical coherence tomography after autologous retinal transplant for full thickness macular hole repair are needed to understand long-term functional outcomes.

Abstract #43 (ePoster)

Extraocular Sebaceous Carcinoma Mimicking Seborrheic Keratosis in an African American Female

Marina Cox¹, Lia Dittenbir², Diana Westgate, MD^{3,2}, Laurence McCahill, MD^{4,5}

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Forefront Dermatology, Kalamazoo, MI. ³Department of Family and Community Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ⁴Department of Surgery, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ⁵West Michigan Cancer Center, Kalamazoo, MI

Abstract

Background: Sebaceous carcinoma is a rare, malignant cutaneous tumor, most commonly occurring on the head and neck, especially the eyelid. Periocular sebaceous carcinomas typically present as orange-yellow papules. The characteristic color and eyelid location would raise clinical suspicion for this malignancy. Conversely, extraocular sebaceous carcinomas, representing 25% of cases, have nonspecific clinical features making them more prone to misdiagnosis. Heightened association of this variant with visceral malignancies or syndromes such as Muir-Torre syndrome (MTS), however, makes early diagnosis critical. This case report describes a rare presentation of an extraocular sebaceous carcinoma on the abdomen of an African American female mimicking an inflamed seborrheic keratosis.

Case Description: An 83 year old African American female presented with a growing, irritated, scaly lesion on her abdomen. The patient noticed this lesion three years prior, but it was diagnosed as a seborrheic keratosis. When she presented to dermatology, the lesion was a 4 x 3.4 cm indurated and hyperkeratotic tumor. The clinical differential diagnosis included inflamed seborrheic keratosis, verrucous carcinoma, and squamous cell carcinoma. A shave biopsy was performed with pathology confirming sebaceous carcinoma. Treatment options included Mohs micrographic surgery or wide local excision. The patient was referred to surgical oncology for a wide local excision.

Conclusions: Extraocular sebaceous carcinoma exhibits a wide range of clinical presentations. This case lacked many of the common risk factors including history of organ transplant, immunosuppression, male sex, White, Asian, and Indian ethnicities, history of radiation, or Muir-Torre Syndrome. The literature reports few cases of sebaceous carcinoma in Black patients. When present, they typically occur in male patients or those with a history of cancer requiring chemotherapy. One study found that the overall population-matched rate of sebaceous carcinoma is highest in Whites (2.03 cases per 1000,000; SE, 0.08) compared to Blacks (0.48 per 1,000,000; SE, 0.11). The unusual presentation of this lesion including atypical clinical morphology, unusual anatomic location and variant patient demographics illustrates that sebaceous carcinoma may not only mimic benign lesions but can occur in underrepresented patient populations. Consideration of this rare adnexal malignancy in our clinical differential is necessary to avoid misdiagnosis.



Abstract #46 (ePoster)

When Infection Mimics Autoimmunity: Fibrillary Glomerulonephritis Associated With Invasive Pulmonary Aspergillosis

Lauren Herschel¹, Jessica Peters², Matthew Kelly³

¹M4 Student at Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Western Michigan University Homer Stryker M.D. School of Medicine, Medicine-Pediatrics Resident, Kalamazoo, MI. ³Assistant Professor, Department of Medicine, Kalamazoo, MI

Abstract

Fibrillary glomerulonephritis (FGN) is a rare glomerular disease defined by accumulations of randomly oriented Congo red-negative straight fibrils 12-24nm in thickness that often presents with proteinuria, hematuria, and impaired renal function. FGN can progress to end-stage kidney disease, with 50% of patients receiving ESRD diagnosis within 4 years^[1]. Our patient is a 57-year-old male who presented with edema and hemoptysis; he was initially suspected to have pulmonary-renal syndrome secondary to an autoimmune etiology, but on kidney biopsy received the diagnosis of FGN. Possible plasma cell dyscrasia was initially suspected due to its known association with FGN and serum protein electrophoresis with immunofixation showing possible small monoclonal protein in the background of an acute phase response with small IgG kappa monoclonal protein on 24-hour urine protein electrophoresis. However, the patient was found to have normocellular bone marrow with normal immunotyping and was later found to have invasive pulmonary aspergillosis which may have led to the FGN independent of a plasma cell dyscrasia picture. Overall, fibrillary glomerulonephritis remains a rare and poorly understood glomerular disease with historically limited diagnostic and therapeutic options. Advances in renal pathology, particularly the identification of DNAJB9 as a sensitive and specific biomarker, have significantly improved diagnostic accuracy and reduced reliance on electron microscopy alone. Despite these advances, treatment strategies remain largely nonspecific, as no standardized disease directed therapy exists. Current management focuses on identification and treatment of underlying or associated conditions, when present, along with supportive care aimed at slowing progression of chronic kidney disease. This case highlights a rare association between fibrillary glomerulonephritis and invasive pulmonary aspergillosis, suggesting that severe systemic infection and immune dysregulation may serve as a potential trigger independent of plasma cell dyscrasia. Further investigation is needed to better elucidate pathogenic mechanisms and to develop targeted therapies for this challenging disease entity.

Abstract #49 (ePoster)

Novel Skin Substitutes for Repair of Large Scalp and Forehead Mohs Defects in Geriatric Patients

Daniel Zhou¹, Osayamen Atekh², Zachary Farhood³, Christopher Tolan³, James Wang⁴

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Augusta

University Medical College of Georgia, Augusta, GA. ³Midwest Facial Plastic Surgery, Eagan, MN.

⁴Northwestern Medicine Department of Otolaryngology - Head and Neck Surgery, Chicago, IL

Abstract

Introduction: Mohs micrographic surgery (MMS) is a method of skin cancer removal that provides a relatively high cure rate while attempting to spare as much healthy tissue as possible. The scalp and forehead are particularly susceptible to skin cancers and reconstructive surgical procedures are typically undertaken to restore shape and aesthetics. However, the thick and immobile nature of tissue in the scalp and forehead presents reconstruction challenges as it relates to closure, wound care and recovery.

Novel skin substitutes, such as amniotic membranes (AM) and collagen-based scaffolds (CBS), have seen increasing usage as tools to delay skin grafting or to improve the development of healthy granulation tissue. Here, we present three cases involving the use of these skin substitutes in the reconstruction of large scalp and forehead MMS defects in geriatric patients.

Case Presentation: Three patients were treated with AM, CBS, or both depending on the size and characteristics of the defect. An 87-year-old male patient presented with a 3.5 x 3.5 cm mid-scalp non-hair bearing defect. Complete granulation was achieved after 8 weeks of treatment, and an overall 93% decrease in surface area after 11 weeks. An 88-year-old male patient with a 9.0 x 5.0 cm bone-exposed defect achieved a 35% reduction in surface area after 4 weeks. A 75-year-old male presenting with a bone-exposed scalp defect of 8.0 x 7.5 cm achieved complete granulation at 8 weeks and 59% total reduction in defect area after 11 weeks. Results are summarized in Figure 1 below.

Discussion: Applications of AM, CBS, or both resulted in significant reductions in defect area over the total course of treatment. These results demonstrate that these skin substitutes offer viable alternatives for patients who have co-morbidities making it challenging to close their large defect, who do not want surgical interventions or whose defects are not yet amenable to skin grafts. Additional randomized controlled trials are needed to assess the efficacy of skin substitutes against secondary intention healing.

Figure 1: Summary of defect area reduction and achievement of complete granulation.

	Patient 1	Patient 2	Patient 3
Defect Area Reduction	93% (11 weeks)	35% (4 weeks)	59% (11 weeks)
Achievement of Complete Granulation	Week 8	Week 1	Week 8

Acknowledgments: The Authors received no technical, general, or financial support for their research.

Abstract #51 (ePoster)

Chemical Leukoderma Associated with Topical Minoxidil Use and Response to Topical Ruxolitinib

Marina Cox¹, Giselly Silva², Diana Westgate, MD³

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Forefront Dermatology, Kalamazoo, MI. ³Department of Family and Community Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Background: Chemical leukoderma is an acquired condition in which repeated exposure to industrial chemicals, pharmaceuticals, or cosmetic topicals results in destruction of melanocytes and cutaneous pigment loss through direct toxicity. Vitiligo arises from an autoimmune mechanism but has shared pathogenic features to chemical leukoderma. Topical minoxidil is commonly used to treat alopecia with known adverse effects including telogen effluvium, contact dermatitis, and hypertrichosis. Leukoderma associated with topical minoxidil use has rarely been reported in the literature. A topical formulation of ruxolitinib, a janus-activated kinase (JAK) inhibitor, was recently approved for the treatment of nonsegmental vitiligo. Evidence of ruxolitinib use in the treatment of chemical leukoderma is not yet established. We describe a patient who developed leukoderma after topical minoxidil use and achieved repigmentation with topical ruxolitinib.

Case Description: A 59-year-old male presented to dermatology with a rectangular area of cutaneous pigment loss on the vertex scalp. The patient reported using topical 5% minoxidil to treat androgenetic alopecia in this area. No other areas of depigmentation were identified. The geometric shape of depigmentation in the minoxidil-treated area supported the diagnosis of chemical leukoderma. Treatment options discussed included UVB therapy, topical steroids, calcineurin inhibitors, or ruxolitinib. A trial of topical ruxolitinib twice daily was initiated, with achievement of significant repigmentation after 8 months.

Conclusions: While chemical leukoderma is considered a subset of vitiligo with pathogenic similarities, vitiligo is a multifactorial autoimmune condition that results in systemic triggering of melanocyte destruction rather than localized destruction at the site of chemical exposure. Extensive chemical exposures have been reported to induce a vitiligo-like entity with depigmentation distant from chemically exposed sites but it is unclear if the chemical exposure is itself sufficient to induce disease or if other factors are also predisposing. Regardless, the mechanism of melanocyte destruction is attributed to oxidative stress and immune activation with cytotoxic T lymphocyte secretion of interferon γ . For this reason, clinicians often use treatments approved for vitiligo in cases of chemical leukoderma. Topical ruxolitinib, a JAK1/2 inhibitor, works by reducing interferon γ signaling and lymphocyte recruitment, decreasing melanocyte destruction. This case shows that topical ruxolitinib may be a promising treatment in chemical leukoderma and should be added to our clinical armamentarium. Other conditions with pigment disruption similar to vitiligo and chemical leukoderma may also benefit from ruxolitinib such as scleroderma, pityriasis lichenoides chronica, extragenital lichen sclerosis, and postinflammatory hypopigmentation.

Abstract #52 (ePoster)

A Unique Presentation of Chronically Infected Bladder Mesh: a Case Report

Tara Subrahmanyam, Ashley Martinez, Lisa Miller

Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Synthetic midurethral slings (MUSs) and transvaginal mesh (TVM) are commonly used for stress urinary incontinence (SUIs). MUS placement in particular is the most common surgical procedure for treating SUIs. However, these synthetic mesh options can have significant complications, causing the FDA to recommend their use with preference towards organic material or autologous tissues in 2011. Still, they are still used when other methods are not available. Due to the high number of patients with MUSs, their serious complications have been widely studied. While rare, the most commonly recognized and studied postoperative complications include urinary tract perforation, vaginal injury, de novo voiding and storage lower urinary tract symptoms, mesh extrusion/exposure, dyspareunia, pain and reoperation for symptoms. There have also been two cases reporting stones arising from the mesh.

Case Presentation: This case presented in a 48-year-old patient with presumed gluteal hidradenitis suppurativa. The patient had undergone an excision procedure but her symptoms returned. During her second procedure the cystic lesions bore down deep, eventually reaching the muscle. This is uncharacteristic of hidradenitis suppurativa, which due to chronic inflammation of dermis leading to skin tunneling, fibrotic scars, and deep seated nodules, that do not extend to muscle. Further exploration revealed an infected bladder sling. The chronic infection of the mesh had led to the development of inflamed epithelialized cysts causing dermatologic nodules and scarring in the gluteal region. The patient also had a history of frequent vaginal discharge treated with antibiotics. After removal of the infected sling, the patient reported the discharge had stopped.

Discussion: This unique presentation of chronically infected mesh has not been documented in the past. With the wide use of MUS for SUI, physicians should be aware of this unique dermatologic presentation when treating patients with a history of MUS placement. In addition, as synthetic meshes are used in a wide variety of procedures, this inflammatory dermatologic phenomenon can be applied to other types of mesh placements, including pelvic organ prolapse repairs and hernia repairs. This case shows that research should be done on how complications of synthetic mesh can manifest as dermatologic symptoms.

Abstract #53 (ePoster)

The Great Imitator: A Can't Miss Diagnosis Masquerading as Autoimmune Disease

Tara Subrahmanyam, Ashley Martinez, Justin Baik, Matthew Kelly
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction and Case: In this case, a 29-year-old female with iron deficiency anemia presented with a 3 month history of arthralgias. She was 8 months postpartum following an uncomplicated pregnancy with proper prenatal care. The patient had recent international travel history when her symptoms began and her partner was diagnosed with Rubella a month prior to presentation. Studies at the onset of symptoms found elevated inflammatory markers (ESR and CRP), with all other labs within normal limits. During the next 3 months, the patient was seen multiple times for exacerbations of her symptoms. A week prior to the current presentation, the patient presented with significant painful joint swelling. She also reported progressive rash, night sweats, chills, lymphadenopathy, headache, and dysphagia. Labs showed positive CMV IgM antibodies. Her symptoms progressed, leading to her no longer being able to tolerate oral intake, prompting inpatient admission to the hospital. Initial workup found a positive ANA and CCP, with no other significant lab findings. This suggested an autoimmune etiology. However, later results showed a positive RPR, and a diagnosis of Syphilis was confirmed with VDRL testing.

Discussion: Infection with *Treponema Pallidum* or Syphilis is often known as “the Great Imitator” as its presentation mimics that of many other medical conditions. Secondary Syphilis often presents with a rash on the palms and soles, joint swelling, flu-like symptoms, and lymphadenopathy. Secondary Syphilis has also been shown to increase certain autoimmune markers such as RF, ANA, and antiphospholipid antibodies. This case was unique in presentation as it showed an elevated CCP, which has not been traditionally associated with secondary syphilis. Anti-CCP is considered highly specific for Rheumatoid Arthritis. This patient presentation, along with positive ANA and CCP, could lead to a false diagnosis of Rheumatoid arthritis. If left untreated, syphilis can progress to neurosyphilis, which has significant complications. This case is important as it illustrates a new presentation of medical mimicry in secondary syphilis that clinicians should be aware of.

Abstract #54 (ePoster)

Unmasking Lung Cancer: Syndrome of Inappropriate Antidiuresis as the Hidden Culprit in a Patient with Routine Respiratory Symptoms.

Omolola Okunromade¹, Olaitan Akinboboye¹, Luke Russell²

¹Department of Family and Community Medicine, Western Michigan University Homer Stryker, M.D. School of Medicine, Kalamazoo, Michigan. ²Department of Internal Medicine, Bronson Battle Creek Hospital, Battle Creek, Michigan

Abstract

Background: Syndrome of inappropriate antidiuresis is a well-recognized paraneoplastic manifestation of lung cancer, yet it may initially present with nonspecific respiratory complaints that obscure the underlying diagnosis. This unique case is notable for an atypical initial presentation in which routine symptoms of cough, chest pain, and shortness of breath led to the discovery of profound euvolemic hypotonic hyponatremia and occult malignancy. The case highlights the importance of considering paraneoplastic etiologies when evaluating unexplained electrolyte abnormalities in older adults with pulmonary symptoms.

Case presentation: A 73-year-old Caucasian woman with a history of chronic obstructive pulmonary disease and insulin-independent diabetes mellitus presented with a few days' history of cough, chest pain, and shortness of breath, which she initially believed were due to a self-limited viral illness. She had been evaluated in the emergency department several days earlier for similar symptoms. Physical examination did not reveal signs of volume overload or depletion. Initial laboratory evaluation demonstrated marked hypotonic hyponatremia with a euvolemic clinical profile, prompting further assessment for inappropriate antidiuretic hormone activity. Alternative etiologies of hyponatremia, including medication effects, adrenal insufficiency, hypothyroidism, and hypovolemia, were considered and found to be unlikely based on clinical findings and laboratory results. Computed tomography of the chest revealed a left lower lobe pulmonary mass, and subsequent diagnostic evaluation confirmed small cell lung carcinoma. The patient was treated with fluid restriction and appropriate correction of serum sodium levels while undergoing oncologic evaluation and initiation of cancer-directed therapy, resulting in stabilization of her electrolyte abnormalities.

Conclusion: Syndrome of inappropriate antidiuresis can serve as an early paraneoplastic marker for lung cancer, particularly when initial symptoms are limited to routine respiratory complaints. This case highlights how severe euvolemic hypotonic hyponatremia drew attention to an underlying malignancy that might otherwise have remained undiagnosed at presentation. Primary care physicians should maintain a high index of suspicion for occult lung cancer when Syndrome of inappropriate antidiuresis is identified without an obvious alternative cause. Early recognition of this association can expedite diagnosis and guide management, which is crucial for delivering high-quality patient care and improving clinical outcomes.

Abstract #56 (ePoster)

Cardiac Conduction Abnormalities in Lyme Carditis: A Case of Complete Heart Block and Evolving Rhythms

Maninder Randhawa¹, Rashma Sadasivan², AJ Karafa³, Zafir Khan¹, Hansen Tang¹, Grace Wang², Jaden Leiterman³, Joanne Baker¹

¹Department of Internal Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Medicine and Pediatrics, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ³Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Lyme disease is a multisystem illness caused by *Borrelia burgdorferi* and is transmitted through tick exposure. Cardiac involvement is an uncommon but potentially life-threatening manifestation, most often presenting as atrioventricular conduction abnormalities. Recognition of Lyme carditis is clinically important because prompt antibiotic therapy can lead to complete reversal of conduction disturbances and prevent permanent cardiac injury. Although atrioventricular block is well described in Lyme carditis, the presence of multiple evolving cardiac rhythms reflecting diffuse conduction system involvement is less commonly reported. This case highlights the diverse electrophysiological manifestations of Lyme carditis in a previously healthy young adult and underscores the importance of early diagnosis and management.

Case Presentation: A 36-year-old previously healthy male presented to the ED with persistent bradycardia (heart rate in the 40s) following a recent tick bite. He was found to be incomplete heart block with erythema migrans rash on his limbs and abdomen. Suspecting Lyme carditis, patient was started on IV ceftriaxone. Echocardiogram showed normal systolic function (EF 65%), and Lyme serologies later confirmed the diagnosis. After four days of antibiotics, his rhythm improved to Mobitz I second-degree AV block without need for temporary pacing. He remained stable and was discharged with a PICC line for a 21-day ceftriaxone course and a Holter monitor. At follow-up, his rash had resolved, EKG showed first-degree AV block, and cardiology follow-up was arranged. Telemetry in the hospital and Holter monitoring over the next few days revealed varied arrhythmias, including sinus bradycardia, atrial fibrillation with slow ventricular response, intermittent junctional rhythm, first-degree AV block, 2° AV block Mobitz I, and 2:1 AV block.

Discussion: Lyme carditis typically occurs weeks to months after infection and results from inflammatory infiltration of the cardiac conduction system, leading to fluctuating degrees of heart block that may progress rapidly. This case is notable for the broad spectrum of atrial, junctional, and atrioventricular rhythms observed, suggesting diffuse conduction system involvement. The presence of erythema migrans and conduction abnormalities in a young patient should prompt immediate consideration of Lyme carditis, even when symptoms are mild or absence of a known tick bite. Early antibiotic therapy can reverse cardiac manifestations and obviate the need for permanent pacing. Continued outpatient cardiology follow-up is essential to ensure complete recovery and detect persistent conduction abnormalities.

Abstract #59 (ePoster)

When Reflux Smells Like Smoke: A Case of Phantosmia Associated With Gastroesophageal Reflux

Christopher Visak¹, Skylar Ketteler¹, Shireen Husami¹, Imran Shafqat^{1,2}

¹WMU Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Bronson Healthcare Family Medicine, Kalamazoo, MI

Abstract

Introduction: Phantosmia is an olfactory disorder characterized by the perception of odors in the absence of external stimuli. Because it is most commonly associated with sinonasal disease, migraine, psychiatric conditions, and intracranial pathology, its diagnostic evaluation prioritizes neurologic and otolaryngologic causes. However, gastroesophageal reflux disease (GERD) has been increasingly recognized as a cause of episodic phantosmia, potentially due to its inflammatory effects on the upper airway and nasal mucosa. We present a case of episodic olfactory hallucinations temporally associated with GERD exacerbation that resolved following proton pump inhibitor (PPI) therapy.

Case Presentation: A 40-year-old female with a past medical history of anxiety, depression, obstructive sleep apnea, chronic allergic rhinitis, and GERD not currently on PPI therapy presented to her Family Medicine clinic with the complaint of intensely smelling cigarette smoke intermittently for three days. These episodes lasted several hours and occasionally woke her up from sleep. Additionally, she reported episodes of déjà vu with nausea and chills, GERD exacerbation including heartburn and nausea, and significant psychosocial stress due to an upcoming international move. Her current medications included only fexofenadine-pseudoephedrine and fluticasone nasal spray for allergic rhinitis. The physical exam was noncontributory. An upper endoscopy was recommended but declined by the patient. H. pylori breath testing was negative. An esophageal x-ray showed a small hiatal hernia with GERD at the level of the thoracic outlet. A non-contrast CT showed no intracranial abnormalities. The patient was started on omeprazole and lifestyle modifications. One month after PPI initiation, she reported 80% decrease in olfactory hallucinations and complete resolution at three months.

Discussion: The chronic exposure of the larynx and pharynx to acid and pepsin in GERD causes inflammation of the olfactory epithelium, resulting in altered signaling from olfactory neurons that becomes reversible with adequate acid suppression. Our patient's resolution of olfactory dysfunction within several weeks of PPI therapy and her negative workup for other cerebral pathology supports a reflux-mediated, inflammatory, and functional mechanism rather than a structural issue or neuronal loss. In cases of GERD-induced phantosmia, PPIs reduce acid and pepsin exposure and allow olfactory epithelial healing, reducing vagal and trigeminal hypersensitivity.

Abstract #60 (ePoster)

Concurrent Relaxing Retinectomy and Autologous Retinal Transplant for Complex Retinal Detachment with Macular Hole

Rami Madani¹, Jad Madani², Matthew Cohen¹, Nuha Mahmood¹, Michael Ward³, Ferris Bayasi⁴, Tarek Alasil³

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²University of California Los Angeles, Los Angeles, CA. ³Vitreoretinal Surgery, Retina Institute of California, Pasadena, CA. ⁴Kresge Eye Institute, Detroit Medical Center, Detroit, MI

Abstract

Background: Autologous retinal transplant (ART) is a surgical technique used to treat macular holes (MH). Most existing literature describes ART as a salvage option for larger or refractory MHs. However, in more complex cases of MH complicated by proliferative vitreoretinopathy (PVR) from chronic rhegmatogenous retinal detachment (RRD), there is consequent retinal shortening which creates tension in the retinal tissue. A relaxing retinectomy (RR) can be performed to relieve this tension. We present three cases where concurrent RR and ART surgery was utilized to treat full thickness MH in patients with chronic RRD and PVR. This concurrent use of RR and ART has not been previously well-described.

Case description: Three patients underwent pars plana vitrectomy with peeling of PVR membranes, followed by RR where a notch was created to harvest a full-thickness neurosensory retinal graft. Perfluoro-octane (PFO) was injected to flatten the retinectomy edges and stabilize the graft, which was then separated from the retinectomy edge and gently mobilized under PFO using a finesse loop to plug the MH. Endolaser was applied to the retinectomy edge under PFO, followed by a controlled PFO air exchange and silicone oil (5000 cSt) infusion. Primary outcomes were MH closure and retinal reattachment assessed by imaging and visual acuity. Across the three cases, improvement from light perception to 20/400+, hand motion to 20/200+, and counting fingers to 20/150 was observed. Average follow-up period was 6.67 months with minimal complications. One patient experienced retinal re-detachment which was subsequently reattached surgically. Post-operative OCT scans showed evidence of successful MH closure with integration of the ART flap into the surrounding retinal tissue.

Conclusion: ART coupled with RR presents a safe and viable strategy to close macular holes in complex retinal detachment cases. Postoperatively, all three patients achieved measurable functional gain, demonstrating the clinical utility of combined ART with RR in cases of PVR-associated RRD and MH. The novelty of our study lies in pairing ART with RR, an approach not previously well described. By describing our surgical approach and outcomes, we aim to expand our understanding of the role ART can play in managing this complex subset of patients.

Abstract #63 (ePoster)

Developmental Interplay Between Great Vessel Formation and Myocardial Architecture in a Syndromic Child

Asra Usmani¹, Lubaina Ehsan², Maria Asif¹, Abdel Rahman Alshekhossin¹, Robin Murphy^{1,3}

¹Department of Pediatrics and Adolescent Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Department of Pediatric Cardiology, Arkansas Children's Hospital, Little Rock, Arkansas. ³Department of Pediatric Cardiology, Bronson Children's Hospital, Kalamazoo, Michigan

Abstract

Background: Interrupted aortic arch (IAA) is an exceedingly rare congenital anomaly, affecting about 3 per million live births and comprising 1% of congenital heart diseases (CHD). Left ventricular non-compaction (LVNC) is another uncommon condition resulting from abnormal embryonic heart development. We detail a unique case of IAA and LVNC presenting with CHARGE syndrome

Case description: A 7-year-old male with IAA type A, peri-membranous ventricular and atrial septal defects (VSD, ASD), and CHARGE syndrome (including choanal atresia, cleft palate, right clubfoot, sacral agenesis, right undescended testicle, and tracheomalacia) presented for cardiology follow-up. His prenatal history included inadequate prenatal care, maternal bipolar disorder, and insulin-dependent diabetes. During the visit, he was asymptomatic with an unremarkable physical exam. Echocardiography revealed left ventricular trabeculation with normal ventricular size and function. Cardiac magnetic resonance imaging later confirmed extensive trabeculation of the left ventricular walls from the mid-ventricular level to the apex and along the lateral wall from the base to the apex, consistent with LVNC cardiomyopathy, with preserved ventricular function. Holter monitoring was performed and revealed frequent ectopy and premature ventricular complexes, likely attributable to the underlying myocardial abnormality. Patient underwent aortic arch reconstruction and VSD closure and has been closely followed since, remaining well with persistent LVNC and preserved function. The patient was also diagnosed with hypertension and is currently managed with lisinopril

Conclusion: IAA is associated with intra-cardiac malformations such as VSD and bicuspid aortic valve. The coexistence of IAA with LVNC is exceptionally rare, with only one documented case in literature (Isilak et al., 2013) and none involving CHARGE syndrome. Detection of LVNC in the context of IAA and CHARGE syndrome underscores the complexity of CHDs and reinforces the need for thorough diagnostic workups in patients with multifaceted congenital presentations.

Abstract #64 (ePoster)

From Fetal Diagnosis to Neonatal Care: Managing Cardiac Tumors with Arrhythmia Risk in a Newborn

Asra Usmani¹, Arsalan Ahmed¹, Ryan Halas^{1,2}

¹Department of Pediatrics and Adolescent Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Department of Pediatric Cardiology, Bronson Children's Hospital, Kalamazoo, Michigan

Abstract

Background: Rhabdomyomas are the most common cardiac tumors in infants, occurring in approximately 0.02-0.08% of live births, and are often associated with tuberous sclerosis complex (TSC). TSC is a genetic disorder characterized by the development of benign tumors in multiple organs, with an estimated incidence of 1 in 6,000 live births. While rhabdomyomas typically present in infancy and may regress spontaneously, their presence can lead to significant complications, due to the disruption of normal electrical conduction pathways. Here we present a unique case of a combination of multiple cardiac rhabdomyomas and Wolff-Parkinson-White (WPW) syndrome in the context of TSC

Case Presentation: A newborn with a history of prenatal rhabdomyomas and underwent genetic testing which confirmed TSC. Prenatal echocardiography revealed a significant atrial rhabdomyoma (1.5 x 1.2 cm) associated with the atrial septum, a patent foramen ovale (PFO) permitting unrestricted right-to-left flow, and multiple hyperechoic masses in the left ventricular myocardium. Immediately after birth, the patient was started on propranolol for supraventricular tachycardia (SVT) prophylaxis. Moreover, postnatal evaluation confirmed non-obstructive rhabdomyomas, including additional lesions in the right ventricular myocardium (5 mm by 6 mm) and near the left ventricular apex (3 mm by 3 mm), with normal biventricular size and function. A baseline ECG subsequently revealed WPW. The patient has been closely monitored since, remaining stable with persistent WPW and rhabdomyomas, while maintaining preserved cardiac function

Discussion: This case emphasizes the importance of comprehensive cardiac surveillance in pediatric patients with TSC, as well as the need for multidisciplinary management to address the complexities associated with congenital cardiac tumors and their potential complications. Prenatal diagnosis of rhabdomyomas typically occurs through advanced imaging techniques, which can detect these tumors as early as the second trimester. Early prenatal diagnosis allows for tailored postnatal care, optimizing outcomes for affected infants.

Abstract #65 (ePoster)

PET-CT Scan Used to Effectively Guide Treatment for *Streptococcus intermedius* Periprosthetic Knee Infection: A Case Report

Channing Pezet¹, Donald Ames², Jim Willey²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Kettering Health Medical Group, Kettering Health Network, Far Oaks Orthopedists, Dayton, Ohio

Abstract

Background: Periprosthetic joint infection (PJI) is a serious complication of total joint arthroplasty, most commonly caused by *Staphylococcus* species. *Streptococcus intermedius*, a member of the *Streptococcus anginosus* group, is an opportunistic organism known for its propensity to form abscesses, most frequently involving the brain, liver, and lungs. While rare cases of osteomyelitis due to *S. intermedius* have been reported, PJI caused by this organism has not been previously described. This case highlights the diagnostic and therapeutic challenges associated with this unusual pathogen and the utility of whole-body positron emission tomography/computed tomography (PET/CT).

Case Description: A 63-year-old female with a history of type 1 diabetes mellitus underwent uncomplicated primary right total knee arthroplasty. Ten weeks postoperatively, she presented with acute knee pain, systemic symptoms, and hyperglycemia. Aspiration revealed purulent fluid, and blood and joint cultures grew *Streptococcus intermedius*. She initially underwent incision and debridement with synovectomy and polyethylene exchange. Due to worsening thigh and calf pain and the known abscess-forming tendency of *S. intermedius*, a whole-body PET/CT scan was obtained, revealing extensive abscesses in the anterior thigh and posterior medial calf without distant infection. The patient required multiple surgical debridements, followed by explantation of the prosthesis and placement of an antibiotic-eluting spacer as part of a two-stage revision. She completed six weeks of intravenous ceftriaxone and subsequently underwent successful reimplantation.

Conclusion: This case represents the first reported instance of *Streptococcus intermedius* PJI and underscores the organism's aggressive abscess-forming behavior. Whole-body PET/CT proved invaluable in rapidly identifying the full extent of infection and guiding surgical management. Early recognition of atypical pathogens and appropriate imaging are critical to achieving infection eradication and favorable outcomes in complex PJI cases.

Abstract #69 (ePoster)

Persistent Myopathy After Statin Cessation: A Case of Immune-Mediated Necrotizing Myopathy

Grainne Caughey¹, Shireen Husami¹, Imran Shafqat^{1,2}

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Western Michigan University Homer Stryker M.D. School of Medicine, Department of Family and Community Medicine, Kalamazoo, MI

Abstract

Introduction: Approximately 30 million Americans are prescribed statins, with up to 10% reporting myalgia. While statin-induced myopathy is common and typically resolves after cessation, persistent symptoms warrant further evaluation. We describe a patient who presented with presumed statin-induced myopathy whose symptoms persisted despite statin discontinuation. She was ultimately diagnosed with immune-mediated necrotizing myopathy, a rare but serious statin-associated complication.

Case Presentation: A 61-year-old woman with a history of hypertension, pre-diabetes, and Graves' disease in remission presented with a two-month history of progressive proximal lower extremity weakness and markedly elevated creatine kinase (CK) levels. She had been treated with atorvastatin 20 mg since August 2024, with dose escalation to 40 mg in February 2025. Despite discontinuation of atorvastatin three months prior to presentation due to concern for statin-induced myopathy, her weakness persisted and CK levels remained markedly elevated at 6,786 IU/L. Initial concern for viral-induced rhabdomyolysis prompted hospitalization with aggressive intravenous hydration; however, after initial improvement, CK levels paradoxically rose. Rheumatologic evaluation revealed positive anti-HMG-CoA reductase (anti-HMGCR) antibodies, and muscle biopsy demonstrated necrotizing myopathy with minimal inflammation, confirming the diagnosis of anti-HMGCR immune-mediated necrotizing myopathy (IMNM). The patient was treated with combination immunosuppressive therapy consisting of prednisone and methotrexate and experienced subsequent sustained clinical improvement.

Discussion: The estimated prevalence of IMNM is 2.9 cases per million, with approximately 92.5% of cases associated with statin exposure. The pathophysiology of IMNM is associated with the production of autoantibodies to HMG-CoA reductase, leading to necrosis of myofibrils. Importantly, IMNM is clinically distinct from statin-induced myopathy, as symptoms persist following statin discontinuation. The diagnostic hallmark of IMNM is the presence of anti-HMGCR autoantibodies. Diagnosis is confirmed with muscle biopsy, which demonstrates myofibril necrosis with minimal lymphocytic infiltration. Treatment of IMNM includes immunosuppression and permanent avoidance of statin pharmacotherapy. This case highlights the critical distinction between self-limited statin-induced myopathy and autoimmune anti-HMGCR IMNM, emphasizing that symptom persistence after statin discontinuation should prompt evaluation for autoimmune myopathy requiring immunosuppressive treatment.

Abstract #73 (ePoster)

Open Management and Other Considerations for Cornual Ectopic Pregnancies – A Case Report

RaMae Norton¹, Jeannette Uribe de Trejo²

¹Western Michigan University Obstetrics & Gynecology, Kalamazoo, Michigan. ²Bronson Obstetrics & Gynecology, Kalamazoo, Michigan

Abstract

Introduction: In this case, we describe the presentation, operative management, and follow-up of a 31-year-old nulliparous woman who was diagnosed with cornual pregnancy at 10 weeks and 3 days gestation. Limited data exists to guide patient counseling regarding subsequent pregnancies. Given the rare occurrence of this subtype of ectopic pregnancy, in addition to discussing the risks factors, diagnosis, and surgical management, our aim is to discuss information regarding prognosis for patients with plans to conceive after cornual pregnancy.

Case Presentation: The patient is a 31-year-old G1P0 who presented on an outpatient basis for dating ultrasound. US scan showed suspected interstitial ectopic pregnancy measuring 10 weeks 3 days without evidence of rupture. Given findings, she was instructed to present to the Emergency Department for further evaluation. At the time of diagnosis, she was experiencing left lower quadrant cramping. She underwent an MRI to further elucidate the location of the pregnancy, which confirmed a left interstitial ectopic pregnancy. Laboratory evaluation at time of diagnosis showed a hemoglobin of 13.4 and a beta-hCG of 34,594. The patient was counseled regarding diagnosis and management options of high-risk location of pregnancy. Patient consented to undergo surgical treatment with laparotomy and subsequently underwent left interstitial ectopic resection/uterine wedge resection. EBL at procedure end was 30 mL. On post-operative day one, the patient was meeting milestones and discharged with follow up in one week. At one-week post-operative follow-up the patient reported mild incisional pain controlled with multimodal pain regimen. Fertility goals were not discussed. She was instructed to follow in four weeks, patient was lost to follow up.

Discussion: Cornual pregnancy (CP) is a rare subtype of ectopic pregnancies accounting for 2-4% with a mortality rate of 2-2.5%.¹ There is an increased risk of hemorrhage and mortality associated with this ectopic subtype.¹ Risk factors for cornual pregnancy (CP) have been recognized including endometriosis, uterine leiomyomata, or pelvic inflammatory disease.¹ One study performed at Oslo University Hospital evaluated future pregnancy rates beyond 24 weeks after cornual resection for interstitial pregnancies. Overall, cornual resection appeared to have no added detrimental effect on subsequent pregnancy rates as compared with salpingectomy for non-interstitial tubal ectopic pregnancies.

This report aims to describe the surgical management and subsequent pregnancy outcomes for patient treated for CP. Future hopes and directions for this case will be to prospectively follow the patient, and report on management and outcomes of future pregnancies.

Abstract #76 (ePoster)

Stump Appendicitis Following Recent Cesarean Section: A Case Report

Polina Waterman¹, Grace Manske¹, Muhammad Nadeem¹, David Minnick²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Bronson Healthcare, Kalamazoo, MI

Abstract

Background: Stump appendicitis is a rare complication following appendectomy involving inflammation of the residual appendiceal tissue. It can present anywhere from 2 weeks to 60 years later. Given its rarity, there is limited reported epidemiology on the condition, with some reports estimating an incidence of 1 out of every 50,000 appendectomies and only 164 recorded cases from 1949-2018. It presents similarly to appendicitis, often delaying diagnosis given the history of appendectomy in these patients. We present a case of stump appendicitis in a young female following a recent cesarean section (C-section). Our objective is to highlight the presentation and management of stump appendicitis to enhance diagnostic approach and improve patient outcomes.

Case presentation: The patient is a 23-year-old female who developed perforated stump appendicitis with abscess nine years after initial appendectomy and three months after C-section. She presented with worsening epigastric and right lower quadrant pain. Her vitals were stable, but her laboratory studies revealed leukocytosis. CT Abdomen/Pelvis obtained at an outside facility reported a short appendiceal stump vs cecal diverticulum with surrounding inflammatory changes. She was transferred to our hospital for further management and started on IV antibiotics. Overnight, she developed a fever and worsening leukocytosis. Ten hours after imaging, the patient was taken to the operating room for diagnostic laparoscopy. Intraoperatively, a perforated stump, abscess cavity, and fecalith were identified. The stump was resected down to the appendiceal base and the abscess cavity was washed out. An abdominal drain was placed due to contamination. The patient did not complete post-operative antibiotics and re-presented 14 days after discharge with abdominal pain and seropurulent drain output. Following 10 days of antibiotics, her symptoms resolved and her drain was removed.

Conclusion: The presented case offers additional clinical insight and management into a rare and often misdiagnosed condition. To our knowledge, this is the first reported case of stump appendicitis following a recent C-section. The previous appendectomy and recent gynecological surgery may have contributed to the delay in definitive treatment in this patient, as conservative management was initially pursued until clinical deterioration required urgent surgical intervention. In patients with prior appendectomy presenting with right lower quadrant pain, clinicians should consider stump appendicitis because early surgical intervention improves outcomes and reduces complications.

Abstract #81 (ePoster)

A Seizure That Wasn't: Psychogenic Non-epileptic Seizures in a Patient With Underlying Psychological Comorbidity

Mahdi Fadel^{1,2}, Ali Fadel³, Burton Tabaac^{1,4}

¹Carson Tahoe Medical Center, Carson City, Nevada. ²Henry Ford Providence Southfield/Novi Hospital, Southfield & Novi, Michigan. ³Wayne State, Detroit, Michigan. ⁴The John Hopkins University Hospital, Baltimore, Maryland

Abstract

Introduction: Psychogenic nonepileptic seizures (PNES), are paroxysmal events that resemble epileptic seizures that lack an epileptiform correlate on electroencephalography (EEG). PNES remains underrecognized in acute and outpatient settings, resulting in prolonged exposure to ineffective treatment. This poses harm and delayed access to appropriate management.

Case Description: We report the case of a 32-year-old woman who presented to the emergency department after a witnessed seizure-like episode at work. Her medical history was notable for psychological comorbidities, and stroke at age 15. She experienced recurrent episodes occurring 1-5 times daily despite treatment with levetiracetam 1000mg twice daily.

Evaluation elected a seizure event using nondeceptive activation procedures, including hyperventilation with transparent verbal suggestion. The episode lasted 80 seconds and was characterized by generalized, motor activity with sustained lower extremity flexion and forward head and neck flexion. Post-event symptoms included confusion, fatigue, reduced verbal output, and severe headache. Video-EEG captured the habitual event without associated epileptiform activity, with preserved background rhythm throughout consistent with PNES likely in the context of comorbid psychological conditions.

Discussion: Management consisted of tapering levetiracetam, providing diagnostic education and reassurance, and referring to CBT-informed and trauma-focused psychotherapy. Reported symptomatic improvement with stress-reduction modalities, including hyperbaric oxygen therapy and flotation therapy. Although these therapies are not disease-specific, they may reflect modulation of autonomic arousal and stress-related pathways that influence frequency and severity. These modalities may be considered coping strategies when used safely and alongside evidence-based psychotherapy.

The misdiagnosis of epilepsy in people with PNES is seen in at least 25% of individuals who don't respond to antiseizure therapy, and are ultimately found to have been misdiagnosed. PNES rates are reported as low as 2 per 100,000 in the general population and as high as 33 per 100,000. This prevalence is comparable to conditions such as multiple sclerosis or trigeminal neuralgia—furthermore PNES has remained under-discussed. The average interval from first seizure-like event to PNES diagnosis exceeds seven years. The potential harm of this has been shown to lead to prompt benzodiazepine administration, ICU admission, and intubation with respiratory complications—representing a major and potentially preventable source of iatrogenic harm.

Abstract #82 (ePoster)

Trapped and Transformed: A Case of Atypical Respiratory Disease Post-Earthquake Exposure

Khaled El Wahab, Nizar Alkhlaifat, Asra Usmani, Maria Asif, Priscilla Woodhams

Department of Pediatrics and Adolescent Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: The victims of natural disasters, particularly children, can develop chronic respiratory morbidity because of dust, debris, and toxic particulates inhaled. We present a case of a 5-year-old girl whose progressive pulmonary symptoms due to long-term entrapment by earthquake rubble were initially misattributed to asthma, but currently suggest an environmentally provoked interstitial lung disease.

Clinical presentation: A 5-year-old asthmatic girl developed progressive respiratory distress with cyanosis unresponsive to six-hourly fluticasone/salmeterol. She had previous history of several hospitalizations for presumed asthma exacerbations after previously being buried for three days under earthquake debris in Turkey. She never needed intubation. TB and fungal causes were ruled out, but highly elevated IgE warranted considering hypersensitivity lung disease. CT chest with high resolution demonstrated diffuse thickening of the bronchus, likely debris within several bronchi, ground glass opacity, air trapping, and reactive mediastinal and hilar lymphadenopathy.

She follows up with Pediatric Pulmonology for cystic fibrosis and alpha-1-antitrypsin deficiency evaluation. Nevertheless, radiologic evidence and timing from the earthquake exposure strongly suggest interstitial lung disease or toxin-associated injury, particularly asbestos exposure.

Discussion: This case presents the possible long-term pulmonary sequelae in children survivors of earthquake disasters. Exposure to environmental agents during entrapment can cause chronic inflammation of airways or interstitial lung diseases, which appear to resemble asthma but are unresponsive to its treatment.

Conclusion: Physicians must have high suspicion for environmentally induced lung disease in children manifesting atypical respiratory courses following exposure to a disaster, using long-term surveillance and multidisciplinary evaluation to avoid misdiagnosis and ensure optimal management.

Abstract #83 (ePoster)

A Rare Case of Dermatillomania in Pregnancy

ANURIKA OKORIE, IAN THOMAS, OLAITAN AKINBOBOYE, FAVOUR DAVID, GOODNESS SUNDAY

Family medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Battle Creek, MI

Abstract

ABSTRACT

Introduction: Dermatillomania, also known as skin picking disorder (SPD), is characterized by recurrent picking, scratching, or digging of the skin resulting in tissue damage and functional impairment. Although underrecognized, it accounts for approximately 2% of dermatology clinic visits and is significantly more common in females, with a reported female-to-male ratio of 8:1. The typical age of onset ranges from 15 to 45 years, peaking in the early twenties. The exact pathogenesis remains unclear; however, neuroimaging studies suggest abnormalities in brain regions involved in emotional regulation and impulse control. We present a rare case of dermatillomania in a pregnant patient with coexisting depression, highlighting diagnostic challenges and the importance of multidisciplinary care.

Case Description: A G1P000 female in her early thirties with a history of untreated depression presented four weeks prior to her initial prenatal visit with a three-year history of compulsive skin picking localized to her lower extremities. She reported engaging in the behavior to relieve psychological tension and described an inability to control the urge despite significant skin trauma and emotional distress. Physical examination revealed multiple excoriations and bruises in various stages of healing. She was diagnosed with dermatillomania and started on sertraline 50 mg daily, later increased to 100 mg daily, with referral for behavioral therapy. After six weeks, she demonstrated improvement in lesion healing and mood. By 12 weeks, she reported minimal urge to pick and continued treatment throughout pregnancy.

Discussion: Dermatillomania is a psychiatric condition often presenting with dermatologic findings such as excoriations and scarring. It frequently co-occurs with mood disorders, as demonstrated in this case. Although pregnancy is not a known risk factor, hormonal and psychological changes may exacerbate compulsive behaviors. Differential diagnoses in pregnancy include pruritic urticarial papules and plaques of pregnancy (PUPPP) and intrahepatic cholestasis of pregnancy. Diagnostic delays are common due to stigma or misattribution to pregnancy-related dermatoses. Treatment with sertraline which is one of the safest antidepressants in pregnancy and behavioral therapy led to significant improvement.

Conclusion: Dermatillomania is a frequently under-diagnosed and chronic condition that necessitates a coordinated, multidisciplinary approach. Timely identification, particularly in women of reproductive age presenting with unexplained or chronic skin excoriations, is critical to initiating appropriate treatment and preventing long-term psychosocial impacts. Early diagnosis, combined pharmacotherapy and behavioral interventions, and treatment of comorbid conditions like depression can lead to meaningful clinical improvement.



Abstract #85 (ePoster)

From Headaches to Genetics: Uncovering a WT1 Mutation in Progressive Hypertension

Nizar Alkhlaifat¹, Khaled El Wahab¹, Asra Usmani¹, Maria Asif¹, Dayana Jibrin¹, Arsalan Ahmed¹, Saadia Abbas¹, Pamela Dowd², Robin Murphy²

¹Department of Pediatrics and Adolescent Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Pediatric Cardiology, Bronson Methodist Hospital, Kalamazoo, Michigan

Abstract

Background: A 12-year-old with progressive hypertension (HTN) and nephrotic-range proteinuria underwent evaluation that revealed chronic kidney disease (CKD); genetic testing later identified a Wilms tumor 1 (WT1) pathogenic variant that reframed diagnostic and therapeutic decisions.

Case: A 12-year-old phenotypic female initially diagnosed with stage I HTN in 2023 progressed to stage II by October 2024 with headaches, and transient blurry vision. Evaluation showed elevated creatinine, nephrotic-range proteinuria, hypoalbuminemia, hypercholesterolemia, vitamin D deficiency with secondary hyperparathyroidism, and a normal renal ultrasound. Family history included early-onset parental HTN and a paternal relative with kidney disease. Losartan produced partial BP improvement but persistent proteinuria and reduced renal function prompted genetic testing, which returned a WT1 c.1557+1G>A variant with 46,XY karyotype and gonadal dysgenesis.

Decision-Making: Because proteinuria and CKD stage III persisted despite angiotensin receptor blockade, we increased losartan and added amlodipine for BP control, reinforced salt restriction and fluid optimization, and initiated vitamin D repletion. After WT1 confirmation we deferred immediate renal biopsy, instituted serial renal and pelvic ultrasound surveillance for Wilms tumor and gonadoblastoma, and engaged genetics and endocrinology for differences-of-sex-development evaluation and family counseling regarding prognosis. This case illustrates that early genetic diagnosis can clarify etiology, reduce invasive testing, guide oncologic surveillance, and tailor renoprotective strategies in pediatric HTN with CKD.

Conclusion: Identification of a WT1 pathogenic variant shifted management from empiric HTN therapy to precision care—optimizing renoprotective pharmacotherapy, initiating targeted tumor surveillance and multispecialty coordination, and informing long-term prognosis.

Abstract #87 (ePoster)

Huff and Puff – A case report of EVALI

Mahmoud Nofal, Maria Asif, Asra Usmani, Arsalan Ahmed, Mariam Ischander
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Background: EVALI is an acute lung condition caused by vaping or e-cigarette use, mimicking multiple other pulmonary conditions. In this article, we present a case of EVALI with numerous overlapping features of asthma and COPD.

Case presentation: We retrospectively evaluated the data from a 16-year-old female who presented with symptoms of shortness of breath, cough, and exercise intolerance for one and a half years. Her symptoms prompted multiple visits to the ED and the PCP office. She was initially diagnosed with moderate persistent asthma and was prescribed rescue inhalers. No formal lung function testing was performed. During an ED visit, her symptoms mimicked COPD, and an inability to improve with breathing treatment prompted inpatient admission for further evaluation. Pediatric Pulmonology was consulted. Blood work was performed, including alpha-1 antitrypsin levels, immunoglobulin levels, a complete blood count, and electrolyte levels, all of which were within normal ranges. A chest x-ray showed ground-glass opacities, which were further confirmed by the CT scan of the chest. Given the frequent use of E-cigarettes, the presence of ground glass opacities on chest imaging, negative COVID-19 test, and less than 10% improvement in lung function test post bronchodilators, the patient was diagnosed with EVALI. Supportive therapy with long-acting bronchodilators and antibiotics was started, and the patient was referred to Pediatric Pulmonology for outpatient follow-up.

Discussion: EVALI is a diagnosis of exclusion, and this case stresses the diagnostic complexities and the importance of broader differentials. At the time of diagnosis, the lung function test of our patient was meeting lung transplantation criteria, which signifies the need for early evaluation and a multidisciplinary approach.

Abstract #89 (ePoster)

Complications from Central Venous Catheters in Neonates: Beware the Rare

Saja Abdelhadi¹, Jwala K C¹, Dayana Jibrin¹, Ghaith Al-Zoubi¹, Andrea Scheurer-Monaghan²

¹Department of Pediatrics and Adolescent Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Neonatal Intensive Care, Bronson Children's Hospital, Kalamazoo, Michigan

Abstract

Background: Umbilical venous catheters (UVCs) and peripherally placed central venous catheters (PICCs) are frequently used in premature and critically ill term infants for administration of parenteral nutrition and medications. Though central venous catheters (CVC) provide lifesaving intravenous access, there are significant risks that must be carefully considered. Common complications include catheter associated blood stream infection, thrombosis, and malposition in a non-intended vessel. Though rare, life-threatening complications do occur and are typically associated with catheter tip migration outside of the venous system. Infants often present with sudden onset clinical decompensation which may be mistaken for other more common neonatal problems. In this case report we review the clinical course of an infant who developed a rare complication from indwelling CVCs.

Case Presentation: Our case involves a 30 weeks appropriate-for-gestational-age preterm female infant admitted to the NICU for prematurity. UVC was placed at birth-requiring umbilical venous access and X-ray confirmed proper positioning. Infant was doing well on feeds and CPAP support until day of life 7 when she developed abdominal distension and decreased activity, raising concern for late-onset sepsis. Laboratory evaluation revealed elevated C-reactive protein. Abdominal radiography showed a non-obstructive bowel gas pattern without pneumatosis but demonstrated lucency over the liver concerning for free air versus large amount of portal venous gas. Pediatric surgery was consulted, and Empiric broad-spectrum antibiotics were initiated.

Given the unusual X-ray appearance, ultrasound abdomen was performed. Imaging revealed three complex cystic hepatic lesions, with one lesion located near the UVC tip. Given the suspicion for catheter-associated hepatic injury, the UVC was removed. Serial ultrasounds over the course of several weeks demonstrated progressive reduction in lesion size following catheter removal. Blood culture remained negative and infant had antibiotics stopped after a week. Etiology of clinical decompensation was catheter migration into the liver and associated development of a TPN-oma.

Conclusion: This case highlights the importance of keeping UVC extravasation high on the differential in any neonate with sudden onset clinical decompensation and indwelling CVC. Recognition is key to the cure-cease use of the CVC, secure other access, and remove CVC as soon as possible.

Abstract #107 (ePoster)

Beyond the Rash: Cold urticaria with unusual Gastrointestinal and Anaphylactic Manifestations

Maria Asif

1. Department of Pediatrics and Adolescent Medicine, Western Michigan University Homer Stryker M.D School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Cold Urticaria is a rare subtype of physical urticaria that, unlike most cases of urticaria, carries risk of anaphylaxis. We present a case of cold urticaria in a young child associated with significant gastrointestinal symptoms and anaphylaxis with exposure to cold water and foods.

Case presentation: A 17 month old female presented to urgent care with swelling of the hands and feet and raised, urticarial rash, which was treated with diphenhydramine. Upon recurrence of the hives, she visited the emergency department and was discharged with as-needed diphenhydramine. Subsequently, the patient developed chronic intractable vomiting with unclear triggers. Extensive outpatient workup, including normal labs and abdominal imaging with colonic stool burden, led to initial diagnosis of constipation. Daily bowel regimen and multiple cleanouts provided minimal improvement. After referral to pediatric allergy, a detailed history revealed vomiting after cold food exposure, without urticaria, and three episodes of peripheral angioedema, poor perfusion (blue lips) and depressed consciousness associated with swimming (both in pool and lake water). She was diagnosed with cold urticaria with anaphylaxis. The patient was started on cetirizine 10 mg twice daily, with significant improvement and carries epinephrine. At follow-up, she tolerated cold foods and swimming.

Discussion: Cold Urticaria is a rare condition even among urticaria subtypes, and along with solar urticaria, carries risk of anaphylaxis. It is typically diagnosed through clinical history and cold stimulation test. This case emphasizes the importance of thorough history taking and maintaining a high index of suspicion when symptoms deviate from common presentation.

Abstract #108 (ePoster)

Protocolized Management of Hypothermic Cardiac Arrest Without On-Site ECMO Capability

Somer Corbett, Shaelyn Swensen, Gabriel Coleman, Justin Rountree, Mark Kerschner
Western Michigan University Homer Stryker M.D. School of Medicine, Department of Emergency Medicine, Kalamazoo, MI

Abstract

Introduction: This paper presents the first use of extracorporeal membrane oxygenation (ECMO) in the management of suspected primary hypothermic cardiac arrest in Kalamazoo County and will discuss differences from the ACLS cardiac arrest algorithm. Primary hypothermia is a reversible cause of cardiac arrest, which may have a more favorable outcome with the initiation of ECMO for rewarming therapy, along with other methods of rewarming. The Hypothermia Outcome Prediction after Extracorporeal Life Support (HOPE) score is an important tool for assessing viability and supporting early neuroprognostication when selecting cases for continued resuscitation. In Kalamazoo, where ECMO capabilities are unavailable, this paper describes the unique challenges of managing hypothermic arrest with a favorable HOPE score and the development of a protocol for care at our facilities equipped with cardiopulmonary bypass while awaiting definitive transfer to a quaternary center with ECMO capability.

Case Presentation: A 29-year-old male presented to a local Level I trauma center with suspected primary hypothermic cardiac arrest. Alternative markers, including chest compressibility, absence of lividity, and serum potassium, were used to assess resuscitation futility. EMS could not obtain a temperature reading, and there was an unknown period of downtime. The chest remained compressible, and CPR was initiated in the field. On arrival, point-of-care potassium was < 9 mmol/L. Cardiothoracic surgery was consulted for initiation of ECMO cardiopulmonary bypass with planned transfer to an ECMO-certified facility.

Discussion: Primary hypothermic cardiac arrest represents a distinct clinical entity in which management and prognostication differ substantially from normothermic arrest. Favorable outcomes have been reported when following structured rewarming protocols and initiation of ECMO in appropriately selected patients. This case illustrates the challenges faced in regions without immediate ECMO capabilities and highlights the importance of early recognition and coordinated multidisciplinary care in preserving the potential reversibility of cardiac arrest while arranging definitive management through transfer.

Abstract #120 (ePoster)

Robotic Cholecystectomy with Intraoperative Cholangiogram in Situs Inversus Totalis

John Lukish¹, Graham McLaren²

¹Department of General Surgery, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Bronson Endocrine & General Surgery Specialists, Bronson Methodist Hospital, Kalamazoo, Michigan

Abstract

Situs inversus totalis (SIT) is a rare congenital condition characterized by complete mirror-image transposition of thoracic and abdominal organs, presenting unique diagnostic and surgical challenges in the management of intraabdominal pathology, especially hepatobiliary pathology. This case report describes a 66-year-old female with SIT who presented initially with gallstone pancreatitis and eventually underwent successful interval robotic assisted laparoscopic cholecystectomy with intraoperative cholangiogram. Robotic cholecystectomy was selected as the operative method in order to best address the technical difficulties associated with reversed anatomy, including altered orientation of the biliary tree and vascular structures. Operative planning emphasized adaptation to mirror-image anatomy, with port placement modified accordingly. The robotic platform facilitated enhanced visualization, instrument dexterity, and ergonomic comfort, mitigating the challenges traditionally encountered by right-handed surgeons in SIT cases. Intraoperative findings included a left-sided gallbladder and cystic duct, with no aberrant vascular anatomy. The procedure was completed without complications, and the patient experienced an uneventful recovery. This case highlights that robotic cholecystectomy is a safe and effective approach for gallbladder removal in SIT, offering technical advantages over conventional laparoscopy, particularly in complex anatomical scenarios. Key factors for success include thorough preoperative planning, detailed anatomical assessment, and intraoperative flexibility. This experience supports the growing consensus that minimally invasive cholecystectomy, including robotic-assisted techniques, can be performed safely in SIT, with outcomes comparable to those in orthotopic anatomy when appropriate modifications are made.

Abstract #121 (ePoster)

Factitious Disorder Imposed on Self Presenting with Predominantly Psychiatric Manifestations

Seerat Dhindsa¹, Yagna Reddy², Maritza Lagos^{1,3}

¹Department of Psychiatry, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ³Department of Psychiatry, Beacon Health System, Kalamazoo, Michigan

Abstract

Background: Factitious disorder imposed on self is characterized by the intentional falsification of psychological or physical symptoms in the absence of obvious external rewards in order to unconsciously fulfill a “sick role.” While most reported cases involve somatic manifestations, factitious disorder with predominantly psychiatric symptoms remains underrecognized and diagnostically challenging, particularly when comorbid with psychiatric conditions. This case report aims to highlight the diagnostic challenges of psychiatric presentations of factitious disorder and the potential for iatrogenic harm when the condition is not recognized.

Case Presentation: We describe a 35-year old female with borderline personality disorder, self-reported attention-deficit/hyperactivity disorder, and history of depression, anxiety, and multiple prior lengthy psychiatric hospitalizations who underwent a prolonged inpatient psychiatric hospitalization for active suicidal ideation. While the patient met criteria for borderline personality disorder, and reported symptoms of anxiety and depression, her reported symptoms were exaggerated and incongruent with her affect. The patient purported to present more ill or impaired as to receive testing, treatments, and enhanced care. The patient was trialed on various psychiatric medications, but continually requested specific medications such as lisdexamfetamine, clonazepam, and haloperidol despite counseling regarding serious adverse effects as the prescription of these medications signaled increased attention from the psychiatric team. Despite treatment, her behavior, anxiety, and mood remained unchanged and supportive therapy produced modest improvement. Most notably, the patient actively requested electroconvulsive therapy (ECT) from a prior psychiatrist’s recommendation. Despite extensive counseling regarding significant risks, she demonstrated no concern and remained insistent. After obtaining a second opinion, she received nine ECT treatments without significant improvement. A pattern emerged in which the patient endorsed acute suicidal ideation or threatened self-injurious behaviors specifically when discharge or treatment discontinuation was discussed. These episodes were often abrupt, followed euthymic mood, and frequently occurred after perceived lack of care by staff – explicitly stating on one instance that she did not want to separate from the doctors she felt were taking care of her. Minnesota Multiphasic Personality Inventory-3 (MMPI-3) testing yielded invalid results with excessive infrequent responses suggestive of deceptive responding and exaggerated somatic symptoms.

Conclusion: This case highlights the diagnostic and treatment complexity of factitious disorder with predominantly psychiatric manifestations in patients with multiple psychiatric comorbidities. The patient’s requests for potentially harmful treatments without appropriate concern for adverse effects, along with invalid MMPI-3 results and symptom exaggeration to maintain medical relationships, support the diagnosis. Early recognition is essential to prevent excessive treatment escalation.

Abstract #130 (ePoster)

Wernicke Encephalopathy Induced by Prolonged Dysphagia

Tessa Kravchenko¹, Morgan Smeltzer¹, Henry Zou², Logan Mills², Akram Alnounou², Theotonius Gomes²

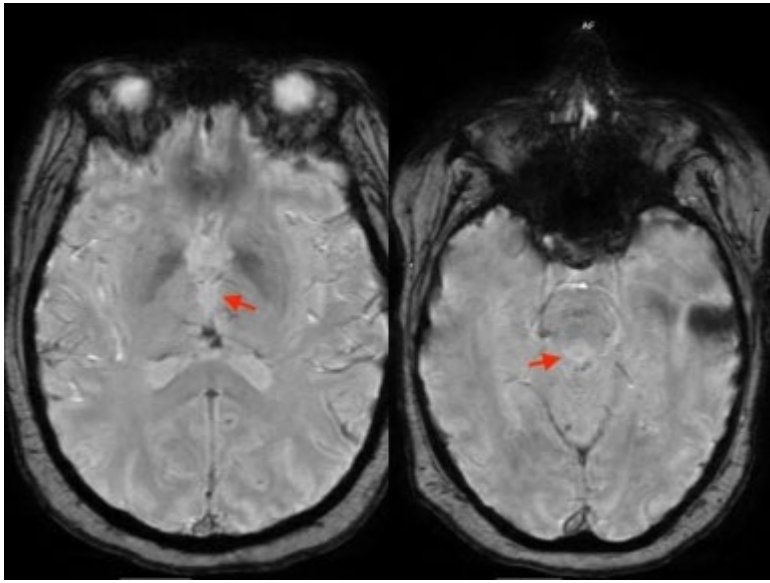
¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Wernicke encephalopathy is an acute neurologic emergency caused by thiamine deficiency that can lead to irreversible injury if treatment is delayed. Dysphagia-related Wernicke encephalopathy is uncommon and is most often reported in the setting of structural or iatrogenic drivers of poor intake, such as esophageal cancer, chemoradiation, or achalasia. This case is novel because the patient developed Wernicke encephalopathy after prolonged dysphagia without evidence of obstruction on swallow study; the patient's dysphagia was therefore presumed to be most consistent with a functional or psychogenic etiology.

Case: A 26-year-old female with type 2 diabetes, hypothyroidism, and anxiety presented with acute confusion, incoherent speech, diplopia, and gait instability after three months of progressive dysphagia requiring blended foods and crushed medications, associated with approximately 100 pounds of weight loss. The patient endorsed worsening dysphagia in the setting of recent bereavements. Initial evaluation showed no acute intracranial findings on computed tomography, and broad thyroid, autoimmune, toxic, and infectious testing was unrevealing; folate was severely low. Magnetic resonance imaging demonstrated signal abnormalities involving the mammillary bodies, posterior midbrain, and medial thalami, consistent with Wernicke encephalopathy. She was treated with high-dose intravenous thiamine, folate, and vitamin B12, with subsequent neurological improvement. A swallow evaluation revealed no physiologic dysphagia, and she was discharged on oral thiamine with outpatient follow-up and a psychiatry referral for suspected functional dysphagia.

Discussion: This case reinforces that prolonged inadequate intake, including functional or psychogenic dysphagia, can precipitate Wernicke encephalopathy even in young patients without alcohol use disorder. The decision to administer empiric high-dose parenteral thiamine was driven by rapid weight loss and evolving neurologic findings, since Wernicke encephalopathy remains a clinical diagnosis and neither serum thiamine values nor imaging are independently diagnostic. Neuroimaging can support the diagnosis of Wernicke encephalopathy, but limited sensitivity means that normal studies should not delay treatment. Clinicians should empirically treat suspected Wernicke encephalopathy in any patient with malnutrition and new neurologic symptoms and should evaluate for concurrent vitamin deficiencies. Recognizing functional swallowing disorders as a potential precipitant expands the differential for nonalcoholic Wernicke encephalopathy and supports low-threshold empiric thiamine protocols to prevent irreversible morbidity.



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Abstract #1 (Printed Poster)

Impact of Student-Run Health Screenings on Empathy and Attitudes Toward Homelessness in 1st Year Medical Students

Amanda Wewer¹, Madison Laird¹, Cheryl Dickson^{1,2}, Peter Vollbrecht^{1,3}

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Pediatric and Adolescent Medicine, Kalamazoo, MI. ³Department of Biomedical Sciences, Kalamazoo, MI

Abstract

Introduction: Empathy is a critical factor in patient satisfaction and clinical outcomes. In particular, unhoused patients report negative attitudes from healthcare providers as a barrier to care. However, studies indicate a decline in empathy as medical students progress through medical school. This study evaluates the impact of early clinical exposure to the unhoused population through student-run health screenings on the clinical empathy trajectory of first-year medical students (M1s) at Western Michigan University Homer Stryker M.D. School of Medicine (WMed).

Methods: M1 students completed two web-based surveys, one at the beginning and one at the end of the 2024–2025 academic year. Surveys included demographics, specialty interest, prior experiences with unhoused individuals, level of Community Health Interest Group (CHIG) involvement, and prior volunteer hours. Attitudes toward the unhoused and clinical empathy were measured using the validated Attitudes Toward Homelessness Inventory (ATHI) and Jefferson Scale of Empathy Student-Version (JSE-S), respectively.

Results: A total of 31 M1 students completed both the pre- and post-intervention surveys. No differences in ATHI or JSE were observed by gender, race, specialty interest, educational background, or anticipated debt. However, ATHI scores increased significantly ($p = 0.0004$), with the largest gain among students who had rarely encountered unhoused individuals prior to medical school. CHIG volunteers ($N=23$) had significantly higher post-intervention ATHI scores compared to non-volunteers ($N=8$; $p = 0.0076$). JSE scores did not change significantly overall ($p = 0.1048$), although students aged ≥ 25 demonstrated higher post-intervention JSE scores ($p = 0.0200$), and students with >15 volunteer hours prior to matriculation had higher baseline empathy ($p = 0.0016$).

Conclusion/Clinical significance: The data confirm previous findings that medical student empathy drops during medical school as measured by the JSE-S. Despite this decrease, early clinical exposure to unhoused individuals through health screenings improves students' attitudes, especially for those with limited prior exposure. These findings suggest that integrating direct experiences with unhoused populations early in the curriculum can enhance attitudes, even as overall empathy declines.

Acknowledgments: This work was funded by a WMed Pilot Grant.

Abstract #3 (Printed Poster)

Evaluating Medical Student Provision of Clinical Preceptor Feedback

Timothy Mayotte¹, Sara Allison²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Biomedical Sciences, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Feedback is essential in medical education, yet it typically flows unidirectionally from preceptors to students, with limited opportunities for students to evaluate preceptors. Student-provided feedback can improve teaching and learning, yet it remains unclear how often such feedback is withheld. This study sought to determine whether students are providing preceptor feedback, the type of feedback offered, and what factors hinder this process.

Methods: A literature review informed the development of a survey created by both authors using Likert-style and free-response items. The Assistant Dean for Clinical Applications at WMed reviewed and revised the survey. Third- and fourth-year medical students at WMed were surveyed via REDCap. Responses were analyzed using descriptive statistics and Fisher's exact tests to assess differences by age, gender, and race. The study received exempt status from the WMed Institutional Review Board (IRB# WMed-2025-1266).

Results: Of the 178 students invited, 37 (21%) responded. Although 83% of students believe preceptors should receive student feedback, only 35% feel comfortable providing honest feedback, and just 30% feel preceptors have sufficient accountability for their teaching. Affirmative feedback is provided more often than constructive feedback with 76% of students never or rarely offering constructive feedback when they have it. Students cited multiple barriers to giving feedback: fear of affecting how preceptors view them (76%) or their grade (62%), doubt that feedback would lead to meaningful change (59%), feeling unqualified (51%), and insufficient opportunity (49%). Still, 89% indicated they would provide individualized feedback if given the right opportunity. Race and gender did not significantly influence willingness to give feedback, while younger students were more likely than older students to provide verbal, affirmative feedback.

Conclusion: Many medical students have preceptor feedback that goes unsaid. Although students value feedback and are willing to provide it, they express concerns regarding anonymity, opportunity, and impact. To promote a culture of continuous improvement which may subsequently enhance education and patient-care, institutions should continue empowering students by ensuring anonymity and welcoming both affirmative and constructive bidirectional feedback.

Abstract #7 (Printed Poster)

Trends in Pharmacological Management of Anxiety Disorders in a Primary Care Clinic Setting: Impact of Gender, Age, and Co-morbidities

Alice Wei¹, Philip Kroth²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Biomedical Informatics, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: The National Institution of Mental Health reports that 1 in 3 adults in the US experience an anxiety disorder at some point in their lifetime; however, less than 40% of those with a diagnosis receive treatment. Although there are a variety of therapeutic options available, currently there are no detailed guidelines regarding pharmacotherapy for anxiety disorders. This study evaluated trends in pharmacological treatment of patients diagnosed with an anxiety disorder in a primary care setting.

Methods: Retrospective, observational study over a four-year period using EHR data for patients aged 12 and older who were seen at a WMed primary care clinic (Internal Medicine, Family Medicine, Medicine-Pediatrics, Pediatrics) and received at least two prescriptions for a diagnosed anxiety disorder. Data collected includes: diagnoses, prescribed medications, GAD-7 screenings, age, gender, race, and ethnicity.

Results: 79.6% of patients diagnosed with an anxiety disorder received pharmacological treatment. Females were more likely to be on medication compared to men (81.0% vs 76.1%, $p = 0.0014$). Among pediatric patients, 73.4% were prescribed any type of pharmacological treatment; 55.7% SSRI, 46.5% Other, 12.3% BZD, 3.8% SNRI, and 3.0% TCA. In comparison to adults, 81.1% were prescribed any type of pharmacological treatment; 64.6% Other, 38.5% SSRI, 32.4% BZD, 16.7% SNRI, and 7.0% TCA. Comorbid conditions increased the odds of third or fourth-line medication use.

Conclusions: Our study revealed that there is a small but significant gender difference, where men are less likely to be treated than women. Prescribing trends revealed a significant predominance for the use of Other medications over SSRIs, SNRIs, BZDs, or TCAs. BZDs were found to be the third most prescribed class for both pediatric and adult populations. These results revealed distinct prescribing trends and a need for further research examining the interplay between gender, age, comorbidities, and anxiety disorder management within primary care.

Abstract #9 (Printed Poster)

Why Do They Do It? Long-Term Follow-Up on the Motivation to Run in Ultrarunners: Findings of the Ultrarunners Longitudinal TRacking (ULTRA) Study.

Luke Malocha¹, Ethan Jastifer², Martin Hoffman³, James Jastifer^{4,5}

¹University of Michigan, Ann Arbor, MI. ²University of Notre Dame, Notre Dame, IN. ³N/A, N/A, N/A.

⁴Clinical Associate Professor, Department of Surgical Services Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ⁵Adjunct Professor, Mechanical and Aerospace Engineering Western Michigan University Department of Mechanical and Aerospace Engineering, Kalamazoo, Michigan

Abstract

Introduction: Participants in the Ultrarunners Longitudinal Tracking Study completed surveys in 2014 and again in 2024 to assess long-term changes in motivation to run and perception of success. While motivation in ultramarathon runners has been studied previously, it is unclear how motivation and perceptions of success change within the same individuals over time. Understanding these changes provides valuable insight into long-term participation patterns, health priorities, and behavioral adaptation among endurance athletes. The objective of this study was to assess within-person changes in motivation and perceptions of success over ten years in ultramarathon runners.

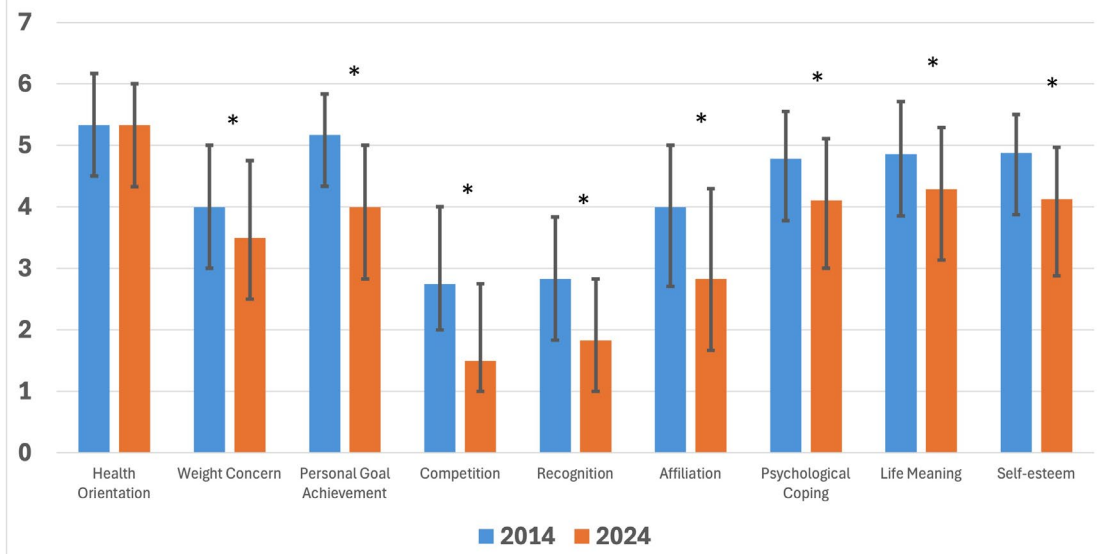
Methods: Participants completed surveys assessing motivation using the Motivations of Marathoners Scales and perception of success using the Perception of Success Questionnaire adapted for ultramarathon running. Participants were also asked whether they would continue ultramarathon participation if it were proven harmful to their health. Longitudinal paired comparisons between 2014 and 2024 were analyzed using the Wilcoxon signed-rank test for continuous variables and McNemar's test for paired categorical variables, and linear mixed-effects models were used to evaluate changes over time and between groups.

Results: A total of 534 runners completed surveys at both time points, of whom 270 were still participating in ultramarathons in 2024. Motivation declined across nearly all dimensions over 10 years, including personal goal achievement, competition, recognition, affiliation, psychological coping, life meaning, and self-esteem (all $p < 0.001$). Health orientation showed no significant change ($p = 0.084$). Participants demonstrated higher task ($p < 0.001$) and ego ($p = 0.002$) scores, indicating weaker orientations toward success in an ultramarathon. In 2024, fewer runners reported they would continue ultramarathon participation if it were proven harmful to their health compared with 2014 (58.8% vs. 74.9%, $p < 0.001$).

Conclusion/Clinical significance: Overall, the results indicate a high level of discontinuation of the sport and a relative prioritization of health-related concerns as other motivations declined over time. These findings provide insight into long-term behavioral changes in endurance athletes that may be relevant for clinicians, coaches, and sports medicine teams supporting aging runners.

Figure:

Motivation of Marathoners Scale



IRB WMed-2022-0935

Abstract #10 (Printed Poster)

Medical Student Comfort Performing Sensitive Cardiovascular Physical Examinations on Female Standardized Patients

Sheridan Bernard, Diane Peirce

Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Women have disparate cardiovascular care and outcomes compared to men.(1,2) Although a careful cardiovascular exam is important for a comprehensive evaluation, medical students are less comfortable performing cardiology examinations on female-presenting standardized patients (SPs).(3) Male students score lower than female students when performing precordial examinations on female SPs during objective structured clinical examinations (OSCEs).(4) These findings indicate a need to improve student comfort during cardiac examinations.

The purpose of this study was to understand what underlies student discomfort examining female SPs. We evaluated whether discomfort correlates with proximity of certain examination maneuvers to breast tissue, and whether medical student gender affects their comfort examining female SPs.

Methods: First-year medical students performed cardiac examinations on female SPs. They then completed a survey evaluating their comfort performing sensitive maneuvers that occurred under or near breast tissue (mitral/tricuspid auscultation, point of maximal impulse palpation, lifts/heaves palpation), and non-sensitive maneuvers that occurred away from breast tissue (aortic/pulmonic auscultation, carotid bruit auscultation, pretibial edema palpation).

The Wilcoxon Signed-Rank Test was used to examine differences in comfort between sensitive and non-sensitive maneuvers. The Mann-Whitney U Test was used to examine differences in comfort between male and female students examining female SPs.

Results: Students were less comfortable performing exam maneuvers near the breast compared to those further away ($p < 0.0001$). This discomfort was present regardless of the student's gender.

Conclusions: This study provides insight into medical student discomfort when examining female patients; some of this discomfort may be attributed to maneuvers near breast tissue. The study also differs from previous literature that found male students were less comfortable examining female SPs.

At our institution, students learn draping techniques and patient-friendly language for performing a cardiovascular examination prior to examining SPs. However, there is no direct education addressing social taboos surrounding breast tissue. Possible next steps include incorporating education during SP events that addresses the discomfort medical students feel performing examination maneuvers close to breast tissue. Doing so may help mitigate possible student discomfort and increase skills in performing cardiovascular examinations on women.

This was approved by the WMed IRB#2025-1241.

Abstract #13 (Printed Poster)

Promissory Evaluation of VTE Prophylaxis Regimens for Hospitalized Patients with COVID-19

Rebecca Bovee, Dane Shiltz, Kari Janes

Ferris State University College of Pharmacy, Grand Rapids, MI

Abstract

Introduction: VTE prophylaxis offers a therapeutic mainstay for patients hospitalized with COVID-19. Despite this, the most effective and safe antithrombotic regimen by agent and dose warrants further exploration. To investigate this, we will complete a retrospective data review of patients admitted to Corewell Health Butterworth or Blodgett Hospitals from April 1, 2020 to December 31, 2020 with symptomatic wild-type SARS-CoV-2. Eligible patients had VTE prophylaxis initiated within 48 hours of admission. We plan to screen 500 patient records for a sample size of approximately 200 patients, with collected data entered into the REDCap® database. Research will be separated into prophylaxis failure vs. success once completed. Data collection for this project is underway, with conclusions yet to be drawn from preliminary results. Unidentified patient and antithrombotic regimen characteristics associated with VTE prophylaxis failure remain a limitation for mitigating risks associated with COVID-19-induced hypercoagulability.

Methods: This retrospective data review will identify hospitalized inpatients aged 18-89 years admitted to Corewell Health Butterworth or Blodgett Hospitals between April 1, 2020 through December 31, 2020. Included patients will have received ≥2 days of VTE prophylaxis initiated within 48 hours of admission with symptomatic wild-type SARS-CoV-2 diagnosed by PCR. We will screen 500 patient records for an included sample size of approximately 200 patients, with corresponding data entered into the online REDCap® database. Data will be extracted from REDCap® and separated into VTE prophylaxis failure vs. success groupings for retrospective comparison. Patient and antithrombotic regimen characteristics will then be examined for statistically significant differences among these groups. Secondly, the incidence of bleeding events relative to patient characteristics and antithrombotic regimen will be examined.

Results: Currently, data from 210 (41%) of 508 records have been collected with 103 (49%) excluded. Figure 1 preliminarily reflects the distribution of thrombosis and bleeding events.

Conclusion: The effect of concurrent medications to treat COVID-19 on complication development and the influence of combination antiplatelet therapy on thrombosis/bleeding outcomes each remain to be established with ongoing data collection. Full data collection will reveal associations between antithrombotic regimens by agent, dose, and corresponding risks for thrombosis and bleeding.

Figure 1:

Prophylactic Anticoagulant Regimen	No Thrombosis	Thrombosis	Total
	103	4	107
Enoxaparin 30mg SC Qday	3	0	3
Enoxaparin 40mg SC Qday	63	4	67
Enoxaparin 40mg SC BID	22	0	22
UFH 5000units BID	2	0	2
Rivaroxaban 10mg PO Qday	13	0	13

Prophylactic Anticoagulant Regimen	No Bleeding	Bleeding	Total
	105	2	107
Enoxaparin 30mg SC Qday	3	0	3
Enoxaparin 40mg SC Qday	67	0	67
Enoxaparin 40mg SC BID	21	1	22
UFH 5000units BID	2	0	2
UFH 5000units Q8H	0	1	1
Rivaroxaban 10mg PO Qday	12	0	12

Spectrum Health IRB-2021-001 NHR

Abstract #14 (Printed Poster)

Indirect Eradication of *Staphylococcal Epidermidis* Biofilms Using Autologous Blood Clots

Ryan Luedtke^{1,2}, Emma Meyer^{1,2}, Kayla Grooters^{1,2}, Yong Li^{1,2}

¹Department of Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Division of Medical Engineering, Department of Surgical Science, Western Michigan University Homer Stryker MD School of Medicine, Kalamazoo, Michigan

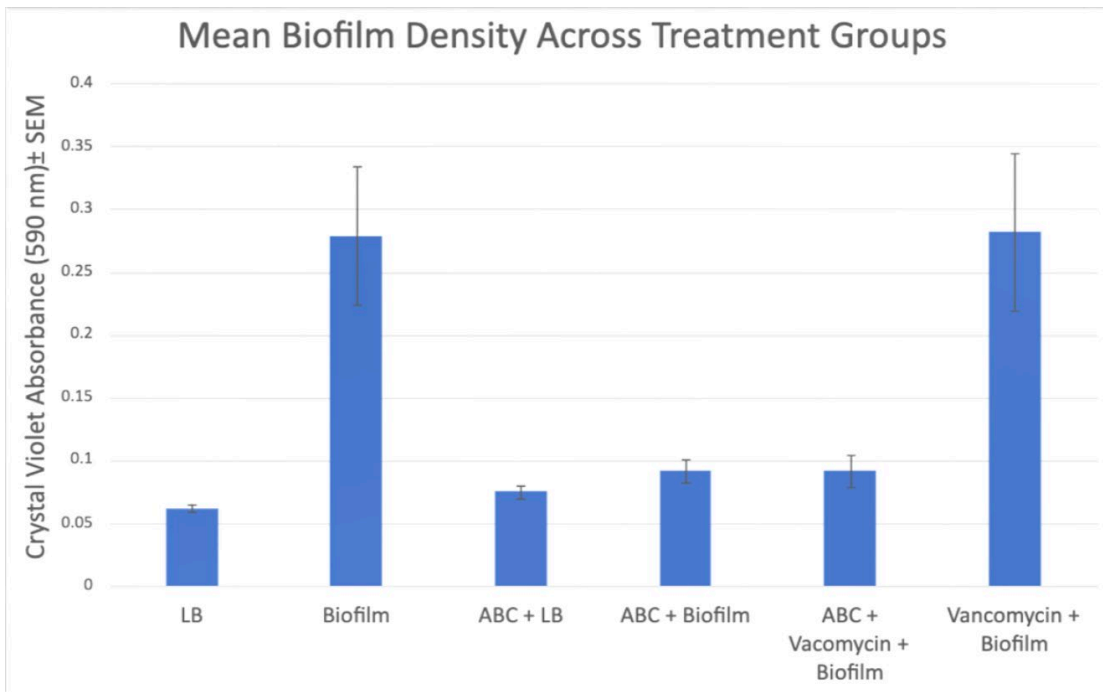
Abstract

Purpose/Hypothesis: *Staphylococcus Epidermidis* can synthesize a biofilm on medical devices like prosthetic joints, heart valves and indwelling catheters. Biofilms are challenging and costly to treat due to their resistance to antibiotics. The use of blood clot treatments has been shown to reduce bacterial cell load and disrupt biofilm architecture (Grooters et al., 2025). This previous study applied autologous blood clots (ABCs) from mice directly onto *S. Epi* biofilms. In this study, we will assess *S. Epi* cell load after indirect application of ABCs using a Transwell plate insert. We hypothesize that the *S. Epi* cell load will be affected by the components within the ABC even without direct adherence to the biofilm.

Methods: *S. Epi* biofilms were grown on 4 out of 6 well plates. The remaining two wells contained LB broth in isolation. Blood was obtained via cardiac puncture from WT mice, allowed to clot, and used to create the following treatment groups: LB, Biofilm, ABC + LB, ABC + Biofilm, ABC + Vancomycin + Biofilm, and Vancomycin + Biofilm. The ABC and/or vancomycin were applied to the Transwell inserts, physically separating them from the underlying biofilm. All wells were suspended in PBS to allow free movement of the well components. Samples of the wells were collected and then analyzed using spectrometry.

Results: [See Table] Decreased absorbance of the crystal violet stain was observed across all four trials for the [ABC + Biofilm] and [ABC + Vancomycin + Biofilm] treatment groups. A decrease in absorbance corresponds with a decrease in biofilm cell density. Of note, a decrease in absorbance was not observed in the [Vancomycin + Biofilm]. Initial statistical analysis using one-way ANOVA revealed a statistically significant difference in absorbance values across treatment conditions ($p < 0.05$).

Conclusion: Our discovery is significant because it shows that ABCs are effective at decreasing biofilm density without being in physical contact with the biofilm and offers insight into the potential mechanism involved. Ongoing in vitro and ex vivo studies aim to isolate individual components within ABCs and evaluate their impact on *S. Epi* biofilm density. Future research is needed to assess the potential immunologic effects of ABC-mediated biofilm disruption.



Abstract #16 (Printed Poster)

Utility of Procalcitonin in Identifying Community Associated Bacterial Infections in Patients Presenting with Diabetic Ketoacidosis, an 11-year review

Grace Manske¹, Marina Cox¹, John Brown¹, Dimitar Bahariev¹, Ryan Clydesdale^{1,2}, Alec Johnson³, Austin Brubaker⁴, Nic Helmstetter¹

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Internal Medicine, Scripps Mercy Hospital San Diego, San Diego, CA. ³Infectious Disease, Mayo Clinic, Scottsdale, AZ. ⁴Biomedical Informatics, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Background: Diabetic ketoacidosis (DKA) is a potentially fatal complication associated with hyperglycemia in patients with diabetes mellitus that results in 220,340 hospitalizations annually. Infections are a common precipitating cause for DKA. Therefore, ruling out bacterial infection becomes essential when a patient presents with DKA. Procalcitonin (PCT) is a useful biomarker for the presence of certain bacterial infections and the severity of sepsis. However, elevated PCT levels have been documented in DKA patients even in the absence of infection. This has led to the hypothesis that PCT is a marker of hyperinflammation and disease severity. We sought to determine the utility of PCT in the context of DKA hospitalizations to risk stratify patients and minimize overmedicalization including antibiotic use.

Methods: A retrospective chart review was performed from 01/01/2012 to 12/31/2022 in adult patients at a community hospital with a type 1 or 2 diabetes mellitus diagnosis, in confirmed DKA at the time of admission, and with a PCT level drawn within 72 hours of admission. Manual data collection was utilized to determine patients with community associated infections (CAI), non-CAI infections, or no infection. CAI included urinary tract infections, pneumonia, and bacterial blood stream infections. Descriptive statistics and various statistical tests were utilized in our analysis.

Results: The median PCT value for patients with DKA and a community associated infection (CAI) (1.32) was higher than the PCT values for patients with DKA in the non-CAI (0.93) and no infection (0.63) groups. However, 69.06% of individuals in DKA with no infection still had an elevated PCT value ≥ 0.25 . Patients with DKA and a CAI were prescribed a significantly longer median duration of antibiotics compared to patients without an infection, regardless of PCT levels ($p < 0.0001$).

Conclusion: Although both groups of patients in DKA had elevated PCT values, there remained a statistically significant elevation in those with CAI versus without infection. This suggests continued utility of PCT in this clinical setting. Employing a higher threshold for a clinically significant elevation in PCT could be considered in conjunction with other clinical data supporting infection.

IRB WMed-2023-0980

Abstract #17 (Printed Poster)

Physicians' Experiences with Provision of Anticipatory Guidance on Infant Safe Sleep

Linh-Nhu Hoang, Amy Damashek

Department of Psychology, Western Michigan University, Kalamazoo, Michigan

Abstract

Introduction: Sleep-related suffocation is one of the leading causes of infant death in the US. The American Academy of Pediatrics (AAP) proposed guidelines to promote safe sleep practices, but research has found that families face barriers to following the guidelines. Medical providers are in a position to increase caregiver adherence to safe sleep guidelines by providing anticipatory guidance. Limited research has been conducted to examine medical providers' experiences with regard to providing anticipatory guidance about infant safe sleep practices. The present study examined medical providers' experiences with and perceived barriers to discussing infant safe sleep with caregivers of infants.

Methods: Participants ($n = 20$) were residents and faculty from WMed Health Department of Pediatric and Adolescent Medicine in Kalamazoo, MI. They participated in a semi-structured interview about their experiences with and perceived barriers to discussing infant safe sleep with caregivers of infants. Thematic analyses were used to analyze the data.

Results: Most providers reported that they agree with the guidelines, but many noted caregiver barriers to following the guidelines (e.g., difficulty getting infant to sleep, lack of fit with cultural practices). Many of the providers reported that they approach safe sleep conversations by having individualized discussions and take a nonjudgmental approach. A subgroup of providers also noted that they use harm reduction strategies when needed. Participants reported that most discussions with patients generally go well, though there are some exceptions (e.g., caregivers with differences in cultural or religious beliefs). The length of the visit and medical complexities were commonly reported barriers to discussions about infant safe sleep.

Conclusion/Clinical Significance: Providers generally reported using effective strategies to discuss infant safe sleep but noted some barriers to engaging in discussions and in caregivers' ability or willingness to follow the guidelines. Training for providers to more effectively address barriers to caregivers' use of the safe sleep guidelines would likely be helpful.

Acknowledgements: This project was funded through Western Michigan University's Graduate Student Research Grant.WMed-2020-0645

Abstract #19 (Printed Poster)

Public Defender Clients Endorse High and Overlapping Mental Health Symptoms

Nishani Samaraweera, PHD^{1,2}, Grace Roth, BA¹, Janet Karpus, MM¹, Jeremiah Reece, JD¹, Jared Minkel, PHD¹

¹Kalamazoo Defender, Kalamazoo, MI. ²Community Faculty, Department of Psychiatry, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Many public defender clients struggle with mental health challenges. To represent their clients better by incorporating information about client mental health, the Kalamazoo County public defender office has been using the CAT-MH[®], a computerized adaptive tool, screening for symptoms of ADHD, anxiety, depression, mania/hypomania, PTSD, psychosis and risk for substance use disorder. This is an initial summary of the retrospective, deidentified data of the first 708 public defender clients surveyed.

Method: (a) Descriptives and Pearson Correlations were calculated to describe relationships among symptom domains. (b) To summarize symptom severity independent of comorbidity in our sample, we used a maximum-severity metric. Each client was categorized according to the most severe symptom level (None, Mild, Moderate, or Severe) observed across 5 domains: Anxiety, Depression, Mania/hypomania, PTSD and Psychosis. ADHD and risk for substance use disorder were excluded from this analysis.

Results: Severe symptoms were highest for anxiety and substance use risk. The latter was not surprising given the high frequency of charges related to alcohol use in this population. Symptoms of mania/hypomania and psychosis were endorsed at higher rates than expected. All seven domains were highly correlated (range $r = .53$ to $.85$, all $p < .001$), with depression and anxiety exhibiting the strongest association. Clinically meaningful mental health symptoms were prevalent in this sample, with 54% reporting moderate or severe symptoms in at least one symptom domain.

Conclusion: The high rates of moderate and severe mental health symptoms in our sample support our belief that incorporating mental health assessments in the process of public defense is important. Symptom prevalence in our sample exceeded that of a similar cohort screened with the CAT-MH[®] (Gibbons et al, 2019). The widespread and highly correlated symptom endorsement suggests that future analyses examine patterns of comorbidity and the possibility of an underlying, general distress factor.

Given the widespread nature of symptoms in this population, the screening may identify those clients who need a formal assessment or interventions addressing multiple issues simultaneously.

Acknowledgements: Grant funding from the Michigan Department of Labor and Economic Opportunity.

Abstract #20 (Printed Poster)

The Effectiveness of Picture-Based Learning

Ashley Minor¹, Madeline Yorke¹, Larry Robert Peters, PhD²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Biomedical Sciences, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Medical school training has traditionally been in the format of lectures or independent learning modules that are text-based. Assessments are standardized and follow a “select the best answer choice” format, which lends itself well to text-based learning. Studies have found that video-based learning provides superior learning compared to text-based for clinical skills topics. Other studies have indicated that image-based multiple-choice questions perform significantly better than text-based ones for musculoskeletal anatomy. While these studies point to the importance of images and videos for learning overall, there is a gap in research surrounding student’s performance on exam questions related to picture-based learning objectives (LOs) vs. text-based ones. Our research examined if performance on picture-based LOs was significantly different from text-based LOs, which will help guide further curriculum adjustments within medical education.

Methods: LOs were stratified between picture-based and written text using the following criteria for picture-based: the LO should have 50% or more of the relevant content associated with the LO in a picture or flowchart-style image; if the LO encompasses multiple different sections of content, then in order for the LO to be considered picture-based, the summative exam question must have an associated image or description of a lesion/disease pathology. 176 summative questions were assessed, and out of those, 41 were picture-based. Mean scores were converted into percent correct for each question and then a t-test was run to discern if there was a statistically significant difference in scores between the two question types.

Results: The mean score for picture-based and word-based questions was 82.37% and 78.37%, respectively. The T-stat was -1.52 and the p-value was 0.1300 indicating that while there is a difference in score, the data not statistically significant.

Conclusion/Clinical significance: Student performance on summative exams is not significantly different when comparing questions written from picture-based LOs and questions written from word-based LOs. There is an increased percent of correct answers on picture-based LOs. A larger sample size may create a significant result, indicating better retention of knowledge for picture-based LOs.

WMed-2025-1326 (Exempt)

Abstract #22 (Printed Poster)

Heart Failure and Prescribing SGLT2 Inhibitors

Fatima Khan¹, Taha Mansoor¹, Harshank Patel¹, Tracey Mersfelder^{2,3}, Stephen McGinnis¹

¹Department of Internal Medicine, Western Michigan University, Kalamazoo, MI. ²Department of Pharmacy, Ferris State University, Grand Rapids, MI. ³Department of Pharmacy, Beacon Health System, Kalamazoo, MI

Abstract

Introduction: The management of heart failure has advanced in recent years, with new recommendations and guidelines for treating patients with heart failure with preserved, reduced, or moderately reduced ejection fractions. Part of this treatment plan is to add a sodium-glucose co-transporter 2 (SGLT2) inhibitor to the patient's medication regimen. Several approaches have been developed using the electronic health record (EHR) to enhance heart failure management. Our objective was to determine if creating and implementing a clinic notification that triggered in patient charts with preserved or reduced heart failure not currently prescribed a SGLT2 inhibitor would increase adherence to the most recent heart failure guidelines.

Methods: This study was a quality improvement project. A report of patients seen in either the Internal Medicine or Medicine-Pediatrics clinic diagnosed with heart failure based on ICD-10 codes was created, excluding those patients already prescribed a SGLT-2 inhibitor. The primary provider was sent an internal notification regarding these patients to consider adding a SGLT2 inhibitor to the patient's medication regimen. A new report was generated after six months of deploying the internal notification. Statistical analysis was then performed. The project was determined to be non-human research by the IRB due to its quality improvement category.

Results: Forty-two patients were identified. Six months after sending the internal notification, 21% of those patients were placed on a SGLT2 inhibitor. There were no statistically significant differences in baseline characteristics.

Conclusion/Clinical significance: Careful consideration should be given when placing notifications in the EHR to avoid provider burnout. This quality improvement project was conducted to determine if there was a need for this intervention and if the type of intervention had an impact. Although there was only a 20% improvement, limitations existed that affected the results. First, not all patients may have been seen in the clinic during the project timeframe, and second, there may have been contraindications to the medication that would not have been identified without a chart review. As a result, the intervention is positive and should be considered for institution-wide expansion.

Abstract #24 (Printed Poster)

Nucleic Acid Delivery Using PEDOT Nanoparticles

Megan Westphal¹, Mitchell Kenter², Abraham Konjoh², Adil Akkouch²

¹Western Michigan University Homer Stryker M.D. School of Medicine Medical Student, Kalamazoo, Michigan. ²Department of Surgical Sciences, Division of Orthopaedic Surgery & Division of Biomedical Engineering, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Gene therapy is an increasingly popular technique in medicine to be used as a method of targeted treatment for a variety of genetic conditions. It involves replacing or correcting non-functional genes and introducing new genetic material to restore proper functioning. This technique has proven effective for conditions like Alport syndrome and has been under investigation for genetic conditions such as sickle cell anemia, thalassemia and the repair of bone and cartilage in degenerative diseases. With this therapy, therapeutic nucleic acids can regulate gene expression and control cell fate, inflammation, matrix remodeling, and drivers of tissue repair. Clinical success depends on the efficiency, safety, tunability, and biocompatibility of delivery systems such as viral vectors, synthetic vectors, and nanoparticles. However, there are some limitations to these methods. Viral vectors have a high risk of triggering an immune response which could limit their effectiveness. Synthetic vectors have lower effectiveness and only work short-term. The structure of solid lipid nanoparticles can lead to lower drug loading capacity and risk for drug expulsion during storage. To address these limitations, we propose engineering a PEDOT based, electrically conductive delivery system that enables electrically modulated intracellular delivery of nucleic acids to enhance tissue regeneration and repair.

Methods: We synthesized pure PEDOT nanoparticles via oxidative polymerization of the 3, 4-ethylenedioxythiophene monomer (EDOT) in the presence of graphene oxide (GO), dimethyl sulfoxide (DMSO), and ferric chloride (FeCl₃). We loaded these nanoparticles with miRNA-3145 labeled with FAM, a fluorescein tag that visually confirm uptake, and we tested delivery to human osteoblasts. We evaluated the cytotoxicity, delivery, and transfection efficacy using live/dead assay, fluorescent microscopy, and gene expression analyses.

Results: PEDOT nanoparticles were successfully synthesized using oxidative polymerization. A typical compact and globular morphology of PEDOT was observed under scanning electron microscopy. Osteoblasts treated with PEDOT_miR-3145 showed no-difference in cell viability (99.1%) compared to non-treated cells (98.6%). Fluorescence microscopy confirmed the uptake of labeled miR-3145 for up to 7 days.

Conclusion/Clinical significance: Controlled nucleic acid delivery using PEDOT nanoparticles could provide an effective, tunable, and clinically translatable platform for gene therapy across a broad range of diseases.

Abstract #25 (Printed Poster)

Taguchi Method Analysis of MEW 3D printed Poly(glycerol-sebacate)/Polycaprolactone Scaffolds for Skin Tissue Engineering

Rafael Deleon¹, Jordan Dombroski², Mitchell Kenter², Adil Akkouch²

¹Michigan State University, Lyman Briggs College, East Lansing, Michigan. ²Department of Surgical Services, Division of Orthopaedic Surgery, & Division of Medical Engineering. Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Skin tissue damage resulting from injuries such as trauma, burns, or chronic wounds presents a significant clinical challenge. These injuries often lead to pain, impaired functionality, reduced quality of life, and increased risk of infection. Skin tissue engineering using scaffolds has emerged as a promising approach offering support for repair and integration of engineered tissue into the host while promoting natural healing processes. Poly(glycerol sebacate) (PGS) and polycaprolactone (PCL) are biodegradable polymers widely used in tissue engineering, due to their excellent biocompatibility. We used a novel 3D printing technology named melt electrowriting to create biodegradable PGS-PCL scaffolds for skin regeneration. Our goal is to investigate the degree of influence that different printing parameters, such as pressure or voltage, have on the physical and mechanical properties of the resulting scaffolds, by using a Taguchi based statistical analysis. The Taguchi method utilizes a set of orthogonal arrays to examine numerous printing parameters with as few experiments as possible, which is more effective than traditional design methods.

Methods: PGS was synthesized using a polycondensation reaction of glycerol and sebacic acid under nitrogen at 120 °C and was then mixed with PCL at 0.5% to 10% weight ratios. A 4x3 Taguchi orthogonal array was used, and scaffolds were printed using the Axo-A3 3D-bioprinter. The physical and mechanical properties of the 3D-printed composites were analyzed. Scaffolds were examined under a stereomicroscope, and filament size, distribution, and shape were recorded.

Results: Based on the Taguchi design of experiments, pressure and voltage were the dominant factors across all concentrations. Temperature and speed affected physical properties, but their impact was smaller than that of pressure and voltage, particularly for mechanical outcomes. Straight filaments showed better mechanical performance than curly filaments; however, increasing the PGS-PCL concentration to 5% or 10% did not produce the same improvement.

Conclusion/Clinical significance: The Taguchi design of experiments used here provided an efficient and systematic way to optimize designs for performance and quality of PGS-PCL scaffolds for skin regeneration. Specifically, the ability to modulate filament morphology through variations in speed, pressure, temperature, and voltage provides a tunable approach to scaffold design.

Abstract #26 (Printed Poster)

Dietary Practices and In-Race Nutrition Among Ultrarunners: Findings from the Ultrarunner Longitudinal TRacking (ULTRA) Study

Ethan Jastifer¹, Luke Malocha², James Jastifer^{3,4}

¹Undergraduate Student, University of Notre Dame, Notre Dame, Indiana. ²Undergraduate Student, University of Michigan, Ann Arbor, Michigan. ³Clinical Associate Professor, Department of Surgical Sciences, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ⁴Adjunct Professor, Mechanical and Aerospace Engineering, Western Michigan University Department of Mechanical and Aerospace Engineering, Kalamazoo, Michigan

Abstract

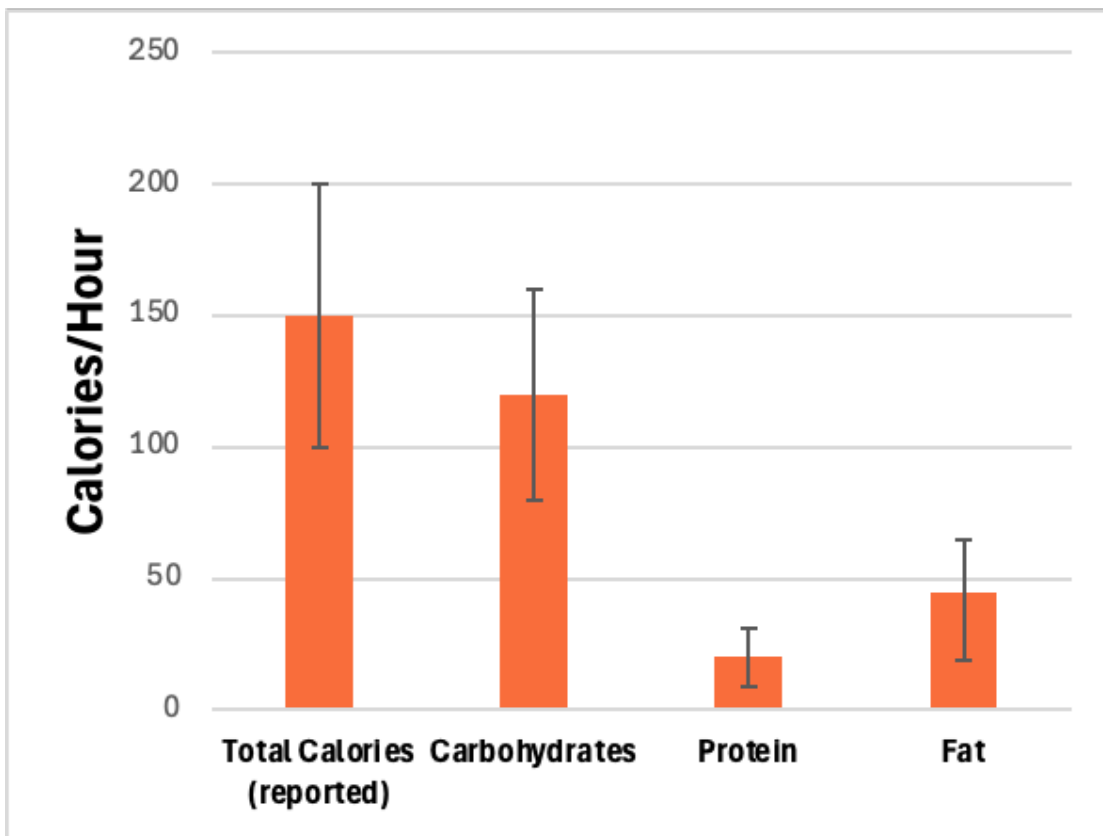
Purpose: Ultramarathons place significant demands on the human body. Despite expert recommendations, limited data exists on actual dietary practices of ultramarathon runners at baseline and during these events. This research aimed to characterize baseline dietary habits and in-race nutritional practices among ultramarathon runners.

Methods: A total of 377 ultrarunners from the ULTRA study cohort were included, all of whom had participated in a race longer than 42 km within the year prior to survey completion. This cross-sectional survey investigated the dietary habits and nutritional practices of participants, examining their health status, running behavior, and dietary practices during daily life and races.

Results: 68% of ultrarunners had no dietary restrictions at baseline, with the most common restriction being vegetarian (11%). 68% of ultrarunners report being somewhat or moderately careful about their daily diet. During ultramarathons, 29% of runners consumed 200–300 calories per hour, 36% consumed 100–200 calories per hour, and 21% did not track caloric intake. 84% consume electrolyte drinks and 49% consume soda during ultramarathons. 40% are unaware of how many carbohydrates per hour they consume, 20% consume 40-60 grams per hour, 24% consume 20-40 grams per hour. 84% percent of runners reported experiencing gastrointestinal (GI) upset during ultramarathons, with 50% reporting symptoms as rare.

Conclusion: This study offers valuable insights into ultramarathon runners' nutrition, emphasizing the need for individualized approaches. A majority of ultrarunners experience GI upset during ultramarathons, highlighting the importance of understanding dietary intake while running. Nutritional practices varied widely among participants, even within similar race demands. These findings highlight the complex relationship between baseline diet, race nutrition, and running behavior in this demanding sport.

Significance: The findings from this research offer valuable information that can be used to create evidence-based nutritional recommendations and ultimately enhance athletic performance and promote overall health. These findings may help guide individualized nutrition strategies that balance energy needs with gastrointestinal tolerance. Understanding real-world dietary behaviors may help bridge the gap between expert recommendations and practical implementation during ultramarathon events.



Abstract #27 (Printed Poster)

Headache: An Unrecognized Challenge in Learner Wellness

Sarah Zalubas¹, Grace Manske¹, Bruke Abenet², Lisa Graves³

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Family Medicine Residency, Atrium Health Navicent, Macon, GA. ³Department of Family and Community Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Headaches in medical students, medical residents, and clinical faculty represent a burden to both medical education and patient care. Despite a significant increase in knowledge related to the incidence and characteristics of headaches among healthcare professionals, headache disorders in medical education learners and instructors remain under-studied, under-recognized, and under-treated. There is especially scarce data available on headaches among residents and clinical faculty members. Our study compares the prevalence and characteristics of headaches over 12 months in the context of medical students, medical residents, and clinical faculty. Objectives include comparing the prevalence of headache between these groups, investigating possible correlation between demographic variables and headache type (tension, migraine, or cluster), and determining the impact of headache on work performance and the need to seek higher level care across the groups.

Methods: A survey was distributed in electronic form to medical students, residents, and employed clinical faculty at Western Michigan University Homer Stryker M.D. School of Medicine. Data analysis included descriptive analysis and 95% Wald confidence intervals.

Results: A total of 717 surveys were distributed with a response rate of 21.53% for medical students, 7.49% for residents, and 31.96% for clinical faculty. The 12-month prevalence of headaches in our population was 91.34%, with no significant difference in prevalence between each role. There was no correlation found between headache type and the demographic factors of role, age, gender, or marital status. Despite similarities in prevalence, medical students were significantly more likely to report work interference than clinical faculty and clinical faculty were more likely than students to obtain imaging to evaluate their headaches.

Conclusion: Headaches represent a significant challenge in learner wellness. Wellness educators and curriculum developers should consider headaches and headache management in wellness program development.

IRB WMed-2024-1182

Abstract #30 (Printed Poster)

Postpartum Women's Experiences with Their Medical Providers

Lowell Bouchard, Amy Damashek

Western Michigan University Department of Psychology, Kalamazoo, MI

Abstract

Introduction: Health disparities in maternal perinatal care related to race and socioeconomic status impacts both mothers and their infants. Indeed, black families experience significantly higher maternal and infant mortality rates than White families. The postpartum period is a critical window for maternal and infant health, yet Black women often experience poorer quality care, contributing to adverse outcomes for themselves and their infants. Research on Black women's experiences during postpartum appointments is limited; thus, the present study examined differences in mothers' six-week postpartum care experiences by race and socioeconomic status.

Methods: Postpartum women were recruited from a local obstetric clinic in a mid-sized midwestern town following their six-week postpartum visit. Participants completed an anonymous survey including questions about demographics as well as perceptions of medical providers' cultural sensitivity, use of effective communication, and discriminatory behaviors.

Results: The sample included 108 postpartum women, of which 23 identified as black or biracial. Slightly less than half (43%) of the participants were insured by Medicaid. Mann Whitney tests showed no significant differences in perceived discrimination, provider communication, or cultural sensitivity by race, ethnicity, or insurance status. However, household income was associated with lower perceived discrimination ($\rho = -.20$, $p = .038$) and higher perceived provider communication quality ($\rho = .22$, $p = .025$). In addition, correlational analyses revealed that higher provider communication quality was associated with lower perceived discrimination ($\rho = -.63$, $p < .001$) and higher perceived cultural sensitivity ($\rho = .50$, $p < .001$).

Conclusions: Findings highlight the central role of provider communication in shaping postpartum care experiences. Given that income was related to perceived quality of care, efforts to improve postpartum care may benefit from addressing barriers to effective communication with lower-income patients. It is critical to provide high quality postpartum care to low-income women to reduce risk of negative infant outcomes (e.g., mortality).

IRB-2025-11

Abstract #32 (Printed Poster)

Visceral Adiposity Promises a Strong Metric to Screen Obesity-Related Diseases

Alison Maniace¹, Shamsi Berry, PhD, MS, CPHI²

¹Western Michigan Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Biomedical Informatics, Western Michigan Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Obesity is the most prevalent chronic disease in the US. BMI, until recently, was the standard to assess obesity and associated disease risk. However, BMI does not account for differences in body fat between racial/ethnic groups and sexes; it also fails to identify patients at risk for type 2 diabetes (T2DM) and hypertension successfully. BMI screening neglects high-risk patients, with 37-45% of patients incorrectly identified as healthy. Reflecting these concerns, the AMA created a new guideline to no longer use BMI alone as a metric of adiposity, instead combining it with other metrics. Visceral adiposity, a type of fat in which hormone, fatty acid, and glycerol production are dysregulated more than in other types of fat, causing insulin resistance and hypertension, could replace or supplement BMI in screening. It is a stronger predictor of cardiovascular disease and T2DM than BMI, central abdominal fat mass, and subcutaneous adipose tissue. This study evaluates the accuracy of metrics for assessing obesity-related risk of T2DM and cardiovascular disease.

Methods: The study uses whole-body CT scans from the New Mexico Decedent Image Database (NMDID). Logistic regressions were used to predict risk of developing T2DM, cardiovascular disease, or either for samples of all patients, only obese, and only non-obese. One model was created using age, skeletal measurements, and visceral fat percentage, and the other using BMI alone.

Results: While BMI was significant, the visceral percentage model performed better than BMI at predicting risk of cardiovascular disease and T2DM in every subgroup of patients. The BMI model's C-statistic ranges between 0.514 and 0.591, indicating that the model is slightly better than random chance. The visceral percentage model's C-statistic ranges between 0.667 and 0.933, in the ranges considered acceptable, excellent, and outstanding prediction of outcomes. Skeletal measurements and age were also found to be significant across many demographic categories.

Conclusion/Clinical significance: Visceral adiposity is a promising metric to replace or supplement BMI in screening for obesity-related disease risk. The project is limited by a small sample size, which prevented investigation of racial/ethnic differences, an important area for future research.

Abstract #33 (Printed Poster)

Deletion of Notch Signaling in the Developing Mouse Kidneys Results in Expanded Expression of the Small GTPase Arf6 and ZO-1, Reduced Expression of E-Cadherin, and Collecting Duct Dilations

Nossin Khan, Agata Parsons-Aubone, Kristi Bailey, Greg Vanden Heuvel
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Background: Notch signaling regulates proximal/distal patterning of the nephron in the mammalian kidney. There are four Notch receptors and five ligands, and during kidney development, Notch receptors are activated by binding to ligands on neighboring cells. This results in a series of proteolytic cleavages that lead to the expression of Notch target genes. Deletion of Notch signaling in the developing collecting duct results in collecting duct dilations and hydronephrosis. While cells lining the medullary cavity formed from hydronephrosis are highly proliferative, cells lining the cortical dilations do not label with markers of proliferation.

Methods: To determine whether the dilated collecting ducts in Notch mutant kidneys, called RBPJ/kCD, resulted from changes in cell-cell interactions, we evaluated the expression of the ADP-ribosylation factor GTPase Arf6, receptor tyrosine kinase EGFR and phosphorylated EGFR, and cell-cell adhesion proteins ZO-1, E-cadherin, and N-cadherin. To further determine effects of reduced Notch signaling, we also assessed expression of alpha smooth muscle actin.

Results: Newborn RBPJ/kCD mice exhibited medullary and cortical dilations. Staining with DBA lectin and cytokeratin confirmed the collecting duct origin of the dilations. Postnatal day 14 (P14), RBPJ/kCD mice exhibited hydronephrosis and cortical dilations. Cells lining the dilated collecting ducts exhibited expanded expression of the ADP-ribosylation factor GTPase Arf6 and cell-cell adhesion protein ZO-1, which are normally restricted to the apical membrane. EGFR, phosphorylated EGFR, and alpha smooth muscle actin expression were increased RBPJ/kCD mice. There was a reduction in the basolateral expression of E-cadherin in the collecting ducts of RBPJ/kCD mice. No differences in N-cadherin expression were observed.

Conclusion: Taken together, our results suggest that Notch signaling is required for normal kidney collecting duct development, and that reduced Notch signaling may disrupt cell-cell interactions and EGFR signaling leading to hydronephrosis.

Abstract #34 (Printed Poster)

Association Between E-Nicotine and Connective Tissue Injury

Brady Vibert¹, Thomas Shade¹, Adil Akkouch²

¹Medical Student Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Department of Surgical Sciences, Division of Orthopaedic Surgery & Division of Biomedical Engineering, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Existing research has focused on nicotine and its negative effects on healing; however, there is limited investigation into the incidence of connective tissue injuries (CTI) across different nicotine delivery systems. CTI involve damage to ligaments, tendons, muscles, or fibrous tissues, resulting from sports, accidents, or overuse. These injuries typically cause pain, swelling, and reduced mobility. Given the high prevalence of nicotine use among young adults, examination of potential musculoskeletal effects is warranted. CTI are relatively common among young adults, which is the population with the highest prevalence of using electronic nicotine delivery systems (e-nicotine). This study aims to compare the incidence of CTI among users of different nicotine delivery systems and non-users of nicotine.

Methods: This is a retrospective cohort study utilizing the All of Us (National Institutes of Health). The study includes young adults aged 18-35. Survey responses of patient reports regarding current nicotine use via specific routes were used to stratify individuals based on type and amount of nicotine consumption. Patients who answered the smoke cigarette and e-nicotine surveys with responses “every day” or “not at all” were included, while patients who reported using nicotine “some days,” “don’t know,” “prefer not to answer,” and “skip” were excluded. Rates of injuries were derived from electronic health record data using SNOMED concepts. Differences in injury risk between groups were evaluated using χ^2 tests of independence

Results: A total of 6670 subjects were included in the study. Individuals who used e-nicotine without any other nicotine sources did not show a significant difference in CTI compared to nicotine non-users (RR = 0.82, 95% CI 0.65-1.02, χ^2 test, p = 0.08). When comparing sole use of e-nicotine to the sole use of cigarettes there was a lower risk of CTI for those who use e-nicotine (RR = 0.76, 95% CI 0.60-0.96, χ^2 test, p = 0.018).

Conclusion: Nicotine consumption via smoke cigarettes increases the risk of CTI compared to nicotine non-users and smokeless products users. Further investigation with stratification for age-related cumulative nicotine exposure via each route would be useful considering the relatively recent adoption of e-nicotine compared to cigarettes.

Abstract #21 (Printed Poster)

Public Defender Clients with More Food, Housing and Employment Instability Display More Severe Mental Health Symptoms

Nishani Samaraweera, PhD^{1,2}, Jeremiah Reece, JD¹, Grace Roth, BA¹, Janet Karpus¹, Jared Minkel, PHD¹
¹Kalamazoo Defender, Kalamazoo, MI. ²Community Faculty, Department of Psychiatry, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: This study examines how social variables relate to mental health severity using the retrospective data of 708 Kalamazoo County public defender clients. Mental health symptoms were gathered via the CAT-MH[®], a computerized adaptive test screening for symptoms of anxiety, depression, mania/hypomania, PTSD and psychosis. Social data included housing, food, employment and receipt of benefits (Medicaid and disability) status.

Methods: Client records with missing data were excluded. Descriptive summaries were generated for social variables. Housing, food security and employment were classified into 3 levels. Medicaid and disability had 2 levels – yes/no. A global mental-health severity score was created by summing the scores from the five CAT-MH[®] symptom domains. One-way ANOVAs tested differences in mental health severity across housing, employment and food-security groups, and t-tests compared severity by Medicaid and disability status. Holm corrections-controlled Type I error. Tukey post-hoc tests were conducted for significant ANOVAs.

Results: After excluding records with missing data, the sample was N=705. In this sample, 38% reported moderate to severe food insecurity, 48% reported housing instability, and 76.6% did not have full time employment. 53.6% had Medicaid and 18.4% reported receiving disability (SSI/SSDI). Global mental health severity differed significantly by food security, housing, and employment (all adjusted ps < .001). Post hoc tests revealed that all subgroup differences were in the expected direction with more severe mental health problems found in more vulnerable SDOH categories. Clients on Medicaid had significantly more severe mental health symptoms than those without (adjusted p = .001), but disability status did not differ between groups (adjusted p = .09).

Conclusion/Clinical significance: Overall, these analyses confirm that social vulnerability matters for mental health. These findings support the premise of holistic public defense and highlight the need for social support programs for this population. The results need to be interpreted with caution since only a few social factors were surveyed and the analyses only looked at the impact of each factor separately and not as an interactive collective, which is how they behave in reality. Future studies that assess social factors in a more comprehensive way are warranted.

Acknowledgments: Grant funding from Michigan Department of Labor and Economic Opportunity.

Abstract #36 (Printed Poster)

Falls after Hip Arthroscopy for Femoroacetabular Impingement Syndrome: Prevalence and Risk Factors of Risk of Revision Surgery

Nicholas Kossoff^{1,2}, Manuel Romero-Padron¹, Adam Alakhras¹, Nihal Nagesh¹, Joshua Everhart¹

¹Indiana University School of Medicine, Department of Orthopaedics, Indianapolis, IN. ²Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: The prevalence and clinical consequences of falls in the early post-operative period after hip arthroscopy for femoroacetabular impingement syndrome (FAIS) remain unknown. The purpose of this study is to 1) determine the prevalence of and risk factors for postoperative falls within 90 days of surgery in patients who undergo hip arthroscopy for FAIS, and 2) determine whether falls within 90 days are associated with increased risk of early (within 1 year) revision hip arthroscopy.

Methods: Consecutive patients who underwent primary hip arthroscopy for FAIS by a single surgeon between 2024-2025 were included. All patients were instructed to adhere to partial weight bearing on the operative extremity with use of gait aides for 3 weeks. Falls were defined by ground impact by body parts other than the feet, and near-falls were defined as sudden, forceful, and unanticipated loading of the operative extremity but remaining upright. Bivariate and multivariate analyses were conducted to identify associations between demographic or clinical factors and fall occurrence as well as revision surgery within 1 year.

Results: 192 patients met inclusion criteria (median age 36.7 years IQR 23.4, 46.5; 72% female). 33 patients (17%) experienced a postoperative fall or near-fall (21 falls, 12 near-falls) within 90 days of surgery. Median time to fall was 16.5 days (IQR 8.3–44.5). Fall/near-fall patients had significantly higher rates of revision surgery within 1 year compared to controls (27% vs. 4%, $p<0.001$; OR=9.4, 95% CI 3.1–30.5). Fall or near-fall events were associated with worse baseline physical function (HOOS-PS, $p=0.047$), lower mental health scores (MHI-5, $p=0.04$), and lower activity levels (UCLA score, $p=0.03$). Hearing or visual impairment (OR=6.6, 95% CI 1.9–23.3, $p=0.004$) and higher HOOS-PS score (OR=1.1, 95% CI 1.1-1.3, $p=0.02$) were the only significant independent predictors of postoperative falls or near-falls.

Conclusion: Falls and near-falls within 90 days of hip arthroscopy are associated with markedly increased revision surgery risk. Surgeons should counsel patients, particularly those with sensory impairments, regarding postoperative fall prevention and emphasize prompt reporting of any fall or near-fall events directly to the surgical team.

Abstract #38 (Printed Poster)

Postoperative Shoulder Balance in Juvenile and Adolescent Idiopathic Scoliosis: A Descriptive Retrospective Review

Audrey Kim¹, Jesse Kooistra¹, AJ Karafa¹, Lucas Topie¹, Karen Bovid^{1,2}

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Dept. of Surgical Sciences, Division of Orthopaedic Surgery, Kalamazoo, Michigan

Abstract

Introduction: Postoperative shoulder imbalance (PSI) is a recognized concern following surgical correction of juvenile idiopathic scoliosis (JIS) and adolescent idiopathic scoliosis (AIS), with cosmetic and functional implications. Prior studies have examined curve characteristics, surgical technique, and various radiographic parameters as predictors of PSI, but limited data exist describing postoperative shoulder alignment. This study aims to characterize postoperative lateral shoulder balance in JIS and AIS patients and explore associations with curve type, upper instrumented vertebra (UIV) level, and disk tilt.

Methods: A retrospective radiographic review was conducted of 20 patients who underwent posterior spinal fusion performed by surgeons affiliated with the former Kalamazoo Center for Medical Studies (KCMS) and Western Michigan University Homer Stryker M.D. School of Medicine (WMed) clinics. Shoulder balance was assessed using clavicle angles measured pre-, peri-, and post-operatively. Descriptive statistics were used to summarize patient demographics, Lenke curve type, UIV level, disk tilt, and clavicle angle. Postoperative clavicle angle was compared across sex, UIV levels, and Lenke curve type using nonparametric testing. Associations between clavicle angle and disk tilt, as well as continuous variables (age at surgery, preoperative Cobb angle, and height), were evaluated using Pearson correlation and simple linear regression. Statistical significance was defined as $p < 0.05$.

Results: The cohort included 20 patients (16 female). Mean postoperative clavicle angle was $-0.14^\circ \pm 3.12^\circ$, indicating overall near-level shoulders. Lenke 2 curves demonstrated the greatest variability in shoulder balance (range -5° to $+5^\circ$). No statistically significant differences in clavicle angle were observed by Lenke curve type ($p=0.87$), UIV level ($p=0.29$), or sex ($p=0.34$). A modest correlation was observed between disk tilt and clavicle angle ($r=0.38$, $r^2=0.14$), though this did not reach statistical significance ($p=0.13$).

Conclusion: In this retrospective cohort, most patients achieved satisfactory postoperative shoulder balance regardless of curve type or UIV level. Lenke 2 curves displayed greater variability, likely reflecting the structural nature of the upper thoracic curve. A modest, non-significant correlation between disk tilt and shoulder balance suggests that spinal alignment has some influence on shoulder position. These findings support favorable postoperative shoulder outcomes while emphasizing the importance of overall spinal alignment in surgical planning.

IRB-WMed-2025-1253

Abstract #39 (Printed Poster)

Seeing Kalamazoo: Providing Eyewear for Unhoused Individuals in Kalamazoo

Justino Vitello, Ashley Martinez, Tara Subrahmanyam, Sheridan Bernard, Cheryl Dickson
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Visual impairment in individuals with uncorrected refractive errors represents an invisible disability that can significantly decrease the quality of life, access to social services, and opportunities for independence. The unhoused population is disproportionately affected, experiencing visual impairment and ocular pathology at rates much higher than the national average. In this project, we provide both refractive eye screenings and corrective lenses at no cost to participants at the Kalamazoo Gospel Mission and Ministry with Community. We seek to determine the prevalence of uncorrected refractive errors in the study population and whether access to corrective eyewear improves self-reported quality of life.

Methods and Results: Participants will undergo vision screening and be provided with appropriate corrective lenses ranging from +0.50 to +4.00. Screening will be conducted at the Kalamazoo Gospel Mission and Ministry with Community. An initial survey is conducted using the EQ-5D quality of life index, a standardized method for evaluating quality of life. This survey is completed again at the 4-week and 6-month benchmarks. The data collected in this project evaluates two key factors: the need for corrective lenses in this population and the change in quality of life.

Conclusion/Clinical significance: This project provides insight into the need for additional eye health services for the unhoused population in downtown Kalamazoo. Serving as a pilot program to determine whether providing basic visual screening and budget-friendly corrective lenses can result in cost-effective quality-of-life improvements. We hypothesize that providing corrective lenses will have significant positive effects on mobility, self-care, daily activities, and anxiety/depression. This project aims to provide an evidence-based model that can be implemented in other institutions

Acknowledgments: Internal funding provided by the Office of Research Student/Resident Initiated Research Project Grant.

WMed-2026-1333

Abstract #40 (Printed Poster)

Gamified Simulation Training: An Opportunity for Improvement in Healthcare Education

Naya Hawkins-Grier, Tara Subrahmanyam, Ashley Martinez, Kelly Fan, Ryan Luedtke, Cheryl Dickson
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Improvements to education are currently being studied, as lectures alone have been shown to lack the ability to engage students effectively. Research has shown that simulation-based methods are promising new methods; however, they still leave room for improvement in the area of motivation. This program was introduced to introduce gamification to the WMed EIH2 program during the simulation section. The aim of this addition is to improve information retention and engagement among the Kalamazoo high school student during the program.

Methods: During each monthly session, the students were divided into two groups. Both groups completed individual pre-quizzes, followed by a simulation session with or without a gamified component. After the simulation, students were given a post-quiz composed of the same questions as the pre-quiz. Pre- and post-quiz score differences assessed knowledge gain. Score differences between groups determined gamification benefits.

Results: In this study, we collected both quantitative and qualitative results. The quantitative results consisted of the average quiz scores of each session before and after the simulation. Using binary coding, a two-way ANOVA and linear regression were performed. Of the six sessions, only the gastrointestinal session showed a statistically significant increase in the scores. The resulting p-value for all the sessions was 0.723. However, our qualitative analysis showed a significant increase in student participation and enthusiasm in the gamified simulations.

Conclusion/Clinical significance: With the ever-changing healthcare education landscape, it is necessary to continue exploring new options for improving student learning. This project focused on examining the effects of gamification on student engagement. While completing this project, we noted increased student enthusiasm in sessions where games were incorporated. However, our quiz results showed highly variable quiz score changes, with one of the six sessions being statistically significant. In this project, we explored different applications of gamification to lessons and found that the type of game and simulation was key to score improvement. The results of this project highlight some of the ways the EIH2 program can be improved and provide a model for application to other healthcare teaching programs.

WMed-2025-1315

Abstract #42 (Printed Poster)

Examining the Role of B-1 cells in Atherosclerotic Plaque Development Using a B-1 cell-Deficient Mouse Model

Shashvat Joshi¹, Michihiro Kobayashi¹, Kristi Bailey², Shun Yonehara¹, Hitomi Ura¹, Yosuke Okumura¹, Momoko Yoshimoto¹

¹Department of Investigative Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Department of Histology, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: B-1 cells are a subtype of B cells derived from embryonic hematopoietic progenitor cells, whereas conventional B (B-2) cells are derived from HSCs in the bone marrow (BM). It is known that B-1a cells produce low-affinity natural IgM antibodies independent of T-cells. These IgM antibodies have been shown to play a critical role in reducing plaque lesions by binding oxidized-Low density Lipoprotein (oxLDL) molecules and apoptotic debris, resulting in their clearance. CD19 knock out (KO) mice show a dramatic reduction of the B-1 cell population while retaining normal B-2 cell number. We examined whether the lack of B-1 cells enhances atherosclerotic plaque development in the LDL-receptor (LDLR) KO atherosclerosis (ASC) mouse model, by crossing them with CD19 KO mice.

Methods: We generated CD19 KO on an existing LDL-receptor (LDLR) KO background. Both LDLR KO CD19 wild-type (control) and LDLR KO CD19 double KO (KO group) were placed on a high-fat diet (HFD) for 11 weeks. At the end of the HFD period, mice were sacrificed and analyzed for changes in immune cell populations in the peritoneal cavity, spleen, and the BM by flow cytometry. Aortic plaque lesions were compared using Oil Red-O staining. Plaque lesions at the aortic valve were compared in heart samples using paraffin block sectioning and H&E staining. Plaque lesion sizes were measured using ImageJ software.

Results: CD19 KO group demonstrated a higher plaque area in both aorta and aortic valve sections compared to controls. A 2-3 fold increase in macrophage and monocyte population in the peritoneum and spleen was also observed in the KO group. The CD19 KO group also exhibited a more pro-inflammatory, M1-like macrophage phenotype in both the peritoneal cavity and spleen.

Conclusion: Our study highlights the anti-atherosclerotic role of B-1 cells in the ASC mouse model. The presence of B-1 cells is important in limiting the development of plaque formation. Further studies to determine the mechanisms through which B-1 cells reduce the plaque region will be required.

AICUC-2023-0030

Abstract #44 (Printed Poster)

Drug-Related Suicides in Western Michigan: 2020-2025

Gemma Harkin, Patrick Hansma

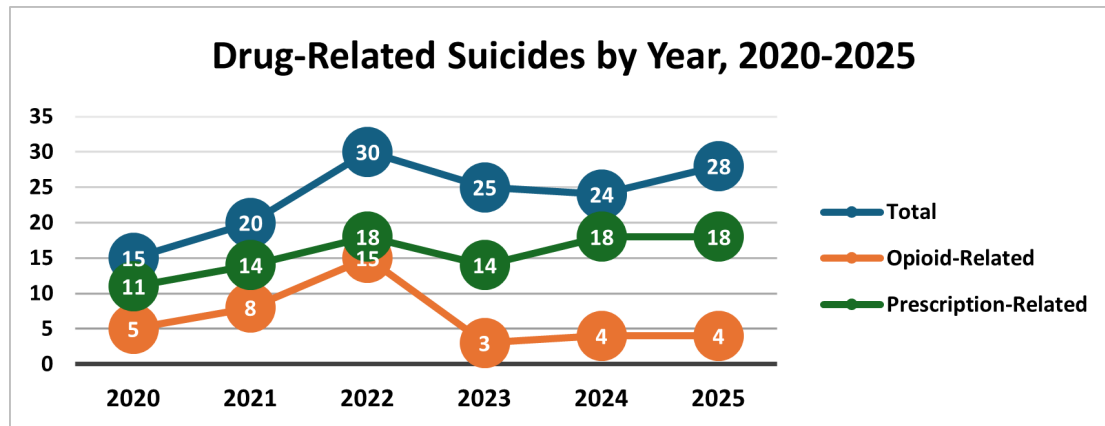
Western Michigan University Homer Stryker M.D. School of Medicine, Office of the Medical Examiner, Department of Pathology, Kalamazoo, MI

Abstract

Introduction: In 2025, 189 suicides were reported to the Medical Examiner's Office at Western Michigan University Homer Stryker M.D. School of Medicine, which serves 14 counties throughout western Michigan. Of these cases, 28 (15%) were considered drug-related suicides. Suicides are often overlooked when discussing drug-related fatalities, this presentation will demonstrate that this method of suicide is an important factor when examining the impact when examining the impact of the opioid crisis and developing drug harm reduction campaigns.

Methods: A data search was performed within the web-based case-management system of deaths reported to the Medical Examiner. These deaths occurred between January 2020 and December 2025, in which a drug, substance or poison was listed as contributory to death. This search included all suicides that involved substances. Non-natural contributors were excluded, such as drowning or asphyxia.

Results: A total of 142 cases of substance-related suicides were identified. Ages ranged from 16 to 94 years, 51 years old being the median age, and 31% was between 50 and 61 years. Women represented 56% (80), Men at 42% (59), Trans persons at 2% (3). 27.4% involved at least one opioid and 10.5% involved a stimulant. At least one prescription opioid, including but not limited to: Hydrocodone (12), Oxycodone (12), Morphine (6), Tramadol (5), was listed as contributory in 27 (19%) of these cases. Ethanol was listed as contributory in 16 (11%) of cases. Alprazolam (8) was the most common non-opioid prescription medication, followed by Venlafaxine (7), and Citalopram (6). Of the 1,883 drug-related deaths reported from 2020 to 2025, 7.5% of them were suicides



Conclusion: While particular is often paid to accidental drug-related deaths, this study demonstrates the prevalence of suicide by acute drug toxicity, and therefore, the importance of a thorough medicolegal death investigation, including signs of illicit or prescription drug use for suicide deaths. Without this, forensic pathologists run the risk of missing intentional drug-related deaths that require full autopsies and comprehensive postmortem toxicological examinations. Thorough death investigations and examinations can inform healthcare and community partners in the design and implementation of unique overdose prevention strategies.

Acknowledgments: MDHHS Swift Toxicology of Overdose Related Mortalities (STORM) project.

Abstract #45 (Printed Poster)

A Survey Investigating the Knowledge, Attitudes, and Beliefs of Healthcare Providers about Sickle Cell Disease and Pain Crises in a Local Population

Sydney Slepian¹, Tessa Kravchenko¹, Carlynn Gasser², Amanda Wewer¹, Katharina Elliott³

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan.

²Department of Pediatrics, Michigan State University College of Human Medicine, Grand Rapids, Michigan.

³Department of Pediatric Hematology Oncology, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Sickle cell disease is a hereditary blood disorder that commonly presents with acute vaso-occlusive pain episodes and frequent emergency department utilization. Pain assessment is inherently subjective, which makes trust between clinicians and patients central to effective care. Prior literature suggests that clinician knowledge gaps, concerns about opioid use, and negative attitudes toward the patient population may contribute to undertreatment of pain and strained patient clinician relationships. This study aims to examine the knowledge, attitudes, and beliefs of emergency department healthcare providers in the Southwest Michigan community regarding sickle cell disease pain crises and treatment, and to identify factors associated with more negative perceptions.

Methods: We designed a cross-sectional survey of healthcare providers (n=29) in different roles working in emergency departments within one health system in Southwest Michigan. We distributed a REDCap survey that incorporated items from a previously validated instrument (General Perceptions of Sickle Cell Disease Patients Scale) and added questions on demographics, guideline awareness, and disease specific training.

Results: Among surveyed providers, 89.29% reported receiving education on sickle cell disease prior to practice; however, only 13.79% were familiar with the American Society of Hematology 2020 Guidelines or the NHLBI 2014 evidence-based guidelines for acute and chronic pain management in sickle cell disease. Providers with prior sickle cell disease education demonstrated greater empathy toward patients with sickle cell disease ($P = .0034$) and perceived fewer patients as drug-seeking at hospital presentation ($P = .0079$). They also reported lower perceived rates of substance abuse among patients with sickle cell disease compared to providers without prior education ($P = .0235$).

Conclusion: Assessment of emergency department provider knowledge and perceptions of sickle cell disease reveals opportunities for education and quality improvement. Improving clinician understanding and addressing negative perceptions may facilitate timelier, guideline-adherent pain management and enhance patient-provider trust in acute care settings. The gap between prior sickle cell disease education and awareness of current evidence-based guidelines among Southwest Michigan providers highlights a critical need for structured training to improve acute and chronic pain management for patients with sickle cell disease. Limitations include a small sample size; future direction includes surveying a larger cohort for further analysis.

IRB WMed-2025-1293

Abstract #47 (Printed Poster)

Psychiatric Symptoms in Normal Pressure Hydrocephalus: A Systematic Review of Presentations, Mechanisms, and Management

Rajasumi Rajalingam¹, Han Gil Park², Alfonso Fasano³

¹Department of Psychiatry, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Toronto Western Hospital, University Health Network, Toronto, Ontario.

³Division of Neurology, University of Toronto, Edmond J. Safra Program in Parkinson's Disease and Morton and Gloria Shulman Movement Disorders Clinic, University Health Network, Toronto, Ontario

Abstract

Introduction: Normal pressure hydrocephalus (NPH) is characterized by gait disturbance, cognitive impairment, urinary incontinence, and ventriculomegaly with normal cerebrospinal fluid opening pressure. In addition to these classical features, NPH may also present with psychiatric symptoms, which can obscure diagnosis and delay treatment. Underdiagnosis may lead to preventable complications, diminished quality of life, and reduced life expectancy. This systematic review aims to (1) identify the spectrum of psychiatric manifestations in individuals with NPH, (2) summarize diagnostic and therapeutic strategies, and (3) explore potential mechanisms linking NPH and psychiatric conditions.

Methods: Following PRISMA guidelines, we systematically searched PubMed, Embase, Web of Science, and APA PsycInfo for articles published from inception to September 2025. Additional studies were identified through reference lists of included articles and relevant reviews. Eligibility was assessed at the title, abstract, and full-text levels. Data extraction is being conducted independently by two reviewers.

Results: The initial search yielded 2108 unique articles after removal of duplicates. Screening and data extraction are currently in progress, and final results will be presented at the 44th Annual Kalamazoo Community Medical and Health Sciences Research Day. We anticipate that our findings will delineate key psychiatric presentations associated with NPH and highlight clinical markers that may facilitate earlier recognition.

Conclusion: Timely identification of psychiatric symptoms in NPH may reduce underdiagnosis and promote earlier interventions, such as ventriculoperitoneal shunting. Early treatment is associated with improved outcomes, reduced socioeconomic burden, and improved quality of life for affected individuals.

Abstract #48 (Printed Poster)

Same-Day-Discharge Total Joint Arthroplasty Results in Shorter Length of Stay without Noticeable Adverse Outcomes with PACU Nurse Mobilization Evaluation Over Physical Therapist

Stephan Bremer¹, Max Albiero¹, Kyra Grove², Hannah Walker², Channing Pezet², Christopher Betzle³

¹ Western Michigan University Homer Stryker M.D. School of Medicine, Orthopedic Residency, Kalamazoo, MI. ² Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI.

³ Western Michigan University Homer Stryker M.D. School of Medicine, Orthopedic Surgery, Kalamazoo, MI

³ Western Michigan University Homer Stryker M.D. School of Medicine, Orthopedic Surgery, Kalamazoo, MI

Abstract

Introduction: The shift toward same-day discharge total joint arthroplasty (TJA) has increased demand on healthcare providers, particularly physical therapists (PTs), to evaluate patients for safe discharge from the post-anesthesia care unit (PACU). This study assessed whether postoperative mobilization evaluation by a registered PACU nurse (RN) was non-inferior to physical therapists by examining length of stay for patients and whether this had any adverse effects on short-term complications or long-term patient-reported outcomes.

Implementation of RN clearance may lead to decreased hospital/surgery center costs, decreased length of stay, decreased failed same-day discharge, and decreased strain on therapists.

Methods: A retrospective cohort study was conducted at a single institution and its outpatient centers, reviewing 582 patients who underwent same-day discharge primary TJA between January 1, 2019, and December 31, 2022. Patients were divided into PT (n=122) and RN (n=460) evaluation groups. Exclusion criteria included revision arthroplasties and inadequate follow-up. The primary outcome assessed was length of stay. Secondary outcomes were falls, ED visits, and telephone encounters all within 30 days, along with PROMIS, HOOS, and KOOS scores at one year. Data were obtained via electronic health records and the Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI). Statistical analysis accounted for data distribution using means or medians as appropriate.

Results: Shorter length of stay for the RN group was found in both the total hips (8.00 versus 9.5 hours) and total knees (8.00 versus 10.00 hours) at $p < 0.0001$. There were no differences in any of the thirty-day outcomes including falls, ED visits, or phone encounters. There were no differences in PROMs at one year including PROMIS mental, PROMIS physical, HOOS, or KOOS. Of note, although PACU times were not significant between the two groups, they did approach significance specifically in both the total hips ($p=0.239$) and total knees ($p=0.051$) with the shorter time experienced by the PT group. This is thought to be due in part to patients requiring transfer out of PACU and to the hospital floor to receive their PT evaluation due to PT delays in PACU.

Conclusion: In conclusion, this study found that RN-led postoperative mobilization evaluation was non-inferior to PT evaluation when comparing short-term complications and long-term outcomes. Additionally, it was associated with shorter hospital stays. These findings suggest that RNs can effectively manage same-day discharge, potentially reducing demand on hospital and PT resources without sacrificing outcomes or patient satisfaction.

Abstract #23 (Printed Poster)

Post-Traumatic Stress Disorder and Criminal Charges: Evidence from Mental Health Screening of Public Defender Clients

Emily Standish, PhD¹, Jeremiah Reece, JD², Nishani Samaraweera, PhD³, Torey Davenport, JD², Grace Roth, BA³, Janet Karpus, MM², Jared Minkel, PhD²

¹Department of Psychiatry, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Kalamazoo Defender, Kalamazoo, MI. ³Kalamazoo Defender, Kalamazoo, MI

Abstract

Introduction: Public defender clients face significant mental health challenges, yet relationships between psychiatric conditions and criminal charges remain unclear. The Kalamazoo County Public Defender Office used the CAT-MH[®], a computerized adaptive mental health screener, to assess clients' psychiatric symptoms. The retrospective analyses presented here on 708 adult records tested our hypothesis that PTSD symptoms uniquely predict criminal charges.

Methods: Multivariable negative binomial regression on z-scored variables analyzed PTSD severity as a predictor of global legal burden while controlling for all other mental health symptoms. Legal burden was calculated as the sum of the severity of each charge a client faced. Secondary bivariate negative binomial regression models identified specific charges that were associated with PTSD symptom severity. These tests were FDR corrected to prevent inflation of Type I error. Incidence Rate Ratios (IRR) were also calculated as effect sizes.

Results: PTSD showed a negative relationship to overall legal burden that was significant at the exploratory level (IRR = 0.89, $p < .05$), but did not survive FDR correction. Secondary bivariate analyses indicated that PTSD severity was associated with a reduced incidence of traffic charges (IRR = 0.98, FDR- $p = .002$). These are common and likely drove the overall protective effect. However, PTSD was also associated with an increased incidence of charges for property theft (IRR = 1.01, FDR- $p = .01$) and violent crime (IRR = 1.03, FDR- $p = .01$).

Clinical significance: This study examines PTSD symptoms' association to legal charges among public defender clients. Our findings suggest that greater PTSD severity may predict less severe total legal burden overall, but could increase risk of charges related to serious violent crime. Limitations include cross-sectional data that prevents causal conclusions and self-reported symptoms in a sample experiencing legal challenges. Additional studies with mixed methods are needed to understand how trauma and legal challenges are related.

Acknowledgements: Grant funding from the State of Michigan Department of Labor and Economic Opportunity (LEO)

Abstract #55 (Printed Poster)

In-Hospital Management and Outcomes of Acute Myocardial Infarction with Cardiac Arrest Stratified by Household Income in the United States

Maninder Randhawa¹, Dylan Yu¹, Aritra Paul¹, Anand Rai¹, Austin Brubaker², Devjit Randhawa³, Dimitar Bahariev¹, Santhosh Koshy¹

¹Department of Internal Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Biomedical Informatics, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ³Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Acute myocardial infarction with cardiac arrest (AMI-CA) is associated with high morbidity and mortality despite advances in revascularization and post-arrest care. Socioeconomic status, often estimated using household income, influences cardiovascular risk and outcomes, yet contemporary national data evaluating income-based differences in in-hospital management and outcomes among patients with AMI-CA remain limited.

Methods: We performed a retrospective observational analysis using the National Inpatient Sample (NIS) from 2002 through 2022. Adult hospitalizations with a primary diagnosis of acute myocardial infarction and secondary diagnosis of cardiac arrest were identified using International Classification of Diseases, Ninth and Tenth Revision codes. Patients were stratified by median household income quartile based on ZIP code and categorized into lower-income (0–50th percentile) and higher-income (51–100th percentile) cohorts. Multivariable logistic regression was used to adjust for patient demographics, comorbidities, insurance status, and hospital characteristics. The primary outcome was in-hospital mortality. Secondary outcomes included cardiogenic shock, use of mechanical circulatory support, gastrointestinal bleeding, respiratory failure, invasive mechanical ventilation, acute kidney injury, renal replacement therapy, do-not-resuscitate status, encounter for palliative care, length of stay, hospitalization cost, and discharge disposition.

Results: A total of 364,603 AMI-CA hospitalizations were identified, of which 202,215 (55.5%) occurred among lower-income patients and 162,388 (44.5%) among higher-income patients. Median age was similar between cohorts (66.6 vs 67.0 years), and patients in both groups were predominantly male, Medicare insured, and treated at urban teaching hospitals. The prevalence of ST-elevation myocardial infarction and rates of revascularization with percutaneous coronary intervention and coronary artery bypass grafting were comparable between income groups. In-hospital mortality was significantly higher among lower-income patients compared with higher-income patients (49.6% vs 44.3%, $p < 0.001$). Respiratory failure occurred more frequently in the lower-income cohort (52.2% vs 50.6%, $p = 0.022$), while rates of cardiogenic shock, mechanical circulatory support, renal replacement therapy, invasive mechanical ventilation, do-not-resuscitate, encounters for palliative care were similar. Total hospitalization costs were lower among lower-income patients (29,766 vs 33,329; $p < 0.001$).

Conclusion: In this nationwide analysis of AMI-CA hospitalizations, lower household income was independently associated with higher in-hospital mortality despite similar utilization of revascularization and invasive therapies. These findings highlight persistent socioeconomic disparities in outcomes among patients with AMI-CA and underscore the need for targeted strategies to improve equity in care and outcomes for this high-risk population.

Abstract #57 (Printed Poster)

Medical Student Wellness: Practices, Perceptions, and Opportunities for Institutional Support

Mohammad Turchian, Matthew Eisenhardt, Lacey Burke, Lauren Griffin, Vitaliy Voytenko, Abigail Solitro, Robert Peters

Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Medical student well-being is a growing concern in undergraduate medical education, with high rates of psychological distress reported globally. A meta-analysis of 195 studies across 47 countries found that 27.2% of medical students screened positive for depression, with prevalence ranging from 9.3% to 55.9% depending on the assessment tool used (Rotenstein et al., 2016). Similarly, a national U.S. cohort reported that 52.9% of medical students met criteria for distress, and 22% had taken or considered a leave of absence due to well-being concerns (Rajapuram et al., 2020). Despite an increased institutional focus on wellness, limited data exists on how medical students define well-being and the practices they use to support it, emphasizing the need for student-informed approaches to wellness initiatives.

Methodology: A cross-sectional, anonymous electronic survey was distributed to WMed medical students (M1–M4) assessing personal wellness practices, perceptions of well-being, and utilization of wellness resources at WMed using Likert-scale and open-ended items. Free-response data concerning student attitudes towards personal well-being practices, internal resources, and unmet well-being needs were collected and reviewed for insights and general student perspectives.

Results: Sixty-six WMed medical students were surveyed on their personal understanding of well-being, daily engagement in wellness practices, and perspectives on institutional support and resources related to well-being. Most students (89.4%) reported having a clear personal definition of well-being and regularly engaging in wellness activities (77.3%). However, fewer students felt their current lifestyle supported their overall well-being (48.5%) or that they had enough time to participate in these activities (40.9%). While most students believed that WMed supports student well-being (62.1%) and knew about available resources (72.8%), less than half (44.0%) reported using these resources in the past year.

Conclusion: Although medical students have clear definitions of well-being and often participate in wellness-supportive activities, many face time and lifestyle challenges. Despite a supportive environment and awareness of available resources, usage remains low, which shows the need for more accessible and integrated wellness initiatives.

Abstract #58 (Printed Poster)

Gamifying Cytokine Biology: Preliminary Learning and Engagement Outcomes from *CytoKind of a Big Deal*

Chidambaram Nachiappan¹, Tyler Brand², Mark Santos³, Karen Duus³, Rajasekaran Koteeswaran⁴, Robert Peters¹, Amy Stone⁵

¹Western Michigan University, Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²University of Idaho, School of Health and Medical Professions, Moscow, ID. ³Touro University Nevada, College of Osteopathic Medicine, Henderson, NV. ⁴Old Dominion University, Macon & Joan Brock Virginia Health Sciences, Eastern Virginia Medical School, Norfolk, VA. ⁵University of Nevada Las Vegas, Kirk Kerkorian School of Medicine, Las Vegas, NV

Abstract

Introduction: CytoKind of a Big Deal (CKBD) is a case-based immunology card game created to help preclinical medical students understand the different immunological concepts covered on the Step 1 exam. The goal is to help these students learn cytokine-cell-function relationships through collaborative play. The game was created on the basis that traditional teaching methods (lectures, readings, flashcards) have limited engagement and often fail to support long-term retention. Following game development, beta testing was conducted to evaluate feasibility, student engagement, and preliminary learning outcomes. The poster presents early achievement data and thematic analysis of learner feedback from the first implementation cohort.

Methods: Preclinical medical students from multiple institutions participated in a gameplay session and completed pre- and post-assessments along with a perception survey. Those students who did not participate in the gameplay sessions also completed the assessments to serve as a control. Survey evaluated engagement, motivation, perceived learning effectiveness, and the ability to apply cytokine concepts. Open-ended responses underwent thematic analysis to identify commonly cited strengths and areas for improvement.

Results: Both groups showed significant improvement from pre- to post-quiz (Control: 10.8 to 12.4, $p = 0.003$; CKBD: 9.95 to 11.6, $p = 0.001$). Percent improvement was comparable (115% vs. 117%), and between-group analysis showed no significant differences in pre-quiz ($p = 0.26$) or post-quiz ($p = 0.45$) scores. Survey responses reflected high engagement and positive learning experiences, with students reporting increased motivation (mean score, $M = 4.35$), improved ability to apply cytokine concepts to cases ($M = 4.71$), and better identification of knowledge gaps ($M = 4.65$). Thematic analysis highlighted social interaction, enjoyment, visual appeal, and case-based reasoning as major strengths, while students suggested clarifying answer keys, simplifying scoring, streamlining case prompts, and expanding content.

Conclusion/Clinical significance: Based on the preliminary data, CKBD has shown to have higher engagement, positive learning experience, overall increased motivation, and an improved ability to apply immunological concepts. While early results did not show better short-term knowledge improvement compared to traditional study methods, learners were highly satisfied and gave useful feedback, supporting further improvement and testing across more institutions.

WMed-2025-1306

Abstract #61 (Printed Poster)

Synthesis and Optimization of AgGO-Chitosan Nanoparticles for pH-Responsive Infection Control

Abigail Eilertson¹, Mitchell Kenter², Robert Sawyer², Adil Akkouch²

¹Kalamazoo College, Kalamazoo, Michigan. ²Department of Surgical Sciences, Division of Orthopaedic Surgery & Division of Biomedical Engineering, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Mesh-associated infection remains a major complication following hernia repair and is largely driven by early bacterial colonization and subsequent biofilm formation, which confers resistance to conventional antibiotic therapy. Implantable surgical meshes capable of localized, infection-responsive antimicrobial delivery represent a promising strategy to suppress bacterial growth prior to biofilm establishment. Chitosan, a biocompatible and biodegradable polysaccharide, exhibits antibacterial and antibiofilm activity through electrostatic interactions with bacterial membranes and disruption of biofilm matrices. Silver-doped graphene oxide (AgGO) provides complementary antibacterial activity via sustained silver ion release. This study aims to develop pH-responsive chitosan nanoparticles containing silver-doped graphene oxide to suppress bacterial growth.

Methods: Chitosan-containing silver-doped graphene oxide-nanoparticles were fabricated using low, medium, and high molecular weight chitosan via emulsification and ionic gelation. Formulations were prepared with and without surfactant (Tween 20) to assess nanoparticle stability. Antibacterial activity was evaluated using *Escherichia coli* as the model organism. Bacteria were treated with increased concentrations of chitosan-AgGO at different molecular weights, and growth was monitored using a spectrophotometer for up to 22h.

Results: Antibacterial activity depended on chitosan molecular weight, AgGO concentration, and surfactant stabilization. Low molecular weight chitosan nanoparticles showed minimal inhibition, whereas high molecular weight chitosan nanoparticles exhibited substantial suppression of bacterial growth, particularly at higher AgGO concentrations, with inhibition sustained for up to 18 hours. Medium molecular weight formulations demonstrated intermediate activity. Surfactant-stabilized nanoparticles consistently showed enhanced efficacy due to improved dispersion and controlled silver nanoparticle release.

Conclusion/Clinical significance: High molecular weight, surfactant-stabilized AgGO-chitosan nanoparticles demonstrate potent antibacterial activity and represent a promising platform for pH-responsive infection control in surgical meshes. These findings support further development of implantable biomaterials to prevent early bacterial colonization and biofilm formation, with potential applications across a range of medical devices.

Abstract #62 (Printed Poster)

From Funding to Practice: Challenges in Translating Pediatric Advocacy Education into Residency Training

Asra Usmani¹, Maria Asif¹, Arsalan Ahmed¹, Ali Baidoun¹, Mahmoud Nofal¹, Rashma Sadasivan^{1,2}, Jessica Peters^{1,2}, Geetha Ramachandran¹, Meagan Nguyen¹, Kelly Brown¹

¹Department of Pediatrics and Adolescent Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Department of Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Background: Advocacy is a core competency for pediatricians, empowering them to engage communities and influence public health policy. Recognizing the need for advocacy training, our institution initiated the development of a structured advocacy curriculum for pediatric residents. In 2023, our institution was awarded the Leonard P. Rome CATCH grant to support this initiative, funding faculty development and resident education. As part of the effort, we hosted a resident-focused Advocacy Day with statewide speakers to deliver education on community advocacy and policy engagement as well as faculty sessions on curriculum design and sustainability. Despite these advances, the comprehensive rollout of the advocacy curriculum remains in progress

Methods: We distributed a mixed-methods survey to faculty to assess barriers to implementing the advocacy curriculum. The survey combined Likert-scale items and open-ended questions to evaluate challenges such as time, funding, and institutional priorities

Results: Of 15 faculty surveyed, 11 responded (73%). Most identified multiple barriers to implementing the advocacy curriculum: 7 (64%) cited “lack of dedicated time” as a major/significant barrier; 10 (91%) noted “competing priorities” as a moderate/major barrier; and 9 (82%) reported “difficulty building a curriculum from scratch.” Challenges like “lack of financial support” and “limited resources” showed more variability (Figure 1).

Qualitative feedback emphasized the need for protected time, institutional support, and dedicated leadership. Concerns included limited infrastructure, unclear funding, and insufficient training. Faculty favored adapting existing curricula and remained enthusiastic about the initiative’s potential with adequate support.

Conclusion: Despite institutional interest and external funding, implementation faced structural and logistical hurdles, chiefly time constraints, limited faculty capacity, and sustainability concerns. Faculty supported the initiative but stressed the importance of centralized leadership, defined expectations, and accountability systems. Our experience highlights that meaningful investment in protected time, administrative infrastructure, and interdepartmental collaboration is essential. These findings may inform other programs working to build or expand advocacy education within pediatric residency training.

Abstract #66 (Printed Poster)

Evaluating the Safety Profile of Pneumococcal Vaccination During Pregnancy and Lactation: A Systematic Review

Lane Levin, Sara Valencia, Kevin Ault

Department of Surgical Sciences, Division of Obstetrics and Gynecology, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Pneumococcal infection exerts a substantial global burden as a leading cause of bacterial community-acquired pneumonia, bacteremia, and meningitis, despite reductions in mortality following the introduction of pneumococcal conjugate vaccines^{1,2}. In addition, bacterial pneumonia is the most common non-obstetrical fatal infection in pregnancy³. Adults aged 19-49 years with immunodeficiencies and chronic conditions exhibit persistently low pneumococcal vaccination rates, with less than ten percent receiving vaccination within seven years of meeting eligibility criteria⁴. Many pregnant individuals fall within this population and qualify for vaccination due to comorbidities such as cigarette smoking, diabetes mellitus, chronic heart or lung disease, or Human Immunodeficiency Virus⁵. However, pregnancy and lactation are frequently excluded from clinical trials, contributing to uncertainty regarding vaccine safety and limiting vaccination uptake in this population.

Methods: A systematic literature review was conducted in PubMed and Scopus to identify articles that investigated pneumococcal vaccine safety in pregnant and lactating people. Titles, abstracts, and full texts were evaluated, and those reporting maternal, fetal, and neonatal outcomes following maternal pneumococcal vaccination were included for analysis.

Results: Eight studies met the inclusion criteria, including four double-blinded randomized control trials, one uncontrolled, unblinded single-arm study, one unblinded randomized control trial, and two retrospective analyses. Local injection site reactions and mild, transient systemic adverse effects were reported more frequently among vaccinated participants than with placebo. Importantly, no significant differences were observed in rates of severe maternal adverse events, miscarriage, congenital abnormalities, preterm births, or low birth weight^{6,7,8,9,10,11,12,13}.

Conclusions/Clinical Significance: The available evidence consistently demonstrates an excellent safety profile, with no observed increase in rates of adverse maternal, fetal, or neonatal outcomes. Pregnancy represents a critical period of heightened engagement with the healthcare system, thus providing a unique opportunity to vaccinate at-risk reproductive age adults who may otherwise have limited contact with medical services and preventative care. Strengthening the evidence base for pneumococcal vaccination in pregnancy may support clinicians in delivering equitable and effective preventive care and help ensure that eligible pregnant patients benefit fully from pneumococcal disease prevention strategies.

Abstract #67 (Printed Poster)

Barriers, Facilitators, and Attitudes Toward Human Papillomavirus Vaccination Among Individuals Experiencing Homelessness or Housing Instability: A Rapid Review with Preliminary Findings

Sara Valencia¹, Lane Levin¹, Kevin Ault M.D.²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Obstetrics and Gynecology, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Since the introduction of the human papillomavirus vaccination, multiple studies have demonstrated declines in the burden and incidence of human papillomavirus-related diseases¹. Despite its efficacy, vaccine uptake remains poor, particularly among those experiencing homelessness, housing insecurity, or housing instability. Current literature suggests these individuals experience fragmented healthcare access and resource limitations, contributing to difficulties completing a vaccine series². However, there is a paucity in the understanding of attitudes, barriers, and facilitators related to human papillomavirus immunization in this population.

Methods: PubMed and Scopus were searched from inception through February 2026 using terms related to human papillomavirus vaccination and homelessness or housing instability. Records were exported and de-duplicated in a citation manager. Titles and abstracts were screened by one reviewer for this preliminary analysis, followed by full text review of eligible studies. Studies were included if they reported primary data on human papillomavirus vaccination attitudes, barriers, facilitators, knowledge, acceptability, or uptake among individuals experiencing homelessness or housing instability. Studies without vaccine-related outcomes or housing unstable samples were excluded.

Results: The search identified 25 articles, including 13 from PubMed and 12 from Scopus, with 12 remaining after duplicate removal. Twelve studies proceeded to full-text review and were included in the preliminary synthesis. Barriers included restricted access to primary care, limited knowledge of vaccination, and challenges in completing vaccination posed by periods of mobility. Facilitators included access through shelters and low-threshold clinical settings, integration of vaccination into other services, and clinician recommendations. Overall attitudes reflected interest in cancer prevention alongside concerns related to vaccination safety, provider trust, and competing life priorities.

Conclusion/Clinical significance: Preliminary evidence suggests that structural barriers, informational gaps, healthcare system distrust, and disrupted access shape the attitudes and uptake of human papillomavirus vaccination among unhoused populations. These findings support the need for low-threshold, community-integrated vaccination approaches and justify a systematic review to guide implementation strategies tailored to this underserved population.

References:

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2. Decker H, Colom S, Evans JL, Graham-Squire D, Perez K, Kushel M, Wick E, Raven MC, Kanzaria HK. Association of housing status and cancer diagnosis, care coordination and outcomes in a public hospital: a retrospective cohort study. *BMJ Open*. 2024 Sep 12;14(9):e088303. doi: 10.1136/bmjopen-2024-088303. PMID: 39266319; PMCID: PMC11404260.

Abstract #68 (Printed Poster)

Learning Objective Use Among Preclinical Medical Students

Joshua Polgar¹, Timothy Bauler²

¹ Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Biomedical Sciences, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Learning objectives (LOs) are mandatory for undergraduate medical education and emphasized by educators. However, little data exists examining medical student use of LOs and their effectiveness in helping students learn. This study's primary objectives are to determine how medical students use LOs during their preclinical curriculum, assess student opinion of actual LOs from course events to inform best practices, and determine if LO use correlates with exam performance.

Methods: This is a retrospective study examining medical students from the Class of 2027 and 2028 at WMed. Students were sent a virtual survey during their final preclinical course shortly before dedicated Step 1 study time assessing their use of and opinions about LOs. Students were asked about LO importance and use over time. They also rated and commented on specific curriculum LOs for utility for learning/studying. Deidentified average summative exam performance was obtained by an honest broker for each respondent.

Results: 56 students responded to the survey, 25 and 31 from the Class of 2027 and 2028 respectively. Students reported variable use of LOs over their preclinical curriculum. 21% of students changed their use of LOs significantly, but average change was insignificant ($t = 0.60$, $p = 0.55$). 57% of students at the conclusion of the preclinical curriculum found LOs not important or slightly important. Frequently reported reasons for not using LOs included not being a priority (50%) and not being helpful (29%). Specific LOs were rated more highly than broader ones. For the Class of 2027, there was no significant correlation between exam performance and self-rated LO importance at the start ($R = 0.24$, $p = 0.24$) and end ($R = -0.01$, $p = 0.96$) of the preclinical curriculum.

Conclusions: Despite the importance given to LOs by faculty and accrediting bodies, LOs are not frequently seen by students as critical for learning. Students generally support more specific LOs that allow them to better understand their learning requirements. More work should be done to understand how to optimize LOs to best allow students to appreciate their utility as learning tools.

IRB WMed-2024-1200

Abstract #57

Identifying Demographic Disparities in Behavioral Health Referral Practices in an Outpatient Pediatric Clinic

Mohammad Tourchian, Ashley Minor, Megan Westphal, Diego Castro Franco, Daniel Frechette, Katherine Tennant Beenen, Summer Chahin
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Behavioral and mental health conditions affect approximately 13%–20% of children in the United States, with an additional 19% experiencing subthreshold symptoms that cause impairment or distress without meeting full diagnostic criteria (Weitzman et al., 2025). Primary care settings have become increasingly central to pediatric mental health for early identification and service delivery. In recent years, 13.6% of primary care visits among children and adolescents were related to mental health concerns, representing a 44.7% increase in just two decades (Gertner et al., 2026). Integrated behavioral health (IBH) care models have demonstrated significant clinical improvements in pediatric populations. These models prioritize population-based care, measurement-based care, and the delivery of evidence-based mental health services (Yonek et al., 2020). Despite these advances, significant disparities in pediatric behavioral health care persist. The American Academy of Pediatrics identifies children of color, children with disabilities, and families with non-English language preference as populations that are often inadequately screened and underserved (Weitzman et al., 2025). Disparities in early access points, including referral practices within primary care, may contribute to downstream inequities in behavioral health service utilization and outcomes.

Methodology: Using data from our institution's Virtual Data Warehouse, chi-square tests of independence and independent t-tests were performed on data from 11,716 patients (aged 5-18 years) seen in the outpatient setting to compare demographic variables between pediatric patients referred to IBH and those who were not.

Results: Significant differences in behavioral health referral rates were observed across sex, gender identity, race, and insurance type. Specifically, male and non-binary Gender Identity, White race, and Medicaid coverage ($p < .001$) were all significantly associated with higher referral rates to IBH. In contrast, referral rates did not differ significantly by ethnicity ($p = .581$) or age ($p = .337$).

Conclusion: Demographic factors associated with certain marginalized indicators were found to have higher referrals to IBH. Despite this, referral to IBH by race remains inconsistent. These findings highlight the need for targeted strategies to improve equity and accessibility in integrated behavioral health care.

WMed-2025-1288

Abstract #71 (Printed Poster)

The Effects of Area Deprivation Index and Social Vulnerability Index on Integrated Behavioral Health Referral Rates

Ashley Minor, Mohammad Turchian, Megan Westphal, Diego Castro Franco, Daniel Frechette, Katherine Tennant Beenen, Summer Chahin
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Approximately 70% of primary care visits include discussion of at least one behavioral health concern (Vohs et al., 2023). Primary care is often the first point of contact for children and families seeking behavioral health support (Hodgkinson et al., 2017). Integrated Behavioral Health (IBH) models, which embed mental health services within primary care, are evidence-based and associated with improved patient outcomes (Filippi et al., 2023). However, access to IBH remains inconsistent, particularly for marginalized populations (Phelan et al., 2021). Mental health is a critical health equity issue shaped by structural and social barriers. Intersectional factors such as race, socioeconomic status, and gender further compound disparities. This project examines how systemic forces drive inequities in IBH access.

It specifically focuses on area deprivation indices (ADI), which assess neighborhood-level socioeconomic disadvantages (Maroko, 2016), and social vulnerability indices (SVI) which measure community susceptibility to adverse outcomes (Agency for Toxic Substances and Disease Registry, 2024).

Methodology: Demographic data, including ADI and SVI, were collected from the electronic medical record on pediatric patients seen in the WMed pediatric primary care clinics between 2017 and 2024. Chi-square tests were performed to compare ADI and SVI between pediatric patients referred to IBH and those who were not.

Results: There was a significant difference in the referral rate between those in high and low ADI categories ($p < .001$). There was a significant difference in the referral rate between those in high, moderate, and low SVI categories ($p = .024$). In addition, patients in the low SVI category received significantly less referrals than expected, and those in the high category received significantly more than expected.

Conclusion: The study highlights the impact of ADI and SVI on referral rates to IBH, which further exacerbates health inequalities in marginalized communities. Patients in the low SVI category received lower referral rates, and those in the high SVI category received higher referral rates. This demonstrates the disparity that exists as those impacted by social drivers of health are not being referred appropriately. Future steps include strategies to improve the accessibility and equity of IBH services.

WMed-2025-1288

Abstract #72 (Printed Poster)

Gaps in Family Medicine Residency Nutrition Education: A National Survey

Sophie Numbers¹, Ramona Wallace, DO², Janet Mindes, PhD¹, Jeffrey L. Goodie, PhD³, Jeanie Kim, MPH⁴, Amy Clithero-Eridon, PhD⁵, Julia Kwapiszewski, BS, MPH⁶, Layth Tumah, MD², Paulina Cradeur, MD¹, Sojdeh Saber-Hamishegi, MD¹, Lisa Graves, MD¹

¹Western Michigan University, Homer Stryker M.D. School of Medicine, Department of Family and Community Medicine, Kalamazoo, MI. ²Cleveland Clinic Foundation, Department of Functional Medicine, Cleveland, OH. ³Uniformed Services University of the Health Sciences, Department of Family Medicine, Bethesda, MD. ⁴Henry Jackson Foundation for the Advancement of Military Medicine, North Bethesda, MD. ⁵University of New Mexico School of Medicine, Department of Family & Community Medicine, Albuquerque, NM. ⁶Central Michigan University College of Medicine, Mt. Pleasant, MI

Abstract

Introduction: Nutrition education is central to preventive care and chronic disease management, and the American Academy of Family Physicians (AAFP) has published nutrition competencies for family medicine (FM) residency training. However, how program directors' perceptions of nutrition importance translate into curricular time and formal competency requirements remains unclear. The objective of this study was to assess family medicine program directors' perceptions of the importance of nutrition education and to examine the association between these perceptions, the amount of curricular time dedicated to nutrition instruction, and the presence of required nutrition-specific competencies for residency graduation.

Methods: Data were drawn from the 2024 Council of Academic Family Medicine Educational Research Alliance (CERA) Program Directors (PD) Survey. Accredited U.S. FM residency PDs reported perceptions of nutrition education importance, time dedicated to nutrition instruction, and whether nutrition-specific competencies were required for graduation. Descriptive statistics and multivariable logistic regression analyses were performed.

Results: Among 265 responding PDs (37% response rate), 35% rated nutrition education as important or very important, while 69% of programs dedicated one hour or less per month to nutrition instruction; only 5% allocated three hours or more. Programs that rated nutrition education as important or very important were significantly more likely to dedicate at least one hour per month to nutrition education (OR 6.1, 95% CI 3.2–11.5, $p < 0.001$). PDs with 1–4 years of experience (OR 0.3, 95% CI 0.2–0.7, $p = 0.006$) and 5–9 years of experience (OR 0.4, 95% CI 0.2–0.99, $p = 0.048$) were less likely to rate nutrition education as important compared with those with ≥ 10 years of experience. Despite national guidelines, 94% of programs did not require residents to demonstrate competency in nutrition education prior to graduation; only 6% had instituted formal nutrition competencies.

Conclusions: While a subset of family medicine PDs value nutrition education, most programs devote minimal instructional time and rarely require formal competency attainment. These findings highlight a substantial gap between perceived importance, curricular implementation, and competency-based evaluation of nutrition education in FM residency training.

Abstract #74 (Printed Poster)

Evaluating the Educational Impact of the WMed Mini Medical School Program for Older Adults: A Collaboration with WMU Osher Lifelong Learning Institute

Elizabeth Lorbeer¹, Shadi Adineh², Nicholas Bronson³, Luke Burgard³, Kelly Fan³, Charles Gu³, Katie Joo³, Nossin Khan³, Ishaan Patel³, Devjit Randhawa³, Maurice Safar³, Henry Zhu³, Mini-Medical School Team³
¹Department of Medical Library, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Community Engagement and Education, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ³Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: WMed Mini Medical School (MMS) serves as an outreach program between the medical school and the community, offering interactive health education to older adults aged 50 years and above, who are enrolled in the WMU Osher Lifelong Learning Institute (OLLI) program. This study evaluated the satisfaction of older adult participants who attended a 4-week program taught by first- and second-year medical students. Topics taught included anatomy, cardiology, microbiology, pharmacology, and pulmonology using plain-language instruction to older adults enrolled in WMU's Osher Lifelong Learning Institute (OLLI) program. This study evaluated the overall educational impact and participant satisfaction among the first MMS cohort of 26 older adults who attended a 4-week program in January and February 2026.

Methodology: A program evaluation design was used. Older adult participants completed the validated Student Evaluation of Educational Quality (SEEQ) instrument anonymously after each MMS session. The SEEQ assesses multiple dimensions of instructional effectiveness, including clarity, organization, engagement, and overall satisfaction of the course. Quantitative survey data are being entered into REDCap and will be descriptively analyzed with support from WMed's Data Analytics Services Unit (DASU).

Results: Planned analyses will use descriptive statistics to summarize the participants' perceptions of instructional quality, engagement, and satisfaction with the medical student instructors. Findings will generate baseline data to inform the refinement of future MMS offerings and contribute to best practices for community-based, health literacy-focused medical education initiatives.

Conclusion: This evaluation is intended to inform the ongoing refinement of the WMed MMS program and support the development of health literacy-focused, community-engaged medical education initiatives to meet the school's mission. The partnership with WMU's OLLI provides a scalable service-learning model that offers educational value for both older adult learners and medical students alike.

WMed-2026-1329

Abstract #75 (Printed Poster)

How Medical Educators Define Success: Priorities in Educational Intervention Outcomes

Charles Gu¹, Alexandra Bayer¹, Stefanie Attardi², Kyeorda Kemp², Sarah Lerchenfeldt², Tracey Taylor², David Thomas², Gustavo Patino¹

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Oakland University William Beaumont School of Medicine, Auburn Hills, Michigan

Abstract

Introduction: In order to design an effective medical education intervention, it is important to understand which outcomes are valued by educators. There is a gap in the literature relating to how medical educators prioritize outcomes when evaluating the success of an educational intervention. This study focused on quantifying the importance placed on specific education objectives like performance metrics and student satisfaction.

Methods: Investigators circulated a survey internationally to undergraduate medical educators. Each participant was instructed to distribute 100 points to 6 different categories related to the outcome of an educational intervention on a course. These categories included 1) improving average score in a summative assessment, 2) increasing percentage of high scoring students, 3) reducing percentage of students receiving failing scores, 4) score changes in a national licensing exam, 5) percentile change in student satisfaction in a national survey of graduates, 6) change in course evaluation Likert score at the end of the course. Points represented the perceived importance that educators attributed to each outcome.

Results: 115 medical educators across 41 countries completed the survey. The highest average point values were assigned to an increased class average score (mean (SD): 21.94 (15.97)) and a reduced percentage of students receiving failing scores (21.45 (16.41)). The outcomes with fewer points allocated were students' satisfaction in institutional (11.61 (8.58)) and national evaluations (12.53 (8.81)), along with increasing the amount of students with higher scores in a summative assessment (12.47 (8.26)).

Conclusion: Survey results show that educators value outcomes based on performance as an indicator of an intervention's success. In addition, ensuring minimal competence among students seemed more important than increasing the percentage of trainees with higher performance. Understanding these values can help guide the creation of future intervention strategies and show which outcomes should be highlighted when evaluating innovations in medical education.

IRB WMed-2025-1245.

Abstract #77 (Printed Poster)

High-Dose Cephalexin vs Standard-Dose Cephalexin for the Management of Cellulitis in Obese Patients: a Single-Center Retrospective Chart Review

Abbi Ryder^{1,2}, Dean Van Loo^{1,2}

¹Ferris State University College of Pharmacy, Big Rapids, MI. ²Bronson Methodist Hospital, Kalamazoo, MI

Abstract

Introduction: Oral beta-lactam therapy have recommendations on how to adjust dose based on declines in renal function, but few studies have looked at dose adjustment based on weight. Current guidelines for the treatment of cellulitis do not provide strategies on how to treat patients who are at extremes of weight. It is unclear whether increasing the cephalexin dose to treat obese patients with cellulitis is beneficial or if it will cause more harm to the patient. This study aims to compare outcomes between patients who receive the two different cephalexin regimens.

Methods: This study is an observational, retrospective chart review being conducted within the Bronson hospital system. Patients with a diagnosis of cellulitis between 1/1/24 and 12/31/24 will be identified using ICD-10 codes and patients weighing 120kg or more will be included. The primary endpoint being evaluated will be return ED visit within 30 days for persistence of initial cellulitis. The secondary endpoint will be antibiotic treatment days. Data to be collected will include patient admission information (including location of cellulitis, admission diagnosis, prior to admission diagnoses, recent hospital admissions, readmission dates), treatment received (cephalexin for cellulitis treatment, dose of cephalexin given, date/time cephalexin was started and anticipated completion), culture and susceptibility reports for any positive cultures, and comorbidities such as obesity or venous stasis dermatitis.

Results: Preliminary data shows that high-dose cephalexin is not being prescribed for outpatient use by Bronson emergency departments, and is only being used for patients receiving inpatient treatment.

Conclusion/Clinical Significance: Data collected from this study will help guide treatment for overweight patients being treated for cellulitis with cephalexin. Since there are currently no guidelines to suggest the most appropriate treatment, looking at institutional trends of readmission rates among patients receiving standard-dose treatment can help make informed decisions when choosing treatment dosages.

WMed-2025-1311

Abstract #78 (Printed Poster)

Lack of Social Supports in Psychiatric Outpatients: A Pilot Study

Tom Cheng, Felipe Chala, Devan Patel, Karan Saini, Chetan Vyas, Vitaliy Voytenko, Heather Mayle, Eric Achtyes

Western Michigan University Homer Stryker M.D. School of Medicine, Department of Psychiatry, Kalamazoo, Michigan

Abstract

Introduction: Individuals with mental health conditions often have difficulty accessing healthcare for numerous reasons, leading to suboptimal treatment outcomes. This pilot study surveyed self-reported barriers to receiving healthcare among patients receiving care at a university-affiliated outpatient psychiatry clinic located in Kalamazoo, Michigan. The study's aim was to assess barriers to receiving health services, as influenced by the interplay of individual, social, and systemic factors.

Methods: A convenience sample of adult patients receiving treatment at WMed Psychiatry Outpatient Clinic was recruited to participate in an anonymous survey that included demographic and socioeconomic variables (e.g., education and employment status), information about available healthcare support proxies, and the Health Care Task Difficulty (HCTD) scale--a validated 11-item self-report measure assessing difficulty completing routine health care tasks. Participation was voluntary, and the only exclusion criterion was inability to read or write in English. A QR code linking to the electronic survey was provided to patients who consented to participating in the study.

Results: Among the 16 participants from our outpatient mental health clinic who completed the survey, most reported that healthcare tasks, as identified by the HCTD, posed no or some difficulty. Specific areas of "some difficulty" included medication access (4/16, 25%) and obtaining information (3/16, 18.8%). Nearly all participants, however, reported a lack of social support: 14/16 (87.5%) had no support persons, 1/16 had one, and 1/16 had multiple.

Conclusions: The striking finding of the lack of social supports among almost all of the participants in this pilot study is resonant with what the U.S. Surgeon General described as the "epidemic of loneliness and isolation" [1]. This epidemic of loneliness has been linked to increased all-cause mortality, and worsened cardiovascular and mental health outcomes including depression, suicide and dementia [2]. Future studies should further assess the causes of this lack of social support, as well as investigate its effects on educational, occupational, social, and other health outcomes. Investigating different scales of social connectedness for future studies may also allow for more meaningful data to address specific research questions [3].

Abstract #79 (Printed Poster)

The Effect of Glutathione Co-Treatment on Thymoquinone and Nano-Thymoquinone Cytotoxicity in Pancreatic Cancer Cell Lines

Finn Husband¹, Brielle Gomez¹, Nicholas Bronson¹, Ali Vural²

¹ Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan.

²Department of Biomedical Sciences, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Pancreatic cancer remains one of the most lethal malignancies worldwide with limited therapeutic options. Thymoquinone, the main active compound from *Nigella Sativa* black seeds, shows promise against pancreatic cancer but suffers from poor bioavailability. This study utilizes a novel nanoparticle preparation to investigate thymoquinone's metabolic pathways, specifically examining how its interaction with glutathione influences efficacy. By evaluating this antioxidant interaction, we determine whether thymoquinone's anti-cancer impact is driven by pro-oxidant free-radical generation or by specific metabolic byproducts.

Methods: Cell viability experiments were performed on PANC-1 cells using serial dilutions of thymoquinone, nano-encapsulated thymoquinone, and glutathione, with IC50 values based on existing literature. Co-treatment was performed with thymoquinone (TQ) or nano-thymoquinone (nTQ) and glutathione at a 1:1 concentration, at the same serial dilution levels. After 48 hours of exposure, an MTT assay was performed to analyze cell viability by measuring the absorbance. Data were collected, and statistical analyses were performed to compare treatment groups.

Results: The cell viability of both TQ and nTQ when combined with glutathione displayed antagonistic effects at high concentrations, suggesting glutathione saved cells from TQ-cytotoxic effects from 93.9% to 144.8% ($p < 0.001$, +51.0% rescue effect) and nTQ-cytotoxic effects from 81.9% to 114.3% ($p < 0.0001$, +32.4% rescue effect). This phenomenon was observed across most concentrations, with TQ being notably more susceptible to glutathione's protective effects than nTQ, suggesting that nanoencapsulation helps circumvent glutathione detoxification.

Conclusion/Clinical significance: Pancreatic cancer remains highly resistant to treatment, with poor responses observed across all tested groups. However, the data suggest that nano-encapsulation may preserve thymoquinone's pro-oxidant activity against glutathione neutralization. However, therapeutic efficacy is limited by potential toxicity to healthy cells at the high concentrations reported in the literature. Consequently, future research is needed to identify and quantify specific metabolites to determine whether the compound's reduced form drives this inhibition. Clinically, these results suggest that antioxidant supplementation is likely contraindicated during therapy as it may antagonize benefits. Conversely, combining nano-thymoquinone with glutathione-depleting agents offers a promising approach to overcoming chemoresistance in pancreatic malignancies.

Acknowledgments: We'd like to thank Dr. Ali Vural for his expertise.

Abstract #80 (Printed Poster)

A Comparison of Thymoquinone and Nano-encapsulated Thymoquinone with Standard-of-Care Chemotherapeutics in Pancreatic Cancer Cell Lines

Finn Husband¹, Nicholas Bronson¹, Maurice Safar¹, Rishabh Budhreja¹, Brielle Gomez¹, Ali Vural²

¹ Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan.

²Department of Biomedical Sciences, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Thymoquinone (TQ), the main bioactive compound derived from *Nigella sativa* (black cumin), has demonstrated anti-cancer activity in preclinical models, including pancreatic cancer. However, its therapeutic potential is limited by poor bioavailability. To address this limitation, this study employs a novel nano-encapsulated thymoquinone formulation with improved solubility and stability. We compared the cytotoxic effects of TQ and nano-thymoquinone (nTQ) with those of the standard-of-care chemotherapeutic agents, gemcitabine and paclitaxel, in in vitro PANC-1 pancreatic cancer cell models.

Methods: Cell viability experiments were performed on PANC-1 cells using serial dilutions of gemcitabine, paclitaxel, TQ, and nTQ, with IC50 values derived from the literature. After 48 hours of exposure, an MTT assay was performed to assess cell viability by measuring absorbance. Data were collected, and statistical analyses were performed to compare treatment groups.

Results: In PANC-1 cell lines, at the maximum concentrations tested (i.e., 200 μ M for TQ and nTQ, 200 nM for paclitaxel, 50 μ M for gemcitabine), cell viability remained above 80%. Nanoencapsulation of thymoquinone proved to have improved cytotoxicity (81.1% cell viability) compared to thymoquinone (93.9% viability, $p = 0.0007$), paclitaxel (93.7% viability, $p = 0.0005$), and gemcitabine (93.1% viability, $p = 0.0016$). In L3.6p1 cell lines, nTQ displayed proliferative effects compared to TQ.

Conclusion/Clinical significance: Nano-encapsulated thymoquinone demonstrated significantly higher cytotoxicity than standard thymoquinone and paclitaxel, suggesting that nanoparticle delivery may enhance the compound's performance in vitro. Despite this improvement, PANC-1 cells remained highly resistant, and significant effects were observed only at relatively high concentrations. These results highlight the potential of nanoformulations to improve bioavailability, though further research is needed to overcome pancreatic cancer's chemoresistance and determine whether effective doses can be achieved within a safe therapeutic range.

Acknowledgments: We'd like to thank Dr. Ali Vural for his expertise.

Abstract #84 (Printed Poster)

Prediction of Biochemical Recurrence in Prostate Cancer Using MRI-Derived Radiomics: A Systematic Review and Meta-Analysis

Pouria Vadipour¹, Mohsen Salimi², Shakiba Houshi³, Fereshteh Yazdanpanah⁴, Sharareh Seifi²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan.

²Research Center of Thoracic Oncology (RCTO), National Research Institute of Tuberculosis and Lung Diseases (NRITLD), Shahid Beheshti University of Medical Sciences, Tehran, Iran. ³Isfahan

Neurosciences Research Center, Isfahan University of Medical Sciences, Isfahan, Iran. ⁴Department of Radiology, Hospital of University of Pennsylvania, University of Pennsylvania, Philadelphia, Pennsylvania

Abstract

Introduction: Biochemical recurrence after treatment for prostate cancer is an important predictor of metastatic progression and cancer-related mortality. Identifying patients at risk for biochemical recurrence at an early stage can inform therapeutic decision-making and improve individualized management strategies. Magnetic resonance imaging (MRI) plays a central role in the detection and follow-up of prostate cancer. This study aimed to evaluate the performance and methodological quality of MRI-based radiomics machine learning models in predicting post-treatment biochemical recurrence in patients with prostate cancer.

Methods: A comprehensive systematic search was performed in five electronic databases (PubMed, Scopus, Embase, Web of Science, and IEEE) through December 23, 2024, to identify studies that developed machine learning models utilizing MRI-derived radiomic features to predict biochemical recurrence in prostate cancer. Methodological quality was evaluated using the QUADAS-2 and METRICS assessment tools. A meta-analysis was conducted on radiomics-only, clinical-only, and combined clinical–radiomics models in validation cohorts to estimate pooled sensitivity, specificity, and area under the curve using a bivariate random-effects approach.

Results: Twenty-four studies were included in the systematic review, of which 14 were eligible for meta-analysis. Radiomics-based machine learning models demonstrated a pooled area under the curve of 0.75, with a sensitivity of 72% and specificity of 78%. Combined clinical–radiomics models achieved the best performance, with a pooled area under the curve of 0.88, sensitivity of 85%, and specificity of 79%. Assessment using QUADAS-2 identified notable methodological concerns, particularly within the index test and flow and timing domains. The average METRICS score across studies was 65.68% (range: 43.8–82.2%), indicating generally good quality overall while revealing deficiencies in specific methodological areas.

Conclusion: MRI-derived radiomics shows promise in predicting biochemical recurrence in prostate cancer, particularly when combined with clinical parameters. Nevertheless, its routine implementation in clinical practice remains limited, underscoring the need for greater standardization and methodological refinement to improve robustness and generalizability. Future research should prioritize multicenter study designs and comprehensive external validation to ensure broader applicability across heterogeneous patient populations.

Abstract #86 (Printed Poster)

The Effectiveness of Picture-Based Learning: A Student Survey

Madeline Yorke, BS, Ashley Minor, BS, Rob Peters, PhD

Western Michigan University Homer Stryker M.D. School of Medicine (WMed), Kalamazoo, MI

Abstract

Introduction: Traditional medical school training has focused on teaching preclinical information in the format of lectures or independent learning modules that are primarily text-based. Previous research on students' preferred learning styles has been proven inaccurate due to lack of supporting evidence, however a text-based emphasis is still supported by many educators. Studies have demonstrated that image-based and interactive learning performs better on exams, and results in higher long-term memory retention. Given that the research of learning styles is largely inconsistent, increased attention to student learning preferences should be considered when designing curriculum. Our research examined the preferred learning styles of WMed students, using measurements including conciseness of material, level of engagement, and recall of content on in-house testing.

Methods: A cross-sectional study design was implemented to assess WMed students in the classes of 2028 and 2029. A questionnaire was distributed in which there were 16 questions using a Likert scale to assess four research questions. Each research question had two Likert scales written to favor text-based learning, and two written to favor picture-based learning. Data collected was analyzed by the WMed statistical team for significant relationships.

Results: 48 students responded to the survey. Of those, 12 were classified as primarily visual learners, 6 verbal/auditory, and 29 mixed. Overall, there were no significant differences in how students answered survey questions ($p > 0.05$). A general trend indicated that all groups believe written text has unnecessary information ($p = 0.738$) and text-based questions on exams were more consistent with learning objectives ($p = 0.0363$). The student population also agreed that picture-based learning is more engaging ($p = 0.0063$).

Conclusions/Clinical significance: While previous research may have disproven learning styles, there is still a clear and significant preference for how students like to be taught information. Even among self-reported auditory learners, picture-based concepts were reported to be more engaging and motivating, as well as contain less irrelevant information. In the future, this survey could be repeated with all classes and cumulative findings could help teaching faculty create structured lectures that are better suited to the preferences of learners.

IRB WMed-2025-1319

Abstract #88 (Printed Poster)

Fas Apoptosis Inhibitory Molecule (FAIM) mediated disaggregation of Transthyretin (TTR)

John Curran, Joshua Mitchell, Jenna Cooper, Varsha Jawahar, Thomas Rothstein
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Maintenance of protein homeostasis is crucial for cell survival, especially when faced with various internal or external insults. In response to cellular stress, repair mechanisms initiate to remove disfunction cellular machinery. Fas Apoptosis Inhibitory Molecule (FAIM) is a native, conserved eukaryotic protein that is able to dissolve β -sheet fibrillar aggregates. FAIM may represent a novel therapeutic mechanism for aggregation diseases such as transthyretin amyloid cardiomyopathy (ATTR-CM). Physiologically, tetrameric transthyretin (TTR) acts as a vitamin A and thyroid hormone carrier. However, given enough time, or when destabilized by single residue mutations, transthyretin becomes unstable, collapses from a tetramer to a monomer, transitions into an aggregation-prone state, and aggregates into β -sheet fibrils in cardiac tissue. Current treatment for ATTR-CM aims to stabilize tetrameric transthyretin to prevent disease progression but does not address existing fibril deposits. Based on the previously characterized FAIM ability to target various protein aggregates (Ab42, SOD1, tau, etc.), we sought to investigate whether FAIM could also disaggregate TTR fibrils, opening the possibility of developing a curative treatment.

Methods: FAIM-S, wildtype, and mutant transthyretin (M-TTR, V30M, L55P, V122I) genes were chemically synthesized, inserted into a pET24a(+) plasmid, transformed, into *E. coli*, and purified. Transthyretin was aggregated into fibrils and FAIM-S was added at various concentrations to assess disaggregation by Thioflavin T binding, change in turbidity, filter trap assay, and Western blot.

Results: We found that FAIM-S successfully dissolves pathological transthyretin fibrils generated from wildtype and mutant protein, demonstrated by decreased turbidity and Thioflavin T fluorescence compared to the negative control. To verify these observations, we performed filter trap assays and Western blots and observed similar results, demonstrating FAIM's ability to deconstruct mature fibrils.

Conclusion/Clinical significance: Our work thus far established a potential mechanism of action for dissolving existing pathological transthyretin fibrils. We anticipate that FAIM may serve as a novel therapeutic approach to reverse fibril formation within the heart and rescue cardiac function for patients with ATTR-CM.

Abstract #90 (Printed Poster)

Mental Health Discourse Among College Students on Social Media

Ella Miotke¹, Irfan Gulzori¹, Jessica Cataldo², Robert Bensley², R. Mark Kelley²

¹Bachelor of Science in Public Health, Western Michigan University, Kalamazoo, MI. ²School of Interdisciplinary Health Programs, Western Michigan University, Kalamazoo, MI

Abstract

Introduction: Social media has become an informal space for individuals to express mental health concerns and seek support. However, social media has its own mental health impacts, with previous research indicating that social media use may worsen mental health symptoms. This study used a qualitative social listening approach to explore how mental health is discussed among college students on social media platforms. **METHODS:** Publicly available Reddit posts were collected from a mental health thread using the search terms college and social media. Thematic analysis was conducted to identify recurring narratives, emotional tone, and coping strategies. **Results:** Analysis showed that college students described social media as increasing stress, anxiety, and negative self-comparison. Coping with the mental health impacts of social media included taking breaks or limiting use, which helped improve mood and focus.

Conclusions: Online spaces can both support expression and contribute to mental health challenges for college students. Findings from this study can be used to support targeted interventions that address mental health risks of social media use among college students.

Abstract #91 (Printed Poster)

Effect of Concurrent Treatment with Thymoquinone and Nano-Thymoquinone on Gemcitabine Synergism in Pancreatic Cancer Cell Lines

Nicholas Bronson¹, Finn Husband¹, Ali Vural²

¹ Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Biomedical Sciences, Kalamazoo, MI

Abstract

Introduction: Pancreatic cancer remains one of the most lethal malignancies worldwide and is characterized by poor prognosis and limited therapeutic options. Thymoquinone (TQ), the main active compound in black seeds of the *Nigella sativa* plant, is a promising cancer therapeutic that has been shown to enhance the efficacy of conventional chemotherapeutic agents and overcome resistance in various cancer models. Despite these favorable properties, its clinical translation remains limited by poor aqueous solubility and low bioavailability. This study uses a novel nanoparticle preparation to investigate its potential to improve physicochemical properties and to evaluate the synergistic anticancer effects of nano-thymoquinone (nTQ) in combination with gemcitabine.

Methods: Cell viability experiments were performed with L3.6p1 cell lines using a 6x6 dose-matrix design with nTQ/TQ and gemcitabine across 36 concentration pairs. After 48 hours of exposure, an MTT assay was performed to analyze cell viability. Synergy was evaluated using the Bliss Independence mode, with synergy scores analyzed by one-sample t-tests against zero; negative scores indicated synergism, positive scores antagonism.

Results: L3.6p1 cells demonstrated inherent gemcitabine resistance, with single-agent treatment inducing proliferative responses. nTQ combined with gemcitabine produced synergistic cytotoxicity across all 36 concentrations tested (mean synergy score: -265.31, $p < 0.001$), demonstrating that the combination converted two individually proliferative treatments into a cytotoxic regimen. In contrast, standard thymoquinone showed a weaker synergism (-19.25, $p = 0.022$), with mixed effects across different dose combinations, suggesting nTQ's superior synergistic potential in overcoming gemcitabine resistance.

Conclusion/Clinical significance: Pancreatic cancer remains profoundly resistant to chemotherapeutics, with limited absolute reductions in viability observed across all experimental conditions. However, nTQ and gemcitabine did not produce a marked absolute reduction in cell viability; they produced robust synergistic interactions across all tested dose combinations, indicating effective modulation of chemoresistance rather than direct cytotoxicity. Clinically, this combination strategy offers a promising approach for gemcitabine-resistant pancreatic tumors, potentially reducing the required chemotherapy doses while enhancing efficacy, thereby minimizing systemic toxicity by combining gemcitabine with nano-thymoquinone. Future research should focus on exploring higher-dose regimens and validating their translational potential in pancreatic cancer treatment.

Acknowledgments: We'd like to thank Dr. Ali Vural for his expertise.

Abstract #92 (Printed Poster)

Subtype-Specific Analysis of Primary Curve Magnitude and Postoperative Outcomes in Scoliosis: A Propensity Score-Matched Retrospective Study

Omar Shaikh¹, Mohammed Abdul Muq̄sith², Ankit Mehta²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan.

²Department of Neurosurgery, University of Illinois at Chicago, Chicago, Illinois

Abstract

Purpose: Spinal curvature severity, measured by the primary curve angle, is key in surgical planning for scoliosis. While higher preoperative curve magnitudes are associated with increased peri-operative complexity and worse outcomes, their independent impact on complications and neurologic outcomes across scoliosis subtypes - idiopathic, congenital, degenerative, and neuromuscular - has not been systematically evaluated. We assessed the relationship between primary curve magnitude and perioperative risk in scoliosis correction surgery.

Methods: Data were drawn from the Scoliosis Research Society Morbidity and Mortality (SRS M&M) database. Patients were stratified by scoliosis subtype and further categorized into mild ($\leq 70^\circ$) and severe ($>70^\circ$) primary curve magnitude groups. Within each subtype, propensity score matching was performed with patient characteristics and comorbidities. Chi-square tests or Fisher's exact tests compared postoperative neurologic deficits, mortality, and hospital complications across severity groups within each subtype.

Results: Among 5,979 scoliosis patients (idiopathic 33.8%, degenerative 24.1%, congenital 11.1%, neuromuscular 30.9%), demographics varied by subtype; degenerative carried the greatest comorbidity burden. Within-subtype 1:1 PSM achieved balance (SMD <0.1). Severe vs mild: idiopathic (n=555 pairs) and congenital (n=297) had higher new postoperative neurologic deficit; neuromuscular (n=1,262) had higher neurologic deficit, mortality, sepsis, and respiratory/combined complications; degenerative (n=40) differed only in blood loss. Overall, severe disease consistently increased blood loss across subtypes.

Conclusion: Curve severity predicts postoperative outcomes in idiopathic, congenital, and neuromuscular scoliosis but not in degenerative scoliosis. Risk stratification and patient-centered surgical planning are essential for optimizing outcomes.

Abstract #93 (Printed Poster)

Perceptions of Educational Experiences Related to HIV/AIDS Pre-Exposure Prophylaxis in Undergraduate and Graduate Medical Learning.

Urvi Savant¹, Cheryl Dickson²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Department of Pediatrics, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Although the incidence of human immunodeficiency virus (HIV) in the US is decreasing, an estimated 31,800 new infections were diagnosed in 2022. Daily oral pre-exposure prophylaxis, or PrEP, is over 90% effective in preventing infections. However, learners at all levels of medical education have reported variability in training about prescribing PrEP, which, among other barriers, may contribute to the significant unmet need for PrEP in vulnerable groups. This cross-sectional study surveyed medical students and residents in an urban, underserved setting to assess reported effectiveness of educational methods and identify gaps that prevent medical learners from screening patients and prescribing PrEP appropriately.

Methods: A REDCap questionnaire was distributed through institutional email. Current WMed students and residents in emergency medicine, family medicine, obstetrics/gynecology, pediatrics, internal medicine, and internal medicine/pediatrics residencies were included. Non-WMed participants, or residents in non-primary care specialties were excluded. For preliminary results, research objectives were addressed through descriptive statistics.

Results: Of 58 preliminary responses, 36% were preclinical students, 46% were clinical students, 8% were PGY1, and 10% were PGY2 and above. For preclinical students, the most effective experiences were lectures (100% reported effective), assigned reading (70.6%), and case-based learning (62.5%). The most effective experiences for clinical students were lectures (86.4%), flashcards (71.4%), and assigned reading (61.9%). 52.9% of clinical students, 50% of interns, and 75% of seniors reported effective learning from patient care. Respondents at all levels reported confidence recognizing risk for PrEP in test-taking, outpatient, and inpatient care. 100% of residents reported not prescribing PrEP in their current practice or within the last year. Constraints for prescribing PrEP included ability to follow up (60% of seniors, 75% of interns), knowledge (60% of seniors, 50% of interns), and confidence (40% of seniors, 50% of interns).

Conclusion: Students found a variety of learning methods effective, especially lectures, assigned readings, and case-based learning. Residents gained the most from patient care experience supported by reading or didactics. No residents prescribe PrEP in their practice, despite reporting confidence recognizing at-risk patients in multiple settings, due to inability to follow up with patients, lack of knowledge, and low confidence. Learners may benefit from case-based learning and reference reading to build knowledge and focused clinical opportunities to build confidence. However, lack of follow-up with at-risk patients points to systemic gaps where underserved patients should be connected to community and medical resources.

IRB WMED-2026-1333

Abstract #94 (Printed Poster)

Parental Attitudes Toward AI and Pediatric Sleep Quality: A Cross-Sectional Survey Study

Allen Terteryan¹, Summer Chahin²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Western Michigan University Homer Stryker M.D. School of Medicine Department of Pediatric & Adolescent Medicine, Kalamazoo, Michigan

Abstract

Introduction: Sleep problems in children are common and influenced by use of technology in the home and routines surrounding bedtime (Hassinger et al., 2023). Artificial intelligence tools can generate customized bedtime stories that may provide beneficial sleep outcomes for children. However, a future randomized trial requires essential data regarding parent acceptability, perceived safety, and prevalent household limitations that may influence adoption and adherence. This initial study allows for baseline contribution to the literature as there is limited information on this topic currently. The objectives of this exploratory survey were to characterize these elements, establish design specifications for a preference-based artificial intelligence intervention focused on bedtime stories, and explore potential relationships between caregiver concerns with child sleep and current technology use.

Methods: Researchers are recruiting caregivers of children between the ages of 3 and 11 for an anonymous cross-sectional survey. Recruitment is being conducted in pediatric medical clinics through electronic flyers and social media. Participants completed a one-time electronic survey that featured a validated short-form pediatric sleep questionnaire (CSHQ), along with items developed by the researchers. These items assessed the organization of the bedtime routine, the accessibility of electronic devices for children during sleep, the duration of time the child has previously engaged with artificial intelligence tools at home, and the comfort and confidence levels of parents related to bedtime stories generated by AI. To inform the targeting of interventions for a future randomized trial, descriptive statistics will be utilized to compile data on sleep-related behaviors and attitudes. Additionally, exploratory analyses will examine the connections between variables related to technology access and the scores obtained from sleep questionnaires.

Results: Preliminary analyses indicated that 83% of caregivers reported their child does not have access to technology at bedtime. Currently, 93% of caregivers reported using classic printed books for bedtime stories. Interestingly, 65% of participants reported feeling they do not at all trust AI-generated stories to be safe or appropriate for children and 65% reported not being comfortable with utilizing AI tools to help their child sleep.

Conclusion/Clinical significance: Despite high household exposure to artificial intelligence (60%) and high caregiver familiarity (45%), most caregivers reported low trust in artificial intelligence-generated stories (65%) and low comfort using artificial intelligence for sleep support (65%), suggesting acceptability is the main implementation barrier. These preliminary data support prioritizing parent-facing safety controls and transparency when designing the randomized trial to maximize parental comfort and adherence.

IRB-WMED-2025-1314

Abstract #95 (Printed Poster)

Health Utilization Among Unhoused Patients Treated by Street Medicine Kalamazoo

Ian Clark^{1,2}, Marlin Halder^{1,2}, Nicholas Helmstetter^{1,3,4}, Sravani Alluri^{1,2}, Rebecca Reardon-Lochbaum⁵

¹Street Medicine Kalamazoo, Kalamazoo, MI. ² Western Michigan University Homer Stryker M.D.

School of Medicine, Family Medicine, Kalamazoo, MI. ³ Western Michigan University Homer Stryker

M.D. School of Medicine, Internal Medicine, Kalamazoo, MI. ⁴ Western Michigan University Homer

Stryker M.D. School of Medicine, Medicine-Pediatrics, Kalamazoo, MI. ⁵Boston University Chobanian &

Avedisian School of Medicine, Boston, MA

Abstract

Introduction: Social determinants of health, including being unhoused, housing instability, lacking efficient transportation and other barriers to care can lead to poor health outcomes. These data evaluate how often patients that receive care from Western Michigan University School of Medicine Street Medicine Kalamazoo visit the emergency department, and then subsequently require admission to the hospital.

Methods: A comprehensive list of patients who utilized care from Street Medicine Kalamazoo was compiled using health informatics in the EPIC EMR. Patient encounters were then reviewed to tally the total number of emergency department visits and hospital admissions occurring each year from 2019 to 2024. These data were used to calculate the percentage of patients that were admitted to the hospital after their Emergency Room assessment.

Results: (Preliminary data), Prior to Street Medicines establishment (in 2019 and 2020), the percent chance that an Emergency Room visit would lead to admission ranged from 15.3-16.0%, This appeared unchanged in the first year of street medicine (2021). The chance that an Emergency Room visit would lead to admission in 2022 increased to 19.0% before decreasing to 14.0-14.3% in 2023 and 2024.

Conclusion/Clinical significance: For unhoused patients, or patients experiencing housing instability, receiving medical care via a system such as Street Medicine Kalamazoo may decrease the likelihood of admission to the hospital after an encounter in the Emergency Department.

IRB WMED-2024-1198

Abstract #96 (Printed Poster)

Resident Perceptions of Documentation Efficiency: A Qualitative Evaluation in a Family Medicine Residency Program

Colleen McKay¹, Lakshmi Sundaresan^{1,2}, Cynthia Lai¹, Christopher Haymaker^{2,1}

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Western Michigan University Homer Stryker M.D. School of Medicine, Department of Family and Community Medicine, Kalamazoo, Michigan

Abstract

Introduction: Effective documentation is essential in Family Medicine (FM) clinics for treatment decisions, billing, and communication among patient care teams. FM residents write notes that demonstrate clinical reasoning, diagnostic thought process, and ability to synthesize complex information. However, manual completion of notes is time-consuming, especially while training. This study identified resident-reported barriers and strategies to efficient note completion in an FM outpatient clinic. The proliferation of ambient artificial intelligence (AI) in medical note writing in the interest of efficiency and decreased effort affects resident education and ability to transition to attending practice.

Methods: This study was conducted at an academic FM residency program, classified as exempt from IRB review. The sample included 23 residents interviewed across postgraduate years of training. Data was collected through semi-structured interviews, guided by six key questions aimed at identifying both barriers and strategies related to timely completion of outpatient medical notes. Qualitative data was collected through recorded interviews transcribed using ambient AI transcription software. Using thematic analysis, three independent coders iteratively reviewed data to generate and consolidate codes and analyze themes. Coding in Microsoft Excel identified common themes based on reviewer coding.

Results: Of the surveyed residents, dot phrases/templating (39.1%), pre-charting (43.5%), competing interests at home (43.5%), and specifically feeling tired/hungry (43.5%) were identified as common themes associated with note-writing efficiency. Also, 45.5% self-identified as efficient note completers, 18.2% identified as inefficient note completers and 36.4% identified as intermediate (one resident excluded). Surprisingly, 52% of surveyed residents commented on their desire to use AI for note-writing completion. Other less represented themes include limiting the number of problems per encounter, reduction in documentation detail, use of voice dictation software and transcription, staffing, burnout, perfectionism, distractions in the clinic, patient late arrival, and visit complexity.

Conclusions: Finding productive ways to review patient charts prior to clinic visits and document in templates during encounters is perceived as an efficient way to close notes. Residents commonly identified home commitments and attending to basic needs as reason for not completing notes efficiently. Residents are interested in exploring AI in note-writing efficiency, which poses an important question about residents' ability to set agendas and summarize information in the absence of technology assistance. This will need to be addressed in resident education as AI technology is evolving quickly.

IRB WMed-2025-1258

Abstract #97 (Printed Poster)

Postmortem Eye Retention in a Regional Medical Examiner's Office

AJ Carpenter, B.S.¹, Matthew Hartwig, B.S.², Abigail Grande, M.P.H.^{3,1}, Nicolas Kostelecky, M.D.¹, Amanda Fisher-Hubbard, M.D.¹

¹Department of Pathology, Division of Neuropathology, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ³College of Osteopathic Medicine, Michigan State University, East Lansing, Michigan

Abstract

At autopsy, forensic pathologists recover and retain the eyes of a decedent for a variety of reasons, one of the most common being suspicion of trauma. The authors evaluated the demographics, causes/manners of death, and globe/optic nerve pathology of decedents for which eyes were retained and examined to better understand the practice within the office.

The electronic database used for neuropathological specimens was queried for all cases in which forensic pathologists at Western Michigan University Homer Stryker M.D. School of Medicine retained eyes for formal neuropathology consultation, which includes cases from 2016 until present. The demographics, causes/manners of death, details of injury (if applicable), and gross/microscopic eye pathologic findings were documented. Examples of pertinent pathologic findings included hemorrhage of the optic nerve, sclera, conjunctiva, and retina; perimacular retinal folds; and amyloid precursor protein-positive axonal varicosities. From 2016 to 2024, 32 cases were identified, two of which were excluded due to jurisdictional constraints. The ages of the decedents ranged from fetus to 6.9 years and 76.7% (23) of these cases were certified as homicides. Undetermined deaths accounted for 10% (3) of cases, accidental deaths accounted for 6.7% (2) of cases, and natural deaths accounted for 3.3% (1) of cases. The one intrauterine fetal demise was not assigned a manner of death. Of the homicides, 78.2% (18) had globe findings, 65.2% (15) had optic nerve findings, and 21.7% (5) had no ocular findings. Of the undetermined deaths, 66.7% (2) had globe findings, 33.3% (1) had optic nerve findings, and 33.3% (1) had no ocular findings. Of the accidental deaths, 100% (2) had globe findings and 50% (1) had optic nerve findings. Both the natural death and the intrauterine fetal demise showed no significant globe or optic nerve findings. Of the 30 cases included in the query, 56.7% (17) had notable pathologies involving both the globe and the optic nerve, while 8 cases (26.7%) were without globe or optic nerve pathology. While our dataset is small and geographically limited, it contributes to the body of literature supporting the forensic utility of ocular examination. Though the majority of eyes were retained from cases that were certified as homicides, eye findings were not exclusive to homicides or accidental traumatic deaths. Therefore, as always, it is important to interpret these findings in the context of the entire case.

Abstract #98 (Printed Poster)

Does Intraoperative Microinstability Affect Outcomes After Revision Hip Arthroscopy? A Two-Year Comparative Study

Allison Garden^{1,2}, Andrea Palazzolo-Ray¹, Adam Alakhras¹, Joshua Finerty^{1,3}, Manuel Romero-Padron¹, Nicholas Kossoff^{1,4}, Joshua Everhart¹

¹Department of Orthopaedic Surgery, Indiana University, Indianapolis, Indiana. ²Edward Via College of Osteopathic Medicine – Carolinas, Spartanburg, South Carolina. ³University of Kentucky College of Medicine, Lexington, Kentucky. ⁴Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Hip microinstability is an increasingly recognized cause of persistent pain and dysfunction after primary arthroscopy for femoroacetabular impingement syndrome (FAIS), often related to capsular or labral insufficiency. While revision arthroscopy can address these issues, comparative outcomes for revisions performed for microinstability versus other diagnoses remain unclear. This study compared 2-year patient-reported outcomes measures (PROMs) between patients undergoing revision hip arthroscopy with intraoperatively identified microinstability and those without microinstability. We hypothesized that, with targeted surgical correction, outcomes would be similar between groups.

Methods: Data collected prospectively on patients undergoing revision hip arthroscopy single surgeon were retrospectively reviewed. All revision hip arthroscopies had no evidence of osteoarthritis (Tonnis grade 0), had a history of primary hip arthroscopy for FAIS, and no evidence of acetabular undercoverage at the time of revision surgery. Microinstability was diagnosed intra-operatively when joint distraction occurred with <50 lb of traction. Primary outcomes were International Hip Outcome Tool (iHOT-12) score and Patient Acceptable Symptom State (PASS) achievement at 2 years. Secondary Mental Health Inventory-5 (MHI-5), Hip Disability and Osteoarthritis Outcome Score–Physical Function Short Form (HOOS-PS), UCLA Activity Scale, Adult Single Item Measure Physical Activity (SIM PA), and subsequent surgery rates. Bivariate comparisons and forward-selection multivariate regression were used to assess differences between groups.

Results: Twenty-four patients met inclusion criteria: 11 with microinstability (mean age 33.7 ± SD 11.0 years; 100% female) and 13 controls (36.0 ± 9.6 years; 38.5% male). Baseline differences included sex (p=0.007), NSAID use after surgery (p=0.04), and BMI (p=0.02), but none were independent predictors of outcomes. At 2 years, iHOT-12 scores (51.6±25.3 vs. 58.1±30.6; p=0.66) and PASS achievement rates (54.6%vs.53.9%; p=0.97) did not differ between groups. Secondary outcomes were similar for MHI-5 (p=0.19), HOOS-PS (p=0.45), and UCLA Activity Scale (p=0.17), but the microinstability group reported fewer active days on the SIM PA (2.18±2.27 vs. 4.38±2.47; p=0.04). Subsequent surgery rates within 2 years were 36.4% for microinstability and 30.8% for controls (p=0.77), with no significant differences in complication rates (p=0.10).

Conclusion: Revision hip arthroscopy for microinstability produced 2-year PROMs comparable to revisions for other indications, although activity levels remained lower in the microinstability group. The wide variability in functional recovery underscores the need for individualized counseling and consideration of preoperative activity status when setting expectations. Early recognition and management of instability during primary surgery may help reduce the need for revision and optimize return to activity.

Abstract #99 (Printed Poster)

A Ten-Year Overview of Drowning Deaths in Western Michigan

Jordan Roberson¹, Christopher Nwoke², Abigail Grande³, Nicolas Kostelecky¹, Amanda Fisher-Hubbard¹

¹Department of Pathology, Division of Neuropathology, Office of the Medical Examiner, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ³Michigan State University, East Lansing, MI

Abstract

Introduction: According to the Centers for Disease Control and Prevention, nationally, unintentional drowning deaths constitute upwards of 4,000 deaths per year and affect all strata of society.¹ Established risk factors include the extremes of age, male sex, limited/no swimming ability, several disabilities, and the use of exogenous substances (e.g., drugs and alcohol) while in or near water.² As the Medical Examiner for multiple counties along the coastline of Lake Michigan and other inland counties with numerous and varied bodies of water, statistics specific to this area would be important for understanding drowning trends as well as for drowning prevention.

Methods: The case management system used by the Office of the Medical Examiner at Western Michigan University Homer Stryker M.D. School of Medicine was queried for death certificates where “drowning” was included in Part I (a, b, c, and d) or in Part II. Cases in which a Drowning Form was completed were also included. This form is used to gather details surrounding circumstances of the drowning event and allows for categorization of the death within the case management system.

Results: The search resulted in 631 cases. Incomplete and duplicate cases were excluded, yielding 321 cases meeting study criteria. Decedents ranged from six months to 96 years. Eighty-three (26%) were female and 238 (74%) were male. The decedents were majority white (251; 78%), followed by African American/Black (47; 15%), Asian (6; 2%), and American Indian/Alaskan Native (5; 1%). Twelve decedents had a race/ethnicity listed as Other or Unspecified (4%). 277 deaths were certified as accident, 28 as suicide, 14 as indeterminate, and two as homicide. Lakes were the most common body of water type for injury occurrence. The zip code with the highest injury rate was 49441, which is located within Muskegon County.

Conclusion: This review demonstrates that most drowning deaths are accidental and that drowning affects a remarkably wide age range. Lakes are the most common body of water for water-related fatalities in this area. More recently, there have been national, collaborative efforts to develop a Drowning Case Registry focused mainly on childhood drowning fatalities.³ One of the goals of this registry is to develop a nationally standardized drowning investigation tool. Ultimately, the performance of high-quality death investigations, as well as complete and accurate death certification, will allow for the appropriate allocation of death prevention strategies, including signage, life rings/lifejackets, and even lifeguards.

Abstract #100 (Printed Poster)

Exploring Neuron Degeneration in the Olfactory Organ

Brittany Richards-Walli, Christine Byrd-Jacobs

Department of Biological Sciences, Western Michigan University, Kalamazoo, MI

Abstract

Introduction: The nervous system is responsible for communication in the body, allowing for reactions to sensory stimuli, control of movement, and regulation of vital life functions. Injury and disease that cause widespread degeneration of neurons can result in death, so it is important to understand the processes of degeneration and regeneration. Zebrafish are a fitting model in which to study neural plasticity, due to their regenerative ability that allows them to recover quickly from a variety of extensive injuries. Previous studies from our lab have shown that the administration of a detergent to the nose of the zebrafish damages primarily one cell type: the ciliated olfactory neurons, which possess long dendrites that extend out onto the surface of the olfactory epithelium. This study examines the effect of a second detergent treatment on the olfactory epithelium, to determine if the underlying microvillus and crypt olfactory sensory neurons will now be susceptible to damage or if they possess neuroprotective features that prevent degeneration.

Methods: Adult male and female zebrafish were anesthetized in 0.03% MS222 until they no longer responded to a tail pinch. Triton-X detergent was applied into the right nare. Animals received Triton-X once or twice, the second dose occurring 24 hours following the first. Fish were euthanized at 24 hours, 4 days, and 7 days following the last treatment and fixed in paraformaldehyde. Olfactory organs were dissected, embedded in paraffin, sectioned, stained with antibodies to cell-specific markers, and viewed on a confocal microscope.

Results: Preliminary results from a previous student, Dr. Tara Maser, showed a significant decrease in microvillus and crypt olfactory sensory neurons following a second detergent exposure. The current study is improving the morphological analysis to allow greater confidence in these results.

Conclusion/Clinical significance: If we confirm that microvillus and crypt neurons succumb to a second detergent treatment, this suggests that they are protected by the projections of the ciliated sensory neurons and do not possess inherent neuroprotective features. This study adds to our understanding of neural degeneration and regeneration in an important model system and provides a way for us to study neuronal turnover due to injury.

IACUC #25-05-02

Abstract #101 (Printed Poster)

Antimicrobial Properties of Silver Nanoparticles and Graphene Oxide Against *Escherichia Coli*

Ryan Luedtke¹, Grace Manske¹, Mitchell Kenter², Robert Sawyer³, Adil Akkouch²

¹Medical Student. Department of Surgical Sciences, Division of Biomedical Engineering, Kalamazoo, MI.

²Division of Orthopaedic Surgery, Kalamazoo, MI. ³Division of Surgery, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: *Escherichia Coli* is a bacterium that commonly causes infections of the urinary and gastrointestinal systems. It can also compromise orthopedic implants and indwelling catheters. Novel antimicrobial mechanisms must be pursued given the increasing prevalence of antibiotic resistance and the inherent difficulties in treating infections of medical devices. Our team aims to demonstrate the antimicrobial effects of silver nanoparticles, graphene oxide, and their combination against *E. coli*.

Methods: *E. Coli* was cultured and diluted to a concentration of 1×10^3 CFU/mL. *E. Coli* in LB broth was then treated with increasing concentrations of either silver nanoparticles (AgNPs), Graphene Oxide (GO), or silver nanoparticles containing graphene oxide (AgGO). LB medium alone, and *E. Coli* treated with kanamycin, an aminoglycoside antibiotic used to treat severe infections caused by *E. Coli*, were used as controls. The treatment conditions were placed into a 96-well plate and bacteria growth was monitored using a spectrophotometer for 3 hours at 37°C. Each culture was then placed onto an LB Agar plate and allowed to incubate for another 21 hours at 37°C. Pictures of the plates were taken and qualitatively measured to determine the minimum inhibitory concentration (MIC) of each treatment.

Results: *E. Coli* treated with AgNPs alone had an MIC of 0.19 mg/mL, while the GO treatment (up to 3 mg/mL) showed no inhibition of bacterial growth. Remarkably, *E. Coli* treated with the combination of AgNPs and GO had a lower MIC of 0.0475 mg/mL. As expected, LB alone did not show any *E. Coli* growth, and the kanamycin treatment resulted in complete inhibition of growth.

Conclusion: Our initial results showed that AgNPs alone have antimicrobial properties against *E. Coli* while GO does not seem to exhibit antimicrobial activity in isolation. Interestingly, when AgNPs are combined with GO (AgGO), they can inhibit bacterial growth to a greater degree than AgNPs alone. GO seems to exert a permissive interaction on AgNPs, enhancing its intrinsic antimicrobial properties. Our next steps will focus on how AgGO influences biofilm growth of various bacterial strains commonly implicated in skin and orthopedic implant infections.

Abstract #102 (Printed Poster)

Small Travelers, Safer Transports: A Pediatric Transport Medicine Quality Improvement Project

Yoshiya Yamakawa¹, Skylar Ketteler¹, Jacob Forstrom¹, Tiffany Truong^{1,2}, Zachary Smith^{1,2}

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Bronson Children's Hospital, Kalamazoo, MI

Abstract

Introduction: Pediatric inter-facility transport ensures safe, timely access to higher levels of care for ill and injured children. With the increased regionalization of pediatric services, the demand for inter-facility transport continues to grow. Despite published quality metrics from the Ground & Air Medical Quality in Transport Quality Improvement Collaborative for safe transport, there is limited data tracking at Bronson Children's Hospital. This quality improvement initiative aims to evaluate this hospital's existing pediatric transport process, identify gaps in documentation and care delivery, and develop sustainable interventions to enhance transport safety and continuity of care.

Methods: Baseline retrospective data was obtained for all pediatric inter-facility transports at Bronson Children's Hospital between January and August 2025. Handwritten records and EPIC electronic notes were combined into a single electronic dataset. Records contained working diagnoses, dispatch times, and referring location for each transport entry. Notable variables collected include hemodynamic status, interventions during transport, and clinical outcomes following arrival.

Results: Retrospective transport records were lacking in key clinical variables including respiratory support, vital signs, pain assessments, transport interventions, and adverse events. This data was used to establish a baseline trend for each metric. Our team identified temperature tracking, dispatch times, and frequency of metric review as areas for improvement. Future interventions for transport teams include clinical algorithms, pre-departure stabilization checklists, escalation screening tools, education of industry standards, and continued use of the standardized electronic records sheet. Outcome measures will include reduced dispatch times, improved compliance with obtaining patient temperature during transport and upon destination arrival, and percent of patients requiring escalation of care after arrival. These interventions and prospective data collection are anticipated to begin in Spring 2026.

Conclusion: Pediatric transport medicine is complicated by transitions of care, communication modalities, medical complexity, and programmatic structures. Patient safety and quality improvement interventions are validated tools to address these concerns. By establishing a centralized database and implementing specific low-burden interventions, this project aims to improve patient safety, strengthen continuity of care, and provide a framework for future pediatric transport quality initiatives. Furthermore, this work will contribute to evidence-based practices in pediatric transport medicine and support safer transitions of care for vulnerable pediatric patients.

Abstract #103 (Printed Poster)

Student Interest in Lifestyle Medicine

Alvin Anand¹, Finn Husband¹, Mohammed Turchian¹, Lacey Burke¹, Lauren Griffin¹, Vitaliy Voytenko¹, L. Robert Peters², Abigail Solitro²

¹ Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan.

²Department of Biomedical Sciences, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Evidence consistently demonstrates lifestyle medicine's (LM) effectiveness in preventing and managing chronic disease, yet undergraduate medical education has not uniformly integrated training in its application. Despite widespread recognition of LM's six pillars—diet, physical activity, sleep, stress reduction, avoidance of risky substances, and social connections—as fundamental to patient care, systematic incorporation of this content into medical curricula remains variable. The gap between what evidence supports and what medical students learn represents an important opportunity to strengthen physician preparation. This study assessed medical students' knowledge of and attitudes toward lifestyle medicine education at Western Michigan University Homer Stryker M.D. School of Medicine (WMed).

Methods: A 31-question survey was developed in-house and distributed via Microsoft Forms to all WMed students through email (initial invitation plus two reminders). The survey was open December 5, 2025–January 26, 2026. This analysis focuses on four questions assessing: class year (Q1), prior LM awareness (Q26), sources of LM knowledge (Q27), and attitudes toward LM training (Q28, four Likert-scale statements). IRB review deemed this study non-human research/quality improvement.

Results: All 97 respondents (M1=34%, M2=18%, M3=30%, M4=18%) completed the LM questions; 60 (62%) had previously heard of LM. Students strongly endorsed LM importance: 79% agreed LM training is important for practice, and 87% supported WMed pursuing LM certification. However, only 32% felt their current training prepared them to integrate LM principles, while 39% were neutral. Interest in a potential LM Distinction Program was moderate (49% would participate). M1 students primarily learned about LM through faculty (Dr. Solitro), while upper-year students cited peers, rotations, and broader sources.

Conclusion/Clinical significance: WMed students across all years strongly support expanding LM curriculum, recognizing its clinical importance. The gap between perceived importance (79-87% support) and preparedness (32% feel trained) suggests need for enhanced LM integration. Future work should identify optimal curricular placement (preclinical vs. clinical) and incorporate practicing physician perspectives to effectively integrate LM into WMed's existing curricula.

Acknowledgments: We'd like to thank Dr. Abigail Solitro for her interest in driving this project and the Well-Being Distinction Program for creating the survey.

WMed-2025-1305

Abstract #105 (Printed Poster)

Characteristics of Hunting-Related Fatalities in Western Michigan, 2015-2024

Aaron Morgan¹, Abigail Grande², Nicolas Kostelecky¹, Amanda Fisher-Hubbard¹

¹Department of Pathology, Division of Neuropathology, Office of the Medical Examiner, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Michigan State University, East Lansing, Michigan

Abstract

Introduction: Despite advances in agricultural practices, hunting remains an integral part of many people's cultural, personal, and socioeconomic identities. It is a popular activity in the United States and in Michigan. We sought to characterize hunting-related fatalities in our jurisdiction to facilitate public health interventions for safe hunting practices.

Methods: The electronic death investigation database was queried for all cases reported to the Medical Examiner's Office between 2015 and 2024 that included the word "hunt" in the case narrative.

Results: The authors identified 740 cases within the search parameters. Of those, 42 cases matched inclusion criteria. Four deaths were excluded as they occurred in physical proximity to hunting-related materials (e.g., tree stands) but did not occur during active hunting activities. Thirty-six decedents were male (94.7%), two were female (5.3%) and the decedents ranged in age from 13 to 79 years. Of the 38 confirmed cases, 17 were certified as accidents (44.7%), 16 as natural (42.1%), 3 as suicide (7.9%), 1 as homicide (2.6%), and 1 as indeterminate (2.6%).

Of the 16 natural deaths, only 7 (43.75%) had cause of death (COD) information available. Of those available, 7 (100%) listed cardiovascular disease as COD. Of the 17 accidents, 7 (41.2%) were the result of blunt force injuries, including 6 (35.3%) falls from height, typically from a tree stand. Two (11.8%) cases listed COD as gunshot wound(s) to the head or chest. Two cases (11.8%) were due to drowning. Two (11.8%) cases listed natural disease as contributing to COD; two (11.8%) cases listed mechanical or positional asphyxia as contributing to COD and one case (5.9%) listed hypothermia as contributing to COD. Two (11.8%) cases involved a fall from height which the individuals survived, but did not return to baseline before dying. Four (23.5%) individuals tested positive for opioids, methamphetamine, ethanol, caffeine, or a combination of two or more at time of death. All decedents appeared to be hunting within regular Michigan game seasons.

Conclusions: Hunting is a popular recreational activity with inherent risks related to firearms, environmental exposure, and falls from height. Overall, details such as firearm used and game being hunted were inconsistently reported. Our review identified the influence of illicit substances, natural disease, and homicidal violence as key components of hunting-related fatalities. These findings support the need for comprehensive forensic death investigations and death certification in these cases.

Abstract #106 (Printed Poster)

Evaluating G4 Inhibitors as Modulators of B Cell Class Switching

Lai Jiang¹, Emily Haigh¹, Zoe Hajratwala¹, Jordan Klevens¹, Erik Larson², Robert Peters²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Western Michigan University Homer Stryker M.D. School of Medicine Department of Biomedical Sciences, Kalamazoo, Michigan

Abstract

Introduction: Class switch recombination (CSR) is a fundamental process in adaptive immunity that enables mature B cells to diversify antibody effector functions without altering antigen specificity. This process occurs at highly repetitive, G-rich switch (S) regions of the immunoglobulin H (IgH) locus, where transcription promotes the formation of non-canonical nucleic acid structures, including R-loops and G-quadruplexes (G4s). Here, our strategy for modulating CSR activity by disrupting G4 DNA structure formation will be presented, which provides a first of its kind approach for altering isotype switching fates.

Methods: We induced CSR *in vitro* using the CH12 murine B-cell lymphoma, a well-characterized model that reproducibly undergoes switching to immunoglobulin A (IgA) under defined stimulation conditions. Class switching was quantified using flow cytometry, enabling single-cell resolution of antibody expression. Cells were stimulated with soluble CD40 ligand, Interleukin-4 (IL-4), Transforming growth factor beta (TGF- β) (aka CIT), a combination known to induce class switching to IgA.

Results: In our initial two experiments, we showed an average of a 6-fold increase in IgA single positive CH12 cells following CIT treatment. This demonstrates we have established a system in our laboratory for testing the ability of G4 inhibitors (G4i) to modulate CSR.

Clinical Significance: While class switch recombination is essential for normal adaptive immune function, dysregulation of this process can contribute to pathological immune responses. Such conditions represent a significant public health burden and disproportionately affect racially marginalized populations. Expanding our understanding of the molecular mechanisms that regulate class switch recombination is therefore critical for identifying strategies to selectively modulate immune outcomes. The system established in this study provides a controlled platform for investigating factors that influence class switching and supports future efforts to limit pathogenic responses while preserving protective immune function.

Abstract #109 (Printed Poster)

Academic and Professional Disparities Among First Generation Low-Income Medical Students: Establishing a Baseline for Intervention

Olivia Ballentine, Brandon Poff, Tabitha Phipps, Kirsten Hickok, Maria Sheakley
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: First generation and low-income students face unique challenges in medical school, such as financial burdens, lack of mentorship, and limited social capital. These barriers can negatively impact academic success and personal well-being. Understanding how these factors influence performance is critical for addressing disparities in medical education. By establishing a baseline for FGLI students' academic and professional outcomes compared to their peers, we aim to identify specific areas where intervention is needed, ultimately fostering an inclusive, supportive learning environment and promoting greater representation of FGLI students in medicine.

Methods: This study utilizes de-identified academic data from medical school classes of 2018-2021 to compare FGLI students with their peers. Data points include summative exam scores, USMLE Step 1 and Step 2 performance, membership in Alpha Omega Alpha (AOA), Gold Humanitarian status, leadership roles, average clerkship shelf exam scores, average clinical clerkship performance grades, average OSCE performance, average overall clerkship scores, and grit scores. Appropriate statistical analysis was used to evaluate differences between FGLI and non-FGLI students across these metrics

Results: The two metrics that were found to show a significant difference between FGLI and non-FGLI students were average clerkship clinical performance grades and average overall clerkship scores with p-values of 0.0167 and 0.0184, respectively. Results indicate that FGLI students score higher in clinical clerkship performance and overall clerkship scores on average compared to non-FGLI students. The remainder of the evaluated metrics showed no statistically significant differences.

Conclusion: The results did not demonstrate an overarching difference in academic and professional outcomes between FGLI students and their non-FGLI peers. However, FGLI students scoring higher on clinical clerkship performance on average may iterate how the diverse backgrounds of FGLI students contribute to advanced teamwork capabilities and relatability to broader, underserved patient populations. Despite minimal differences in academic performance, FGLI students continue to make up only a small portion of medical students training in the United States today. This hints at the persistent obstacles that FGLI students face when preparing and applying to medical school. Further exploration into the perceptions of FGLI students and what areas of support may be lacking is essential.

WMed-2025-1252

Abstract #110 (Printed Poster)

E-Cigarettes and Bone Health: Risk of Tibial Shaft Fracture

JaVaughn King¹, Jordan Dombroski¹, Karen Bovid², Adil Akkouch^{2,3}

¹Department of Surgical Sciences, Kalamazoo, Michigan. ²Division of Orthopaedic Surgery, Kalamazoo, Michigan. ³Division of Medical Engineering, Kalamazoo, Michigan

Abstract

Introduction: Smoking is a leading cause of mortality, with detrimental effects on every part of the body. According to the Centers for Disease Control, there was an estimated 7.2 million-person increase in electronic cigarette consumption between 2017 and 2023. Although traditional cigarette use has declined over recent decades, millions of Americans remain affected. The health consequences of traditional cigarette use are well documented, which has supported global cessation efforts. Traditional cigarettes use negatively impacts fracture healing; however, the impact of e-cigarettes remains unclear. The goal of this study is to determine whether the correlation between traditional cigarette smoking and fracture incidence extends to e-cigarette use. Evidence suggests that some effects of traditional cigarette smoking on bone health can be reversed with cessation. If e-cigarette use produces similar effects, which can potentially be reversed with smoking cessation, raising awareness of these risks is critical. The objective of this study is to determine whether e-cigarettes use is associated with a higher incidence of tibia shaft fractures.

Methods: A retrospective cohort study using participant (aged 18 to 64 years old) survey data and electronic health care records was conducted through the All of Us Research Workbench (National Institutes of Health). Statistical analyses were restricted to participants with complete data on smoking and vaping frequency. All analyses were conducted using R (version 4.5.0).

Results: Multivariable logistic regression model adjusted for age and sex indicated that exclusive e-cigarette use (without concurrent cigarette use) was associated with higher odds of tibial shaft fracture compared with non-users of both cigarettes and e-cigarettes (OR = 6.21; 95% CI = 1.89–38.3).

Conclusions: Due to the rising use of e-cigarettes among adult populations, the increased correlation between e-cigarette use and tibia shaft fractures is a significant public health concern. Bone health naturally declines with aging; therefore, the long-term effects of e-cigarettes may be even more significant later in one's life. Additional long-term cohort studies exploring the relationship between bone health among e-cigarette users represents a critical next step in public health research.

Abstract #111 (Printed Poster)

Promoting Microbiology Literacy Among Older Adults Using Adult Learning Theory

Nicholas Bronson¹, Sean Crowley¹, Nossin Khan¹, Lamese Saab¹, Liz Lorbeer², Shadi Adineh³

¹ Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Medical Library, Kalamazoo, MI. ³Community Education and Engagement, Kalamazoo, MI

Abstract

Introduction: Andragogy, Malcolm Knowles' theory of adult learning, emphasizes that adults learn best through self-directed, problem-centered instruction that leverages their prior experience. This study evaluated the effectiveness of andragogy-informed instruction for teaching microbiology to adults aged 50+ through WMed's Mini Medical School (MMS), a community education program designed to teach directly applicable health information to older adults.

Methods: 28 adults aged 50+ attended MMS microbiology education session covering bacteria, viruses, and fungi, including common types, treatments, and prevention strategies. This session incorporated andragogy-aligned instructional methods: visual diagrams, mock disease presentation including clinical reasoning for diagnosis and next steps, real-life examples applying concepts to participants' daily health experiences, and extensive time for question-and-answer discussions to allow learners to direct their own understanding. Participants completed pre- and post-instruction assessments consisting of five questions based on our learning objectives to prompt learners to retrieve what they already knew and later to recall what they learned. An open-ended qualitative question asked attendees to identify which session elements most helped their learning. Responses were thematically coded to identify patterns.

Results: Due to ongoing data analysis, results are preliminary. Early findings suggest overall knowledge scores improved from 78.6% to 85.0% following instruction. Learning gains varied by topic: Gram staining showed substantial improvement (50% to 82.1%, +32.1 percentage points), and viral replication increased strongly (78.6% to 96.4%, +17.8 percentage points). Performance on beneficial bacteria and fungi declined on post-test questions requiring deeper application. Among the 16 learners (57%) who provided qualitative feedback, question-and-answer opportunities were most frequently identified as most helpful (n=6), followed by visual aids (n=5), and several noted combinations of methods were particularly effective.

Conclusion/Clinical Significance: Preliminary findings suggest andragogy-informed instruction through MMS supported knowledge gains in microbiology concepts among older adults. Interactive discussion opportunities, patient case scenarios modeling clinical reasoning, and visual support aligned with adult learning principles were most valued. These findings can guide future MMS sessions, suggesting that incorporating self-directed question opportunities, visual scaffolding, and real-world patient cases effectively engage older adults in understanding health-relevant scientific concepts directly applicable to their daily lives.

Abstract #113 (Printed Poster)

Chemical Ablation of the Zebrafish Olfactory Epithelium on Behavioral Movement

W. Ethan Coleman¹, Brittany Richards², Christine Byrd-Jacobs²

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²Dept. of Biological Sciences, Western Michigan University, Kalamazoo, Michigan

Abstract

Introduction: The zebrafish olfactory system is a well-established model for sensory injury and regeneration due to its rapid and reproducible recovery following damage. Although structural regeneration of the olfactory epithelium after detergent damage has been described, the behavioral consequences and recovery timeline following a second exposure to the toxicant remain incompletely characterized. It is known that one detergent treatment causes loss of ability to sense one category of odorant, bile salts, but not the ability to smell amino acids. This study evaluates odorant-evoked behavioral responses following a second chemical olfactory injury.

Methods: Adult zebrafish (n = 6) underwent detergent ablation of the olfactory epithelium using two Triton X-100 treatments administered 24 hours apart. Behavioral measurements were collected at baseline, 24 hours, 48 hours, 3 days, and 7 days after the first treatment. At each time point, fish were individually acclimated in isolated tanks and then exposed to either bile salt or amino acid food stimulus. Behavior was recorded for 30 seconds and analyzed using motion-tracking software. Primary outcome measure was number of turns and tank location preference following stimulus administration.

Results: Behavioral response metrics will be quantified through stimulus-evoked movement across time points. It is expected that post-treatment measurements after one administration of detergent will show no response to bile salts and increased turning behavior with amino acids. A second detergent treatment is hypothesized to show loss of response to both bile salts and amino acids, with day 3 showing little recovery and day 7 showing near baseline levels of movement.

Conclusion: Determining the effects of a second detergent treatment will reveal whether different olfactory sensory neuron subtypes show differential responses to damage. This study helps establish a framework for assessing functional effects of olfactory organ injury and regeneration. Motion-tracking movement and turning measures serve as practical proxies for sensory pathway disruption and recovery, supporting the use of zebrafish as a model for studying mechanisms of olfactory injury and regeneration. This model may inform future studies of sensory injury and recovery in other vertebrates, with future work initially correlating behavioral recovery with histologic or molecular markers of olfactory neuron growth.

WMU IACUC: 25-05-02

Abstract #114 (Printed Poster)

Evaluation of Dexamethasone as an Immunosuppressive Agent in Adult Zebrafish

Gabriel Vander Woude, Ethan Coleman, Trisha Fontanilla, Christine Byrd-Jacobs

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

Abstract

Introduction: Zebrafish possess a remarkable capacity for central nervous system regeneration, restoring neuronal structure and function following injury without forming the inhibitory glial scars commonly observed in mammals. This regenerative ability involves coordination across multiple biological systems and isn't well understood. The immune system, specifically microglial cells, is thought to be essential to this process. Experimental investigation of immune involvement in zebrafish neuroregeneration requires a reliable method for immunosuppression. The present study evaluated the efficacy of the glucocorticoid dexamethasone as an immunosuppressive treatment in adult zebrafish by examining microglial labeling within the brain, using the olfactory system as a histologically accessible model region.

Methods: Adult zebrafish (*Danio rerio*) were exposed to water-soluble dexamethasone (10 mg/L) for two, three, or four weeks, with partial water replacement every 48 hours to maintain drug concentration. Control animals were maintained without treatment. Following exposure, animals were anesthetized and perfused with paraformaldehyde. Brains containing the olfactory bulbs were dissected, paraffin-embedded, and sectioned at 10 μm . Immunohistochemistry using the 4C4 microglial antibody and HRP-labelled secondary antibodies was performed, and grayscale images of the olfactory bulbs were collected using brightfield microscopy. Microglial cells were manually quantified and classified by activation stage.

Results: Immunohistochemical labeling successfully identified microglial cells in the olfactory bulb, telencephalon, and diencephalon of both treated and control fish, demonstrating clear visualization of multiple activation stages. Ongoing quantitative analysis will determine whether dexamethasone treatment altered microglial abundance or activation profiles.

Conclusion/Clinical significance: Establishing dexamethasone as an effective pharmacological immunosuppressive agent in zebrafish will allow for further research into the role of the immune system in the mechanism of neural regeneration. Growing the understanding of the process that allows zebrafish to regenerate fully without glial scarring could lead to insights and applications in human neuroregeneration and potential therapeutic approaches for human brain injury and neurodegenerative diseases.

WMU IACUC 24-10-02

Abstract #115 (Printed Poster)

Community-Based Pharmacology Education for Older Adults: An Experiential Learning Approach

Devjit Randhawa¹, Nicholas Bronson¹, Henry Zhu¹, Liz Lorbeer², Shadi Adineh³

¹ Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Medical Library, Kalamazoo, MI. ³Community Education and Engagement, Kalamazoo, MI

Abstract

Introduction: Kolb's Experiential Learning Theory (ELT) describes learning as a cyclical process involving concrete experience, reflective observation, abstract conceptualization, and active experimentation. In collaboration with the Western Michigan University Osher Lifelong Learning Institute, Mini Med School, a community education program, aims to promote medication literacy among older adults, aged 50+, in the Kalamazoo community through accessible evidence-based health education delivered by medical students.

Methods: 3 WMed medical students designed and will deliver a 2-hour pharmacology education session February 2026, for approximately 25 adults aged 50+. The session incorporates Kolb's four learning stages: concrete experience (participants reflect on their own medications and health experiences), reflective observation (reflection journaling and small group discussions), abstract conceptualization (teaching the four steps of drug movements in the body: drug absorption, distribution, metabolism, and excretion, plus age-related physiological changes affecting drug metabolism), and active experimentation (applying knowledge to generate informed questions for their healthcare providers). Content covers commonly used medications including acetaminophen, ibuprofen, and atorvastatin, emphasizing critical drug interactions such as alcohol and acetaminophen, NSAIDs with anticoagulants. Participants will complete 10-question pre- and post-instruction assessments evaluating their recall gains in pharmacokinetic principles, age-related medication changes, and practical medication safety practices. At the end of the session, participants will complete the validated Student Evaluation of Educational Quality (SEEQ) instrument to rate instructional effectiveness and of delivery of instruction by medical students.

Results: Due to ongoing data collection in February 2026, results are preliminary. Early findings will be presented. Expected outcomes include improved medication literacy among older adults demonstrated through pre/post assessment gains, reflecting upon successful application of the four stages of Kolb's experiential learning model. SEEQ evaluation data will provide insight into perceived instructional quality, clarity of content delivery, and engagement facilitated by medical student instructors.

Conclusion/Clinical Significance: The pharmacology Mini Med School project applies Kolb's experiential learning theory to community-based health education for older adults. By connecting pharmacology concepts to participants lived experiences with medications and providing opportunities for reflection and application, this program hopes to address critical gaps in medication knowledge that impact medication adherence, safety, and health outcomes in aging populations.

IRB-Approved Study: WMed-2026-1329

Abstract #116 (Printed Poster)

Gabapentin and Prescription Opioid Co-Exposure in Postmortem Toxicology

Jade King^{1,2}, Ivan Padilla², Jessica Adamczyk², Paul Moorman², Prentiss Jones²

¹Biomedical Sciences, Western Michigan University, Kalamazoo, MI. ²Toxicology, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Gabapentin is an anticonvulsant often prescribed to treat neuropathic pain and epilepsy. Gabapentin is a gamma-aminobutyric acid (GABA) analogue that modulates central nervous system activity. Gabapentin was approved in the United States in 2002 to treat postherpetic neuralgia. Hydrocodone, hydromorphone, oxycodone, and oxymorphone are opioid analgesics. categorized as Schedule II controlled substances. Both gabapentin and these opioids can elicit CNS effects, which, when concomitantly used, can lower the respiratory depressive threshold.

Objective: The focus of our study was to 1) characterize the co-occurrence of gabapentin with four commonly prescribed opioid analgesics, specifically, hydrocodone, hydromorphone, oxycodone, and oxymorphone in postmortem casework, and 2) determine the frequency with which the combination of gabapentin and one or more of the specified opioid analgesics was reported on the death certificate as the cause of death.

Methods and Materials: This study involved the analysis of 5,038 postmortem blood samples submitted as part of a drug surveillance program, i.e., Swift Toxicology of Overdose-Related Mortalities (STORM), conducted at WMed. Samples were extracted using a solid-phase extraction technique, followed by analysis with liquid chromatography-tandem mass spectrometry (LC-MS/MS).

Results: A total of 5,038 samples were collected and analyzed from February 11, 2022, to January 21, 2026. Gabapentin was identified along with hydrocodone in 65 samples, with oxycodone in 34 samples, with hydromorphone in 28 samples, and with oxymorphone in 19 samples. Additionally, 3 samples were positive for gabapentin along with hydrocodone, oxycodone, hydromorphone, and oxymorphone. Gabapentin and a co-occurring opioid were reported in 6 out of 149 (4%) cases as contributing to the cause of death.

Discussion and Conclusion: Gabapentin is a prominently prescribed medication used to treat epilepsy and neuropathic pain, and over the years, there has been an increase in its use outside of the originally prescribed intent (i.e., generalized anxiety disorder). The findings for this study suggest that there is a potential risk of a fatal outcome when gabapentin is taken with hydrocodone, oxycodone, hydromorphone, or oxymorphone; however, the occurrence of an opioid-related death where these combined substances are the principal cause of death has been rare for the 5,038 cases studied at WMed. From a public health perspective, this study supports the need to remind the general public of the potential risks for a toxic or fatal outcome when gabapentin and these four prescription opioids are simultaneously used and the need for close medical supervision.

Abstract #117 (Printed Poster)

Is the Decline in Laparoscopic Intraoperative Cholangiography and Common Bile Duct Exploration Skills Threatening Effective Surgical Training?

John Lukish, Mahmoud Ajine, Rami Madani, Nicholas Stevens, Alain Elian, Gitonga Munene, Saad Shebrain

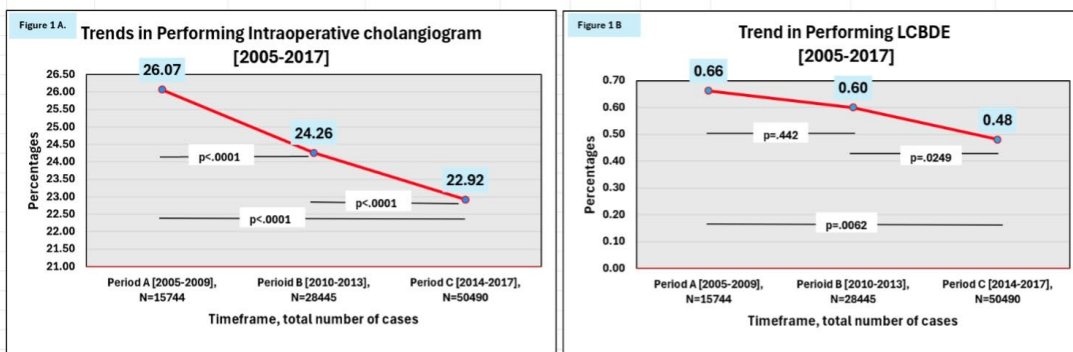
Department of General Surgery, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: More than 900,000 cholecystectomies are performed annually in the United States for gallbladder disease. Of these patients, about 15% have choledocholithiasis, which often requires either endoscopic retrograde cholangiopancreatography (ERCP), or, less commonly, simultaneous laparoscopic cholecystectomy and common bile duct exploration (LCBDE). Recent studies suggest that LCBDE has better outcomes than ERCP. However, LCBDE requires proficiency in intraoperative cholangiogram (IOC) and bile duct manipulation—skills that may not be widespread and that have prompted additional LCBDE training courses for surgeons. This study aims to analyze patterns and trends in the use of IOC and LCBDE over a 13-year period.

Methods: Patients undergoing laparoscopic cholecystectomy with or without cholangiogram or with common bile duct exploration (LC, LC-IOC, LC-LCBDE) between 2005 and 2017 were identified from the ACS-NSQIP database. Temporal utilization trends were assessed over three periods [2005-2009, 2010-2013, and 2014-2017]. A chi-squared test was used to assess differences in the performance of these procedures across timeframes. Statistical significance was set at $\alpha=0.05$.

Results: A total of 394,472 patients were identified between 2005 and 2017: 298,127 (75.6%) underwent LC without IOC, 94,185 (23.9%) LC with IOC, and 2160 (0.5%) LC with CBDE. Seventy-one percent (280,248) were female. Over the study period, IOC utilization dropped significantly from 26.07% (2005–2009), to 24.26% (2010–2013), and 22.92% (2014–2017) ($p < .0001$). LCBDE utilization also declined over the same periods, from 0.66% to 0.60%, then 0.48%, with a significant reduction between the [2010–2013] and [2014–2017] periods ($p = 0.0249$). FIGURE-1.



Conclusion: This study demonstrates a progressive reduction in intraoperative cholangiogram use and a decrease in LCBDE. Given the current evidence demonstrating favorable outcomes of LCBDE compared with the commonly performed ERCP for choledocholithiasis, surgical training programs should advocate for incorporating and implementing IOC and LCBDE as core skills into training curricula.

Abstract #118 (Printed Poster)

Suicides in a Southwest Michigan County: A Ten-Year Overview

Gloria Pacic¹, Abigail Grande², Nicholas Kostelecky¹

¹Department of Pathology & Office of the Medical Examiner, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Michigan State University, East Lansing, MI

Abstract

Introduction: According to the American Foundation for Suicide Prevention, over 49,000 individuals died by suicide in 2023, making it the 11th leading cause of death in the United States³ and the 8th leading cause of death in individuals aged 10 to 64 years.² There are numerous factors that make some individuals more susceptible to suicide, including, but not limited to, being a white male,³ a veteran,¹ or having access to lethal means such as a firearm.³

Methods: The case management system utilized by the Office of the Medical Examiner at Western Michigan University Homer Stryker M.D. School of Medicine was queried for death certificates in which the manner of death was certified as suicide from January 1st, 2015, to December 31st, 2024, and the location of death was within one southwest Michigan County. The search resulted in 435 cases with no duplications or incomplete cases found.

Results: Of the 435 cases identified, 343 (79%) decedents were male and 92 (21%) were female. Ages ranged from 11 to 93 years, with an average age of 45. The majority of decedents were white (388; 89%), followed by African American/Black (34; 8%), Asian (6; 1%), Other (5; 1%), and American Indian/Alaskan Native (2; 1%). Firearms were the most common mechanism of suicide (207; 48%), followed by hanging (127; 29%), and drug intoxication (66; 15%). Other mechanisms make up the additional 35 (8%) cases. 71 (16%) of the 435 decedents were veterans. The most common location of injury was the decedent's residence (264; 61%).

Conclusion: Suicide impacts a wide range of individuals and is a serious, but preventable, public health issue. Identifying local patterns and trends in data is vital to ensure that each region is receiving support that is specific to their community needs.

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Abstract #119 (Printed Poster)

A Novel Low-Barrier Approach to Hepatitis C Screening and Treatment in Precariously Housed Individuals

Megan Brezka, ScM^{1,2}, Lane Levin, BS^{1,2}, Rebecca Reardon-Lochbaum, MD³, Sravani Alluri, MD^{1,2}, Nicholas Helmstetter, MD^{1,2}

¹Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI. ²Street Medicine Kalamazoo, Kalamazoo, MI. ³Boston University Chobanian & Avedisian School of Medicine, Boston, MA

Abstract

Introduction: Hepatitis C virus (HCV) infection disproportionately affects people experiencing homelessness despite highly effective curative therapies. Traditional care requires multiple visits for screening, confirmatory testing, specialist referral, and treatment initiation, creating substantial barriers for patients. Street Medicine Kalamazoo developed an innovative model integrating point-of-care testing and streamlined treatment within community settings where precariously housed individuals reside, reducing the care pathway from approximately six visits to two encounters.

Methods: From January 2021 to April 2023, Street Medicine Kalamazoo provided HCV screening using point-of-care antibody testing to individuals experiencing homelessness in Kalamazoo, Michigan. The program was embedded within an established Street Medicine framework delivering comprehensive healthcare through twice-weekly mobile clinic visits to encampments and shelters. For patients with positive antibody results, pretreatment laboratory evaluation was completed during the same encounter. Patients meeting simplified treatment criteria received antiviral prescriptions over an eight-week course. Sustained virologic response was assessed at least twelve weeks post-treatment, with treatment stipends supporting adherence and follow-up.

Results: Among 126 patients screened, 44 were diagnosed with current or previous HCV infections. Of these, 43 tested positive for HCV antibodies. All seropositive patients underwent viral load testing, and a total of 27 patients were prescribed treatment. Of these, 13 achieved sustained virologic response. The remaining 14 patients included four who failed to initiate treatment, five with an unknown virologic response, and five who remained HCV RNA quantification positive after the treatment period. Patients that did not initiate treatment or were not assessed for cure accounted for 1/3 of those that initiated treatment, consistent with the loss-to-follow-up rate of other unhoused populations receiving direct-acting antivirals.

Conclusion/Clinical significance: This community-embedded model demonstrates that comprehensive HCV care can be successfully delivered to precariously housed individuals when brought directly to their communities. The 72% cure rate among assessed patients confirms treatment efficacy, while the 67% of patients that received treatment and engaged with this novel model through confirmatory testing shows meaningful connection with a traditionally excluded population. Although loss to follow-up remains a challenge reflecting the instability inherent to homelessness, this approach represents a replicable framework for HCV elimination efforts. Findings support implementation of low-barrier, community-based treatment models and inform policy advocacy for improved care access for marginalized individuals.

Acknowledgments: Grant funding provided by the Michigan State Medical Society Foundation.
IRB WMed-2023-1011

Abstract #122 (Printed Poster)

Postmortem Detection of Ortho-Methylfentanyl in Michigan: An Emerging Synthetic Opioid

Ivan Padilla^{1,2}, Jade King^{1,2}, Paul Moorman¹, Jessica Adamczyk¹, Prentiss Jones¹

¹Toxicology Department, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan. ²College of Arts and Sciences, Biomedical Sciences Department, Western Michigan University, Kalamazoo, Michigan

Abstract

Introduction: The rapid evolution of synthetic opioids and fentanyl analogs creates significant analytical and public health challenges. A new substance, ortho-methylfentanyl (OMF), is a fentanyl analog with a methyl group on its aromatic ring. Its similarity to other fentanyl derivatives and absence from routine toxicology testing increases the risk of undetection. The Swift Toxicology for Overdose- Related Mortalities (STORM) program at Western Michigan University began testing for OMF on April 1, 2025, confirming 15 cases in Michigan. This study examines OMF detection in postmortem samples and overall public health implications.

Objectives: This study reports OMF in postmortem specimens from decedents in multiple non-contiguous Michigan counties. It highlights OMF exposure, its spread across Michigan, and the need for detection and toxicological surveillance.

Methods and Materials: This study analyzed postmortem blood from medical examiner offices participating in the STORM program, covering over half of Michigan's 83 counties. The STORM profile included 68 drugs and metabolites, analyzed via solid phase extraction (SPE) and liquid chromatography tandem mass spectrometry (LC-MS/MS). Samples underwent addition of deuterated standards, extraction, drying, reconstitution, and LC-MS/MS. Separation used a bi-phenyl column at 40°C, with electrospray ionization in positive mode. Two ion transitions per analyte were monitored, and retention time, transition mass, and peak ratios were used for identification and reporting.

Results: Between April 1, 2025, and January 25, 2026, WMed analyzed 3,678 postmortem cases, including 15 Michigan submissions with OMF. These cases came from counties in the western Upper Peninsula, the Lower Peninsula, the central Lower Peninsula, and the southeastern Lower Peninsula.

Conclusion: OMF was found in less than 1% of cases but shows regional patterns and co-occurs with fentanyl and para-fluorofentanyl, indicating shifts in illicit drug trends like mixing or contamination. Its inclusion in toxicology panels highlights the need to improve surveillance and expand mass spectrometry libraries, which could reduce underreporting of new opioids causing deaths. Findings across Michigan counties suggest OMF is entering the illicit drug supply, often evading standard tests, exposing the gap between new analogs and detection methods. The presence of multiple fentanyl analogs emphasizes the urgent need for better toxicological surveillance to keep up with evolving substances.

Acknowledgement: I would like to acknowledge the Michigan Department of Health and Human Services for funding the Swift Toxicology for Overdose- Related Mortalities (STORM) project. I would also like to acknowledge the Toxicology Department at WMed for testing samples and overseeing STORM.

Abstract #123 (Printed Poster)

Birth Weight and Neonatal Intensive Care Unit Admission Rates After Antenatal Corticosteroid Administration in Pregnancies Delivering at Term

Colleen McKay, Kelsy Highsmith, Grace Filipiak, Jordan Wroblewski
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Background: Antenatal corticosteroids (ANCS) are administered in pregnant patients who are suspected to deliver preterm (before 37w0d) to induce fetal lung maturity. In some instances, the steroid recipient goes on to deliver at term. Previous studies suggest that term neonates that received ANCS had lower birth weights and higher NICU admission rates. Knowledge of these possible outcomes should be a factor in decision making when considering ANCS administration in a preterm pregnancy. The objective of this study is to understand the impacts of preterm ANCS administration in pregnancies that deliver at term.

Methods: This retrospective cohort analysis collected data from all patients 18 years or older that received ANCS during pregnancy and delivered at term ($\geq 37w0d$) at a hospital with a Level 3 NICU between 1/1/2019 and 12/31/2023. Deliveries in weeks 37 and 38 are considered early term while deliveries in weeks 39 and 40 are considered term. Medical chart abstraction followed by manual data collection was performed with RedCap. Data from 519 deliveries were included in this analysis.

Results: Median birth weight of term neonates was not significantly different in our sample, compared to the national median birth weights, stratified by gestational age at delivery.

	Sample median birth weight (lbs.)	National median birth weight (lbs.)	p-value
37 weeks	6.51	6.67	0.3002
38 weeks	6.97	7.09	0.2727
39 weeks	7.42	7.43	0.5102
40 weeks	7.69	7.71	0.9488

Of 519 term deliveries, 360 occurred in weeks 37 and 38 of gestation (69.36%) whereas 33.30% of all term deliveries nationally were early term in 2023. Finally, 48 neonates from this sample required admission to the NICU (9.25%), higher than the average 7.1% for early term and 3.8% for term deliveries reported by the National Center for Health Statistics.

Conclusions:

Median birth weight of term neonates in our sample was not significantly different from the national median by gestational age. However, our population reinforced the previous findings that NICU admission rates may be higher in those who received ANCS and went on deliver at term. Understanding these risks is an important part of decision making and informed consent. Further analysis of confounding factors, term delivery outcomes, and studies comparing term deliveries to preterm counterparts can strengthen this study.

IRB # WMed-2024-1171

Abstract #124 (Printed Poster)

Non-Invasive Modulation of Injury Signaling and Regenerative Growth by Magnetic Field Exposure via Bioelectric and Reactive Oxygen Species Signaling

Jana Vuckovic, Wendy Beane

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

Abstract

Introduction: Bioelectric signaling is an early and conserved regulator of tissue repair, where trauma-induced membrane potential (V_{mem}) depolarization and calcium (Ca^{2+}) influx coordinate downstream growth responses. Reactive oxygen species (ROS) are also essential injury signals that regulate gene expression, stem cell proliferation, and blastema formation in regenerating systems such as planarian flatworms. However, the mechanistic integration of bioelectric signaling, ROS dynamics, and environmental biophysical factors remains unresolved. Recent work demonstrates that static weak magnetic fields (WMFs) can modulate ROS formation, altering regenerative outcomes and heat shock protein expression. Here, we tested the hypothesis that WMFs influence regeneration by also disrupting an integrated injury signaling axis comprising of V_{mem} , Ca^{2+} flux, and different reactive species via the radical pair (RP) mechanism.

Methods: Regenerating planarian fragments were exposed post-amputation to controlled static WMFs ranging from hypomagnetic conditions to 900 μT , with focused analyses at 200 μT and 500 μT . In vivo fluorescent reporter dyes were used to quantify spatiotemporal changes in membrane voltage, Ca^{2+} flux (Fura-2-AM), and total ROS (CM H2DCFDA), as well as specifically superoxide (Detection Reagent Orange 1) and peroxynitrate (2,7-Dichlorodihydrofluorescein diacetate) within the hours following injury. Regenerative outcomes were quantified by blastema size and stem cell proliferation was assessed via immunostaining (pH3+).

Results: We show that injury induced rapid, spatially localized increases in V_{mem} depolarization, Ca^{2+} influx, and ROS within 30 minutes, displaying distinct temporal kinetics. WMF exposure significantly altered these early bioelectric and redox responses in a field-strength dependent manner. At 200 μT , WMFs suppressed anterior depolarization, corresponding with reduced ROS accumulation, and pharmacological reduction in ROS attenuated Ca^{2+} influx and downregulated Hsp70 expression, diminished stem cell proliferation, and smaller blastema. Conversely, 500 μT exposure enhanced depolarization amplitude elevating ROS, particularly superoxide, upregulating Hsp70, and producing larger blastema. The analyses revealed nonlinear magnetic field effects consistent with the radical pair mechanism predictions developed using the spin density operator.

Conclusions: These findings identify WMFs as modulators of an integrated injury-response network linking bioelectric signaling, calcium dynamics, redox biology, and proteostatic stress pathways. Our data support the model developed in which WMF-mediated spin dynamics alter ROS formation, reshaping V_{mem} and Ca^{2+} signaling and regulating Hsp70 activation and stem cell-driven tissue growth. This work highlights WMFs as a potential non-invasive strategy to therapeutically modulate wound repair and regenerative growth.

Abstract #125 (Printed Poster)

An Assessment of the WMed Well-Being in Medicine Distinction Program and Student Perspectives on a Curriculum Initiative

Lacey Burke¹, Lauren Griffin¹, Mohammad Tourchian¹, L. Robert Peters², Abigail Solitro², Vitaliy Voytenko³

¹ Western Michigan University Homer Stryker M.D. School of Medicine Well-Being in Medicine Distinction, Kalamazoo, MI. ² Western Michigan University Homer Stryker M.D. School of Medicine, Department of Biomedical Sciences, Kalamazoo, MI. ³ Western Michigan University Homer Stryker M.D. School of Medicine, Departments of Psychiatry and Medical Ethics, Humanities, and Law, Kalamazoo, MI

Abstract

Introduction: Trainee psychological stress and burnout are growing concerns in medical education and healthcare. WMed has sought to address these concerns through wellness-focused elective course offerings and the development of a longitudinal elective co-curricular distinction program, Well-Being in Medicine (WBM). Since its launch in 2020, the program has not undergone formal evaluation. This quality improvement (QI) project surveyed currently enrolled medical students to assess utilization and interest in the WBM Program; perceptions of the effectiveness, timing, and format of current offerings; and preferences around the proposed addition of a longitudinal clerkship-level Reflection Rounds (RR) course.

Methods: This QI project was designed using the FADE (focus, analyze, develop, execute) framework, with the survey representing the analysis phase. All current medical students were invited to complete an anonymous, online survey via Microsoft Forms. Quantitative data were analyzed using descriptive statistics and percentage frequency distribution, including comparisons by class year, while qualitative free-text responses underwent thematic analysis by multiple investigators. The project was exempted from WMed IRB review.

Results: All 97 survey respondents (34/87 M1, 17/84 M2, 29/84 M3, 17/86 M4) were favorable toward the distinction program. Pre-clerkship students preferred early introduction of WBM electives in longitudinal format during lighter blocks. Clerkship-level respondents preferred in-person electives for engagement but valued having virtual options for flexibility, suggesting in-person electives during pre-clerkship green weeks and longitudinal virtual electives during clinical years. Perceptions of RR varied by training level. 50% of pre-clerkship respondents supported offering RR as an M3 elective but were generally neutral regarding required participation. Clinical students were highly favorable toward optional RR but expressed hesitation toward making it a requirement. Preferences for course delivery were mixed, with most students preferring virtual or hybrid formats, and 51% of respondents indicating “maybe” willing to attend evening sessions.

Conclusion: The program assessment demonstrated that most students view WBM elective offerings as valuable. However, formal distinction program enrollment appears constrained by concerns regarding time commitment and elective scheduling. Findings suggest that early preclinical integration, paired with flexible longitudinal offerings throughout clinical years, may optimize student engagement. RR were supported as an optional, adaptable elective during clerkships.

Acknowledgments: No external funding was used.

WMed-2025-1305

* Contributed equally as first author

Abstract 126 (Printed Poster)

Non-traumatic Out-of-Hospital Cardiac Arrest Survival Rates are Similar between Staffed and Unstaffed Fire Station Jurisdictions

Alex VanWoerkom, Joshua Mastenbrook, Kimberly Avery, Steven Joyce, Stephanie Van Alsten, Michael Bentley, Megan Richardson, William Fales

Department of Emergency Medicine, Division of EMS, Western Michigan University Homer Stryker M.D. School of Medicine Kalamazoo, MI

Abstract

Introduction: Historically, non-traumatic out-of-hospital cardiac arrests (OHCAs) occurring in rural communities have been associated with lower survival rates. Given our county's robust first responder network, we aimed to test the null hypothesis that there would be no difference in OHCA survival between staffed and unstaffed fire station jurisdictions.

Methods: This was a retrospective analysis of 5-years (2019-2023) of non-traumatic OHCAs from Kalamazoo County, Michigan (population 265,000) by comparison of local jurisdictional-level data with national myCARES and Michigan EMS state ePCR data. Demographic data were abstracted and outcome measures (total survival rate, Cerebral Performance Category (CPC) score, and Utstein survival rate) were compared using basic statistics.

Results: During the study period, there were 1269 non-traumatic OHCAs in Kalamazoo County. Compared with national data, the county demonstrated higher rates of patients admitted to the hospital (29.1% vs. 24.6%), patients discharged from the hospital alive (13.2% vs. 9.2%), CPC Scores 1-2 (11.6% vs. 7.3%), and Utstein Survival (40.9% vs. 29.8%).

When comparing Kalamazoo County staffed and unstaffed fire stations, there was no statistically significant difference in survival to hospital discharge, 133 (13%) vs 28 (11.8%), respectively (p-value 0.62). There was no statistically significant difference in CPC Scores of 1 or 2 between staffed (121, 11.8%) and unstaffed (26, 10.9%) stations (p-value 0.71). There was no statistically significant difference in Utstein survival between staffed (48, 38.7%) and unstaffed (14, 35.9%) jurisdictions (p-value 0.75). Among demographic data, there was a statistically significant difference in race proportion among unstaffed (225, 94.5% white) and staffed (730, 71.2% white) stations (p-value 0.0000).

Conclusions: Our county's OHCA survival rate exceeded the national average. We saw similar outcomes between staffed and unstaffed fire station jurisdictions in terms of survival to hospital discharge and good to moderate CPC scores. The null hypothesis was supported.

Abstract #127 (Printed Poster)

Placental Phenotype Correlations with Maternal Health Factors in Cases of Fetal Demise

Skylar Ketteler, Michelle Ji, Carmen Sanchez, Polina Waterman, Amanda Wewer, Andrew Lynch, M.D., RaMae Harpestad, Kevin Ault, M.D., Gerrit Bouma
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Introduction: Compromised placentation is associated with pregnancy disorders, including intrauterine growth restriction, gestational diabetes, and pre-eclampsia that ultimately can lead to adult-onset diseases for the child such as hypertension, diabetes, and coronary heart disease. However, the use and feasibility of placental pathology and morphology (i.e., placental phenotype) as a non-invasive biomarker of both maternal and offspring well-being has not yet been explored. To determine if placental data correlates with maternal health, fetal outcome, and future child health, more retrospective data needs to be collected. This retrospective study aimed to assess what placenta data is available in Epic and combine placenta data with maternal health factors and fetal/neonatal weight, sex and race in cases of fetal demise.

Methods: This is a retrospective pilot study of 524 cases of fetal demise in Kalamazoo County from 2012-2022. Fetal sex was determined either by chromosomal analysis results or sex assigned at birth. The social vulnerability index (SVI) was calculated for each mother as a measure of socioeconomic status.

Results: Out of 524 fetuses, 35% were male, 24% female and average gestational age was 168 days. Sixty-five percent of fetuses were white or Caucasian, 20% black or African American, 2% Asian, and less than 1% Arab and American Indian. Fetal Hispanic or Latinx ethnicity was 7.7%. The overall vulnerability SVI score was 0.60, within the moderate-to-high vulnerability category. Mean placental length was 12.50 cm, width 10.11 cm, thickness 2.69 cm, and weight was 193 g. Placental pathology falls into 6 categories: Fetal Vascular Malperfusion; Maternal Vascular Malperfusion; Inflammation (chorioamnionitis, funisitis or villitis); Fibrinoid Deposition; Chromosomal Analysis; and Villous Characteristics, Maturation, etc.

Conclusion: In our cohort, the average age of fetal demise occurred prematurely at 24 weeks gestation and affected more male fetuses. All five maternal SVIs calculated were in the third quartile. This vulnerability may represent significant barriers to care and socioeconomic factors that may have impacted the outcome of these pregnancies. Current analysis is underway to determine correlation between placental phenotype and maternal health factors. These initial results provide the foundation for future prospective studies and highlight the importance of post-birth placental analysis.

IRB WMed-2024-1203

Abstract #128 (Printed Poster)

Artificial Intelligence May Benefit Experienced Users More Than Novices in Point-of-Care Ultrasound Acquisition

Jacob Lenning, Aaron Mahoney, Paul Thanel, Corey Garrison II

Western Michigan University Homer Stryker M.D. School of Medicine, Emergency Medicine, Kalamazoo, MI

Abstract

Background: There is limited evidence defining the role of artificial intelligence (AI) guidance in point-of-care ultrasound (POCUS) education. It unknown for which learners and for which POCUS studies AI assistance is most helpful.

Objective: To determine the immediate effect of AI guidance assistance on POCUS acquisition time and image quality in novice and experienced users.

Methods: A repeated-measure experimental study was conducted in a simulated setting. A convenience sample of 14 novices with limited POCUS training during medical school and 10 experienced emergency medicine residents recorded right upper quadrant (RUQ) and apical-4 chamber (A4C) windows with and without AI assistance on three standardized patients in randomized order. Acquisition times were compared with the Mann-Whitney U test. Three blinded reviewers assigned Boolean values for the quality criteria: essential structures visible, correct imaging plane, and proper probe orientation. Quality criteria proportions were compared with Pearson's chi-square for independent samples and McNemar's test for repeated measures.

Results: 286 ultrasounds were recorded. Median [interquartile range] acquisition time (seconds) was longer with AI for A4C (117 [125]; 69 [62]; $p < 0.01$) and RUQ (61 [64]; 38 [38]; $p < 0.01$) windows in all users. All A4C and RUQ quality criteria were more likely in experienced than novice users. The total number of A4C quality criteria was more often greater with AI (0.35 [95%CI 0.25, 0.47]) than without (0.20 [0.12, 0.32]) in all users (X^2 , $df=1$, $n=142$, $p=0.04$) regardless of training level. The correct A4C imaging plane was more likely with AI (0.40 [0.29, 0.52]; 0.25 [0.16, 0.36]) in all users (X^2 , $df=1$, $n=71$, $p=0.02$) and experienced users (0.60 [0.42, 0.75]; 0.37 [0.22, 0.55]; X^2 , $df=1$, $n=30$, $p=0.03$). No significant differences were observed in novice users or RUQ windows.

Conclusion: AI guidance assistance promoted longer POCUS acquisition time. The immediate effect on image quality trended more favorably in experienced users obtaining the more difficult A4C window.

Abstract #129 (Printed Poster)

Standardizing Follow-Up Care for Pediatric Patients Identified as Overweight or Obese During Well-Child Encounters

Daniella James¹, Amber Campbell², Jwala KC¹, Mahesh Shrestha¹

¹Pediatric and Adolescent Medicine, Kalamazoo, MI. ²Pediatric and Adolescent Medicine, Kalamazoo, MI

Abstract

Introduction: Childhood obesity presents a public health challenge, affecting 14+ million American children and contributing to comorbidities including type 2 diabetes, dyslipidemia, and cardiovascular disease. Despite available guidelines, variability in provider care often leads to inconsistent management for those with excess weight. This QI project sought to standardize an approach for residents managing patients identified as overweight or obese during well-child encounters in the pediatric clinic at WMED.

Methods: A Plan, Do, Study and Act framework was utilized for this project. Pre-intervention quantitative data was collected from 2–17 year-old well-child visits over a 3-month period (October, November, December 2024). Data identified how many patients with BMI greater than or equal to the 85th percentile received appropriate bloodwork (HgbA1C, ALT/AST, Lipid Panel), lifestyle counseling, and follow-up specifically for lifestyle modifications.

After data collection, a clinical practice guideline (CPG) was developed integrating evidence-based literature from the 2023 AAP CPG into an outpatient pediatric clinic. Subsequent resident-led sessions (morning reports, noon lectures, and didactics) reinforced the importance of weight-focused interventions before a 3-month (March, April, May 2025) post-intervention quantitative data collection allowed for analysis to assess effectiveness of CPG education.

Results: Target patient intervention goals were established as 20% pre-intervention and 50% post-intervention. 492 overweight and obese patients were identified during intervention periods and the following improvements in quality-of-care indicators were observed: Counseling improved from 84.1% to 94.1%; lipid ordering rose from 33.0% to 33.3% (peaked at 39.7%); all recommended test ordering increased from 8.0% to 20.2%; and follow-up visits expanded from 13.6% to 22.1%.

Conclusions: Though CPG adherence missed pre-established targets (by 17% for lipid ordering, 30% all-test ordering and 28% for follow-up), interventions surpassed the initial 20% target improvement by project conclusion. Measured outcomes revealed opportunities for enhancing care delivery for pediatric patients at risk of obesity-related comorbidities. Combining the 2023 AAP comprehensive obesity management framework with directed resident instruction and accessible standardized clinical tools can increase consistency in testing, counseling, and follow-up scheduling among patients in need. Sustained success will require continued resident education, ongoing feedback regarding barriers to implementation, and clinical workflow review to maintain high compliance.

Abstract 155 (Printed Poster)

Identifying Demographic Disparities in Behavioral Health Referral Practices in an Outpatient Pediatric Clinic

Mohammad Tourchian, Ashley Minor, Megan Westphal, Diego Castro Franco, Daniel Frechette, Katherine Tennant Beenen, Summer Chahin
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Abstract

Introduction: Behavioral and mental health conditions affect approximately 13%–20% of children in the United States, with an additional 19% experiencing subthreshold symptoms that cause impairment or distress without meeting full diagnostic criteria (Weitzman et al., 2025). Primary care settings have become increasingly central to pediatric mental health for early identification and service delivery. In recent years, 13.6% of primary care visits among children and adolescents were related to mental health concerns, representing a 44.7% increase in just two decades (Gertner et al., 2026). Integrated behavioral health (IBH) care models have demonstrated significant clinical improvements in pediatric populations. These models prioritize population-based care, measurement-based care, and the delivery of evidence-based mental health services (Yonek et al., 2020). Despite these advances, significant disparities in pediatric behavioral health care persist. The American Academy of Pediatrics identifies children of color, children with disabilities, and families with non-English language preference as populations that are often inadequately screened and underserved (Weitzman et al., 2025). Disparities in early access points, including referral practices within primary care, may contribute to downstream inequities in behavioral health service utilization and outcomes.

Methodology: Using data from our institution's Virtual Data Warehouse, chi-square tests of independence and independent t-tests were performed on data from 11,716 patients (aged 5-18 years) seen in the outpatient setting to compare demographic variables between pediatric patients referred to IBH and those who were not.

Results: Significant differences in behavioral health referral rates were observed across sex, gender identity, race, and insurance type. Specifically, male and non-binary Gender Identity, White race, and Medicaid coverage ($p < .001$) were all significantly associated with higher referral rates to IBH. In contrast, referral rates did not differ significantly by ethnicity ($p = .581$) or age ($p = .337$).

Conclusion: Demographic factors associated with certain marginalized indicators were found to have higher referrals to IBH. Despite this, referral to IBH by race remains inconsistent. These findings highlight the need for targeted strategies to improve equity and accessibility in integrated behavioral health care.

WMed-2025-1288

Abstract #156 (Printed Poster)

Grit and Success in Medical School

Elizabeth Wang, Marina Cox, Timothy Bauler, PhD, Maria Sheakley, PhD
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan

Abstract

Purpose: Medical school admissions committees are increasingly using non-cognitive traits, such as motivation and attitude, rather than intellect alone, to predict which applicants are most likely to succeed in medical school. 'Grit' has been defined as a "predisposition for pursuing long-term, challenging goals with passion and perseverance", and has been associated with academic and professional success independent of IQ in a variety of fields. Higher levels of grit, as measured by individual self-reflection, have been additionally associated with protection from burnout in medical students and residents. An objective measure of grit, therefore, may be helpful in predicting both academic and non-academic achievements in medical school.

Methods: A retrospective review of four medical school classes at a single institution was completed. The experiences section of each students' admission application was de-identified and examined for pre-determined objective measures of grit. Each application was independently reviewed by two reviewers using the same rubric for scoring. In cases of discrepancy, a third reviewer served as a tie-breaker. Seven objective measures of grit were pre-identified to highlight applicant experiences that demonstrate perseverance. Students were assigned a grit score of '0' or '1' based on the experiences review. Multiple medical school performance metrics, both academic and non-academic, were obtained for each student and analyzed for correlation with the grit score.

Results: A total of 2568 experiences from 230 student applications were reviewed and grit scores assigned. Students determined to have grit scored significantly higher on the surgery shelf exam, but there was no statistical significance between students determined to have grit and those without in other measures of academic performance, graduation rates, or other awards.

Conclusion: Medical school admissions committees are seeking non-cognitive traits that predict success. Grit alone, as determined by this study's criteria, does not predict academic and non-academic success in medical students. It may contribute, however, to predictions of success in conjunction with other metrics used in the holistic admissions process.

WMed-2019-0575