DEPARTMENT OF EMERGENCY MEDICINE

WILLIAM G. BARSAN EMERGENCY MEDICINE RESEARCH FORUM

North Campus Research Complex, Ann Arbor

April 27, 2016

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- Please use the hashtag **#UMichBarsanForum** for this event.
- All speaker presentations at this event will be recorded and uploaded to the Department of Emergency Medicine's YouTube channel one to two weeks after this event; slides will be made available on SlideShare.

Welcome to the Inaugural William G. Barsan Emergency Medicine Research Forum!

Thanks to a strong legacy of outstanding research, the University of Michigan Department of Emergency Medicine's research capacity has flourished in the last decade. U-M has the most highly NIH-funded emergency medicine department for research in the US (2015), with many of our faculty members consistently among the top 50 most highly NIH-funded NIH emergency medicine researchers. Further, in the past year we have seen a tremendous growth of research across EM faculty with over 60 national conference presentations this year alone. These accomplishments deserve celebration.

To celebrate the legacy and ongoing leadership role our department plays on the national stage, we've set aside this day to honor, learn, and share the work of colleagues. We are pleased to welcome Dr. Bill Barsan as our keynote speaker – a fitting acknowledgment for our department's founding leader and a revered medical researcher – and to name this event in his honor.

Throughout the day you will hear about exciting, innovative work being done by your colleagues – from formal presentations to poster sessions. We hope you will use this opportunity to learn about your colleagues work and explore ways to collaborate as we look to continue to transform the field of Emergency Medicine through scholarly work.

We're glad you're here.

Robert W. Neumar, MD, PhD FACEP
Professor and Chair, Emergency Medicine
University of Michigan Medical School

Rebecca Cunningham, MD
Professor, Emergency Medicine
Associate Chair, Research
Director, University of Michigan Injury Center

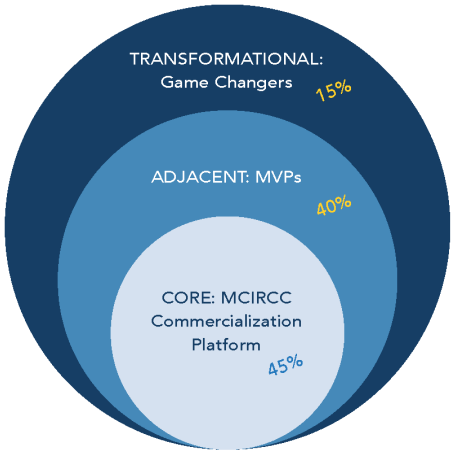
CENTER FOR INTEGRATIVE RESEARCH IN CRITICAL CARE
UNIVERSITY OF MICHIGAN

MCIRCC OVERVIEW

MCIRCC MISSION

To develop and deploy critical care solutions that are precise, predictive, proactive, and personalized for real-world impact.

MCIRCC INNOVATION PORTFOLIO



MCIRCC: THE KEYS TO "TOTAL INNOVATION"

1. **TALENT**: world-class multidisciplinary research teams supported by innovation, financial, business, and commercialization experts.
2. **INTEGRATION**: highly coordinated and collaborative infrastructure to connect clinicians, scientists, and engineers alongside early integration strategies with industry, entrepreneurs, and donors.
3. **FUNDING**: proven organizational structure and programs to effectively deploy revenue streams to support and accelerate translational research and new product development.
4. **PIPELINE**: prioritize translational research so new ideas are constantly flowing into the product development pipeline.
5. **COMMERCIALIZATION ROADMAPS**: comprehensive project packages that translate innovations from laboratory bench to commercial industry to the patient bedside in the shortest timeframe.
6. **METRICS**: measure success based on products delivered to market that are precise, predictive, proactive, and personalized for real-world impact at reduced costs.

GRAND CHALLENGE PROGRAM:

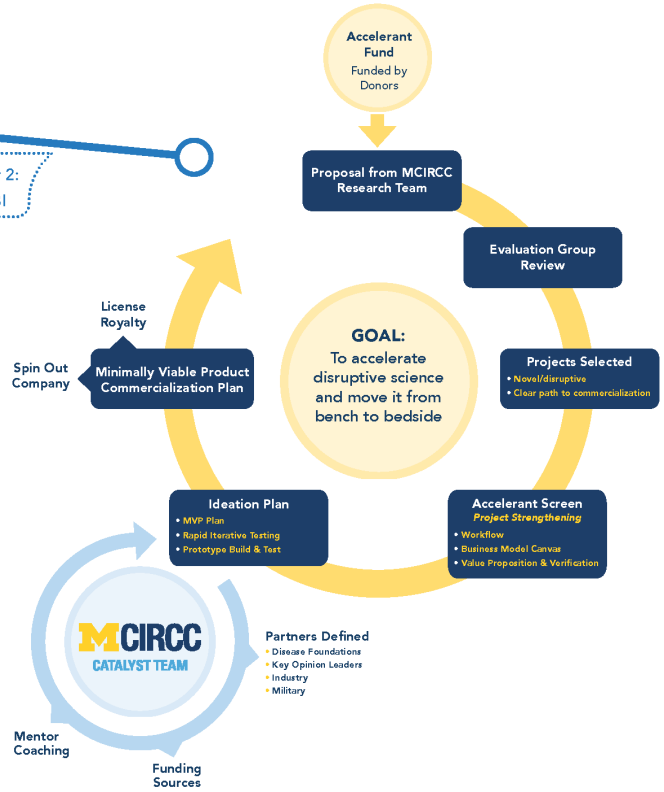
Targets BIG PROBLEMS in critical care using "integrated science teams" to develop and deploy solutions that impact patient health at reduced costs.

Year 1: SEPSIS

Year 2: TBI

ACCELERATION STRATEGIES

- Integrated project teams rooted in clinical and market relevance.
- Commercialization coaches assure alignment with FDA regulatory considerations and commercialization plans.
- Support big data technology infrastructure.
- Sponsored research and co-development with industry partners.
- Proposal Development Unit and other collaboration tools reduce barriers and enhance team science.



V2015-07-15

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MCIRCC

Follow us on LinkedIn

Making a Difference

Transportation-related injury

Violence interventions

Prescription drug misuse

Concussion

Injury is the #1 cause of death for people aged 1 to 44.

We work to prevent injury by:

- Performing innovative research
- Publishing research findings and translating research into practice
- Supporting community groups
- Publishing educational materials for practitioners
- Educating students, trainees, and others
- Providing support for developing effective injury policy

INJURY CENTER
UNIVERSITY OF MICHIGAN

Become a member today!

With monthly learning activities, engaged members, funding opportunities, a resource-rich website, and collaboration opportunities, the University of Michigan Injury Center provides a way to connect and grow.

www.injurycenter.umich.edu @UMInjuryCenter 734-232-2105

Investigator Team: Robert C. Hyzy, MD, Kyle Gunnerson, MD, Pauline Park, MD
Study Coordinator: Kristine Nelson (pager 37169)

ROSE

Clinical Trial Sponsored by the NIH National Heart, Lunch, and Blood Institute

Reevaluation of Systemic Early Neuromuscular Blockade

IRBMed: HUM00108077

Clinicaltrials.gov: NCT02509078

Hypothesis: Early neuromuscular blockade will improve mortality prior to discharge home before day 90, in patients with moderate-severe ARDS.

Study Design: Multi-center, prospective, 2-arm, unblinded, randomized clinical trial of two management strategies of neuromuscular blockade (cisatracurium). Subjects in both arms will receive high PEEP / low tidal volume ventilation. A conservative fluid management will also be used in both arms. Subjects in the study drug arm will receive cisatracurium for 48 hours. Subjects in the control arm will receive standard of care sedation.

Primary objectives: To assess the efficacy and safety of early neuromuscular blockade in reducing mortality and morbidity in patients with moderate-severe ARDS in comparison to a control group with no routine early neuromuscular blockade.

This study is being conducted as part of the PETAL Network. The Clinical Trials Network for the Prevention and Early Treatment of Acute Lung Injury (PETAL Network) is a network of 12 Clinical Centers funded by the National Heart, Lung, and Blood Institute (NHLBI) to develop and conduct randomized controlled clinical trials to prevent or treat, and/or improve the outcome of patients who have, or who are at risk for, Acute Lung Injury (ALI) or Acute Respiratory Distress Syndrome (ARDS).

If you are considering paralytics, please contact the study team!

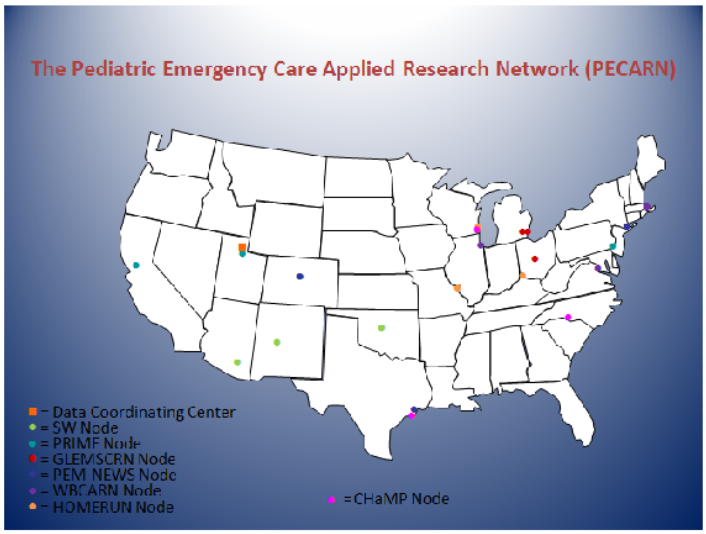
University of Michigan Health System

PETAL NETWORK
Prevention & Early Treatment of Acute Lung Injury

PEDIATRIC EMERGENCY CARE APPLIED RESEARCH NETWORK

Conducting High Priority, High-Quality Research in Pediatric Emergency Care

Since 2001, the University of Michigan Hospital has been affiliated with the PECARN network by conducting research on the prevention and management of acute illnesses and injuries in children and youth of all ages.

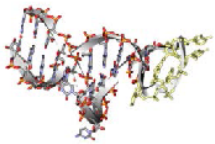


Active research studies for 2016 at the UM Hospital:

Emergency Department Screen for Teens at Risk for Suicide (ED-STARS)

Established Status Epilepticus Treatment Trial (ESETT)

Impact of Emergency Department Probiotic Treatment of Pediatric Gastroenteritis



RNA Biosignatures: A Paradigm Change for the Management of Young Febrile Infants (Biosig II)

PECARN is supported by cooperative agreements between seven academic medical centers and the Health Resources Services Administration / Maternal and Child Health Bureau / Emergency Medical Services for Children Program (HRSA / MCHB / EMSC).

For more information about the PECARN network at the University of Michigan Hospital, please contact:
The PECARN Research office – Tel: (734) 936-7715
www.pecarn.org

Alexander Rogers, MD
Hospital Emergency Department Affiliate PI
Children's Emergency Services
University of Michigan Hospital and Health Systems

University of Michigan Health System

OPENING & CLOSING SPEAKERS

REBECCA CUNNINGHAM, MD

Professor, Emergency Medicine
Associate Chair, Research
Director, U-M Injury Center

Rebecca Cunningham is Associate Chair for Research and Professor for the University of Michigan's Department of Emergency Medicine, Director of the CDC-funded University of Michigan Injury Center, and Professor in Health Behavior & Health Education, School of Public Health.

Dr. Cunningham has a distinguished career in researching Injury prevention, particularly of youth and young adult populations often in Flint MI. Her focus on brief interventions in the emergency room has included using technology to overcome barriers to reaching youth to prevent alcohol and drug misuse including prescription drug misuse as well as associated consequences. She has received funding as PI from NIAAA, NIDA, Fogarty, and CDC over the past 18 years.

ROBERT W. NEUMAR, MD, PhD FACEP

Professor and Chair, Emergency Medicine

Robert Neumar is Professor and Chair of Emergency Medicine at the University of Michigan Medical School in Ann Arbor, Michigan, USA. He is the chair-elect for the International Liaison Committee on Resuscitation (ILCOR) and the immediate past Chair of the American Heart Association Emergency Cardiovascular Care Committee. He has over 20 years research experience in cardiac arrest resuscitation, with international recognition as an expert in advanced cardiovascular life support (ACLS) and the pathophysiology and treatment of post-cardiac arrest syndrome. His research has focused on mechanisms of brain injury caused by cardiac arrest and the neuroprotective strategies including hypothermic-targeted temperature management.

Don't Forget!

Visit the Registration Desk

Visit the registration desk (*located in the lobby of building 10, 1st floor*) at the end of today's presentations and receive your U-M Department of Emergency Medicine tumbler mug.

KEYNOTE ADDRESS

WILLIAM BARSAN, MD

Professor, Emergency Medicine

William Barsan is Professor and former Chair of the Department of Emergency Medicine at the University of Michigan Medical School. He completed medical school at the Ohio State University and completed his emergency medicine residency at the University of Cincinnati in 1979. From 1979 until 1992, he was a faculty member at the University of Cincinnati and was promoted to Professor in 1991. While in Cincinnati, Dr. Barsan was a founding member of the Greater Cincinnati Northern Kentucky Stroke Team and has been involved in stroke clinical trials since 1983. Dr. Barsan came to the University of Michigan in 1992 as the Section Chief for Emergency Medicine within the Department of Surgery. He led the development of an Emergency Medicine Residency at the University of Michigan and spear-headed the creation of the Department of Emergency Medicine within the medical school in 1999.

His academic focus is translational research in stroke and neurological emergencies. He was the only emergency medicine investigator in the initial studies evaluating tPA in ischemic stroke and he was part of the team the designed the pivotal NINDS tPA trial as well as the NIH Stroke Scale. Since 2006, he has been the principal investigator of the Clinical Coordinating Center for the Neurological Emergencies Treatment Trials Network (NETT). This is a large cooperative award from the NIH encompassing 22 academic sites across the country to conduct clinical trials in neurological emergencies, including stroke, epilepsy, traumatic brain injuries and spinal cord injuries. In 2010, Dr. Barsan was also co-Principal Investigator on the ADAPT-IT (Accelerating Drug and Device Evaluation through Innovative Clinical Trial Design) project funded by NIH and FDA for advances in regulatory science. The ADAPT-IT project has been instrumental in promoting the use of adaptive clinical trial designs in confirmatory phase clinical trials and evaluating the advantages and barriers to adaptive design strategies.

Dr. Barsan is recipient of numerous awards, including Hal Jayne Academic Excellence Award from SAEM, the Peter Rosen Academic Leadership Award from AAEM, the ACEP Award for Outstanding Contributions in Research and the SAEM Leadership Award. Dr. Barsan has served as president for several academic organizations, including the Society for Academic Emergency Medicine, the American Board of Emergency Medicine and the Association for Academic Chairs of Emergency Medicine. He was elected to membership in the National Academy of Sciences Institute of Medicine in 2003.

SPEAKER INFORMATION (In alphabetical order)

MAHSHID ABIR, MD, MSc

Assistant Professor, Emergency Medicine

Mahshid Abir is an emergency physician and health services researcher with a joint appointment at the University of Michigan and the RAND Corporation. She earned a master's degree in Health and Health Services Research from the Robert Wood Johnson Foundation Clinical Scholars Program at the University of Michigan in 2011. Dr. Abir's research focus is in evaluating the continuum of acute care delivery in the United States, including pre-hospital, emergency, inpatient, and ambulatory care with a focus on addressing policy-related questions pertaining to utilization, quality, efficiency, outcomes, and costs of acute care delivery in these settings.

MICHAEL BOYD, MD

Resident, Emergency Medicine

Michael Boyd is a fourth-year House Officer in the University of Michigan/St. Joseph Mercy Emergency Medicine Residency. For the past two years, he has been a member of the Healthcare Administration Scholar's Program. As a member of the ACEP State Legislative Committee, he is involved in advocacy efforts at the state and national level. Dr. Boyd's academic interests focus on emergency department quality and operations, with active research involving resident performance metric feedback, diagnosis of deep vein thrombosis, and identification of patients with low risk chest pain.

JOHN BURKHARDT, MD, MA

Lecturer, Emergency Medicine

John Burkhardt is a junior faculty member in the Departments of Emergency Medicine and Learning Health Sciences at the University of Michigan Medical School. The core of Dr. Burkhardt's research agenda is educational policy analysis and quantitative methodology in medical education. Within his general research concentration, he has focused on increasing the evidentiary basis for decision-making in medical education in areas such as recruitment, admissions, resident selection, curriculum, and assessment. To better investigate his research interests, Dr. Burkhardt has pursued significant additional training outside his MD; earning a master's degree in Higher Education with a focus in Medical Education and at present continuing his education as a PhD student in Higher Education.

PATRICK CARTER, MD

Assistant Professor, Emergency Medicine

Patrick Carter is an Assistant Professor of Emergency Medicine and an injury researcher within the CDC-funded University of Michigan Injury Center. After completing his medical degree at Tufts University and Clinical Residency training at the University of Michigan in Emergency Medicine, Dr. Carter completed an NIH-sponsored research fellowship through the University of Michigan Injury Center.

Dr. Carter practices clinically within the U-M Department of Emergency Medicine, and his research focuses on the intersection of substance use and injury, including youth violence, firearm violence, and motor vehicle crash injury. In addition, his recent research has focused on the development of evidence -based firearm violence prevention methods.

KEITH KOCHER, MD

Assistant Professor, Emergency Medicine

Keith Kocher is an emergency physician and health services and outcomes researcher who studies the delivery and performance of emergency and acute care. His research focuses on resource utilization, variation, and delivery system influences on the cost and quality of emergency care supported by external funding, including a career development award from the Agency for Healthcare Research and Quality. He also serves as the Director of the Michigan Emergency Department Improvement Collaborative (MEDIC), www.medicqi.org, a statewide collaborative quality initiative sponsored by Blue Cross Blue Shield of Michigan/Blue Care Network designed to advance the performance of emergency care through meaningful exchange of data and shared learning.

FREDERICK KORLEY, MD, PhD

Assistant Professor, Emergency Medicine

Frederick Korley is an Assistant Professor of Emergency Medicine. He has expertise in the design and conduct of clinical investigations to diagnose and treat acute brain and cardiac injury using emerging diagnostic technologies. Dr. Korley has substantial experience in the discovery, quantification, and validation of novel protein-based biomarkers using advanced proteomics techniques. He is a co-inventor of a panel of novel biomarkers for diagnosing acute traumatic brain injury (TBI). He is also the PI of HeadSMART (Head Injury Serum Markers for Assessing Response to Trauma), a prospective cohort study examining the utility of blood-based biomarkers for acute stage TBI diagnosis and risk-stratification.

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SPEAKER INFORMATION, *cont'd.*

MICHELLE MACY, MD, MS

Assistant Professor, Emergency Medicine and Pediatrics

Michelle L. Macy is an Assistant Professor in the Departments of Emergency Medicine and Pediatrics and a pediatric health services researcher. Her research focuses on child passenger safety, with the goal of increasing the number of children across the United States who are using the size-appropriate restraint on every trip.

WILLIAM MEURER, MD, MS

Assistant Professor, Emergency Medicine

William Meurer is currently an Assistant Professor of Emergency Medicine and Neurology at the University of Michigan Health System. His clinical and research focus is on the early care of patients with acute neurological emergencies. In addition, he is a PI of the National Institutes of Neurological Disorders and Stroke (NINDS) Clinical Trials Methodology Course and a co-investigator in the clinical coordinating center of the Neurological Emergencies Treatment Trials Network (also funded by NIH). He is also a PI on an NIH-funded emergency department based, health care provider targeted, clinical trial to improve the care of patients with acute dizziness.

Dr. Meurer works to improve the care of patients with acute neurological disease both through his work on the acute stroke team and as a researcher. He attended medical school at the University of Cincinnati, residency at MetroHealth/Cleveland Clinic and then came to Michigan for his stroke fellowship in 2006. During that fellowship he received an MS in clinical research design and statistical analysis from the University of Michigan School of Public Health. He is a core-faculty member for the University of Michigan/St. Joseph Mercy Residency. In addition, he serves clinically both the in the Emergency Department and with the U-M Stroke Team, where he is Emergency Medical Director for the Comprehensive Stroke Center.

MICHELE NYPAVER, MD

Associate Professor, Emergency Medicine and Pediatrics

Michelle Nypaver is an Associate Professor, Clinical Track, with joint appointments in the Department of Emergency Medicine and Department of Pediatrics at the University of Michigan. She is the current Co-Director of the Blue Cross Blue Shield funded Michigan Emergency Department Improvement Collaborative (MEDIC) CQI. Dr. Nypaver will contribute to the vision and strategic direction for on-going growth and development and lead the design and implementation of quality improvement initiatives for the pediatric population in state of Michigan collaborative.

(continued on next page….)

Dr. Nypaver has experience directing quality improvement initiatives targeting pediatric emergency care with oversight for training, intervention development and implementation. She is a member of the AAP/ Section on Emergency Medicine Subcommittee on Quality and is active in the section's study and implementation of PEM quality measures. Her research interest is in the study of clinical and process measures that will aid in improving the outcomes of children visiting emergency departments, particularly for children with cancer and sepsis. Dr. Nypaver is the past Co-Chair of the American Academy of Pediatrics (AAP)/Subcommittee on Fellowship and author of the discipline's entrustable professional activities (EPA's) source document acknowledged by the American Board of Pediatrics & American College of Graduate Medical Education (ACGME).

ALEXANDER ROGERS, MD

Assistant Professor, Emergency Medicine and Pediatrics

Alexander Rogers is an Assistant Professor and attending physician in the Departments of Emergency Medicine and Pediatrics. Dr. Rogers has served as the site Principal Investigator at the University of Michigan for the Pediatric Emergency Care Applied Research Network (PECARN) since 2008. He is responsible for implementing PECARN's multi-center studies at University of Michigan, is a member of the PECARN steering committee and is the Chair of the Quality and Safety subcommittee.

SARAH TOMLINSON, MD

2nd Year Fellow, Pediatric Emergency Medicine

Sarah Tomlinson is a second year pediatric emergency medicine fellow. She attended the David Geffen School of Medicine at UCLA and completed her pediatrics residency at the University of Michigan. Her research interests include medical technology and the use of technology and social media in medical education.

J. SCOTT VANEPPS, MD, PhD

Clinical Lecturer, Emergency Medicine

J. Scott VanEpps received his MD as well as his PhD in Bioengineering in 2009 from the University of Pittsburgh. He matched at the University of Michigan for an Emergency Medicine residency and stayed to complete a research fellowship funded by a Society for Academic Emergency Medicine (SAEM) research training grant. He is now faculty at the University of Michigan and working in AES and EC3. Dr. VanEpps's primary research interests are in medical device infection.

SPEAKER INFORMATION, *cont'd.*

KEVIN WARD, MD

Professor, Emergency Medicine

Kevin Ward is the Executive Director for both the Michigan Center for Integrative Research in Critical Care (MCIRCC) and Fast Forward Medical Innovation (FFMI) and a Professor in the UMMS Department of Emergency Medicine. Dr. Ward received his medical degree from Tulane University and completed his Emergency Medicine training at the University of Pittsburgh.

Dr. Ward's research encompasses the development of platform technologies that span the spectrum of critical illness and injury ranging from the critically ill neonate to the critically injured warfighter. His research has been funded by the NIH, Department of Defense and National Science Foundation. He is a serial innovator and entrepreneur in the field of critical care with over 40 issued and pending patents, 10 products licensed to industry, and four companies launched. His work has resulted in his being awarded the Innovator of the Year at Virginia Commonwealth University and receiving recognition by the Department of Defense for his innovative work in hemostasis and in developing and directing programs that have provided medical training to over a thousand Special Operation Medics.

Dr. Ward's passion is in developing programs which encourage strategic, integrative, and disciplined collaborations across medicine, engineering, information sciences, and industry that promote true solutions. The ability to integrate such strategies at all levels of problem recognition and solving (laboratory, classroom, bedside) applied to the tripartite mission of academic medicine serves as force multipliers for translational team science.

MODERATOR

REBECCA CUNNINGHAM, MD

Professor, Emergency Medicine
Associate Chair, Research
Director, U-M Injury Center

See full bio for Dr. Cunningham on page 8.

DEPARTMENT OF EMERGENCY MEDICINE

NORTH CAMPUS RESEARCH COMPLEX (NCRC)

All speaker presentations will take place in the Research Auditorium on the 1st floor, in Building 10 of the NCRC. Note that **lunch** and the **poster session** will take place on the ground floor, in Building 10. The lunch buffet will be set up in the South Atrium and seating will be available in the South Atrium and in rooms G063 and G064. Following lunch, posters will be on display in the South Atrium room, located adjacent from the buffet line.

REGISTRATION DESK

A staff member will be stationed at the registration desk, located in the lobby of Building 10 on the 1st floor, throughout the event. If you need any assistance, please visit the registration desk. At the end of the event, be sure to visit the registration desk to pick up the event giveaway item.

FORUM EVALUATION

A follow-up survey evaluation will be emailed to all attendees. We ask you to please complete and submit your evaluation as quickly as possible. Your feedback will help the Department of Emergency Medicine improve this event. Thank you in advance for participating in making this research forum useful and informative!

PHOTOGRAPHY & VIDEO

Photographers and videographers will be present at the forum obtaining photographic images and video recordings of speaker presentations to make available to those unable to attend and to promote the department's work. Photos may be used to populate the website, accompany post-event press releases, and in selected print publications.

MISCELLANEOUS INFORMATION

Please note: all speaker presentations will be recorded for those unable to attend and for future use. As a courtesy to the videographer, please limit distractions and extraneous noises during all presentations. A microphone will be available to use to address speakers with questions during the Q&A periods.

DEPARTMENT OF EMERGENCY MEDICINE

William G. Barsan EM Research Forum Agenda

WEDNESDAY, APRIL 27TH

8:00 – 8:30 **REGISTRATION & CONTINENTAL BREAKFAST**—1st Floor Lobby, B10

8:30 – 8:45 **WELCOME & OPENING REMARKS** —Research Auditorium

- Robert Neumar, MD, PhD, FACEP, *Professor and Chair, Department of Emergency Medicine, University of Michigan*

8:45 – 9:40 **KEYNOTE ADDRESS** —Research Auditorium

- William G. Barsan, MD, *Founding Chair and Professor, Department of Emergency Medicine, University of Michigan*

9:40 – 9:55 **BREAK**

9:55—11:25 MORNING SESSION: RESEARCH REPORTS —RESEARCH AUDITORIUM

- **Moderator:** Rebecca Cunningham, MD, *Associate Chair for Research, Professor, Department of Emergency Medicine, University of Michigan, Director, University of Michigan Injury Center, and Professor, Health Behavior & Health Education, University of Michigan School of Public Health*

9:55 – 10:05 **Keith Kocher,** MD, *Assistant Professor, Department of Emergency Medicine, University of Michigan, and Director of Michigan Emergency Department Improvement Collaborative (MEDIC)*

10:05 – 10:20 **Patrick Carter,** MD, *Assistant Professor, Department of Emergency Medicine, University of Michigan*

10:20 – 10:30 **John Burkhardt**, MD, *Lecturer, Departments of Emergency Medicine and Learning Health Sciences, University of Michigan*

10:30 – 10:45 **Alexander Rogers**, MD, *Assistant Professor, Departments of Emergency Medicine and Pediatrics, University of Michigan*

10:45– 11:05 **Michael Boyd**, MD, *4th Year House Office, Department of Emergency Medicine, University of Michigan/St. Joseph Mercy* &
Sarah Tomlinson, MD, *2nd Year Fellow, Department of Emergency Medicine, University of Michigan*

11:05 – 11:20 **Kevin Ward**, MD, *Executive Director of Michigan Center for Integrative Research in Critical Care (MCIRCC) and Fast Forward Medical Innovation (FFMI), and Professor, Department of Emergency Medicine, University of Michigan*

11:20 – 12:15 **LUNCH & NETWORKING** —Ground Floor Atrium, B10/ Seating available in rooms G063, G064

12:15 – 1:00 **POSTER SESSION**—Ground Floor South Atrium Room, B10

1:00—2:15 AFTERNOON SESSION: RESEARCH REPORTS —RESEARCH AUDITORIUM

- **Moderator:** Rebecca Cunningham, MD

1:00 – 1:10 **Michelle Macy**, MD, MS, *Assistant Professor, Departments of Emergency Medicine and Pediatrics, University of Michigan*

1:10 – 1:20 **Mahshid Abir**, MD, MSc, *Assistant Professor, Department of Emergency Medicine, University of Michigan and the RAND Corporation*

1:20 – 1:40 **William Meurer**, MD, MS, *Assistant Professor, Departments of Emergency Medicine and Neurology, and Emergency Medical Director for the Comprehensive Stroke Center, University of Michigan*

1:40– 1:50 **J. Scott VanEpps**, MD, PhD, *Lecturer, Department of Emergency Medicine, University of Michigan*

1:50– 2:05 **Frederick Korley,** MD, PhD, *Assistant Professor, Department of Emergency Medicine, University of Michigan*

2:05 – 2:15 **Michele Nypaver**, MD, *Associate Professor, Departments of Emergency Medicine and Pediatrics, University of Michigan, and Co-Director of the Michigan Emergency Department Improvement Collaborative (MEDIC) CQI*

2:15 – 2:30 **AWARDS & CLOSING REMARKS** —Research Auditorium

- Rebecca Cunningham, MD
- Robert Neumar, MD, PhD FACEP

POSTER PRESENTATIONS

Poster Session: 12:15—1:00 p.m., South Atrium, B10, Ground Floor

#	Presenter	Name of Project/ Poster Title
1	Sardar Ansari	A Portable Non-Invasive Polyvinylidene Fluoride Based Sensor for Detection of Hemorrhage
2	Ashwin Belle	Development of an Electrocardiogram Analytic For Detection of Pending Hemodynamic Instability
3	Michael Clery	Presentation Violence Prevention Efforts: Methods to Retain Participants in Youth Violence Research
4	Quyen Epstein-Ngo	Violence Perpetration and Alcohol Use Among High-Risk Youth in the ED: The Case for Mindfulness-Based Interventions
5	Josh Glazer	Impact of an ED-ICU on Severe Sepsis and Septic Shock
6	Josh Glazer	PReDICT: Prognosticate Resuscitation Demands Integrating Computerized Triage
7	Jason Goldstick	Using Machine Learning Methods to Predict Future Weapon Violence Among Entrants to an Urban ED
8	Nathan Haas	An Emergency Department-Based Intensive Care Unit Decreases Hospital and ICU Utilization in Diabetic Ketoacidosis
9	Deneil Harney	A Descriptive Review and Analysis of the FDA Docket on Public Disclosure Material for Emergency Research Studies Conducted Under 21 CFR 50.24 (Docket FDA-1995 -S-0036)
10	Carrie Harvey	The Impact of an ED-Based Critical Care Unit on the Provision of Palliative Care in the Emergency Department
11	Cassie Holman	The Effect of an Emergency Department-Based Critical Care Unit on the Utilization of Non-Invasive Positive Pressure Ventilation and Patient Disposition
12	Tomas Huerta	The Evolution of Appendiceal Ultrasound: Ten Years' Experience within a Pediatric Emergency Department
13	Usha Kadiyala	Enzyme Inhibition May Be a New Mechanism of Action for Zinc Oxide Nanoparticles Against Staphylococcus Aureus
14	Benjamin Long	Impact of an Emergency Critical Care Unit on the Management of Critically Ill Intoxicated and Poisoned Patients
15	Tianhui Ma	Staphylococcus Epidermidis Alters a Fibrin Clost
16	Allen Majkrzak	Equivocal (EQ) Ultrasound's (US) in Suspected Appendicitis (APP) in Children (CHD): Radiology & Emergency Provider (EP) Factors in Secondary Imaging (SI)

#	Presenter	Name of Project/Poster Title
17	Kurtis Mayz	Implementation of a White Board Communication Tool (WBCT) in a Pediatric Emergency Department (PED): A Quality Improvement Initiative
18	Daniel Micheller	A Low Fidelity High Functionality Inexpensive Ultrasound Guided Femoral Nerve Block Model
19	Rockefeller Oteng	The Preventability of Trauma Related Death in Kumasi, Ghana
20	Jessica Roche	Youth Violence Prevention: Effects of a Universal Violence Intervention in an Urban ED
21	Eytan Shtull-Leber	Pre-Hospital Midazolam for Treatment of Status Epilepticus Before and After RAMPART: A National Observational Cohort Study
22	Alan Sielaff	Assessing Parents' Knowledge of Child-Care and Preschool Disaster Plans
23	Vijay Singh	Male Intimate Partner Violence Perpetrators and Victims Identified in Primary Care Settings: Prevalence and Associations
24	Cemal B. Sozener	Utility of a Novel, Competency-Based Emergency Medicine "Dean's Letter"
25	Cemal B. Sozener	Economic Benefit of an Educational Intervention to Improve tPA Use as Treatment For Acute Ischemic Stroke in Community Hospitals
26	Cemal B. Sozener	Use and Importance of Emergency Medical Services in Rural Delivery of tPA in Acute Ischemic Stroke
27	Cemal B. Sozener	Geographic, Demographic and Socioeconomic Analysis of StrokeNet Research Network Population Coverage
28	Rachael Sturtevant	Increased Expression of Fibrinogen-Binding Protein (sdrG) By Late Phase Staphylococcus Epidermidis May Contribute to Increased Stiffness of Infected Fibrin Clots
29	M. Hakam Tiba	Comparison of Respiratory Induced Inferior Vena Cava Diameter Changes with Limb Impedance Changes in Hemodialysis Patients
30	M. Hakam Tiba	Monitoring of Tissue Microvasculature Oxygenation Using Resonance Raman Spectroscopy
31	M. Hakam Tiba	Controlling Pelvic Hemorrhage Using a Novel Pressure Garment
32	Kevin Walker	Assessing Disaster Preparedness Among Select Children’s Summer Camps in the United States
33	Kaneesha Wallace	Measurement and Methodology for Daily Patterns of Drug Use and Related Behaviors
34	Anran Wang	Local Early Child Care Biosurveillance Is Equivalent to Google Flu Trends For Prediction of Influenza in Michigan
35	Lisa Zbizek-Nulph	Implementation of Daily Text Message Surveys Assessing Drug Use and Sexual HIV Risk Behaviors: Feasibility and Acceptability

POSTER ABSTRACTS

***Abstracts listed in the order shown on pages 18 & 19 of program.*

1) A Portable Non-Invasive Polyvinylidene Fluoride Based Sensor for Detection of Hemorrhage

Sardar Ansari, Daniel Slavin, Mohamad H. Tiba, Harm Derksen, Kenn Oldham, Kevin Ward, Kayvan Najarian

Background: Hemorrhage is one of the leading causes of mortality from trauma, and continuous monitoring for hemorrhage using techniques such as traditional systolic arterial pressure (SAP), especially in field conditions, poses significant challenges.

Objectives: The aim of this project is to build a portable, low-powered, noninvasive sensor made of polyvinylidene fluoride (PVDF) material for continuous vascular tone monitoring to detect significant hemorrhage.

Methods: Nine pigs underwent hemorrhage by femoral artery bleeding. SAP was used to select 16 instances of significant hemorrhage (SAP>85mmHg pre-hemorrhage and >10mmHg drop in SAP post-hemorrhage). The PVDF signal was measured from the animal's distal forelimb. A piece-wise linear estimation of the PVDF signal was computed using the Taut String algorithm. The number of pieces in each period was used as a complexity score (CS) to detect hemorrhage.

Results: Maximum separation between pre- and post-hemorrhage CS was achieved by a threshold of 5.5; 14 instances (87.5%) transitioned from CS≥6 to 5 within 5 minutes of the onset of hemorrhage while the remaining 2 instances transitioned from CS=5 to 3. The average detection delay was 1.95±1.2 min. These changes corresponded to >10mmHg decrease in SAP from baseline. CS improved during subsequent resuscitations.

Conclusions: The proposed low-powered portable sensor captures continuous vascular tone and can be used to detect significant hemorrhage in a continuous manner that may offer diagnostic and therapeutic guidance as an alternative to traditional intermittent SAP measures. The results indicate that the derived CS can effectively separate the signals pre- and post-hemorrhage.

2) Development of an Electrocardiogram Analytic For Detection of Pending Hemodynamic Instability

Ashwin Belle PhD, Sardar Ansari PhD, Max Spadafore, Harm Derksen PhD, Kevin Ward MD, Kayvan Najarian PhD

Introduction: Hemodynamic monitoring capable of predicting deterioration or improvement in the hemodynamic state would have the potential to greatly enhance outcomes.

Objective: Using advanced signal processing and machine learning we sought to, develop an automated clinical decision support system capable of using electrocardiogram (ECG) analysis to provide real time hemodynamic trajectory monitoring including the ability to detect early hemodynamic decompensation.

Methods: Prolonged measurement of ECG (lead-II) was collected from 178 volunteer human subjects as they underwent lower body negative pressure (LBNP) as a model of human hemorrhage until hemodynamic decompensation occurred. Using several advanced signal processing and machine learning techniques, novel bio-markers from the ECG were computed and modeled into a continuous predictor of stability or instability of the subjects. The comparison was made against standard HRV based bio-markers which are commonly used for hemodynamic assessment.

Results: Using 10 fold cross validation and non-parametric Mann-Whitney U-tests, the predictive capacity of the analytic model demonstrated an area under the curve (AUC): 0.915; accuracy: 84.73%; sensitivity: 81.937% and specificity: 87.468%; while the standard HRV based model showed AUC: 0.848; accuracy: 77.7%; sensitivity: 73.4% and specificity: 81.9%. The new analytic required only 150 beats and required no baseline ECG data to make the prediction.

Conclusions: The presented model out performs the standard model in every aspect of the evaluation. The developed ECG analytic technique has provided encouraging results and has shown potential to be applicable in a variety of critical care environments and applications where detection of hemodynamic changes prior to overt decompensation would allow early intervention.

3) Presentation Violence Prevention Efforts: Methods to Retain Participants in Youth Violence Research

Michael Clery, M.D., M.P.P., Jessica Roche, M.P.H., Pat Carter, M.D., Rebecca Cunningham, M.D.

Background: Achieving high follow-up rates necessary for study validity, has proven particularly difficult in certain populations including those with mental illness, substance abuse behavior, and victims of violence. Very little has been previously described regarding optimizing follow-up methods for victims of violence.

Objectives: The Flint Youth Injury (FYI) Study is a prospective cohort study that followed a difficult-to-track patient population seeking care for assault-injury and recent drug use, and a comparison population seeking care for any medical issue and recent drug use.

Methods: 599 patients age 14-24 were recruited in the ED and followed for 2 years, with retention rates exceeding 85%. All contact attempts made were coded by type. See Table 1 for a description of strategies utilized. Participants completed follow-up assessments at 6, 12, 18 and 24 months post index ED visits. Poisson and logistic regression analysis were conducted to predict contact difficulty and contact completion at 24 months.

Results: At 24 months, 85.3% of participants completed the interview requiring an average of 10 contacts (range 0-53). Hard to Reach participants (the upper quartile of contact effort) required greater than 16 contacts to complete the interview, compared to 6 contacts for the least effort group (Figure 1). 21% of participants required non-hospital follow-up locations including 4% while in jail. Female and African American participants were significantly more likely to complete the interview. While anxiety symptoms were associated with increased contact difficulty, African American race, school enrollment, substance disorder, depression symptoms, and assault-injury group were associated with less contact difficulty.

Conclusion: The FYI study methodology was targeted to overcome patient contact barriers, ultimately demonstrating less contact difficulty for those with severe barriers such as substance disorder, violent injury, and depression symptoms.

4) Violence Perpetration and Alcohol Use Among High-Risk Youth in the ED: The Case for Mindfulness-Based Interventions

Quyen Epstein-Ngo, PhD, Maureen Walton, PhD, Yasamin Kusunoki, PhD, Andria Eisman, PhD, Stephen Chermack, PhD, Rebecca Cunningham, MD

Background: Dating and sexual violence have become a focus in recent years. Few programs exist to reduce dating violence perpetration, and even fewer with empirically validated, theoretically driven prevention interventions. One potential intervention approach is the use of mindfulness-based interventions. This study examines whether mindfulness is associated with types of dating violence perpetration, including sexual violence, among emerging adults (18-25 years) seeking treatment in an urban Emergency Department (ED).

Methods: Data for this study came from a screening sample of emerging adults seeking treatment for any reason in an urban ED. Youth completed a computer tablet-based questionnaire that included questions related to demographics, violence, mindfulness, alcohol use, and depression. We present descriptive statistics, bivariate analyses and logistic regressions to explore the associations between alcohol use, mindfulness, and violence perpetration.

Results: Of 986 emerging adults seeking treatment in the ED 43% were female, 61% African American, and 6% Latino. Logistic regression analyses revealed that alcohol use and depression were positively associated with physical dating aggression [OR=1.15; 95% CI (1.08-1.23) and OR=1.07; 95% CI (1.05-1.09), respectively], sexual coercion [OR=1.11; 95% CI (1.04-1.18) and OR=1.03; 95% CI (1.00-1.05), respectively], and injuries related to dating violence [OR=1.14; 95% CI (1.05-1.24) and OR=1.07; 95% CI (1.04-1.09), respectively]. Mindfulness was negatively associated with physical dating violence [OR=0.94; 95% CI (0.90-0.99)], forced sex with a dating partner [OR=0.81; 95% CI (0.70-0.93)], sexual coercion [OR=0.94; 95% CI (0.89-0.99)], and injuries related to dating aggression perpetration [OR=0.91; 95% CI (0.84-0.98)]. Interactions between alcohol use and mindfulness were also explored.

Conclusions: Results from this study suggest that alcohol and depression are significantly associated with dating violence perpetration. Moreover, mindfulness appears to be a viable avenue for interventions to reduce dating violence perpetration including sexual coercion and forced sex in dating relationships.

5) Impact of an ED-ICU on Severe Sepsis and Septic Shock

Glazer, JM; VanEpps, JS; Bassin, BS; Otero, RM; Boyd, C; Co, I; Neumar, RW; Gunnerson, KJ

Background: Patients presenting to the emergency department with severe sepsis and septic shock make up a large proportion of both hospital admissions and drive hospital mortality. Interventions exist which reliably decrease mortality and improve outcomes. The emergency department intensive care unit (ED-ICU) model has potential to further affect this important disease state.

Objectives: Determine the effects our department's ED-ICU model, the Emergency Critical Care Center (EC3) which opened in February 2015, on the management and outcomes of patients presenting for severe sepsis and septic shock. Metrics of interest included: disposition and length of stay, complications, in-hospital mortality rates, and standards of care benchmarks (e.g. time to antibiotics).

Methods: This was a retrospective before-and-after EC3 opening study. Admissions for severe sepsis and septic shock between February 2014 and November 2015 were captured via an automated algorithm and a four month sample from each period was analyzed for the above metrics of interest. Sequential Organ Failure Assessment (SOFA) scores were calculated at 6 hours from triage. Patient status, determined by the physician at the time of acceptance to the EC3 as either "critical" (needs ICU) or "unknown disposition" (potential for downgrade to floor bed), was also recorded.

Results: Combined severe-sepsis and septic-shock admissions totaled 1,344 in 2014 and 2,020 in 2015; 549 of these were treated in the EC3. They were well-matched for age, gender, presenting vital signs, and initial lactate. SOFA scores were overall higher in 2015 and in EC3 patients (Figure 1a). In-hospital mortality for ICU patients was equivalent (Figure 1b). Length of stay (LOS) was higher for the initial ED encounter but shorter for ICU and equivalent for total hospital stay (Figure 2a-c). Meanwhile, 28.4% of patients normally admitted to an ICU went directly to a floor bed from EC3 (Figure 3).

Conclusions: The EC3 model, when applied to patients with severe sepsis and septic shock, saves at least 39 ICU admissions and 117 ICU bed-days per month. Septic EC3 patients have significantly higher disease severity scores and ED LOS when compared to historical controls and contemporaneous patients treated exclusively in the ED. Despite this, they have equal mortality rates, shorter ICU LOS, and equivalent hospital LOS.

6) PReDICT: Prognosticate Resuscitation Demands Integrating Computerized Triage

Glazer, JM; Gunnerson, KJ; Medlin, RP; Lupton, R; Kronick, SL; Neumar, RW; Bassin, BS

Background: A paramount skill in Emergency Medicine is identifying patients in the department who require early and aggressive resuscitation, while also accounting for absolute and relative acuity. Conventionally, this requires interrogating individual charts within the electronic medical record (EMR) for key data points relevant to such a determination.

Objectives: Our goals were twofold. First, creation of a dedicated page within the existing EMR which displays all patients in the department alongside their current vital signs, laboratories, and other values of interest (eg. fluid balance). Second, an automatically-updating means to quantify and thus sort patients by their degree of physiological derangement and organ dysfunction within that display.

Methods: An intuitive point-system loosely based off the Modified Early Warning System was devised. Points are summated to give the total PReDICT score. To account for new data points and new patients, and recognizing that vitals and labs are dynamic variables which reflect progression or resolution of acute disease, a new score is automatically recalculated every fifteen minutes.

Results: The PReDICT tool, which includes both a novel dynamic acuity scoring system and practical display is fully operational within our existing EMR. Current and max PReDICT scores are viewable on this display, as are the current vital signs and labs used in their calculation (Fig 1). Trend in PReDICT score and individual parameters are also viewable by selecting a specific patient (Fig 2).

Conclusions: PReDICT facilitates real-time rapid and efficient identification of patients with the highest degree of physiological derangement and organ dysfunction within the ED. Machine learning and statistical analysis are underway to weight composite variables and translate early dynamic changes into predictive power. PReDICT will expedite and improve resuscitation, resource allocation, and safe hospital disposition.

7) Using Machine Learning Methods to Predict Future Weapon Violence Among Entrants to an Urban ED

Jason Goldstick, Patrick M. Carter, Maureen Walton, Marc Zimmerman, Rebecca Cunningham

Introduction: Correlates of violent behavior have been studied, but few studies have focused on optimal out-of-sample prediction of future violence.

Objective: To use machine learning methods on data collected from entrants to an urban emergency department (ED) to derive a minimal screen for future weapon violence.

Methods: Measurements were taken from a longitudinal study of n=600 youth aged 14-24 seeking care at a Level-1 ED in Flint, Michigan. The outcome variable was the indicator of self-reported gun/knife violence at any of four bi-annual follow-ups. Baseline measurements of violence involvement, mental health, substance use, and peer/parental/community environment (179 features total) were candidates. After withholding ¼ of the data for post-selection validation, we performed 10000 repeated 80/20 (training/test) splits on the remaining ¾, running elastic-net penalized logistic regression to select features from the training data, and determining predictive power in the test data. Variable importance was determined by their frequency of selection in those replications, restricting only to replications with an area under the ROC curve of ≥.7 in the test set.

Results: The top five features were: serious fighting frequency, marijuana use frequency, # of friends who get into fights, # of friends who carry weapons, and frequency of restlessness/anxiety. A score based on those variables (range=[0,20]) was highly associated with future weapon violence in the validation set (OR=1.17,95%CI=[1.06,1.29]).

Conclusions: Violence involvement (direct and friend influences), marijuana use, and anxiety show promise for prediction of future weapon violence. Individuals screening positive on several of those features may be effective intervention targets.

8) An Emergency Department-Based Intensive Care Unit Decreases Hospital and ICU Utilization in Diabetic Ketoacidosis

Nathan Haas, MD; Arun Ganti, MD; Chris Hapner, DO; Ben Bassin, MD; Kyle Gunnerson, MD; Sage Whitmore, MD

Background: Patients in diabetic ketoacidosis (DKA) commonly have severe metabolic derangements requiring resource intensive management. Most are admitted to the hospital at substantial cost, and many to an intensive care unit (ICU), although this level of resource utilization may not be necessary or improve outcomes. The Emergency Critical Care Center (EC3) is a nine bed ICU contained within the adult ED at the University of Michigan with the goal of delivering high quality critical care in the ED for the first 24 hours of critical illness. We hypothesized that early aggressive management of DKA in EC3 would result in fewer hospital and ICU admissions.

Objective: To evaluate the impact of an ED-based ICU on disposition outcomes for adult ED patients in DKA.

Methods: An electronic medical record search identified adult ED patients diagnosed with DKA from 2014-2015. The authors manually reviewed patient charts to confirm the diagnosis and excluded patients with initial pH >7.3 or bicarbonate >18 mEq/L. Consecutive DKA patients managed in EC3 since opening February 16 to September 28, 2015 were compared to a similar number of consecutive DKA patients managed immediately prior to EC3 opening. Baseline demographic and clinical data and disposition were evaluated.

Results: A total of 148 cases of DKA were used for analysis, 74 before and 74 after EC3 opening. Baseline demographics and clinical variables were similar between groups. Compared to the control group, we observed a significant decrease in the number of hospital admissions from 69 to 55 (relative risk reduction 0.8 [95%CI 0.69-0.92, $p<0.05$]). This resulted in an ARR of 19% (95%CI 7-31%) and NNT of 5 (95%CI 3-14). A trend was noted in reducing the ICU admission rate from 15 to 8 with a RRR of 0.53 (95%CI 0.24-1.18), though this did not reach statistical significance.

9) A Descriptive Review and Analysis of the FDA Docket on Public Disclosure Material for Emergency Research Studies Conducted Under 21 CFR 50.24 (Docket FDA-1995-S-0036)

Deneil Harney, MPH, MSW, Adrianne Haggins, MD, MS, Robert Silbergleit, MD, Ben Humes, BS

Problem Statement: Clinical trials investigating therapies for acutely and critically ill and injured patients in the earliest phases of treatment often can only be performed under regulations allowing for Exception from Informed Consent (EFIC) for emergency research (21 CFR 50.24). Implemented in 1996, these regulations impose special requirements for such research including community consultation (CC) and public disclosure (PD). FDA guidance regarding EFIC issued in March of 2011 instructs sponsors to submit publically disclosed information to FDA through both their IND/IDE and to FDA's Dockets Management (Docket FDA-1995-S-0036). FDA dockets are the public's source for information on the development of Federal regulations and other related documents issued by the U.S. government. The content and format of EFIC materials to be submitted, however, have never been specified. We sought to systematically review and characterize the current public FDA docket on Public Disclosure Materials for Exception from Informed Consent (EFIC).

Description of Research: We performed quantitative and qualitative content analysis of FDA-1995-S-0036 as of March 2013. For the quantitative analysis, we determined the number of pages per trial that were specific to CC or PD materials, or to something else. For the qualitative analysis we categorized the information content provided, how it was organized and submitted, and its granularity.

Conclusions: We conclude that the public docket is a rich source of public information about clinical trials conducted under EFIC, but that the variability of the materials submitted and challenges related to the ways the submissions are organized limit the accessibility of this information. There may be an opportunity for the docket to better accomplish its goals if it were organized differently. Furthermore, the range of materials submitted may permit interested parties to compare approaches and converge on a set of best practices for public reporting of research conducted under EFIC.

10) The Impact of an ED-Based Critical Care Unit on the Provision of Palliative Care in the Emergency Department

Carrie Harvey MD, Kyle Gunnerson MD, Ross Kessler MD, John Litell DO, Sage Whitmore MD, Renee Havey, MS, RN, CCRN, ACNS-BC and Benjamin Bassin MD

Background: ED use is common in the last six months of life and can be burdensome for patients and caregivers, but may represent an opportunity to initiate palliative interventions. Despite known benefits of early palliative care, emergency providers are uncertain how to best initiate and deliver these interventions in the ED. In February 2015, our institution opened the Emergency Critical Care Center (EC3), an ED-based ICU staffed by subspecialty trained emergency medicine/critical care faculty. The EC3 offers an opportunity to provide advanced resuscitative care, as well as time and resources for palliative interventions.

Objectives: To retrospectively review the proportion of ED patients who received a palliative intervention before and after the opening of the EC3.

Methods: All patients presenting to the ED from February – September 2014 and 2015 were reviewed. A palliative intervention was defined as (1) change to DNR status (2) Palliative Medicine consult order or (3) discharge to hospice.

Results:

Table 1. Number of patients with change to DNR status

	2014	2015
Within Emergency Department	8	6
Within EC3	-	69

Table 2. Number of Palliative Medicine Consults

	2014	2015
During patient encounter	279	531
Within Emergency Department	0	1
Within EC3	-	19
Within 24 hours of admisison		
Admitted from ED	75	119
Admitted from EC3	-	7

Table 3. Number of patients discharged to hospice

	2014	2015
During patient encounter	290	262
Within Emergency Department	3	0
Within EC3	-	5
Within 24 hours of admisison		
Admitted from ED	11	6
Admitted from EC3	-	2

Conclusions: Patients receiving a portion of their care in EC3 had more palliative interventions prior to admission and fewer palliative interventions in the first 24 hours after admission. This is likely due to additional time for goals of care discussion and the ability to obtain Palliative Medicine and Social Work consults 24 hours a day. A pathway for initiating palliative interventions during an extended ED phase of care may benefit both critically ill patients and also those whose acute needs included organized palliative care. Having identified relevant patient populations, next steps include development of an evidence- based protocol to aid providers in the management of patients with acute palliative needs, determination of disease states which should this protocol, and resource utilization metrics.

11) The Effect of an Emergency Department-Based Critical Care Unit on the Utilization of Non-Invasive Positive Pressure Ventilation and Patient Disposition

Renee Havey, Cassie Holman, Joshua Glazer, Benjamin Bassin

Background: In selected patients with respiratory failure, noninvasive positive pressure ventilation (NIPPV) is an effective adjunct to usual medical therapy. In appropriate candidates, NIPPV reduces the need for endotracheal intubation, hospital length of stay, and risk of death.

Objectives: Evaluate the effect of our emergency department intensive care unit (ED-ICU) model, the Emergency Critical Care Center (EC3), on the utilization of NIPPV, patient outcomes, and resource utilization metrics.

Methods This was a retrospective review of patients that required NIPPV utilizing data from the electronic medical record before and after implementation of an ED-ICU at a large academic institution. Data from February 16th, 2015 - June 30th, 2015 was compared to data from February 16th, 2014 – July 1st, 2014. Comparative analysis included NIPPV use and duration, failure of NIPPV requiring endotracheal intubation, EC3 level of care changes (correlating to ICU admissions saved), as well as ED, ICU, and overall hospital length of stay (LOS) data.

Results Overall use of NIPPV in the emergency department has remained stable between 2014 (n=162) and 2015 (n=150). In-hospital mortality rates for patient requiring NIPPV also remained stable. Meanwhile, the number of ICU admissions for patients requiring treated with NIPPV in the emergency department dropped significantly (121/162 vs 57/150) with an absolute risk reduction of 0.367 (95%CI 0.259-0.462) and a NNT of only 3. There was a strong albeit nonsignificant trend toward decreased NIPPV failure requiring intubation with a relative risk reduction of 0.337 (95%CI -0.0709-0.7846).

Conclusion The EC3 model has led to significantly decreased ICU admissions for respiratory failure amenable to NIPPV while overall use, NIPPV failure, and in-hospital mortality remained stable. Managing reversible causes of respiratory failure in an ED-ICU has high potential to benefit both patients and medical systems.

12) The Evolution of Appendiceal Ultrasound: Ten Years' Experience within a Pediatric Emergency Department

Tomas Huerta, Devika P. Bagchi, BA, Michael Hipp, BA, Nikita N. Jambulingam, BA, Ting Gou, BA, James A. Cranford, PhD, Robert Huang, MD, Allen Markrzak, MD, Ramon Sanchez, MD, Michele M. Nypaver, MD

Background: Appendicitis (APP) is a common acute abdominal condition in the pediatric population. Emergency providers (EP's) rely on radiographic imaging, frequently ultrasound (US) and computed tomography (CT) to diagnose APP.

Objectives: To characterize radiographic utilization patterns and efficacy in the diagnosis of APP in children <18 years in a tertiary pediatric emergency department (PED) over a 10-year period (2003-2013).

Methods: Retrospective review (2003-2013) of a radiology database was conducted at a tertiary PED. Inclusion criteria: children aged <18 years who underwent abdominal US for suspicion of acute appendicitis; studies from outside hospitals were excluded. Data variables included age, sex, date and time of study, US utility and findings, radiologist and ED provider types, associated radiographic utilization, and pathology reports.

Results: 2871 patients were identified who met the inclusion criteria. US successfully identified 96% (199/207) of APP cases, confirmed by pathology reports. In 2003, 36 patients underwent US to diagnose APP. By 2013, this number increased to 685 (1800% increase). The number of patients undergoing CT decreased over this time period from 41.7% to 11% while the number of patients undergoing plain abdominal x-ray imaging increased from 41.7% to 48%.

Conclusion: Use of US as the primary imaging modality in the diagnosis of appendicitis increased dramatically in this PED setting over a 10-year period. Same visit associated imaging demonstrated steady decline in CT use while plain abdominal x-ray use increased.

13) Enzyme Inhibition May Be a New Mechanism of Action for Zinc Oxide Nanoparticles Against Staphylococcus Aureus

Usha Kadiyala, Joong Hwan Bahng, Nicholas A. Kotov, and J. Scott VanEpps

Background: Annually 1 million healthcare associated infections are related to implanted medical devices. We recently demonstrated that layer-by-later coatings of zinc oxide nanoparticles (ZnO-NPs) reduce staphylococcal growth by greater than 99%. Mechanisms underlying the antibacterial activity of ZnO-NPs remain controversial. The prevailing hypothesis involves the production of oxidative stress. However, we have recently demonstrated shape-dependent biomimetic enzyme inhibition by ZnO-NPs. Here we sought to evaluate the oxidative stress hypothesis and begin to evaluate enzyme inhibition as an alternative.

Methods: ZnO-NPs were purchased or prepared as previously described and incubated with cultures of S. aureus for 30min. Reactive oxygen species (ROS) were quantified by fluorescent markers (H2DCFDA and APF). Lipid peroxidation was evaluated using thiobarbituric acid reactive substances assay (TBARS). Growth recovery by antioxidants was evaluated by adding N-acetylcysteine (NAC). RNA was extracted from NP exposed bacteria for microarray analysis.

Results: ROS production was independent of NP size and shape. There was no detectable increase in ROS for NP treated samples vs untreated. Similarly, there was no increase in lipid peroxidation. Adding NAC did not mitigate ZnO-NPs growth inhibition. Microarray analysis revealed 333 upregulated and 482 down-regulated genes. Almost all oxidative stress genes were down regulated. The entire uridine monophosphate (UMP) biosynthesis pathway was significantly upregulated.

Discussion: This work reaffirms the antimicrobial benefits of ZnO-NPs for preventing biofilms. In addition, we demonstrate that S. aureus killing by ZnO-NPs is likely not a result of oxidative stress. The UMP biosynthesis pathway was identified as potential target for ZnO-NP inhibition.

14) Impact of an Emergency Critical Care Unit on the Management of Critically Ill Intoxicated and Poisoned Patients

Benjamin Long, Ronny Otero, MD, Cemal Sozener, MD

Background: Acute intoxication is a significant burden on the modern critical care system. This population differs substantially from other critically ill patients in that once they are treated and recovered from their acute insult they can be discharged after a relatively short hospital stay.

Objective: To review the incidence, demographics and outcomes of critically ill intoxicated and poisoned patients referred to the Emergency Critical Care Center (EC3) at the University of Michigan. EC3 is an intensive care unit physically located in the emergency department. We will evaluate the impact of EC 3 management on the disposition and LOS for adult patients evaluated for intoxication and poisoning.

Methods: This is a retrospective review of patients evaluated and treated for intoxication and poisoning (I+P) in the emergency department (ED). In this before and after review we will analyze the association between an early critical care approach on the management of intoxication and poisoning. Electronic medical record data from February 16, 2014- September 30, 2014 (pre-EC3) will be compared to February 16, 2015 - September 30, 2015. A comparative analysis will review the effect of EC3 on hospital disposition (ICU vs non-ICU), emergency department length of stay (LOS) and hospital length of stay.

Results: The rate of hospital admission for I+P decreased from 2014 (36.71%) to 2015 (30.40%). This was a relative reduction in admissions by 13.60%. The rate of admissions to the intensive care unit also decreased significantly from 2014 (7.89%) to 2015 (4.01%). The reduction in ICU admissions was 46.94%. Of the 78 patients referred to the EC3 during the eight month period 28 (35.90%) were discharged, 43 (55.13%) were admitted to a non-ICU and 17 (21.79%) were admitted to the ICU.

Conclusions: There was a statistically significant reduction in critical care length of stay. Further study of whether protocol driven emergency critical care units can reduce the cost and improve morbidity and mortality outcomes for these patients is needed.

15) Staphylococcus Epidermidis Alters a Fibrin Clot

Tianhui Ma, J. Scott VanEpps, Michael J. Solomon

It has been observed that S.epidermidis biofilm entangled in fibrous clots covers medical implants over time, which leads to malfunction of the devices and causes life-threatening problems. Although clots and biofilm alone have been widely studied for decades, established knowledge on the interactions between bacterial components and clots is limited. Specifically, the bi-directional relation between bacteria and clots has been explained biologically. However, the structural and mechanical impact of bacteria on clots is unknown. It is critical to both the functions and pathogenicity of clots.

Through bulk rheology measurements on a rheometer, we find that S.epidermidis cells first slow down the formation of a fibrin network and then start a secondary clotting process. The resultant steady state infectious clot is about four times larger in elasticity. Using a confocal microscope, we observe that the infectious clot has a heterogeneous structure with two pore size populations rather than a homogeneous pure fibrin network. The bacterial components further reorganized the network until it breaks – known as syneresis effect. To illustrate the mechanical variance of an infectious clot coagulation process on a micro-scale, we aligned bulk elasticity to microstructure via fiber motility by multiple-particle tracking method.

We suggest that the bacteria-fibrin adhering effect should be responsible for the formation of the heterogeneous structure and the re-organization of the network. More direct evidences will be showed in our future work. Our results enable us to predict what will happen with biofilm-forming bacteria accumulated in blood-reachable regions inside human bodies and explain clinical observations of septic embolism.

Understanding the mechanical properties of a lab-constituted infectious clot will assist how we eliminate septic thrombi and prevent embolism.

16) Equivocal (EQ) Ultrasound's (US) in Suspected Appendicitis (APP) in Children (CHD): Radiology & Emergency Provider (EP) Factors in Secondary Imaging (SI)

Majkrzak, Allen MD, Hipp, Michael MD, Jambulingham, Nikita BA, Bagchi, Devika BA, Gou Ting BA, Huerta Tomas BA, Sanchez Ramon MD, Huang Robert MD, Cranford James PhD, Nypaver Michele MD

Background: US used by adult (AEM) and pediatric (PEM) EP's to diagnose APP in children. SI at EP discretion if US EQ and influenced by adult (AR) and pediatric (PR) radiologist reports.

Objective: In CHD with US EQ for APP we compared 1) EQ APP rates by ARs versus PRs and 2) rates of SI by AEMs versus PEMs.

Methods: Retrospective radiology database query pediatric academic ED (vol. 25K) with AEM & PEM and AR's and PR's. Inclusion: US's CHD <18 yrs suspected APP (2003-13). EQ if "equivocal" or "cannot exclude APP" in US report. Excluded outside hospital USs. Same visit SI (US, Computed Tomography CT, Magnetic Resonance Imaging MRI) analyzed.

Results: 130 / 2871 (4.5%) EQ US cases for APP. PR 73/130 (56%) EQ cases and AR 57/130 (44%) EQ cases ($\chi2 = 1.9$, $p = .16$). SI 42/130 (32%) EQ cases. 97.6% SI in EQ cases by PEM vs 2.4% by AEM ($\chi2 = 37.1$, $p<0.05$). PEM ordered a second US 10/124 (8.0%) EQ cases and third US 2/124 (1.6%). No repeat US by AEM in any EQ. PEM ordered CT SI 30/125 (24%) EQ cases vs 1/4 (25%) AEM (p NS). No MRI as SI in any EQ case.

Conclusions: Between 2003-2013 EQ APP US reports were rare & similarly distributed among ARs and PRs. CT most frequent SI choice by both PEM & AEM when US EQ for APP in CHD.

17) Implementation of a White Board Communication Tool (WBCT) in a Pediatric Emergency Department (PED): A Quality Improvement Initiative

K Mayz, JD MD MBA, H Kelker, MD, J Cranford, PhD, K Pham, BS, A Goldfarb, BA, and N Sroufe, MD MPH

Background: Effective parent-provider communication is vital in the PED. Poor communication leads to decreased satisfaction, increased medical costs, and malpractice litigation. Impact of the white board as a communication tool in the PED not previously reported.

Objective: To determine the impact of a WBCT on parent-provider communication and parent satisfaction with care in an academic PED.

Design/Methods: WBCT (Fig 1) developed and implemented 1/2014. Pre-implementation, a convenience sample of parents was asked, "Who is your doctor?" and "What are you waiting for?" Parents completed online survey on communication, care, and satisfaction. Patients' providers were asked, "What is your patient waiting for?" Study replicated one year post-implementation. Responses analyzed for level of agreement between parent and provider and parent satisfaction.

Results: 48 surveys completed pre-implementation, 177 post-implementation. No differences between parent groups (education, previous ED visits, level of concern with patient condition). Ability to correctly identify child's provider increased (38% to 60%, $p<0.05$); when provider name was on the WBCT, increased to 81% ($p<0.05$). Although parent and provider agreement regarding care plan did not significantly improve (attending 75% vs 79%, $p=0.28$; other provider 73% vs 83%, $p=0.15$), more parents reported what they were waiting for was 'very clearly' explained (65% vs 85%, $p<0.05$), and felt satisfied with communication (85% vs 93%, $p<0.05$). Visit satisfaction increased (80% vs 93%, $p<0.05$).

Conclusions: Use of a WBCT in an academic PED improved communication, provider identification, and parent satisfaction with communication and ED care. Identification of parents' perceived communication gaps and providers' barriers to use will help improve tool.

18) A Low Fidelity High Functionality Inexpensive Ultrasound Guided Femoral Nerve Block Model

Daniel Micheller MD, Matthew J Chapman BS, Jonathan D Porath BS, Nik Theyyunni MD, Ross Kessler MD, Robert Huang, MD

Background: Nerve blocks are an essential component of analgesia plans. Ultrasound-guidance is increasingly used to assist these procedures. Low-fidelity nerve block models are useful for simulating ultrasound guidance of needle to target, but are unable to simulate the appearance of local anesthetic infiltration around a nerve. There is a need for a low-cost, higher-fidelity model that can better simulate this infiltration.

Objective: Our project goal was to create a low-fidelity, high-functionality, inexpensive femoral nerve block model that could mimic both typical ultrasound nerve anatomy and hydrodissection. Our purpose was to educate novice practitioners in both performing the procedure and interpreting the ultrasound images.

Design: To simulate human femoral anatomy, we modeled after the femoral nerve bundle. We used a tubular balloon filled with water to simulate a compressible vein; the artery was made with a paper straw within the balloon to make the wall rigid and less compressible. For the nerve, we inserted five pieces of spaghetti into a balloon filled with water to create a nerve with a honeycomb-like ultrasound appearance. These structures were then sandwiched between two chicken breasts used as an inexpensive surrogate for human muscle.

Discussion: The simulated nerve was visualized in short axis and approached in-plane. Cooking-oil was used as a surrogate lidocaine for injection within the fascia layer by a medical student. This model can be used to teach ultrasound-guided nerve blocks in a controlled environment while also mimicking the sonographic appearance of a nerve, before, during, and after a successful nerve block.

19) The Preventability of Trauma Related Death in Kumasi, Ghana

Rockefeller Oteng, Ron Maio, Daniel Osei-Kwame, Hussein Yakubu, Kwame Ekremet, Bernard Ahin

Background: Injury results in 5.8 million deaths worldwide every year, which is 32% more than HIV, malaria, and tuberculosis combined1. A major contributor to this disparity in sub-Saharan Africa is the lack of organized emergency medical systems3.The optimal strategy for creating hospital-based emergency departments in sub-Saharan Africa, and the impact on patient outcomes has yet to be determined.

The efficacy of interventions made in an attempt to assuage the burden of traumatic disease, are often very difficult to quantify. One proven methodology is to perform a preventable death review. This method uses a multi-disciplinary panel review of trauma deaths to determine if they could have been prevented by more appropriate medical care and has been recommended as method to evaluate trauma care in low/middle income countries (LMICs).

Objectives: 1) to determine the frequency of preventable trauma deaths and nature of inappropriate trauma care since the initiation of the EM training program. 2) to compare the results of this study with the previous preventable death study done at KATH, in 2008.

Methods: We identified the medical records of 50 patients who presented to the ED with a traumatic mechanism of injury and had death as their outcome. An expert panel then performed a structured review of each case.

Results: 40% of cases were either definitely preventable or possible preventable. 66% were males. Most common mechanism of injury was Auto vs. Pedestrian.

20) Youth Violence Prevention: Effects of a Universal Violence Intervention in an Urban ED

Jessica Roche MPH, Patrick M. Carter MD, Maureen A. Walton MPH PhD, Marc Zimmerman PhD, Steve Chermack PhD, Rebecca Cunningham MD

Background: Violent injury is the leading cause of death among urban youth. Emergency department (ED) visits represent an opportunity to deliver a brief intervention (BI) to reduce violence among at-risk youth.

Objective: This study aimed to determine the efficacy of a universally applied BI addressing violence behaviors among youth presenting to an ED in a high-risk community.

Methods: Youth (14-20 years) seeking care in a Level-1 ED were assigned, based on home address, to receive a 30-min therapist-delivered BI, or an informational brochure (control condition). Participants completed validated survey measures at baseline and 2-month follow-up. The BI combined motivational interviewing and cognitive skills training, including a review of participant goals, tailored feedback, decisional balance exercises, role-playing exercises, and linkage to community resources.

Results/Outcome: 409 eligible youth (82% participation) were enrolled (mean age 17.7, 60% female, 93% African American, 79% receive public assistance), and assigned to the BI (n=263) or control (n=146). The 2-month follow-up rate was 91% (n=373). There were no significant baseline differences between the two study conditions. Compared with controls, participants in the therapist BI showed self-reported reductions in frequency of violent aggression (therapist, -45.1%; control, -33.3%; Incident rate ratio [IRR], 0.84; 95% confidence interval [CI], [0.74-0.96]) and increased self-efficacy for non-fighting (therapist, +7.2%; control, -1.3%; IRR, 1.09; 95% CI, 1.02-1.15). No changes were noted in victimization.

Conclusion: Among youth seeking ED care in a high-risk community, a brief, universally applied BI resulted in increased self-efficacy for avoiding fighting and a decrease in the frequency of violent aggression.

21) Pre-Hospital Midazolam for Treatment of Status Epilepticus Before and After RAMPART: A National Observational Cohort Study

Eytan Shtull-Leber, Robert Silbergleit, MD, William Meurer, MD, MS

Background: Knowledge Translation is often challenging and is under-investigated. Implementation of evidence-based treatment for pre-hospital status epilepticus can improve outcomes.

Objectives: We hypothesized that publication of the Rapid Anticonvulsant Medication Prior to Arrival Trial (RAMPART) altered national midazolam use for pre-hospital treatment of seizures.

Methods: This is a retrospective, observational cohort study. All adult and pediatric patients with seizure and pre-hospital treatment with a benzodiazepine in states that submitted full data to the National Emergency Medical Services Information System (NEMSIS) database from 2010 to 2014 were included in the study. We performed linear regression to examine the association between midazolam utilization and month of study. We examined whether this rate of change was different before and after the publication of RAMPART by adding an indicator variable.

Results: NEMSIS had 157,791 eligible events. Midazolam use increased from 28.0 % to 56.9 % (difference +28.9%, 95%CI 28.0-29.7%). The linear regression model estimated a 0.64% absolute increase in midazolam use per month (R2 = 0.96). After the publication of RAMPART, the rate of adoption increased from 0.48 % to 0.74 % per month (R2 = 0.97). Among EMS agencies contributing cases for all years, midazolam use increased 0.44 % per month (R2 = 0.94), with an increase in the monthly rate of change from 0.33 % to 0.51 % after the publication of RAMPART (R2 = 0.95).

Conclusions: Pre-hospital midazolam use for status epilepticus increased steadily from 2010 to 2014, with marginal increase in rate of adoption after the publication of RAMPART.

22) Assessing Parents' Knowledge of Child-Care and Preschool Disaster Plans

A Sielaff, MD, M Chang, MD, K Walker, MD, S Bradin, DO, A Matos-Moreno, MPH, D Singer, MPH, S Clark, MPH, A Kauffman, BA, M Davis, MD, MAPP and A Hashikawa, MD

Background: Children in early learning settings are vulnerable to man-made and natural disasters because of physical and developmental limitations. Little is known about parents' knowledge of disaster preparedness in early learning settings.

Objective: To examine parents' knowledge of emergency preparedness in their child's early learning settings.

Methods: In May 2015 we conducted a cross-sectional, Internet-based survey of a nationally representative sample of U.S. parents as part of the C.S. Mott Children's Hospital National Poll on Children's Health. Parents of children ages 0-5 years in child care settings or preschools (n=264) were asked about their level of confidence in their center's ability to respond to specific disasters and knowledge of the components of their emergency plans. Multivariate linear regression was used to generate adjusted odds of awareness of specific emergency plans.

Results: Survey participation rate was 55%. Parents reported being "very confident" with their center's ability to deal with: power outage (79%), evacuation (67%), severe weather (62%), delayed parent pick up (60%) and lock-down (58%). Only 21% knew if the plan included all 4 key components of an evacuation plan (child identification, parent identification, rapid communication, extra car seats). 36% of parents reported that emergency plans accommodated children with special needs. Parents who had attended any emergency training events (n=90) were much more likely to be aware of plans for all 5 types of emergency situations (Table 1), compared with parents who had not attended.

Conclusions: Many parents were unaware of emergency plans at their child's early learning settings. Although few parents had attended emergency training events, such participation was associated with higher levels of parental awareness.

23) Male Intimate Partner Violence Perpetrators and Victims Identified in Primary Care Settings: Prevalence and Associations

Vijay Singh, MD, MPH, MS, Katelyn Hom, and Bethany Buschmann, MPH

Introduction: Intimate partner violence (IPV) research has focused on screening women victims. Future research should explore primary care-based identification and response to men involved in IPV. The purpose of this study is to determine the (1) self-reported IPV victimization and perpetration prevalence among men in primary care settings, (2) correlates of IPV with demographics, alcohol and substance use, and other individual factors.

Methods: A consecutive sample of men aged 18 to 70 who can speak and read English, not too ill, were approached in waiting rooms of primary care medical clinics in the Ann Arbor and Ypsilanti area. Men received surveys with validated questions on past year IPV victimization and perpetration, alcohol use, substance use, gun storage, and mindfulness. Descriptive statistics described prevalence, and bivariate and multivariate logistic regression analyses assessed associations of IPV victimization and perpetration.

Results: Of 277 men who completed survey, 218 had a partner. Of these men, 158 (72%) reported being a victim of any IPV, 146 (67%) reported being a victim of psychological IPV, 93 (43%) reported being a victim of technology-delivered IPV, and 26 (12%) reported being a victim of physical IPV. 145 (67%) disclosed perpetrating any IPV, 137 (63%) reported perpetrating psychological IPV, 59 (27%) reported perpetrating technology-delivered IPV, and 14 (6%) reported perpetrating physical IPV. Multivariate analyses showed that significant correlates of any IPV victimization included income (AOR 1.83, CI 1.12-2.98), illicit substance use (AOR 3.61, CI 1.36-9.54), and belief that relationship problems impact health (AOR 3.44, CI 1.33-8.90), while significant associations of any IPV perpetration included income (AOR 1.54, CI 1.01-2.35), belief that relationship problems impact health (AOR 2.25, CI 1.02-4.93), and mindfulness (AOR 0.48, CI 0.24-0.96).

Conclusions: This study is the first study to assess technology-delivered IPV among adult men in primary care settings. The prevalence rates of psychological IPV are higher than in other settings, and any IPV victimization and perpetration correlates are similar.

24) Utility of a Novel, Competency-Based Emergency Medicine "Dean's Letter"

Cemal B. Sozener, Laura R. Hopson, Joseph House, Suzanne L. Dooley-Hash, Samantha Hauff, Monica Lypson, Sally A. Santen

Background: EM Milestones guide training from end of med school through residency. It’s unclear how well prepared graduates are to meet level 1 milestones. Currently the MSPE is inadequate to confirm level 1 milestone achievement.

Objectives: We attempt to determine value of a milestone-based competency assessment given to program directors (PDs) of incoming EM residents as a second MSPE. We hypothesize this would be beneficial to customize training.

Methods: An ad hoc EM Competency Committee was formed. Multiple observations from the 4th year were utilized to assess competency of level 1 milestones of graduates entering EM. Resultant data were utilized in 2 phases. In Phase 1 (P1), individual assessments were sent (with permission) to their future PDs. In Phase 2 (P2), a representative assessment of a graduating student entering EM was sent to all PDs. Surveys to assess utility were sent in each phase.

Results: In P1, 33% of PDs were somewhat dissatisfied with utility of the MSPE in judging achievement of level 1 milestones; 16% of those in P2 were somewhat and 37% very dissatisfied. 100% of P1 PDs and 81% of P2 said they do not use the MSPE to customize training. 66% in P1 and 86% in P2 felt the proposed assessment would provide new detail over the MSPE. 100% of P1 PDs and 90% of P2 felt the proposed assessment would be useful for all incoming interns.

Conclusions: Surveyed PDs overwhelmingly felt the proposed assessment would provide new data over the MSPE and would help customize training.

25) Economic Benefit of an Educational Intervention to Improve tPA Use as Treatment For Acute Ischemic Stroke in Community Hospitals

Cemal B. Sozener, David Hutton, William Meurer, Shirley Frederiksen, Allison Kade, Phillip A. Scott

Background: Prior work demonstrates substantial economic benefit from tPA use in acute ischemic stroke.

Objectives: We hypothesized a T2 knowledge translation (KT) program to increase community tPA treatment would be cost-effective beyond research funds spent.

Methods: Data utilized from the INSTINCT trial involving 24 community hospitals. Hospitals were assigned to receive barrier assessment-interactive educational intervention (BA-IEI) vs. control. Cost analyses conducted from a societal perspective for 1) total trial costs and 2) intervention costs alone (no research overhead) as an estimate of the cost of generalization of the results. Savings attributable to increased tPA use determined by applying published stroke economic data to the study cohorts. Data integrated in a Markov model to determine long-term economic impact of the BA-IEI versus control.

Results: INSTINCT cost $3.3 million. Intervention sites treated 2.30% (244/10,627) of patients compared to 1.59% (160/10,071) at control sites. Increased tPA use resulted in direct savings of $540,000 due to reduced length of hospital and nursing facility stay. Increased tPA usage resulted in an additional 81 quality adjusted life years (QALY), with incremental cost-effectiveness ratio of $34,000/QALY. Using $50,000 as conservative estimate of societal value per QALY, additional benefit of $4,100,000, or net societal economic benefit of $1.3 million was realized. Generalizing the intervention in a similar population (excluding research overhead) would cost $680,000 and provide net benefit of $3.9 million.

Conclusions: Due to the underlying cost-effectiveness of tPA, community KT efforts with modest gains in tPA usage produce substantial societal economic returns and are considered good value.

26) Use and Importance of Emergency Medical Services in Rural Delivery of tPA in Acute Ischemic Stroke

Cemal B. Sozener, Benjamin Hume, William Meurer, Phillip A. Scott

Introduction: 60% of stroke patients utilize EMS, which is associated with improved door to physician and CT times. Rural areas may have limited EMS access and its use and impact on tPA delivery in this setting is unknown.

Objectives: We assessed the hypothesis that EMS use in tPA treated patients are lower in rural compared to urban areas. Important time intervals between groups were also examined.

Methods: Previously collected data from 24 randomly selected Michigan community hospitals in the INSTINCT trial were utilized. Hospitals identified a priori as urban or rural using two models to account for varying rural definitions (Model 1 - rural hospitals = outside Metropolitan Statistical Area (MSA); Model 2 - rural hospitals = outside major Urban Area (UA > 150 square miles)). Descriptive statistics presented; Student's t and X2 tests used in comparisons.

Results: All 557 patients treated with tPA for AIS from 2007-2010 included. 82% [95% CI: 79%-85%] used EMS to access stroke care. Similar demographics in both groups. Transport times longer for rural patients in both models. Model 2 (more restrictive geographic definition of a rural hospital) identified reduction in EMS use in rural patients compared to urban group.

Conclusions: EMS use among tPA treated patients was higher than previously reported. Lower EMS use in rural settings confirmed in the restrictive model. EMS transport times longer in the rural setting, likely reflecting greater travel distances. EMS level interventions to improve tPA delivery would reach majority of treated patients in both urban and rural settings.

27) Geographic, Demographic and Socioeconomic Analysis of StrokeNet Research Network Population Coverage

Cemal B. Sozener, Karl E Longstreth, Jamey Frasure, Dawn Kleindorfer, Opeolu Adeoye, Phillip A Scott

Background: StrokeNet is an NIH research network to advance research for acute treatment, prevention, and recovery/rehabilitation following stroke.

Hypothesis/Objective: We characterized the adult population with geographic access to a StrokeNet acute care research site and its representativeness of the overall US population.

Methods: Data on research sites was obtained from the StrokeNet National Coordinating Center and geocoded. Ground and air-ambulance data identify transport times of 60, 90 and 120 minutes, corresponding to transport distances of 20, 40 and 65 miles, respectively. Geographic Information System (GIS) software overlaid these radii on thematic maps of StrokeNet adult acute care hospitals, their referral clinics, and participating VAMC hospitals. The analysis used complete 2010 US census data and 2013 data for economic variables, coded to the block group level. Descriptive data presented with comparison to national averages.

Results: 281 sites were identified as of August 1, 2015. 38%, 50%, and 60% of the total US population were within 20, 40 and 65 miles of an identified site. Geographic coverage and analysis for gender, race, age, and income are presented below. High rates of access were identified for Hispanic/Latino, Black, and Asian populations and households with high median incomes. Limited rural access was identified. Data on rehabilitation and pediatric access to be presented.

Conclusions: Current StrokeNet sites provide geographic access to acute care research opportunities for a substantial portion of the US population. The encompassed population reflects the demographic and socioeconomic makeup of the nation as a whole.

28) Increased Expression of Fibrinogen-Binding Protein (*sdrG*) By Late Phase *Staphylococcus Epidermidis* May Contribute to Increased Stiffness of Infected Fibrin Clots

Rachael A. Sturtevant, Tianhui Ma, Michael J. Solomon, PhD, and J. Scott VanEpps, MD, PhD

Background: Biofilm colonization of medical devices is known to be facilitated by a number of host factors, especially clot formation. We have previously demonstrated *in vitro* that an infected clot's mechanical properties depend on the growth phase of the infecting *Staphylococcus epidermidis.* That is, late phase bacterial cells (which more closely mimic biofilm phenotype) producing stronger clots compared to early phase. We postulated that these differences may be due to differential expression of adhesion-related genes affecting cellular binding. Our preliminary study examines the expression levels of *sdrG,* a cell-surface receptor protein with a high affinity for fibrinogen binding, *icaA,* which is involved in the synthesis of polysaccharide intercellular adhesion (PIA), and accumulation-associated protein (*aap)*, which facilitates intercellular adhesion.

Methods: RNA was isolated from both early (mid-log) and late (stationary) phase planktonic cultures of *S. epidermdis*. One-step RT-PCR was performed using dual-labeled probes. 16S rRNA was used as the endogenous control, and early phase as the reference sample. A fold-change in gene expression relative to the reference was expressed as $2^{-\Delta\Delta CT}$.

Results: Gene expression of all studied targets was upregulated. Compared to early phase, *sdrG* was significantly increased by 60% in late phase cells ($p = 0.009$). However, observed increases in *icaA* (40%) and *aap* (120%) were not statistically significant ($p = 0.307$ and 0.2117, respectively).

Conclusions: An increase in *sdrG* expression supports our hypothesis that cellular binding proteins may play a role in the enhanced properties of clots infected with late phase *S. epidermidis.* Our future work will further investigate the changes in *sdrG*, *icaA,* and *aap* in the context of a physiologic blood flow environment and will also examine other cellular binding factors, such as *atlE,* a major autolysin.

29) Comparison of Respiratory Induced Inferior Vena Cava Diameter Changes with Limb Impedance Changes in Hemodialysis Patients

M. Hakam Tiba, MD, MS; Nik Theyyunni, MD; Barry Belmont, PhD; Michael Heung, MD, MS; Robert Huang, MD; Christopher Fung, MD; Amanda Pennington, MS; Gerard Draucker, EMT; Brandon Cummings; Kevin R. Ward, MD

Background: Assessment of patients' volume status continues to pose a challenge. Measuring dynamic changes in the diameter of the inferior vena cava (IVC) using ultrasound is becoming a standard tool to assess volume status. However, ultrasound requires training, difficult to use in certain patients, and frequent monitoring is impractical. Methodologies that leverage the physiology of venous return in response to respiration may provide means to assess intravascular volume changes, allow improved scaling and less expertise compared to ultrasound.

Objectives: To evaluate the use of bioimpedance to monitor the movement of blood in the arm in response to respiration. We hypothesize that dynamic changes in limb's impedance could be used to assess intravascular volume status and its performance would be comparable to IVC-ultrasound.

Methods: 46 hemodialysis patients were recruited. Testing with impedance and ultrasound was done at the beginning and end of the hemodialysis session. Impedance was measured in the upper arm. Simultaneously, IVC's diameter was measured by ultrasound. Subjects performed respiratory maneuver by inhaling through a respiratory training device.

Results: Impedance change (dz) was determined, normalized to baseline breath and compared to the IVC collapsibility index (dIVC) ($r=0.76$, $p<0.0001$). Receiver operator curves for dz at thresholds of dIVC ranging between 20%-to-90% demonstrated high predictive power of dz with areas under the curves between 0.92-and-0.99 ($p<0.0001$).

Conclusions: Real-time dynamic changes in limb impedance are capable of tracking a wide range of dynamic dIVC. This technique might be a suitable surrogate for monitoring real-time changes in dIVC to assess intravascular volume status.

30) Monitoring of Tissue Microvasculature Oxygenation Using Resonance Raman Spectroscopy

M. Hakam Tiba, MD, MS; Amanda Pennington, MS; Gerard Draucker, EMT; Brandon Cummings; Kyle Gunnerson, MD; Kevin R. Ward, MD

Background: Noninvasive monitoring of the critically ill remains a challenge. Resonance Raman Spectroscopy (RRS) is an optical technique that provides information on the vibrational and electronic properties of compounds, including oxy- and deoxy-hemoglobin. It interrogates tissue hemoglobin levels (StO2) by producing signals dominated by venous blood. The resulting aggregate StO2 is reflective of the post-extraction compartment of the tissue similar to conventional central venous hemoglobin oxygen saturation (ScvO2).

Objectives: Evaluate the ability of RRS to monitor StO2 noninvasively in a post-surgery setting and compare its performance with ScvO2.

Methods: Post-surgery patients with central venous catheter in place were recruited. StO2 measurements were obtained using RRS with a sensor placed on the buccal mucosa. Simultaneously, blood samples were obtained from the indwelling central catheter. StO2(s) were compared to ScvO2(s) (gold standard).

Results: Nineteen Patients with an average (SD) age of 64(10), were recruited. Average StO2 was 75% while average ScvO2 was 71% ($r=0.635$, $p=0.003$). Average difference between StO2 and ScvO2 was 4% ($p=0.05$, 95%CI: 1.9%-8.2%). Receiver operator curves (ROC) for StO2 at ScvO2 thresholds of 60% and 65% have demonstrated high predictive power of StO2 with areas under the curves between 0.94 and 1.00 ($p<0.01$).

Conclusions: StO2 measurements taken using RSS are highly correlated with ScvO2, which is an important measure of tissue oxygenation. RSS is showing promise as a faster, safer, and more cost-effective way to assess patient tissue oxygenation, aiding in the diagnosis and treatment of conditions such as sepsis, trauma, heart failure and other critical states.

31) Controlling Pelvic Hemorrhage Using a Novel Pressure Garment

M. Hakam Tiba, MD, MS, Kevin R Ward, MD, Hasan B. Alam, MD, Jonathan L. Eliason, MD, Brendan M. McCracken, BS, Gerard T. Draucker, EMT-P

Background: Hemorrhage is a serious complication of trauma for both civilian and battlefield injury. Wounds to the groin as well as intra-cavitary wounds of the abdomen are of special concern and have been considered non-responsive to external pressure.

Objectives: Evaluate the ability of a new prototype garment in reducing or halting blood flow in a model of lethal pelvic arterial injury.

Methods: Nine swine were anesthetized, instrumented, and randomized into treatment and control groups. Both groups were subjected to uncontrolled hemorrhage by pulling a suture through the iliac artery. Hemorrhage was controlled by a specially designed pressure garment that was applied over the lower abdomen for 60 minutes followed by release and monitoring for 30 minutes or until the animal expired. The control group received no garment treatment. Hetastarch (500mL) was infused immediately after hemorrhage.

Results: All treatment animals survived for 60 minutes during pressure garment application. Average survival time for the control group was 8(8.5) min. Following pressure release, treatment animals survived an average of 17(12.1) min. There was a significant difference in survival time between treatment and control groups ($p < 0.003$). The rate of death in the control group was 4.9 greater than the treatment group. Lactate levels at the end of 60 minutes in the treatment group were 1.7(0.5) meq/L.

Conclusions: The pressure garment was successful in improving survival for 60 minutes after an otherwise lethal vascular injury. Such a device may be helpful as bridge to newer endovascular methods of hemorrhage control.

32) Assessing Disaster Preparedness Among Select Children's Summer Camps in the United States

Kevin Walker, Alan Sielaff, Megan Chang, Michael Ambrose, Andrew Hashikawa, Stuart Bradin

Background: Man-made and natural disasters are increasingly common. Summer camps are at particular risk for pediatric casualties when a disaster occurs.
However, the degree of disaster preparedness among summer camps is unknown.
We assessed disaster preparedness at selected summer camps for a range of man-made and natural disaster situations.

Methods: We partnered with CampDoc.com, a web-based health records system, to send camp leadership (315 camps) an online survey of disaster preparedness. Results were analyzed using descriptive statistics.

Results: Responses from 181 camps were received, with complete responses from 169 individual camps. Camp types included overnight/resident camps (59.7%), day camps (20.7%), medical or special needs camps (14.2%), and other (5.5%).

Survey respondents included directors (52.1%), nurses (14.2%), office staff (10.1%), physicians (5.3%), owners (5.3%), and other (11.2%). Almost 18% of camps were located more than 20 miles from a major medical center, and 36% were at least five miles away from police or fire departments. Most camps surveyed took care of children with disabilities including food allergies (83%), asthma (66%), mobility issues (27%), diabetes requiring medications (56%), development or cognitive impairment (34%), and hearing or speech impairment (28%). No plans were available for the following disasters: prolonged power outage (23%), lockdown for crisis situation (15%), large illness outbreak (15%), tornado/high wind (11%), evacuation for fire, flood, or chemical spill (9%), and other severe weather (8%). Many camps did not post emergency plans online (53%), had no plans for special needs children (38%), were without a method to rapidly communicate information to parents (25%), and had no method to identify children for evacuation and reunification (40%). The majority of camps (75%) had not worked with medical organizations for disaster planning.

Conclusions: A substantial proportion of summer camps were missing critical components of disaster planning. Future interventions must focus on increasing partnerships with local and national organizations and developing specific guidelines.

33) Measurement and Methodology for Daily Patterns of Drug Use and Related Behaviors

Wallace, Massey, Walton, Cranford, Cunningham, Buu

Aims: Prospective data collection, using interactive voice response (IVR) and text-messaging (SMS) systems, provide new research methodology for examination of substance use and other risk behaviors. This data is from an experimental study of a high risk sample of emerging adults to examine compliance under different data collection methods (IVR, SMS) and assessment schedules (daily, weekly).

Methods: Adults (18-28) agreeing to be re-contacted (n=279) from the FYI study completed a baseline assessment and were randomized into one of four groups: either weekly (12 weeks) or daily (90 days) surveys by interactive voice response system (IVR) or by text-messaging (SMS). In addition, the amount of the incentive for completion changed by cohort. Cohort 1 (n=87) was paid $1 per daily survey or $7 per weekly survey. Cohort 2 (n=192) were paid $4 daily survey and $28 weekly survey.

Results: Overall, ANOVA analysis shows that the main effect of assessment schedule was significant ($p<.05$), with post-hoc tests indicating that IVR weekly reported significantly greater compliance (mean = 67.0) than IVR daily (mean = 48.0); SMS weekly (mean =55.3) did not differ from SMS daily (mean = 55.3). Overall, Cohort 2 showed significantly greater compliance (mean = 61.0) than cohort 1 (mean = 45.1) ($p<.001$).

Conclusions: Rates of compliance varied by frequency and method of data collection. Although support was found for increasing incentives on improving compliance rates, these effects varied by method of data collection. Future analyses will examine the effects of assessment schedule and data collection methods on reliability and validity.

34) Local Early Child Care Biosurveillance Is Equivalent to Google Flu Trends For Prediction of Influenza in Michigan

Anran Wang, Andrew Hashikawa, MD

Background: Disease biosurveillance is a critical tool in the early detection and monitoring of outbreaks. In Michigan, mandated school-based reporting is the primary source for pediatric influenza data but relies heavily on paper-based reporting and is limited to children in kindergarten and up. Our web-based system (sickchildcare.org) uses real-time early child care (ECC) provider-generated illness reports to track illness among the infant to preschool-aged children.

Objectives: To compare two web-based methodologies of biosurveillance - Internet search-based Google Trends and ECC reporting-based sickchildcare.org - for flu-like illness.

Methods: All cases of flu-like illness from 12/2013 to 05/2015 were collected from sickchildcare.org and the Michigan Disease Surveillance System (MDSS). Weekly rates of flu-like illness in Michigan were generated by Google Trends Influenza 2014 prediction algorithm for the same time period. SAS software was used to generate autoregressive models using the Yule-Walker method.

Results: The ECC data generated a sixth-order autoregressed model and the Google model generated a third-order autoregressed model. Calculating the sums of residual squares in ECC vs MDSS and Google vs MDSS shows that the ECC and Google models have equivalent fit, at 260,000 and 268,000, respectively.

Conclusion: Outbreaks of seasonal influenza-like illnesses in the state of Michigan are equally accurately modeled by extrapolation of a web-based ECC reporting system and by Google Flu Trends. With Google Flu Trends no longer publicly available, biosurveillance using child care centers and preschools represents a feasible method for tracking and modeling disease activity on a regional level.

35) Implementation of Daily Text Message Surveys Assessing Drug Use and Sexual HIV Risk Behaviors: Feasibility and Acceptability

Lisa Zbizek-Nulph, Erin E. Bonar, Maureen A. Walton, & Rebecca M. Cunningham

Background: Drug use and sexual HIV risk behaviors (e.g., inconsistent condom use) are concerning among emerging adults who are reaching a developmental stage when both behaviors tend to peak.

Objective: We used daily text messaging and assessments to help uncover the daily relationships between substance use and condom use behaviors across relationship types (e.g., main/regular partners, casual partners). This study describes the implementation of this method and participants' attitudes regarding the daily surveys.

Methods: Participants were 111 emerging adults (18-25 year olds) presenting in an urban Emergency Department who reported past 28-day drug use, sex without a condom, and having a cell phone with text messaging capability (M age = 22; 53% female; 45% Black, 38% White; 95% used marijuana).

Results: An average of 18.9 surveys were completed (SD = 7.9) with 51% of participants completing at least 75% of surveys. Among 93 participants (84%) who completed a 1-month follow-up assessment, 97% said they would consider participating in a similar study. Most (90%) found the surveys not at all or only a little annoying and were generally comfortable with the daily questions about drugs/alcohol (98%) and sex (95%).

Conclusions: In summary, participants in this sample seemed to find this methodology acceptable for assessing this sensitive information; however, compliance with daily surveys was lower than expected. Anecdotally, several participants noted that compliance was hindered by: interruptions in phone service (e.g., change carriers, late payment), network or carrier disruptions, their personal schedules, as well as survey length.

Notes

Department Abstracts for Spring 2016 Conference Presentations

CONFERENCE	CITATION **denotes Resident*	DAY	TIME	PRESENTATION TYPE
SAEM	Abir M, Truchil A, Wiest D, Choi HC, Nelson D, Lozon M, Brenner J. Informing Patient-Centered Interventions to Reduce Asthma-Related Pediatric Hospitalizations Through Cluster Analysis of Administrative Hospital Data	Wednesday, May 11	1:00-2:30	Poster
SAEM	Bagchi DP, *Majkrzak A. The Evolution of Appendiceal Ultrasound: Ten Years' Experience within a Pediatric Emergency Dept	Wednesday, May 11	1:00-2:30	Poster
SAEM	Bassin B, Sozener C, Havey R, Otero R, Neumar R, Gunnerson K. A Novel ED-based Critical Care Unit Reduces ICU Utilization	Wednesday, May 11	10:00-12:00	Plenary Session
SAEM	*Boyd M. Shared Decision Making Employing HEART Score and a Visual Aid in Patients Presenting with Chest Pain to a Community Emergency Dept	Thursday, May 12	9:00-10:00	Spotlight Oral Presentation
SAEM	Carney M, Wolff M, *Skaugset M, Dunbar E, Zamaripa A, Nguyen D, *Pavlic A, Ankel F, Hemphill R, Santen S. How to Effectively Supervise and Teach Residents: Entrustment and Autonomy	Friday, May 13	10:30-11:20	Didactic
SAEM	Carter P, Walton MA, Zimmerman M, Chermack S, Roche J, Cunningham R. Youth Violence Prevention: Effects of a Universal Violence Intervention in an Urban ED	Wednesday, May 11	10:00-12:00	Plenary Session
SAEM	*Clery M. Violence Prevention Efforts - Methods To Retain Participants In Youth Violence Research	Friday, May 13	8:00-9:00	Lightning Oral Presentation
SAEM	*Fung C. Measurement of Carotid Artery Flow Time via Point of Care Ultrasound Hemodialysis Patients	Friday, May 13	10:00-11:00	Lightning Oral Presentation
SAEM	*Glazer JM, VanEpps JS, Bassin BS, Otero RM, Boyd C, Neumar RW, Gunnerson KJ.. Impact of an ED-ICU on Severe Sepsis and Septic Shock	Friday, May 13	10:00-11:00	Lightning Oral Presentation
SAEM	*Glazer JM, Bassin BS, Medlin RP, Holmes JG, Gunnerson KJ. ASCERtain: Automated Sepsis Capture for Emergency Department Registries	Thursday, May 12	10:00-12:00	Poster
SAEM	*Glazer JM, Gunnerson KJ, Medlin RP, Lupton R, Kronick SL, Neumar RW, Bassin BS. PReDICT: Prognosticate Resuscitation Demands Integrating Computerized Triage	Thursday, May 12	10:00-12:00	Poster
SAEM	Gou T, *Majkrzak A. Equivocal Ultrasound Findings for Suspected Appendicitis in Children: Radiology & ED Provider Factors in Secondary Imaging	Friday, May 13	10:00-12:00	Poster

CONFERENCE	CITATION *denotes Resident	DAY	TIME	PRESENTATION TYPE
SAEM	Harvey C, Gunnerson K, Kessler R, Litell J, Whitmore S, Havey R, Bassin B. The Impact of an ED-Based Critical Care Unit on the Provision of Palliative Care in the Emergency Department	Thursday, May 12	1:00-3:00	Poster
SAEM	Havey R. Bassin B. The Effect of an Emergency Department-Based Critical Care Unit on the Utilization of Non-Invasive Positive Pressure Ventilation and Patient Disposition	Friday, May 13	10:00-11:00	Lightning Oral Presentation
SAEM	*Hess R, *Leonard P, Kahler J. What's That Rash?			Poster
SAEM	Hopson L, Carney M. Education Value Units: Crafting a Mechanism to Recognize Educational Contributions.	Wednesday, May 11	2:00-2:20	Didactic
SAEM	Kocher K, Venkatesh A. Quality Measurement Registries and Performance Reporting in Emergency Care.	Thursday, May 12	8:00-8:50	Didactic
SAEM	Kocher K, Dev S. Emergency Department Utilization and Hospital Readmission Following Major Surgical Procedures in the United States	Friday, May 13	11:00-12:00	Lightning Oral Presentation
SAEM	*Liu D. The Effect of Triage Chief Complaints on Emergency Department Room to Provider Time in a Community Tertiary Care Hospital	Thursday, May 12	8:00-10:00	Poster
SAEM	*Malone M, Purkiss J, Schiller J, Stansfield BR, Santen S.. Is Tolerance of Ambiguity Associated with Emergency Medicine Clerkship Performance?	Thursday, May 12	1:00-2:00	Lightning Oral Presentation
SAEM	Merritt C, Daniel M, Wolff M, Santen S. Apprenticeship to Independence: Facilitating Autonomy in EM Learners	Friday, May 13	2:00-2:50	Didactic
SAEM	Porath JD, Meka AP, Fagerlin A, Meurer WJ. Shared decision making for low-value testing in the emergency department	Wednesday, May 11	1:00-2:30	Poster
SAEM	Ray J, Hopson LR, *Peterson W, Santen S, Khandelwal S, Gallahue FE, White M, Burkhardt JC. How Does the Consideration of Other Possible Medical Specialties and the Reason to Choose Emergency Affect the Timing of Specialty Selection?	Friday, May 13	10:00-12:00	Poster
SAEM	Rivers M, Marcolini E, DeBlieux, Wira Chas, Gunnerson K. Sepsis in the Emergency Department: New Data, New Definitions, New Practice?	Friday, May 13	10:00-11:00	Panel
SAEM	Royan R, Wu C, Goslinga T, Puelle M, Daniel M, Santen S. Making Clinical Reasoning Visible: Techniques for Preclinical Learners in the Emergency Department			Spotlight Oral Presentation
SAEM	Santen S, Farrell S, Hopson L, Hemphill R. Improve You Teaching By Debunking Educational Myths: Evidence-based Teaching Workshop Using Articles that Will Change Your Teaching Practice (Flipped Classroom).	Friday, May 13	11:30-12:20	Didactic

Department Abstracts for Spring 2016 Conference Presentations

CONFERENCE	CITATION *denotes Resident	DAY	TIME	PRESENTATION TYPE
SAEM	Santen S, Farrell S, Hopson L, Hemphill R. Improve You Teaching By Debunking Educational Myths: Evidence-based Teaching Workshop Using Articles that Will Change Your Teaching Practice (Flipped Classroom).	Friday, May 13	11:30-12:20	Didactic
SAEM	Santen S, Hopson L, Daniel M, Ling L. Diagnosing and Remediating Clinical Reasoning Difficulties	Friday, May 13	8:00-8:50	Didactic
SAEM	Santen S, Burkhardt. The Scholarship Pipeline: Best Practices to Keep your Academic Career Moving Forward. (*W Peterson)	Friday, May 13	1:30-1:50	Didactic
SAEM	Santen S, Wolff M, Perry M, House J, Burkhardt J, Carney M, Theyyuni N, Daniel M, Hopson L. Focusing Your Educational Research: So Much To Do, So Little Time			Oral Presentation
SAEM	Shtull-Leber E, Silbergleit R, Meurer W. Pre-Hospital Midazolam for Treatment of Status Epilepticus Before and After RAMPART: A National Observational Cohort Study	Thursday, May 12	8:00-9:00	Oral Presentation
SAEM	*Sielaff A, Chang M, Walker K, Bradin S, Matos-Moreno A, Singer D, Clark S, Kauffman A, Davis M, Hashikawa A. Assessing Parents' Knowledge of Child-Care and Preschool Disaster Plans	Thursday, May 12	8:00-10:00	Poster
SAEM	Stowell JR, Kendall JL, Lewiss RE, Barjaktarevic I, Kessler R. Critical Care Ultrasound: A National Survey Across Specialties	Friday, May 13	1:00-3:00	Poster
SAEM	Tiba HA, Belmont B, Heung M, Theyyunni N, Huang R, *Fung C, Ward KR. Evaluation of Intravascular Volume Status Using Dynamic Respiratory Induced Bioimpedance of the Limb	Wednesday, May 11	3:00-4:00	Oral Presentation
SAEM	VanEpps JS, Cunningham R, Callaway CW, Kline JA. Human resources for the research enterprise.	Wednesday, May 11	1:30-2:20	Didactic
SAEM	Wang A, Schellpfeffer N, Hashikawa. Early Child Care Biosurveillance is Equivalent to Google Flue Trends for Prediction of Influenza in Michigan	Friday, May 13	9:00-10:00	Lightning Oral Presentation
SAEM	Whitmore S, *Haas N, *Ganti A, *Hapner C. An Emergency Department Based Intensive Care Unit Decreases Hospital and ICU Utilization in Diabetic Ketoacidosis	Friday, May 13	1:00-2:00	Oral Presentation
PAS	Anacker M, Jackson B, Noble J, Zirngible G, Hashikawa A. Local physicians require more training to ensure Head Start children obtain necessary dental screens			

CONFERENCE	CITATION *denotes Resident	DAY	TIME	PRESENTATION TYPE
PAS	Hashikawa A, Walker K, Chang M, Sielaff A, Bradin S, Matos-Moreno A, Singer D, Clark S, Kauffman A, Davis M. Parents' knowledge of child care and preschool disaster plans			
PAS	Macy ML, Bingham CR, Resnicow K, Freed GL, Cunningham RM. A Pilot Emergency Department (ED)-Based Intervention for Child Passenger Safety	Monday, May 2	8:00-10:00	Platform 3110
PAS	Macy ML, Reeves SL, Dombkowski KJ, Freed GL. Assessing Imaging Overuse among Children with Post-Traumatic Headache	Saturday, April 30	1:30-2:45	Poster
PAS	Mayz K, Kelker H, Cranford J, Pham K, Goldfarb A, Sroufe N. Implementation of a White Board Communication Tool in a Pediatric Emergency Department (PED): A Quality Improvement Initiative Shows Improved Communication and Parent Satisfaction.			Poster
PAS	Hoefgen E, Macy ML. Healthcare Utilization and Expenditures for Children With Non-Complex Chronic Illness	Sunday, May 1	12:30-4:00	Presidential Plenary
PAS	Rajput S, Naughton M, Hashikawa A, Shah B, Roche J, Carter P. Development of an Online Asynchronous Video-Based Firearm Safety and Injury Prevention Counseling Curriculum for Pediatric Residents			
PAS	Sills M, Macy ML. Impact of Social Determinants on Children's Hospitals' Preventable Readmissions Performance	Monday, May 2	10:30-12:30	Platform 3355
PAS	Tomlinson S, Haas M, Skaugset M, Cico S, Wolff M, Santen S, Lin M, Huang R. #NotAnotherBoringLecture: Using Presenter Initiated and Generated Live Educational Tweets (PIGLETs) to Broaden Traditional Conference Workshop Reach			Platform Presentation
CGEA Annual Retreat	Cedarbaum J, House J, Sullivan A, Haque F, Daniel M. The Initial Clinical Experience (ICE): A Novel Approach to Interprofessional Education through Early Immersion in Healthcare Teams	Thursday, April7	4:30-6:30	Poster
CGEA Annual Retreat	Daniel M, Cole M, Huang R, Theyyunni N, Rougas S, Cinti S. Using Instructional Design Theory to Develop a Clinical Reasoning Curriculum	Thursday, April 7	4:30-6:30	Poster
CGEA Annual Retreat	Daniel M, Hogikyan E. Interdisciplinary Co-teaching in a Clinical Skills Course: What Makes the Relationship Work?	Thursday, April 7	4:30-6:30	Poster

Department Abstracts for Spring 2016 Conference Presentations

CONFERENCE	CITATION **denotes Resident*	DAY	TIME	PRESENTATION TYPE
CORD	Hopson L. Keeping the Research and Scholarship Pipeline Flowing	Sunday, March 6	1:00-2:00	Presentation
CORD	Hopson L, House J. Research 101 for the Novice: Keeping the Research and Scholarship Pipeline Flowing	Monday, March 7	3:00-4:00	Presentation
CORD	Hopson L. Where to Find Basic Requirements/Dealing with Common Emergencies	Monday, March 7	4:00-4:45	Presentation
CORD	Hopson L. Defining Emergency Medicine Residency Training Outcomes Using Delphi Method	Sunday, March 6	11:30-1:00	Poster
CORD	*Munzer B. Reflections of 1st Year Medical Students in the Emergency Department	Sunday, March 6	11:30-1:00	Poster
CORD	*Haas, M. Social Media in Emergency Medicine Resident Education: A Needs Assessment	Sunday, March 6	11:30-1:00	Poster
CORD	House J. CDEM End-of-Shift Assessment Consensus Conference	Sunday, March 6	2:00-5:00	Workshop
CORD	House J. CDEM End-of-Shift Assessment Consensus Conference	Monday, March 7	9:00-12:00	Workshop
CORD	House J. An Attempt to Standardize Evaluation Scoring	Sunday, March 6	5:00-6:30	Poster
CORD	Minges P. A Tailored, Longitudinal Ultrasound Curriculum for Pediatric Emergency Medicine Fellows	Sunday, March 6	5:00-6:30	Poster
CORD	*Peterson, W., Hopson, L.R., Khandelwal, S., Gallahue, F., White, M., Burkhardt, J., Rolston, A., Santen, S. Impact of Doximity Residency Rankings on Emergency Medicine Applicant Rank Lists—Selected for Best of the Best at CORD			Oral Presentation
CORD	Ray J, Hopson LR, *Peterson W, Santen S, Khandelwal S, Gallahue FE, White M, Burkhardt JC. How do the Previous Experiences of Medical Students Related to When and Why They Choose Emergency Medicine as a Specialty			

Notes

April 27, 2016

WILLIAM G. BARSAN EMERGENCY MEDICINE RESEARCH FORUM

AGENDA AT A GLANCE

8:00-8:30 am	**REGISTRATION & BREAKFAST**
8:30-8:45 am	**WELCOME & OPENING REMARKS** Robert Neumar, MD, PhD FACEP, Chair
8:45-9:40 am	**KEYNOTE ADDRESS** William G. Barsan, MD Founding Chair, U-M Department of Emergency Medicine
9:40-9:55 am	**BREAK**
9:55-11:25 am	**MORNING SESSION: RESEARCH REPORTS**
9:55-10:05 am	**Keith Kocher, MD**
10:05-10:20 am	**Patrick Carter, MD**
10:20-10:30 am	**John Burkhardt, MD**
10:30-10:45 am	**Alex Rogers, MD**
10:45-11:05 am	**Michael Boyd, MD** **Sarah Tomlinson, MD**
11:05-11:20 am	**Kevin Ward, MD**
11:20-12:15 pm	**LUNCH** (ground floor)
12:15-1:00 pm	**POSTER SESSION** (ground floor)
1:00-2:15 pm	**AFTERNOON SESSION: RESEARCH REPORTS**
1:00-1:10 pm	**Michelle Macy, MD**
1:10-1:20 pm	**Mahshid Abir, MD**
1:20-1:40 pm	**Will Meurer, MD**
1:40-1:50 pm	**J. Scott VanEpps, MD, PhD**
1:50-2:05 pm	**Fred Korley, MD, PhD**
2:05-2:15 pm	**Michele Nypaver, MD**
2:15-2:30 pm	**AWARDS & CLOSING REMARKS** Rebecca Cunningham, MD & Robert Neumar, MD, PhD FACEP

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