

Emergency Medicine Research Times

WINTER IS COMING!

The world has witnessed the terrible effects of the COVID-19 global pandemic. Frontline healthcare providers like yourselves -- firefighters, EMTs, paramedics, hospital and ICU personnel, emergency nurses and physicians -- have been at the tip of the proverbial spear in the fight against this pandemic scourge. Along the way, emergency medicine (EM) researchers have been partnering with colleagues within their hospital facilities as well as across the country to investigate better approaches for early detection, optimize treatment strategies, as well as advocate for greater focus on public health approaches to address future complex health emergencies. As we go to press, we are seeing worrisome trends that point to a resurgence of COVID-19 cases in our community. Undeterred by such challenges, in the pages that follow, you will bear witness to the outstanding scholarship of our residents, fellows, advanced practice providers and faculty alike. For example, members of our EM family are working to assess how emergency care providers cope with extreme stress; investigators are working alongside others to assess the accuracy of rapid tests for SARS-CoV-2; our researchers are partnering with fellow SIREN investigators on a COVID-19 convalescent plasma study; EM faculty and fellows are employing ultrasound to aid in the detection of pulmonary complications of COVID-19; additionally, we are gearing up to co-host the Emergency Medicine Principal Investigator's Research Education (EMPIRE) Course, among several other scholarly activities that have been conducted, or are underway. Despite the uncertain future before us, your courage, your cheerfulness, and your gritty perseverance will see us through the dark COVID winter. Science will help to light our path forward.

PsySTART

The UT Health SA DEM is participating in a CDC grant funded research project in an effort to better understand how Emergency Responders cope with the extreme stress of our jobs. We will provide Emergency Responders with mental health resources to prevent long term adverse mental health effects. We will be deploying a mental health self-triaging tool called PsySTART. PsySTART is a quick questionnaire that identifies events indicating a risk for subsequent development of long term mental health complications. The study will involve all of UT Health SA Emergency Medicine Providers from physicians to residents to APP's. This will be a great opportunity for the Department of Emergency Medicine to work with the CDC and for all of our providers to ask the much needed questions about how everyone is coping with COVID-19.

-Romeo Fairley, MD

Research Continues



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TOXICOLOGY CORNER

- Shawn Varney, MD

The 2020 N. American Congress of Clinical Toxicology annual meeting was held in Sept. virtually. Specialists in Poison Information (SPIs) and faculty from the S. Texas Poison Ctr. (STPC) had 13 abstracts published & posters presented at the meeting. Topics: case reports on patients experiencing severe toxicity from dermal mercury skin-lightening cream; intractable vomiting & sedation requiring intubation in a child exposed to varenicline; and acetaminophen overdose in a 720-gram, 25-week-gestation, five-day-old, micro-preemie. Other presentations: reports on dangers of huffing keyboard cleaner; top ten medications most often taken by preteens to commit suicide; chloroquine & hydroxychloroquine exposures reported during COVID-19; phosphide exposures; benzocaine exposures in young children appear numbingly uneventful; comparison of opioid exposures managed at military & Veterans hospitals; and more.

Dr. Tony Gao joined the UTHSA Dept. of Emergency Medicine faculty in July and is the new Assistant Medical Director at the STPC. He completed his medical toxicology fellowship in San Diego, CA and now brings his experience to our center.

The STPC is currently engaged in a COVID-19 study that is obtaining anterior nasal swab samples to test a new machine to identify the SARS-CoV-2 virus.

For more info contact Dr. Varney:

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DoD Grant Sought Innovation, Education and Service to Biomedical Innovators

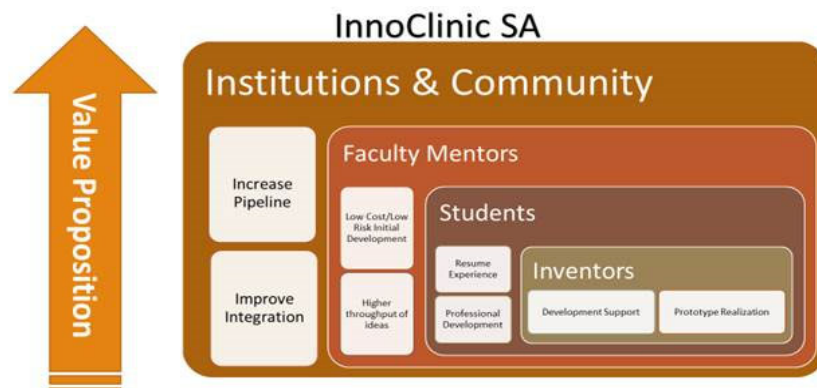
Rob De Lorenzo, MD is the principle investigator on a grant application to the National Defense Education Program. Totaling nearly \$3M, the three-year proposal addresses a deep need in the community's drive to become a biotech hub: better service and education on early-phase biomedical innovation. The leadership team includes Dr. R Lyle Hood, PhD (UTSA asst. prof engineering and adjunct faculty in EM), Teresa Evans, PhD, (asst. prof biochemistry), Jeremy Nelson, PhD, Military Health Institute, and Jing Wang, PhD, RN, Vice Dean of Nursing, and brings together expertise across the health, science, and engineering disciplines. Support for the InnoClinic SA concept was broad and includes multiple departments and centers in UTHSA and UTSA, the city of San Antonio Economic Development Corp., The US Army Institute for Surgical Research, Texas Biomedical Institute, Lackland Independent School District, US Air Force 59th MDW (research wing), and Naval Attachment Research Unit – San Antonio.

InnoClinicSA is a place for clinicians, engineers, and other innovators to take their biomedical ideas and early-stage innovations for a reality check. Using students, faculty, and experts from the local University of Texas (UT) academic campuses and other San Antonio institutions, InnoClinicSA would provide a full-service collaboration that screens, analyzes, evaluates, and realizes

inventors' biomedical product ideas. By utilizing this innovation-centered enterprise, inventors gain access to valuable multi-disciplinary resources, receive important vetting, and attain a champion for their concept from early stage ideation through prototyping and early business development. Further, InnoClinicSA provides an educational platform for students, as well as encourages and fosters a broader community of entrepreneurship. InnoClinicSA serves the greater biomedical technology community of San Antonio, including industry, academia, entrepreneurs, and government. San Antonio is Military City USA and special linkages to the DoD infrastructure in biotechnology can be envisioned. The vision of InnoClinicSA is to *provide a one-stop shop of innovation-development services for inventors with biomedical invention ideas. As a student-run, faculty-supervised organization, InnoClinicSA focuses on early-stage (pre-innovation) clinical devices and inventions, bridging the "Valley of Death" between ideation and prototyping.*

The grant proposal was a collaborative effort of Drs. De Lorenzo, Hood, Evans, Nelson, and Wang, with truly heroic support from DEM's Grants and Contracts Specialist, Ms. Stephanie Martinez. The grant was submitted in late February, 2020 and we hope to hear back by July 2020.

-Robert De Lorenzo, MD



DEM RESEARCH

The C3PO Study

Clinical Trial of COVID-19 Convalescent Plasma in Outpatients

Although the majority (80%) of cases of COVID-19 are considered mild, approximately 5% of all cases will progress into critical illness, characterized by hypoxemic respiratory failure, shock, and end-organ failure. Additionally, as many as 50% of these will die. Currently, there are no specific treatments available to prevent the progression of COVID-19 from mild to severe disease. Passive antibody therapy using plasma from donors who have been infected and then recovered (convalescent plasma, CP) contains neutralizing antibodies against the infectious agent. Presently, there is no evidence to support the efficacy of CP for treating COVID-19 illness. Our site has been selected to partner with the SIREN (Strategies to Innovate Emergency Care Clinical Trials Network) investigators on an exciting COVID-related clinical trial called the C3PO study (**C**linical **T**rial of **C**COVID-19 **C**onvalescent **P**lasma in **O**utpatients). This is a multi-center, NIH-funded randomized, placebo controlled phase III trial to establish the safety and efficacy of a single dose of convalescent plasma (CP) for preventing the progression from mild to severe COVID-19 illness. The goal of this trial is to assess the role of passive immunization as a safe and efficacious therapy in preventing the progression from mild to severe/critical COVID-19 illness and to understand the immunologic kinetics of anti-SARS-CoV-2 antibodies after passive immunization. Along with other SIREN sites, we will enroll approximately 600 adult participants with mild symptoms of COVID-19 to test the safety and efficacy of CP for treating mild COVID-19 infection.

- William Fernandez, MD

EM Participating in COVID Testing Clinical Trial

As of 8/10/20 the DEM has begun enrolling patients in the clinical trial, "Clinical Evaluation of the BinaxNOW COVID-19 Antigen (Ag) Card. The trial is sponsored by ABBOTT Diagnostics. Dr. Riviello is serving as PI. The BinaxNOW@COVID-19 Antigen (Ag) test is a lateral flow immunochromatographic test intended for the qualitative detection of nucleocapsid protein antigen from SARS-CoV-2 in nasal swabs from individuals who are suspected of COVID-19 by their healthcare provider. It is intended that this assay will be launched as a CLIA-waived EUA (Emergency Use Authorization) assay in the United States. The primary objective of this study is to estimate the clinical sensitivity and specificity of the BinaxNOW@COVID-19 Ag card against the reference method, Abbott RealTime SARS-CoV-2, in patients suspected of COVID-19 infection by a healthcare provider using nasal swabs. In the first phase validation samples are being obtained to send to the research lab for analysis. In the second phase, we will have the testing device in the ED to test patients and an additional sample will be sent to the research lab for validation. If you have any questions, please contact Dr. Riviello at: ***riviellor@uthscsa.edu***

COVID-19 Vaccine

UT Health has been selected to be a testing site for one of the COVID-19 vaccine trials. Keep your eyes open for recruitment emails through UT email for study participants. It is a great opportunity to give back to science and medicine.

-Ralph Riviello, MD

CAN AN 8 POINT LUNG ULTRASOUND PROTOCOL BE USED AS A RISK STRATIFICATION TOOL IN COVID PATIENTS?

Principal Investigator: Ryan Joseph DO

Investigative Team: Craig Sisson, MD, Christopher Gelabert, MD, Jessica Solis-McCarthy, MD, Mark Foster, MD, Abhishek Roka, MD, Zach Kendrick, MD, Samuel Neemann, MD

Background: Control of the COVID-19 pandemic is centered on rapid identification and isolation of infected patients to minimize exposure of healthy individuals. Limited scientific evidence exists on the best practices for hospital triage of suspected COVID-19 patients. However, recent observational data has surfaced demonstrating that point-of-care lung ultrasound (LUS) may have the ability to identify progressive pulmonary involvement in COVID-19. Therefore, LUS may be useful as a risk stratification tool and to aide clinical decision making. The purpose of this study is to evaluate whether LUS can be used to help triage patients with suspected COVID and if LUS findings correlate with poor clinical outcomes.

How are we doing the study? When a PUI or a patient with confirmed COVID presents to the Emergency Department we perform an 8 point lung ultrasound and document our findings using a scoring system. This person is then enrolled in the study, and if discharged from the ED, we have research associates that call them at 48 hours, 7 days, and 14 days from discharge. If they are admitted, we extract data from their chart in Epic and our research associates call them at the same intervals from their ED visit.

Where are we now? Currently, we have enrolled around 100 patients and are in the process of entering the patient data into our data collection software.

The EMPIRE Program

A program of EM resident research education to boost scholarly success

Promoting research skills in emergency medicine (EM) residency training is important to foster skills in critically-appraising research papers, understanding and developing knowledge of research design, encouraging intellectual curiosity, stimulating residents' scholarly productivity and presentation skills, developing critical thinking, as well as meeting ACGME core curriculum requirements. However, barriers exist at the resident (e.g., insufficient research knowledge), faculty (e.g., time pressures) and institutional levels (e.g., financial barriers) that may stand in the way of scholarly success. To overcome such barriers, we established the **EMPIRE** (Emergency Medicine Principal Investigator's Research Education) Program.

The EMPIRE Program consists of a structured timetable of research milestones achieved over the 3 post-graduate years (PGY) of training. The EMPIRE program kicks off with an intern research course (a 4-day research "boot camp") in the PGY1 year, and culminates with the successful completion of a scholarly activity that is completed through project-based learning, as well as an oral presentation at the Senior Scholar's Forum at the end of the PGY3 year. We have organized these research milestones according to PGY level of EM residency – the **"Think-Do-Write" program: "Think" (scholarly preparation in PGY1), "Do" (research execution in PGY2), "Write" (writing up/presenting scholarly work in PGY3)**. In the first year, apart from the intern research course, residents focused on the tasks involved with *research* preparation (e.g., completing required CITI research training, performing a literature search, topic/hypothesis generation, etc.). The second year is focused on the *data collection* phase of the research process (e.g., obtaining IRB approval, participant recruitment, data analysis, etc.). Finally, the senior year is devoted to *presenting and publishing* research findings (e.g., abstract/manuscript preparation, regional/national conference presentation, planning for future research, etc.).

In summary, the EMPIRE Program is an innovative program of learning which includes a research skills boot camp along with a series of research milestones organized according to PGY level. The combination of a skills-based research boot-camp course, along with a set of established research milestones, as well as a required scholarly activity centered on the principles of project-based learning were created to boost research self-efficacy and stimulate trainees to engage in future academic scholarship. A description of the EMPIRE Program will be presented at the 2021 Shine Academy Medical Education Innovation Conference at the University of Texas (Austin, TX) in February, 2021.

-William Fernandez, MD

Recent Faculty Announcements

Dr. Robert DeLorenzo was recently promoted to the newly created role of Vice Chair of Research. Since the inception of our residency program, Dr. DeLorenzo served as the Director of Clinical Research. Under his leadership he has expanded our research division in both the number of grants submitted as well as funded. The new role as Vice Chair will better strategically align the department's mission in research, and will allow the division to grow.

Dr. Christina Bird, Emergency Department Medical Director, has been promoted to Associate Professor in the Department of Emergency Medicine, at the LSOM.

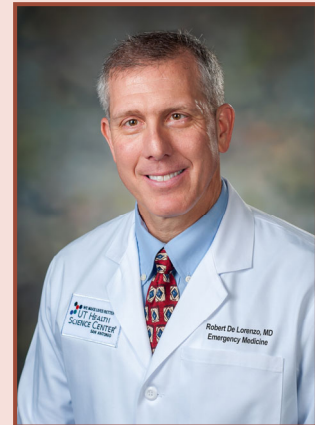
Dr. Christina Bird, along with Dr. Juan Garza (AVP Epic, UHS) for completing the UTHSCSA Executive Development Program (EDP) for Emerging Health Leaders!! This is a 12-month intensive leadership and health care management program in collaboration with the UTSA School of Business.

Dr. Leanna Dolson and Dr. Christopher (Topher) Dayton were chosen to participate in the 2020-2021 EDP Program.

Bradley Goettl, RN, DNP was chosen by the San Antonio Business Journal as a 2020 Healthcare Hero- NonPhysician. Link: <https://www.bizjournals.com/sanantonio/news/2020/08/26/sabj-presents-the-2020-health-care-heroes.html#g/471242/8>

-Ralph Riviello, MD

Promoted



Robert A. DeLorenzo, MD
Vice Chair of Research,
Department of Emergency
Medicine

Cases in Global Health: Left ventricular mass in a patient with severe heart failure

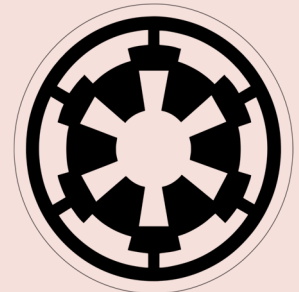
-Ryan J. Joseph DO

Cardiac masses have a wide range of etiologies with the most common being thrombi and less commonly tumors. However, in Sub-Saharan Africa other etiologies not commonly seen in developed countries such as endomyocardial fibrosis (EMF) must be considered. EMF is a disease process associated with poverty, a poor diet, and eosinophilia although its pathology is poorly understood. We report a case of a 53-year-old male with a history of dilated cardiomyopathy who presented to a Ugandan Emergency Department in respiratory distress. Bedside echocardiography was performed which revealed a large mass in the apex of the left ventricle. The patient was subsequently given supplemental oxygen and intravenous furosemide, however he later died while in the emergency department due to limited resources and lack of definitive care. The list of potential etiologies of cardiac masses is widely variable, and in settings such as Sub-Saharan Africa, this list must be expanded to include possible diagnoses such as EMF. EMF is a diagnosis that should be considered in patients presenting with respiratory distress and a cardiac mass present on echocardiography, such as the case presented here. The limited opportunities for medical personnel to diagnose cardiovascular disease can be made more efficient by the use of diagnostic imaging devices which are portable, yet capable of diagnosing the most common local pathologies. Source: Wangmang F, **Joseph R** Case report: Left ventricular mass in a patient with severe heart failure, AfJEM, 2020, *In press*: <https://doi.org/10.1016/j.afjem.2020.04.002>

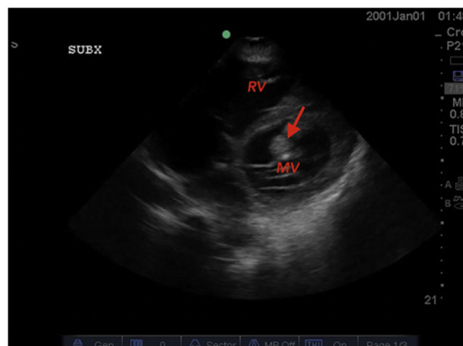
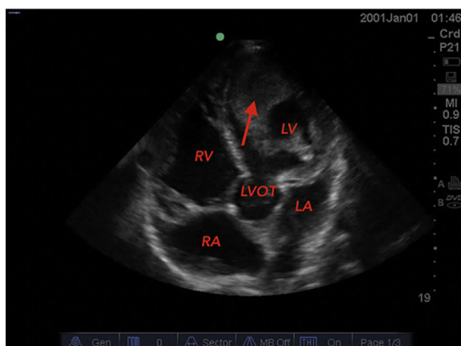
Ready for The Empire Course?

Dec. 18, 2020;

Jan 4, 5, 8, 2021



*In an ED (not so) far, far
away....*



DATE CHANGE! AAEM2021

...has moved from March
to June to allow for in-
person attendance.
**Please save the dates:
June 19-23, 2021**

In Memory of...

Joseph Edwin Peters , Jr.

March 1955 - September 2020



Our dear friend and colleague, Joseph “Joe” Edwin Peters, Jr., died peacefully with friends and family at his bedside on September 24, 2020 at the age of 65 years. Joe was happily married to his wife, Nancy, for over thirty-five years. He was a citizen-scholar who loved to read and learn new skills, restore old cars, and renovate homes. Additionally, Joe loved music, especially the Beatles, the symphony, and the ballet. Joe was an integral part of the UT Health Department of Emergency Medicine family. He served as a Senior Research Coordinator, where he helped to navigate scores of research projects through the Institutional Review Board approval process. Previously, he was a member of the UTHSCSA School of Health Professions and actively participated in multiple EMS organizations. Joe was the recipient of numerous honors, commendations, and awards for his contributions to the community and in the medical field throughout his career. He will be sorely missed.

Top 10 Responsibilities Faculty Principal Investigators

Before the study, the PI must ensure:

1. The science is sound
2. Study personnel have completed appropriate training/educated on the research protocol
3. IRB application has been approved

During the study, the PI must ensure:

4. All personnel follow the ethical conduct of Human Research
5. Prompt reporting of unanticipated problems/events to the appropriate authorities
6. Continuing progress reports are submitted accurately & in a timely manner

After the study, the PI must ensure:

7. Data must be kept for as long as required by federal, University, and sponsor requirements
8. Honest and accurate reporting of study findings

Throughout the life cycle of the Research Study, a PI must ensure:

9. Proposed changes to protocol must be approved by the IRB in advance
10. Timely communication between study personnel, department research personnel, and other partners

*Overall, the PI has ultimate responsibility for all aspects of a research study (i.e., captain of the ship). This means that although some duties may be delegated (e.g., conducting the informed consent process), however, the PI cannot delegate overall accountability in a study (e.g., making sure that elements of the informed consent process are carried out properly). Finally, the PI must always place the protection of participants as paramount, as well as adhering to the approved protocol, drug/device accountability, and financial and contractual obligations.

Scholarly Activities

Emanuel T (2020). Role of the APP in the Emergency Department. In: Campo T and Lafferty K (Eds.), *Essential Procedures for Emergency, Urgent, and Primary Care settings: A Clinical Companion* (3rd ed) New York: Springer.

Parker B (2020). Auricular Anesthesia. In: Campo T and Lafferty K(Eds.), *Essential Procedures for Emergency, Urgent, and Primary are Settings: A Clinical Companion* (3rd ed.) New York: Springer.

Bierle R (2020). Interosseous Access. In: Campos T and Lafferty K(Eds.), *Essential Procedures for Emergency, Urgent, and Primary Care Settings: A Clinical Companion* (3rd ed.) New York: Springer.

Mcdonald J (2020). Auricular Hematoma. In: Campos T and Lafferty K (Eds.), *Essential Procedures for Emergency, Urgent, and Primary Care Settings: A Clinical Companion* (3rd ed.) New York: Springer.

Mountford S, **Wilson J**, EMS Provider Health & Wellness. Treasure Island (FL): StatPearls Publishing; Jan 2020.

Wilson J. Disparity in Early Detection of Breast Cancer. Treasure Island (FL): StatPearls Publishing; *In press*

Burbank, KM, Schauer SG, , **De Lorenzo RA**, Wenke JC: *Early Application of Topical Antibiotic Powder in Open Fracture Wounds: A Strategy to Prevent Biofilm Formation and Infections. Orthopedic Trauma Association International*. Accepted for publication July 20, 2020, <http://dx.doi.org/10.1097/OI9.000000000000091>

Blackburn MB, Wang SC, Ross BD, Holcombe SA, Kempinski KM, Blackburn AN, **De Lorenzo RA**, Ryan KL: Anatomic Accuracy of Airway Training Manikins Compared to Human Subjects. *Anaesthesia* Epub 2020 Aug 27. <http://dx.doi.org/10.1111/anae.15238> PMID: 32856291

Schauer SG, Naylor JF, April MD, Tanaka K, Baldwin D, Maddry JK, Beaumont DM, Becker TE, **De Lorenzo RA**: *Airway management in the pre-hospital, combat environment – Analysis of after-action reviews and lessons learned. Journal of Special Operations Medicine* 2020; 20(3): 44-48.

Jain P, Schoppe A, Akhter F, Hood RL, **De Lorenzo RA**: Airway Clearance Using Suction Devices in Prehospital Combat Casualty Care: A Systematic Review. *Prehospital and Disaster Medicine* 2020: 1-7. DOI: <https://doi.org/10.1017/S1049023X20001065> PMID: 32907690

Macko C, **Ahmed S**, Seifi A, Brain Abscess in a Patient with Radiotherapy-Treated Adenoid Cystic Carcinoma: A Misdiagnosis Case Report and Review of the Literature. *Journal of Neurology Research*. August 2020. <https://doi.org/10.14740/jnr620>

Jain P, Akhter F, Hood RL, **De Lorenzo RA**: Airway Clearance Using Suction Devices in Prehospital Combat Casualty Care. The World Association for Disaster and Emergency Medicine (WADDEM) sponsored PDM and hosted podcast #5: <https://soundcloud.com/wadem-pdm/prehospital-and-disaster-medicine-podcast-5> ; <https://youtu.be/z91Pep3bB8Y>

Wangmang F, **Joseph R**. Case report: Left ventricular mass in a patient with severe heart failure, *AfJEM*, 2020, *In press*: <https://doi.org/10.1016/j.afjem.2020.04.002>

Pederson T, Hagahmed M. Appendicitis: Why Do We Miss It, and How Do We Improve? *EMDocs.net*, published online, 2020, accessed October 24, 2020

Cullison C. The Storm Within: Cytokine Storm and COVID-19. *EMDocs.net*, published online, 2020, accessed October 24, 2020

Cullison C, Fairley R. Thromboelastography for Hypocoagulable Patients with Non-Traumatic Bleeding. *EMDocs.net*, published online, 2020, accessed October 24, 2020

Office of Clinical Research Concierge Services (FY 2021)

Tues.	11/3/2020	1pm - 4pm
Wed.	11/4/2020	9am-12pm
Tues.	11/17/2020	9am-12pm
Tues.	12/1/2020	1pm-4pm
Wed.	12/2/2020	9am-12pm
Wed.	12/16/2020	9am-12pm
Tues.	01/5/2021	1pm-4pm
Wed.	01/13/2021	9am-12pm
Wed.	01/27/2021	9am-12pm
Tues.	02/2/2021	1pm-4pm
Wed.	02/10/2021	9am-12pm
Wed.	02/24/2021	9am-12pm
Tues.	03/2/2021	1pm-4pm
Wed.	03/10/2021	9am-12pm
Wed.	03/24/2021	9am-12pm
Tues.	04/6/2021	1pm-4pm
Wed.	04/7/2021	9am-12pm
Wed.	04/21/2021	9am-12pm

OCR Concierge Services



We're meeting online! Our Concierge service has been changed to virtual meetings.

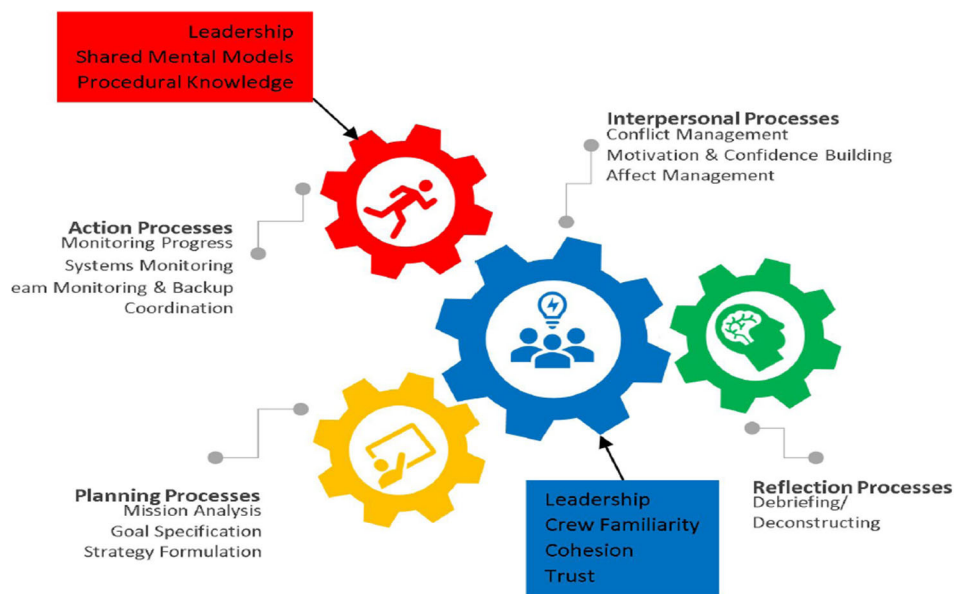
Contact us:

Research Administration Bldg., Room 2.302
Phone Number: 210-567-8555

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Applying a Model of Teamwork Processes to EMS

Effective teamwork has been shown to improve patient safety. However, research on the critical elements of team effectiveness in emergency medical services (EMS) has been sparse. Dr. Fernandez and colleagues conducted a theory-driven qualitative study of teamwork processes—the interdependent actions that convert inputs to outputs—by frontline EMS personnel to provide a model for use in EMS education and research. The investigators sampled participants from an EMS agency in Houston; full-time EMS personnel were recruited. Using a semi-structured format, the investigators queried respondents on task/team functions and enablers/obstacles of teamwork in EMS. Phone interviews were recorded and transcribed. Using a thematic analytic approach, they combined codes into candidate themes through an iterative process. Analytic memos during coding and analysis identified potential themes, which were reviewed/refined and then compared against a model of teamwork processes in emergency medicine. Results: The authors reached saturation once 32 respondents completed interviews. Among participants, 94% were male, and the median experience was 15 years. The data demonstrated general support for the framework. Teamwork processes were clustered into four domains: planning; action; reflection; and interpersonal processes. Additionally, Dr. Fernandez's team identified six emergent concepts during open coding: leadership; crew familiarity; team cohesion; interpersonal trust; shared mental models; and procedural knowledge. Overall, in this thematic analysis, investigators outlined a new framework of EMS teamwork processes to describe the procedures that EMS operators employ to convert individual inputs into team performance outputs. The revised framework may be useful in both EMS education and research to empirically evaluate the key planning, action, reflection, and interpersonal processes that are critical to teamwork effectiveness in EMS. The article has been accepted for publication in the *Western Journal of Emergency Medicine*.



Revised model of teamwork processes in emergency care, applied to emergency medical services.

(Source: Fernandez WG, Benzer JK, Charns MP, Burgess JF. *West JEM*. 2020, *In Press*)