

# Emergency Medicine Research Times

## Scholarship in the Time of COVID-19: “Right Place, Right Time”

I asked my former epidemiology instructor about his secret to academic success. His answer, “Four words: right place, right time”. Of course, one’s curiosity, focus, and stick-to-itiveness are all important to scholarly success. However, using one’s imagination to leverage opportunities that appear right in front of us is also critically important. During this COVID season, emergency care providers stand at the crossroads of medicine and public health. Our brothers and sisters across the globe stand directly in harm’s way in order to protect the public from harm. To identify countermeasures against the current and subsequent waves of COVID-19 will no doubt require curiosity, focus, and stick-to-it-iveness. However, we stand at the right place at precisely the right moment in time to envision the tools to predict respiratory decline among asymptomatic individuals, innovate new devices to improve the management of COVID-related lung disease, and make a difference in this fight. In this issue of the Emergency Medicine Research Newsletter, we celebrate the academic accomplishments of our EM family, and hope that this will ignite a passion for scientific inquiry in the next generation of emergency physicians.

-William Fernandez, MD

### LSOM Research Day, Best Resident/Fellow Presentation: Sophia Ahmed

**Project: Surgical Airway Models for Low Resource Settings- Dr. Sophia Ahmed**  
**Co-Investigators: Povlow A, Graham CW, Cardwell JM, Sontag RJ, Cooley C**

Description: Cricothyrotomy is a method of last resort used to attain airway control in critically ill patients when other modalities fail or are unavailable. This procedure is typically performed by emergency medicine physicians, however in some countries emergency medicine as a field is grossly underdeveloped. We traveled to Vietnam and Nepal to teach physicians, medical students and nurses how to perform cricothyrotomies using high-fidelity, low-cost simulation models. Participants completed a survey regarding their comfort level with the procedure both pre and post-simulation training. We noted a significant improvement in providers’ comfort level after our simulation training (4.32 vs 2.72,  $p < 0.0001$ ). We hope participants will share the knowledge among their peers and teach other first responders this life-saving procedure.

-Sophia Ahmed, MD



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### RESEARCH NETWORK

**Robert De Lorenzo, MD**  
Research Director

**William Fernandez, MD**  
Asst. Research Director  
Newsletter Editor-in-Chief

**Yolanda Flores**  
Admin. Asst. Assoc.  
Publisher

**Stephanie Martinez**  
Grants & Contracts

**Joe Peters**  
Sr. Research Coordinator

UPCOMING EVENTS

**Research Concierge -  
Office of Clinical  
Research (FY 20)**

Tuesday	5/5/2020	1pm - 4pm
Wed.	5/6/2020	9am - 12pm
Wed.	5/20/2020	9am - 12pm
Tuesday	6/2/2020	1pm - 4pm
Wednes-day	6/3/2020	9am - 12pm
Wednes-day	6/17/2020	9am - 12pm
Wednes-day	7/1/2020	9am - 12pm
Tuesday	7/7/2020	1pm - 4pm
Wed.	7/15/20	9am-12pm
Wed.	7/29/20	9am-12pm
Tuesday	8/4/20	1pm-4pm
Wed.	8/12/20	9am-12pm
Wed.	8/26/20	9am-12pm

**Main Campus**

**(Long Campus)  
Library, 2nd Floor  
Computer Classroom,  
Room 2.011**

Interested in **TechNovum**?

The second cohort is open to all life science innovations. The teams will meet weekly, typically in the evening, for 3 hour moderated coaching sessions over 14 weeks. The anticipated start date is January 2021.

Application Deadline:  
October 7, 2020

For more information:  
<https://otc.uthscsa.edu/technovum>

**Wilderness Medicine**



**GAMOW BAG STUDY**

Drs. Graham and Husby are working on a pilot study using the Ultra-Lite Gamow Bag and its Effect on Capillary Oxygenation at Intermediate Altitude performed among the Wilderness and Survival Medicine Elective cohort that traveled to Big Bend National Park. During this study they rapidly ascended to over 2000m on the South Rim Trail and using a pulse oximeter recorded changes in measured capillary oxygenation before, during and after undergoing hyperbaric compression up to 2 PSI. Additionally, the Ultra-Lite Gamow Bag product durability and feasibility will also be reviewed.

-Luke Husby, DO



**TECHNOVUM**

TechNovum™, the accelerator at UT Health San Antonio, is intended to assist investigator entrepreneurs who wish to play a more active role in the commercialization of their UT Health San Antonio-developed inventions. TechNovum provides practical commercialization-oriented educational coaching and is designed to help investigator entrepreneurs to validate their product idea through the use of customer and market feedback, and the creation and development of a compelling commercialization story. The deliverable is a vetted business model and an investor-ready pitch/presentation. TechNovum is a value-added program of the UT Health San Antonio Office of Technology Commercialization in the Office of the Vice President of Research. TechNovum was established for the purpose of enabling rapid and efficient translation to the marketplace of innovations discovered/developed at UT Health San Antonio, the chief catalyst of the city's \$40.2 billion health care and biosciences industry.

**Rob Mora, MD, and Rob De Lorenzo, MD** were invited to join the inaugural TechNovum class in 2019. Dr. Mora's project involved doppler detection of pulses for resuscitation monitoring and Rob De Lorenzo's project was an advanced portable medical suction unit for combat casualty care and emergency medical services Together with other innovators from the Schools of Medicine, Nursing, Dentistry, Biomedical Sciences and Health Professions, the small group of inventors met, learned and shared ideas on bringing their invention from idea to market. Any faculty member with a health- or medical-related innovation should explore this opportunity and take advantage of the university's support.

-Robert De Lorenzo, MD



## The POWDER Study



## Abstract

### Objective:

The goal of this study is to assess the [safety and efficacy](#) of topical vancomycin powder, administered within 24 hours of an open fracture injury, in the prevention of infection and infection-related complications.

### Methods:

The POWDER study is a multicenter, prospective, randomized controlled clinical trial using a pragmatic open-label design. Two hundred long bone open fracture patients will be recruited from University Hospital at UTHSA and the San Antonio Military Medical Center. Patients will be screened and randomized in a 1:1 ratio to receive either usual care plus 2g topical vancomycin or usual care only. The primary objective of this study is to compare the proportion of infection and infection-related complications that occur within one year in open fractures treated with usual care alone versus those that are treated with vancomycin powder in addition to the usual care. An additional objective is to develop a risk-prediction model for open fracture wound complications.

### Justification:

The infection rates seen in open fractures remain alarmingly high in both combat and civilian settings. Orthopedic surgery studies suggest that vancomycin powder is effective in reducing surgical site infections when applied topically at the time of wound closure. We expect to see a reduction in infections in open fracture injuries treated acutely with vancomycin powder.

### Outcome:

[The primary outcome measure is development of deep-space infection at the prophylaxis site within 1 year of the injury.](#) This study may provide important information regarding the use of local vancomycin powder during the acute treatment of open fractures. If shown to be efficacious, vancomycin powder could provide a simple, time- and cost-effective infection prophylaxis strategy for these injuries. [Secondary outcome measures include rate of post-operative medical interventions, repeat visit rate, readmission rate, and death rate for open fracture infection within one year of injury, local or systemic complications within one year of injury.](#)

—Robert De Lorenzo, MD

### The POWDER Study Group:

Robert A De Lorenzo; Steven G Schauer; Joseph C Wenke; Abigail R Wheeler; Kimberly M Burbank; Steven B Moore; Animesh Agarwal; Boris A Zelle; Jeffrey T Howard; Kevin S Akers; Michael D April; William G Fernandez; James A Pfaff; Amanda Fowler; Joseph K Maddry; Patrick M Osborne; Daniel J Stinner; Brit J Long; William T Davis; Rachel Pesek; Stephanie A Martinez; Joseph E Peters; Mireya A Escandon; Genny L Krackau ; Elizabeth-Costilla; Yolanda Flores.

### GOT RESEARCH IDEAS?

Let us help you take those grant ideas and put them into motion. We are here to assist with everything from technical assistance, protocol development, navigating the IRB, and assisting with subject enrollment.

### For Grant Consultation & Support, Contact:

Stephanie Martinez  
(martinezs13@uthscsa.edu)  
210-450-8566

### For IRB applications & Protocol Development,

Contact: Joe Peters  
(petersj@uthscsa.edu)  
210-450-8559

## Intern Research Conference

### STRAC CONFERENCE

**June 15-17th, 2020  
Hyatt Hill Co. Resort**

This year the UT Health SA DEM has joined the South Texas Regional Healthcare Systems Conference. This allows us to reach a broader group of emergency providers for the entire region. This exciting 3 day conference will have multiple educational tracks throughout the day including: Emergency, Trauma, Disaster, Behavioral, Pediatrics, Perinatal, Stroke, and Cardiac. We are having preconference workshops: POCUS, LLSA, TOPICS, EKG as well as the 2<sup>nd</sup> Annual National Whole Blood Summit. 2020 will be our biggest conference yet with an estimated 500+ attendees. We look forward to seeing you there!

For more information:

<http://conference.strac.org/>

-Kathryn Braseth PA-C

### IRB STUDIES IN THE WORKS

**B. Everitt** - Validation of EMS Sepsis Protocol in a Large Urban System

**J. Feldman** - EMNote: An Instrument for Measuring Quality Of HER Notes in the Emergency Department

**C. Cullison** - The COVID-19 AACT (Accessment for Appropriate COVID-19 Triage) Study

This year, our department made an important investment towards boosting our academic scholarship by co-hosting the Intern Research Conference with our emergency medicine colleagues from the San Antonio Military Medical Center (SAMMC). This introductory research course was started at SAMMC over 20 years ago, and is modeled after SAEM's EMBRS (Emergency Medicine Basic Research Skills) Course.

#### *Topics Covered*

Research Terminology	PI Responsibilities	Animal Research
Research Question	Federal Regulations	Survey Research
Research Hypotheses	Federal/DoD Funding	Case Control vs Cohort Studies
Literature Search	Case Reports/Case Series	Cohort Studies
Sample Size/Power Calculations	Chart Reviews	Randomized Controlled trials
Navigating the IRB process	Descriptive Studies	Systematic (and other) Reviews
Informed Consent	Sim Research	Appraisal of the Literature

### Current Intern Projects

Upon completion of the Intern Research Course, our Interns are expected to have a basic protocol created. Below is a list of our Interns current projects:

- The use of motivational interviewing in the Pediatric ED on adolescent smoking. **[Dr. Cara Borelli]**
- Use of prophylactic ondansetron on morphine-induced nausea. **[Dr. Bill Jones]**
- Ketamine as Adjunctive Therapy to Benzodiazepines for Alcohol Withdrawal. **[Dr. Thomas Pederson]**
- No Pressure, Eye'll Scan That: Ocular Ultrasound As A Surrogate Tool to Evaluate Intraocular Pressure. **[Dr. Breanna Bates]**
- Use of Transcutaneous (Telescopic) Ultrasound to Drain Peritonsillar Abscesses. **[Dr. Joshua Radparvar]**
- Validating High-Sensitivity Troponin Algorithm at Ruling out AMI at a South Texas Academic County Hospital. **[Dr. Duy Huang]**
- Prevalence of liver cysts among patients at San Antonio Refugee Clinic. **[Dr. Jeffrey Lin]**
- Time to Post Cardiac Arrest Hypothermia. **[Dr. Taylor Rodrigues]**
- TXA with direct pressure vs direct pressure alone for AV fistula hemorrhage. **[Dr. Roger Farney]**
- Effectiveness of a brief training session on intimate partner violence screening by emergency medicine residents. **[Dr. Natalie Reynolds]**
- Training medical students to manage cardiogenic shock: A simulation study **[Dr. Blane Womack]**
- Use of ThromboElastogram (TEG) in Hemorrhagic Shock Patient to Reduce Blood Product Administration and Improve Resuscitation Time **[Dr. Chuck Cullison]**

## Recent Faculty Announcements

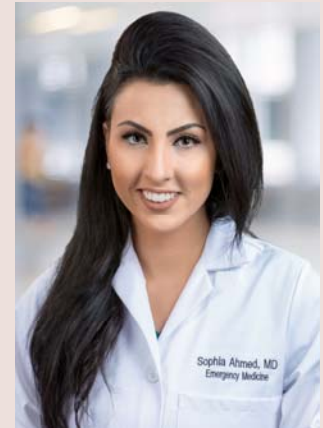
*Did you know...*

**Katie Braseth** is the EM Track Coordinator for the STRAC Conference

**Bradley Goettl** is a co-investigator in a state grant to establish an Emergency Nurse Practitioner track within Doctor of Nursing Practice program at UT Health San Antonio School of Nursing. Emergency and Trauma Care Education Partnership, Graduate Nursing Education Grant, Texas Higher Education Coordinating Board

**Chad Retzloff, Ryan Bierle, and Tatiana Emanuel** were promoted to Assistant Professor in PA Studies

**Bill Fernandez** was selected to be a Section Editor for the ED Administration, Quality & Safety section of *Western Journal of Emergency Medicine*



**Sophia Ahmed, MD**

Administrative Chief  
Residency 2020-2021

LSOM Research Day Winner!

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## TOXICOLOGY CORNER

Shawn Varney, MD, FACEP

### NEWS:

The Toxicology Section published 3 abstracts for a recent toxicology conference.

1. **Capsaicin** 2. **Glyphosate**

3. **Neuroleptic Malignant Syndrome** (Summary below)

Arthur Daigh, MD & Shawn M. Varney, MD

**Neuroleptic malignant syndrome (NMS)** is a rare condition involving a tetrad of altered mental status, neuromuscular abnormalities, autonomic instability, and hyperthermia after exposure to dopamine antagonists or withdrawal from dopamine agonists. Standard treatment is stopping the causative agent, aggressive supportive care, and benzodiazepines. Dantrolene sodium, a musculoskeletal relaxant, is sometimes added, but the physiologic basis for its use is unclear. Our aim was to determine in patients with suspected NMS from a large toxicology database, if adding dantrolene to standard care improved clinical outcomes and to describe treatment and outcomes. We tested for associations and created hierarchical clustering heat maps to describe symptom distribution among patients.

Of 131 patients diagnosed with NMS, 72.5% were 19-65 years old, and 61.1% were male. 13% were treated with dantrolene, 71% received benzodiazepines, and 23.7% bromocriptine. There was no association between dantrolene administration and specific organ system dysfunction, vital sign abnormalities, or any demographic characteristic. The heat map of nervous system symptoms (mental status/neuromuscular abnormalities) suggested three patient clusters corresponding to three levels of severity. 14.5% of patients were intubated, one cardiac arrest, and zero deaths. Limitations included small sample size, misdiagnosis, incomplete data on indications for and temporality of dantrolene administration, and retrospective nature. **We found no association between dantrolene administration and organ system findings in this NMS patient cohort.**

*For more information regarding other published Toxicology abstracts, contact Dr. Varney (varney@uthscsa.edu)*

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### Next Intern Research Course

Tentatively: Dec 18 &19,  
2020; Jan 4-5, 8, 2021

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### ACEP CONFERENCE

OCTOBER 26-29, 2020

#### ACEP ABSTRACT

DEADLINE : June 11, 2020

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### Pacific Northwest Sepsis Virtual Conference

June 16, 2020

<https://www.wsha.org/event/virtual-pacific-northwest-sepsis-conference/>

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### SURF 2020

Virtual

June 25, 2020

<http://research.utsa.edu/surf/>

## ***Scholarly Activities***

**Paquette R, Bierle R, Wampler D, Allen P, Cooley C, Ramos R, Michalek J, Gerhardt RT.** External soft-tissue hemostatic clamp compared to a compression tourniquet as primary hemorrhage control device in pilot flow model study. *Prehosp Disaster Med.* 2019;34(2):175-181

**Braseth K, Husby L, Wayman B.** (2019) Visual Diagnosis- Southern Tick-Associated Rash Illness (STARI). EMRA

**Goettl, B.** (2020). Child with Racing Heart. In: Kline-Tilford, A. and Haut, C. *Cases in Pediatric Acute Care: Strengthening Clinical Decision Making.* Hoboken: Wiley.

**Emanuel, T.** (2020). Role of the APP in the Emergency Department. In: Campo, T. *Essential Procedures for Emergency, Urgent, and Primary Care Settings: A Clinical Companion.* New York: Springer.

**Durani O, Ely R, Kester N.** Interfacility Transfers: Pearls & Pitfalls for the Emergency Physician, emDocs.net, published online, 2020.

**Blackmon M, Kester N:** Unstable A-fib, A Guide to Management, emDocs.net, published online, 2020

**Ahmed S, Chapman M, Kester N:** A Case of Pulmonary Hypertension in the ED, EMResident. <https://www.emra.org/emresident/article/pulmonary-hypertension/>

**Schultz, C. H., Fairley, R., Murphy, L. S.-L., & Doss, M.** (2020). The Risk of Cancer from CT Scans and Other Sources of Low-Dose Radiation: A Critical Appraisal of Methodologic Quality. *Prehospital and Disaster Medicine*, 35(1), 3–16.

**Sparkman MK.** [Poster] Implementing Standards and Indicators for Level III and Level IV Texas Hospital Injury Prevention Programs. Presented at the Texas EMS Conference, Nov 2019

**Sparkman MK.** [Discussion Board] Identifying Human Trafficking Victims, Current Identification Tools and Protocols. Presented at the Texas EMS Conference, Nov 2019.

**Ahmed S, Kester N.** A Different Kind of Hypertensive Crisis. AAEM Scientific Assembly [Accepted for Poster Presentation]

**Ahmed S., Fairley R.** Time to accurate identification of needle decompression and cricothyrotomy sites by civilian and military paramedics. TCEP Annual Meeting [Accepted for Poster Presentation]

**Ahmed S, Kester N, Chapman M.** A Review of Pulmonary Hypertension in the ED. *EM Resident Magazine.* February/March 2020; 47 (1): 24-27

**Ahmed S, Fairley R.** Diabetic Muscle Infarction. *WestJEM-CPC EM.* 2020; 4(1): 99-100

**Ahmed S, Varney S.** Bites and Stings. *Emergency Medicine secrets, ed 7. In press.*

**Rybarczyk MM, Muck A, Kolkowitz I, Tupesis JP, Jacquet GA.** Global Health Training in U.S. Emergency Medicine Residency Programs. *AEM Ed and Train.* Early View 27 Apr 2020. DOI: <https://doi.org/10.1002/aet2.10451>

**Ahmed S, Povlow A, Graham CW, Cardwell JM, Sontag RJ, Cooley C.** Surgical Airway Models for Low Resource Settings. [Poster Presentation] UT Health San Antonio, Long School of Medicine Research Day 2020 - *S. Ahmed Awarded Best Poster Presentation by a Resident or Fellow*



Department of Emergency Medicine  
UT Health San Antonio  
7703 Floyd Curl Drive, MC 7736  
San Antonio, Texas 78229-3900

Newsletter submissions:  
William Fernandez, MD  
[fernandezw@uthscsa.edu](mailto:fernandezw@uthscsa.edu)