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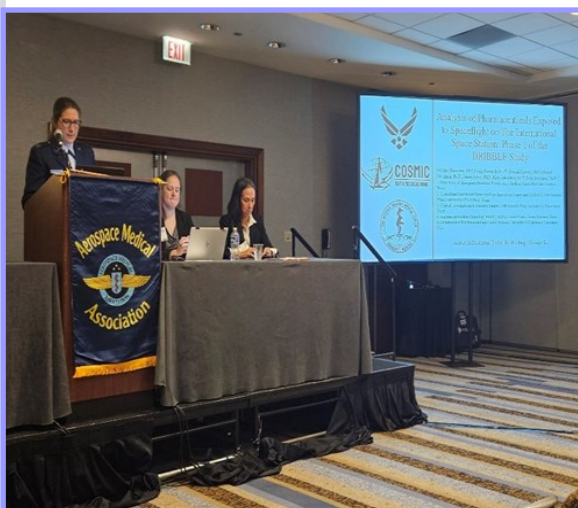
VOLUME 8, ISSUE 2

JULY 2024

Published by: Chief Scientist's Office  
59 MDW/ST  
(210) 292-2097  
(DSN 554)

## U.S. Air Force Captain (Dr.) Corrinne Rezentes, PGY-2 Emergency Medicine Resident, Honored with Aerospace Medical Association Scientific Award

Author: Dr. Carol Walters



In a landmark achievement, Capt (Dr.) Corrinne Rezentes has been given the prestigious Aerospace Medical Association Student and Resident Organization's Scientific Award. Capt Rezentes is a Postgraduate Year 2 (PGY-2) Resident in the San Antonio Uniformed Services Health Education Consortium's Emergency Medicine Residency program. The award is in recognition of her remarkable abstract and presentation titled, "Analysis of Pharmaceuticals Exposed to Spaceflight on the International Space Station: Phase 1 of the DRIBBLE Study."

This tribute, considered the oldest honor within the Aerospace Medical Association, is awarded exclusively to a student or resident first author whose submission stands out at the AsMA annual scientific meeting. What makes this award even more special is that it is the only one within the association specifically designated for students and trainees and is selected by their peers.

Capt Rezentes conducted her groundbreaking research under the faculty research mentorship of Major (Dr.) Craig Nowadly, as part of a Clinical Investigations Program-funded project, conducted in collaboration with NASA's Exploration Medical Capability. Under the technical tutelage of Dr. Dennis Lovett, PhD, and Dr Khaled Shennara, PhD, Capt Rezentes supported method development and validation, as well as analysis of 8 pharmaceuticals used in this study. Her work investigates the analysis of pharmaceuticals exposed to spaceflight conditions aboard the International Space Station, marking a significant advancement in understanding the effects of space environments on medicinal compounds.

The recognition of Capt Rezentes' efforts highlights the importance of interdisciplinary collaboration and innovative research in advancing our understanding of aerospace medicine. Her dedication to pushing the boundaries of scientific inquiry in space exploration serves as an inspiration to aspiring researchers worldwide.

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## Enhancing Grant Writing Skills A Comprehensive Course for Researchers

Author: 59th Medical Wing Chief Scientist's Office, Science & Technology



Victor L. Sylvia PhD

The 59th Medical Wing (59MDW) Research Education Academy (REA) recently hosted an invaluable training session for researchers and clinicians: the grant writing course titled "Grantsmanship for Clinical Research." This course, designed to bolster participants' skills in securing funding for clinical research projects, was held on June 11, 2024, via Teams. This informative session provided essential insights into the nuances of grant writing, equipping attendees with the tools needed to craft compelling research proposals.

The "Grantsmanship for Clinical Research" course covered several critical topics that are crucial for successful grant writing. These topics included:

- **Planning Your Research Project:** Participants learned how to effectively plan and structure their research projects to align with funding requirements. Emphasis was placed on the importance of a well-thought-out research plan as the foundation for a successful grant proposal.
- **Basics of Grantsmanship:** The course provided insights into the foundational elements of grant writing, highlighting the do's and don'ts of the process. Attendees gained a thorough understanding of the essential components that make a grant proposal stand out to funding bodies.
- **Specific Aims, Hypotheses, and Goals:** One of the key aspects of the course was teaching participants how to articulate their research aims, hypotheses, and goals clearly and compellingly. This section focused on the importance of a well-defined research question and the ability to present it in a way that resonates with reviewers.
- **Common Mistakes and Hints for Success:** The course also addressed common pitfalls in grant writing and provided practical tips for crafting a successful proposal. Attendees learned from real-world examples and received guidance on how to avoid common errors that can hinder the success of their applications.

In addition to the main course, participants had the opportunity to schedule individual or group tutorials for personalized guidance. These tutorials offered a deeper dive into specific aspects of grant writing, tailored to the unique needs of each researcher or research team. For more information or to schedule a session, attendees were encouraged to contact Dr. Victor Sylvia at [victor.l.sylvia2.ctr@health.mil](mailto:victor.l.sylvia2.ctr@health.mil).

The course was meticulously tailored to address the specific questions and concerns that researchers often face during the grant writing process. Some of these key questions included:

The 59MDW Research Education Academy provides comprehensive research education in study design, funding acquisition, and project management. The Academy's programs are designed to support residents, fellows, and staff, contributing to their academic and professional development. These programs include:

- Graduate Medical/Health Science Education (GME/GHSE)
- DHA Clinical Investigation Program (CIP)
- Allied Health Education Research Endeavors

These initiatives are integral to fulfilling academic requirements and advancing research in medical and health science education. By offering such comprehensive educational opportunities, the REA continues to play a pivotal role in fostering a culture of excellence in research and clinical practice within the 59th Medical Wing.

The 59MDW Research Education Academy (REA) invites you to attend a grant writing course entitled "Grantsmanship for Clinical Research"

To join the Teams presentation, [Grantsmanship Discussion](#) on **December 11, 2024, at 0900.**

## En route Care Research Center (59th MDW) \* USAF Research Lab (711th HPW) Organ Support and Automation Technologies (USAISR) STRONGER TOGETHER

Author: 59th Medical Wing Chief Scientist's Office, Science & Technology



On March 21-22, 2024, the En Route Care Research Center (ECRC) hosted a team from the 711th USAF Research Lab for a site visit at JBSA. The group included 2 senior Battlefield Assisted Trauma Distributed Observation Kit (BATDOK) Engineers and 3 Rapid Prototype Cell (RPC) Engineers.

This visit supported multiple lines of collaborative research and development efforts between the groups, including: development of the Case Downloader capability for BATDOK to stream high frequency patient data from the Zoll Propaq transport monitors; enabling streaming of an advanced hemodynamic parameter, Pleth Variability Index; creation of a novel handoff reporting tool for critical care patients using Illness severity, Patient summary, Action items, Situation awareness, and Synthesis (iPASS); adaption of the dashboard function of BATDOK to serve as a “central monitor” for Critical Care Air Transport Teams (CCATT) patients,

streaming real-time vital signs to a single BATDOK tablet during simulated missions; and development of clinical decision support tools and alerts to aid providers in adherence to clinical practice guidelines.

The RPC has created 3D printed Zoll Propaq monitors for training/simulation use for a fraction of what an actual monitor would cost, without degradation of user interface when paired with the iSimulate system.

Highlights of the visit included a demonstration of a high-fidelity simulation platform in a static C123 airframe and a tour of the 59MDW Pilot Unit for the developers to understand the actual setting where patient care is provided. The RPC team demonstrated 3D printed devices that stream simulated patient data for training/research applications (e.g., Emma capnograph, Wireless Vital Signs Monitor) and 3D printed ventilators, infusion pumps, and other medical devices.

The teams also met with the US Army Institute of Surgical Research Organ Support and Automation Technologies Combat Casualty Care Research Teams (CRT) who are developing new clinical decision support products, hands-free devices that implement augmented reality “heads up” displays, and developing several other automation technologies that may benefit from the BATDOK platform and infrastructure. A great deal of synergy was achieved during this meeting, building strong relationships among the USAF and Army engineers working on clinical decision support activities. The visit wrapped up with discussions about future ECRC collaborations and opportunities to synergize with Army programs.

## Strategic Engagement with Colonel Linda Rohatsch Enhancing Air National Guard CCAT Training and Validation

Author: Dr. Robert T. Gerhardt



On May 21st and 22nd, 2024, the 59th Medical Wing Science and Technology Division, alongside the Trauma and Clinical Care Research Directorate, hosted Colonel Linda Rohatsch, the director of the Air National Guard Medical Service Office of the Air Surgeon, for a strategic engagement. This pivotal visit aimed to enhance the development of regional training and validation centers for Air National Guard Critical Care Air Transport Teams (CCAT).

Colonel Rohatsch and her staff visited JBSA-Lackland to explore the educational, training, and research initiatives offered by the Science and Technology Division, the Enroute Care Research Center (ECRC), the Validated Assessment Program for Operational Readiness (VAPOR)

program, and the Improvements in Neurological Sensory & Perceptible Research (INSPIR) portfolio. These programs represent the cutting edge of medical research and training, crucial for the advancement of CCAT team capabilities.

The first day commenced with an introduction to key personnel and their work. Dr. Debra Niemeyer, Chief Scientist, provided an overview of the division's research priorities. This was followed by an insightful briefing from Dr. Bob Gerhardt of the Trauma and Clinical Care Research Directorate, and Lieutenant Colonel Tonya White, Deputy Chief Scientist and Director for Nursing Research. These sessions highlighted the extensive research efforts and innovative projects currently underway.

The team then visited the Clinical Investigations and Research Support (CIRS) center, where Dr. Carol Walters, CIRS Director, and Dr. Craig Koeller, Supervisory Veterinary Medical Officer, conducted a comprehensive tour. The CIRS center's state-of-the-art facilities and ongoing projects showcased the practical applications of research in enhancing clinical care.

On the second day, Colonel Rohatsch and her team delved into the enroute care research enterprise. They received detailed briefings from Mr. William Gissendanner, Project Manager for the VAPOR program, and Major Tyler Davis, Director of the ECRC. These briefings provided an in-depth look at the innovative approaches being developed to improve patient care during transport.

A key highlight of the visit was the hands-on experience with the Enroute Patient Staging System (ERPSS). The visiting team observed and participated in simulated CCAT patient loading and transport scenarios. This included ground transport via bus and subsequent air transport aboard a C130 aircraft. The real-time simulation demonstrated the critical processes involved in patient care during air transport, emphasizing the importance of seamless coordination and advanced training for CCAT teams.

Colonel Rohatsch and her team expressed great enthusiasm for the programs and initiatives presented by the 59th Medical Wing. They were particularly impressed with the integration of research and practical training designed to enhance the readiness and effectiveness of Air National Guard medical personnel. The strategic engagement concluded with a commitment to ongoing collaboration as the Air National Guard moves forward with their initiative to establish regional training and validation centers.

This visit underscores the importance of strategic partnerships and knowledge sharing in advancing military medical capabilities. The 59th Medical Wing's dedication to innovation and excellence continues to set the standard for medical research and training within the Air Force and beyond. We look forward to future collaborations with Colonel Rohatsch and her team, as we collectively strive to improve the training, validation, and performance of CCAT teams, ensuring the highest level of care for service members in critical situations.

## Celebrating Dr. Holly Chapapas' Achievements

Author: 59th Medical Wing Chief Scientist's Office, Science & Technology



We are thrilled to announce the recent accomplishments of Dr. Holly Chapapas, a key member of Dr. Paul Sherman's Radiologic and Aerospace Medicine Research team. Dr. Chapapas has successfully completed her PhD in Translational Science with a focus on Data Science from the University of Texas (UT) Health Science Center at San Antonio. This milestone marks a significant advancement in her career and showcases her dedication to the intersection of data science and medical research.

Dr. Chapapas' dissertation, titled "Pharmacological Agents to Mitigate Effects of Hypobaric Neuronal Injury in a Swine Model," presents groundbreaking research aimed at addressing neuronal damage caused by high altitude

exposure. Dr. Paul Sherman, the principal investigator of this project, has conducted extensive studies on the impact of chronic high altitude exposure on neuronal health. Dr. Chapapas' research specifically explored the potential of Lipitor (atorvastatin) as a therapeutic agent to alleviate such injuries.

Dr. Chapapas joined Dr. Sherman's research team in 2018 as a research project manager, bringing with her a passion for scientific inquiry and a robust background in data analysis. Over the past few years, she has been instrumental in managing various aspects of the research projects, ensuring the smooth execution of studies, and contributing to the team's overall success. Her role as a research project manager involved coordinating with team members, overseeing data collection and analysis, and preparing research findings for publication.



Post-graduation, Dr. Chapapas will continue to support Dr. Sherman's work as a research scientist. Her advanced training in data science and bioinformatics, acquired during her time at UT Health San Antonio, will be invaluable in driving forward the research agenda of the Radiologic and Aerospace Medicine team. She plans to apply her enhanced skills to both current and future projects, focusing on the integration of sophisticated data analysis techniques to further understand and mitigate the health risks associated with high altitude exposure.

As Dr. Chapapas continues her work with Dr. Sherman's team, we anticipate significant advancements in our understanding of pharmacological interventions for high altitude-induced neuronal injuries. Her dedication to combining data science with translational research sets a remarkable example for aspiring scientists and underscores the value of interdisciplinary collaboration in addressing complex medical issues.

We congratulate Dr. Chapapas on her outstanding achievements and look forward to her continued contributions to the field of aerospace medicine. Her work exemplifies the commitment to innovation and excellence that drives our research community forward.

## 59th Medical Wing Office and Science and Technology researcher wins national award for work on mental health Research focused on solving operational problems takes place at JBSA

Author: Dr. Alexander J. Burdette



CAPT Joseph Dervay, M.D., M.P.H., MMS, FACEP, FAsMA, FUHM, USA (ret), president of the Aerospace Medical Association and Capt William Hoffman USAF MC at the AsMA National Meeting Awards

Capt William Hoffman MD USAF MC received the 2024 Aerospace Medical Association Boothby-Edwards award for his research and clinical contributions to aerospace medicine related to the care of professional pilots. The award was presented by the Aerospace Medical Association (AsMA) during Honors Night ceremonies on May 9, 2024 in Chicago, IL.

Capt Hoffman led a multi-institution effort to study the health behavior of over 5,000 pilots across the United States and Canada, advancing the understanding of healthcare avoidance and its impact on the mental health of professional pilots. He subsequently led a large study through the 59th Medical Wing Office of Science and Technology that identified barriers pilots face in seeking mental healthcare and identified ways to address those barriers. His work on healthcare avoidance was cited during the 2023 National Transportation Safety Board (NTSB) roundtable on mental health and led to his appointment to the 2024 Federal Aviation Administration (FAA) Aviation Rule Making Committee (ARC) on mental health.

Capt Hoffman and a team of researchers at the 711th Human Performance Wing led a 1.5 hour long scientific session at the AsMA National Meeting, where they presented key data on a large qualitative assessment of the barriers USAF pilots face in addressing mental health concerns. Importantly, they also presented data-backed ways to address those barriers in hopes of optimizing USAF pilot mental wellness and medical readiness. While the manuscript is pending peer review, the team is hopeful to share the study results with USAF leaders.

Capt Hoffman's work on aircrew mental health has resulted in multinational collaborations to forward pilot health in the US and abroad. He established and now leads a new AsMA working subgroup charged with proposing research priorities related to mental health in aviation. This effort included 53 members from 15 NATO allied countries in both military and civilian setting with a manuscript pending peer review in *Aerospace Medicine and Human Performance*.

“The critical progress on aviation mental health research in the DoD and abroad would not be possible without the leadership, support and guidance of the 59th Medical Wing Office of Science and Technology,” Capt Hoffman said during an interview for this article. “Research focused on solving operational problems takes place at JBSA with the mission and our patients at the center.”

## Breakthrough in Aircrew Safety

### Real-time Cerebral Oxygen Monitoring with NIRSense Aerie

Author: 59th Medical Wing Chief Scientist's Office, Science & Technology



In the high-stakes world of military aviation, the ability to detect and manage physiological episodes (PE) in real-time is essential for aircrew operating high-performance aircraft (HPA).

Addressing the unique challenges posed by high acceleration (G-force), a recent study explores the efficacy of a novel wearable system, NIRSense Aerie, designed to continuously monitor cerebral oxygenation under extreme conditions.

The NIRSense Aerie is a flight-optimized, wearable functional near-infrared spectroscopy (fNIRS) device, engineered to monitor tissue oxygenation at depths of 13-20 mm below the skin.

This sophisticated system features an optical frontend adhered to the forehead, a compact electronics module behind the helmet earcup, and a custom adhesive for secure attachment. It employs an array of infrared emitters and a photodetector to measure oxygen levels, coupled with an accelerometer for motion data.

The system's efficacy was evaluated in a human study involving six subjects subjected to G-forces up to +9 Gz in a centrifuge at an Aerospace Environmental Protection Laboratory. During these tests, fNIRS data, pulse oximetry, and electrocardiography (HR) were recorded to analyze the oxygenation kinetics of cerebral and superficial tissues under G-loading and recovery phases.

The findings indicate that NIRSense Aerie holds significant promise for real-time monitoring of aircrew physiological responses during high G-force exposure. Despite some challenges, the system provides critical insights into cerebral oxygenation kinetics, which could enhance the learning and retention of anti-G straining maneuvers through real-time feedback during training.

Looking ahead, future development will focus on miniaturizing and optimizing the device to improve comfort and wearability for aircrew. This technology not only represents a leap forward in aircrew safety but also holds potential for broader applications in enhancing performance and safety in other high-risk environments.

## Calendar Events

- ▶ TSNRP Research & EBP Grant Camp, 15-18 July 24, Bethesda, MD
- ▶ TSNRP Writing Workshop, 5-7 Aug 24, NASNI, San Diego, CA
- ▶ 2024 MHSRS, 26-29 Aug 24, Gaylord, Kissimmee, FL
- ▶ Research Fundamentals Workshop, 10-11 Oct 24, details to follow
- ▶ Hosting CDOG in Oct 24 -dates and details to follow

## Center for Advanced Molecular Detection (CAMD) Monthly Scientific Presentations

Author: Dr. Susan N. Asin

The Center for Advanced Molecular Detection (CAMD) has been hosting monthly Scientific Presentations since January of 2021. These presentations have undergone significant evolution since their inception, initially involving scientists solely within the 59th MDW Science and Technology group. Over time, these presentations have broadened to include participants from diverse backgrounds, such as academia, industry, non-profit organizations, and other military facilities. This expansion has led to enriched discussions and stimulated scientific collaborations among speakers with varying perspectives and backgrounds. The CAMD Scientific Presentations serve as a crucial platform for fostering collaboration, knowledge sharing, networking, professional development, and research advancement across diverse scientific disciplines.

These monthly Scientific Presentations have covered a wide range of topics, reflecting the diverse expertise and interest of the participating speakers. Examples include discussions on animal models for infectious disease research, such as "Nonhuman Primate Models of Infectious Diseases: Implications for Vaccine Development" presented by Dr. Deepak Kaushal. Other presentations have delved into critical medical issues, such as hemorrhagic shock, as evidenced by "Targeting the Root Mechanism of Hemorrhagic Shock for Golden Hour Extension" delivered by Dr. Lusha Xiang. Cutting-edge diagnostic technologies have also been explored, exemplified by Steradian Technologies' presentation on "Creating Photonic Systems to Change the Future". Furthermore, topics ranging from NASA human research programs, as showcased in "45 Days Inside the HERA Analog" by Dr. Lauren Cornell, to sensory neuron translation and molecular mechanisms for the development of pain, as discussed in "The Dynamic Landscape of Nascent Protein Synthesis in Sensory Neurons" by Dr. Tarjani Shukla, have been addressed. Additionally, Lt Col Tonya White presented on "The Influence of Diet on Vaginal Microbiota Composition in Pregnant Women," highlighting the breadth of research areas covered in these dynamic and intellectually stimulating presentations.

A notable outcome of these presentations has been the initiation of discussions with Lt Col Tonya White regarding the potential allocation of nursing research program funds to support future projects at CAMD. This prospect underscores the significance of these presentations in not only facilitating scientific collaboration and advancement but also in leveraging resources to further innovative research endeavors. Such strategic partnerships exemplify the transformative impact of inter disciplinary collaboration in driving scientific progress.

The format of these presentations can be either in person or virtual, thereby greatly increasing the accessibility and participation of a wider range of individuals.

Future speakers will be announced once confirmed. Those interested in participating or attending these scientific presentations can contact the CAMD Director, Dr. Susana N. Asin, at [Susana.n.asin.civ@health.mil](mailto:Susana.n.asin.civ@health.mil) or by phone at 210-292-0504.



## San Antonio & DHA well represented at 2024 BIO International Convention

Author: Dr. Scott Walter



Pictured above is Dr. Heather Hansen (BioMed SA), Sophie Bardy (BioBridge Global), Dr. Patti Geppert (VelocityTX), and Dr. Scott Walter (59 MDW/ST)

San Antonio biomedical research and development community was well represented at the BIO International Convention held June 3-6 2024 at the San Diego convention center. The 2024 BIO International Convention is the largest and most comprehensive event for biotechnology, representing the full ecosystem of biotech with more than 20,000 industry leaders worldwide.

This year’s BIO International Convention attracted over 13,000 attendees from across the globe, bringing together over leaders, inventors, investors, developers, and businesses to explore the full spectrum of biotech innovations, development, marketing, and end user applications. In addition to the San Antonio team, the Defense Health Agency (DHA) and the 711<sup>th</sup> Human Performance Wing supported a large, combined pavilion at the 2024 BIO International Convention, enabling multiple opportunities for non-government attendees to engage with the military to understand unique military medical requirements for their operations as well as learn, understand, and ascertain how novel and breakthrough discoveries could be applied to the DoD mission, where and how to engage military medical R&D funding opportunities, and much more.



Pictured above, multiple DoD medical R&D organizations such as the 59 MDW and 711 HPW were collocated the Defense Health Agency (DHA) pavilion, coordinated by the DHA Medical Technology Transfer (MTT) Office

However, the real lasting value of attending BIO International will be the networking which started at the event and will grow from the follow up engagements. One central theme from attending BIO International was that just one quality connection often provides a substantial Return On Investment (ROI), and the value of more than one is uncalculatable!

Also, the key message for attending was to take some risk by meeting new contacts and creating new relations, as often stated in business “No risks = no rewards”.

## Mechanisms for Collaboration, Technology Transfer, and Commercialization with the Military

Author: Dr. Scott Walter



On 20 May members of the 59th Medical Wing (59MDW) participated in the seminar/webinar "Mechanisms for Collaboration, Technology Transfer, and Commercialization with the Military" hosted by the City of San Antonio and held at VelocityTX's Community Resource Center and online.

This webinar was the third in a series of three webinars to help prepare attendees of San Antonio's first ever Academic Industry Military (AIM) Health Research and Development (R&D) Summit scheduled for 23 - 24 June 2024 at the H. B. Gonzales Convention center.

This webinar provided tips to get the most benefits from attending the 2-day conference and provided an introduction to military technology transfer mechanisms such as Cooperative Research and Development Agreements (CRADAs) that enable the military research and development organizations to work with industry, academia, foundations, non-profit organizations, and others. This webinar helped prepare attendees to optimize opportunities for one-on-one meetings and networking at 2024AIM Health R&D Summit, especially with San Antonio based medical R&D organizations.

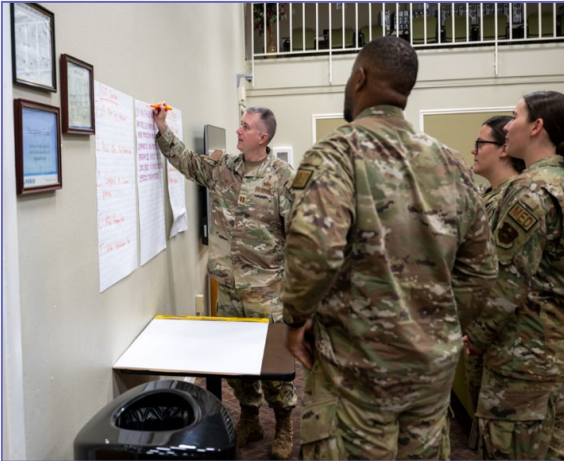
The webinar was hosted by Dr. Patricia Geppert, the Director of Innovation for VelocityTX and the San Antonio Military Medical Innovation (SAMMI) Director. It included an introductory briefing by Mr. Robert "Bob" Charles from USAMRDC, and a panel session of local technology transfer experts: Mr. James "Jim" Weissmann from the 59 MDW Office of Research and Technology Applications (ORTA), Ms. Diana Nieves from Naval Medical Research Unit - San Antonio (NAMRU-SA), LTC Christopher Moon representing the USA Institute of Surgical Research (USAISR), Ms. Sharon Conable from Brooke Army Medical Center (BAMC), and Dr. Alicia Swan from the Department of Veterans Affairs (VA). The panel was chaired by Dr. Scott Walter from the 59 MDW, and was attended by 32 individuals both online and present in the room.

Watch the Recording:

<https://youtu.be/-6Y0m0sFdqk>, View Presentation Slides:  
[https://www.velocitytx.org/wp-content/uploads/2023/07/May\\_20\\_slidedeck\\_rev.pdf](https://www.velocitytx.org/wp-content/uploads/2023/07/May_20_slidedeck_rev.pdf)  
 more info on AIM Health R&D Summit 2024 and registration:  
[https://www.velocitytx.org/aim-conference/.](https://www.velocitytx.org/aim-conference/)"

## TSNRP Evidence-Based Practice (EBP) for Military Nursing & Readiness Workshop

Author: Dr. Rebecca Heyne



The 59 MDW/STN – Nursing Research and Center for Clinical Inquiry (C2I) hosted a TriService Nursing Research Program (TSNRP) Evidence-Based Practice (EBP) for Military Nursing and Readiness workshop April 8-9, 2024, at Joint Base San Antonio, TX. This one and half day EBP workshop was designed to support a culture of inquiry and facilitate evidence-based decision-making to solve military nursing and operational readiness questions and issues.

The focus of the workshop was to enhance participant's knowledge of EBP methodology, enhance EBP competency, and facilitate development of feasible, operational EBP proposals. Participants engaged in collaborative teamwork activities and received mentoring from EBP mentors. During the course participants were able to develop and refine a PICOT (patient, intervention, comparison, outcome and time question), engage in a librarian-led literature search, and critically appraise a quantitative and a qualitative research article. Participants also received valuable information related to available resources and funding to support military EBP efforts and initiatives.



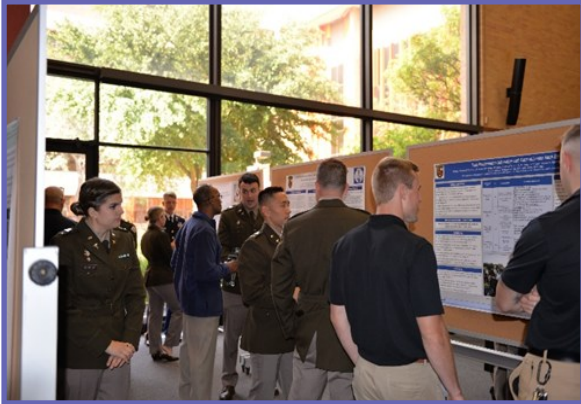
Course participants included 16 active-duty nurses representing the 59MDW/SGCS-WHASC, 959IPTS-BAMC, 959SGCP-BAMC, and 559AMDS. Course faculty included Dr. Rebecca Heyne, TSNRP EBP Facilitator (Lackland, AFB), Mr. Lance McGinnis (Lackland, AFB), Nurse Consultant, Dr. Laurie Migliore, TSNRP Senior EBP Facilitator (Walter Reed Medical Center), and Ms. Ellen Kroll, EBP Facilitator (Madigan Army Medical Center).



For more information regarding EBP educational offerings and opportunities or to request a consult to discuss a potential EBP initiative please contact Dr. Rebecca Heyne at [rebecca.e.heyne.ctr@health.mil](mailto:rebecca.e.heyne.ctr@health.mil) or 330-354-1161.

## 13th Annual Graduate School Research and Education Symposium Graduate School U.S. Army Medical Center of Excellence

Author: 59th Medical Wing Chief Scientist's Office, Science & Technology

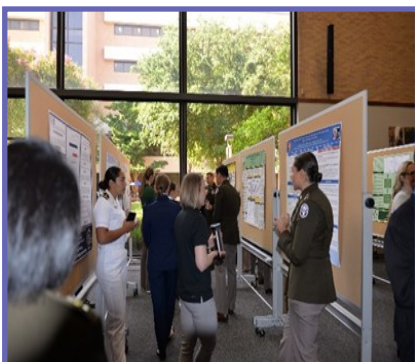


The 13th Annual US Army Medical Center of Excellence (MEDCoE) Graduate Student Research and Education Symposium (GSRES) took place on June 5-6, 2024. This symposium serves graduate school faculty, researchers, clinicians, and healthcare administrators from the Department of Defense, the Department of Veterans Affairs, and civilian community partners. This year's theme, "Navigating the Changing Character of Military Medicine," promises to provide valuable insights and discussions.

The recent symposium brought together students and faculty from the MEDCoE Graduate School, providing a platform for esteemed guest speakers to share their expertise and insights. The event featured poster and podium presentations showcasing a wide spectrum of translational research conducted by students and faculty.

### Represented Programs:

1. Doctor of Physical Therapy (Baylor University)
2. Occupational Therapy Doctorate (Baylor University)
3. United States Army Graduate Program in Anesthesia Nursing; DNP (Baylor University)
4. MHA/MBA (Baylor University)
5. Graduate/Master's Program in Nutrition (Baylor University)
6. Master's of Social Work (University of Kentucky)
7. Interservice Physician's Assistant Program (University of Nebraska Medical Center)



At the recent symposium, Dr. Victor Sylvia made a notable contribution by delivering a brief yet impactful presentation on the nuances of grant writing. His session was a valuable addition to the event, offering practical advice and strategies for securing funding in the competitive field of research. Attendees benefited from his expertise, gaining insights into crafting compelling grant proposals that can significantly enhance their research endeavors. Dr. Sylvia's participation exemplified the symposium's commitment to providing participants with essential skills and knowledge for advancing their academic and professional careers.

Key events included a networking session for participants to exchange information and build professional connections, plenary sessions with engaging talks and discussions on relevant topics in military medicine, and poster sessions highlighting research findings and projects. This symposium was an invaluable opportunity to engage with cutting-edge research and expand professional networks within both military and civilian medical communities.

## Groundbreaking Research on PTSD Published in Military Medicine

Author: 59th Medical Wing Chief Scientist's Office, Science & Technology

We are pleased to announce that the Applied Technology and Genomics Division of the U.S. Air Force School of Aerospace Medicine (USAFSAM), in collaboration with the Defense Advanced Research Projects Agency (DARPA), the Uniformed Services University of the Health Sciences (USUHS), and the 59th Medical Wing Chief Scientist's Office / Science & Technology (59 MDW/ST), has had a manuscript accepted for publication in the Warfighter Supplement of Military Medicine. The peer-reviewed article, titled "A Baseline Model of Post-Traumatic Stress Disorder (PTSD) from the Adverse Childhood Experiences (ACES) Cohort," is set to be published in the July-August 2024 issue.

This significant study aims to deepen our understanding of the genetic factors that contribute to the development of PTSD, particularly in individuals who have experienced adverse childhood events. By utilizing polygenic risk scores (PRS), the research seeks to identify those at a heightened risk for PTSD, thereby enabling early intervention strategies to support the mental health of warfighters.

The primary objective of the study was to assess how polygenic risk scores, which quantify disease risk based on genetic predispositions, can be used to pinpoint individuals who may be more susceptible to PTSD. The research focused on data from the Adverse Childhood Experiences (ACES) cohort, a comprehensive dataset that includes individuals with varied backgrounds and experiences. By analyzing this data, the researchers aimed to establish a baseline model that could predict the likelihood of developing PTSD based on genetic risk factors.

One of the most significant outcomes of the research is the potential for early identification and intervention. By recognizing individuals at higher genetic risk for PTSD, healthcare providers can implement preventative measures and tailored interventions before the onset of severe symptoms. This proactive approach could significantly improve the quality of life for at-risk individuals and enhance their ability to cope with the stresses associated with military service.

This research represents a collaborative effort between several esteemed institutions. The Applied Technology and Genomics Division of the USAFSAM led the study, with crucial support from DARPA, USUHS, and the 59 MDW/ST. Each organization brought unique expertise and resources to the project, contributing to the study's robustness and validity.

The collaboration between these institutions underscores the importance of interdisciplinary research in addressing complex health issues like PTSD. By combining genetic research with insights from military medicine and advanced technology, the study highlights the potential for innovative solutions to longstanding challenges in mental health care.

We congratulate the research team on their remarkable achievement and look forward to the continued progress in this vital area of study.

## New England Journal of Medicine Highlight

### "Noninvasive Ventilation for Preoxygenation During Emergency Intubation"

Author: 59th Medical Wing Chief Scientist's Office, Science & Technology



We are pleased to announce the publication of a groundbreaking article titled "Noninvasive Ventilation for Preoxygenation During Emergency Intubation", in the June 13, 2024, issue of the New England Journal of Medicine. This significant study was made possible through a Defense Health Agency Restoral program grant in collaboration with the 59th Medical Wing.

Its present critical advancements in the field of emergency medicine, highlighting the effectiveness of noninvasive ventilation in reducing hypoxemia during intubation of critically ill adults.

The research, which could transform current clinical

practices, was conducted by a dedicated team across 24 emergency medicine departments and intensive care units in the United States.

The multicenter clinical trial involved 1,301 critically ill adults, all aged 18 or older. These patients were randomly assigned to receive preoxygenation either with noninvasive ventilation or an oxygen mask. The focus of the study was to see how many patients experienced hypoxemia during intubation. Hypoxemia was defined as having an oxygen saturation level below 85% from the start of anesthesia until two minutes after intubation.

The results were clear: patients who received noninvasive ventilation had much lower rates of hypoxemia compared to those who used an oxygen mask. This finding is especially important because hypoxemia during intubation can lead to serious problems like cardiac arrest and death.

Traditionally, most critically ill adults are given an oxygen mask for preoxygenation. However, this study suggests that noninvasive ventilation might be a better option, offering a safer and more effective way to manage these patients.

These findings are significant because they suggest a new way to improve patient care during intubation, potentially saving lives and reducing complications. The study's success demonstrates a critical advancement in medical practices and highlights the importance of ongoing research and innovation.

This publication is a testament to the collaborative efforts and innovative research spearheaded by the 59MDW Chief Scientist's Office and their partners, including the U.S. Army Institute of Surgical Research and Brooke Army Medical Center, Joint Base San Antonio–Fort Sam Houston, and the 59th Medical Wing, Joint Base San Antonio–Lackland teamed with the Center for COMBAT Research University of Colorado School of Medicine and alliance of medical centers across the country. This group effort to advance medical research and improve patient care outcomes has led to these important findings, which are set to influence clinical protocols and enhance the safety and efficacy of intubation procedures.

The insights gained from this study are already paving the way for improved clinical practices and better patient outcomes. This research marks a significant step forward in the field of critical care and underscores the critical importance of continued innovation and collaboration between clinical researchers at Defense Health Agency major medical institutions and civilian medical centers.

For more information please visit: <https://www.nejm.org/doi/full/10.1056/NEJMoa2313680>

## AIM Health R&D Summit 2024: A Landmark in Research Collaboration

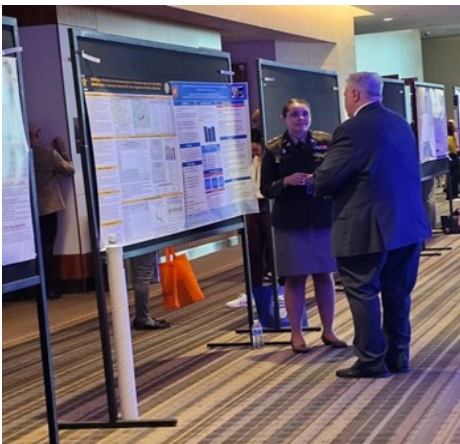
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The Academia-Industry-Military (AIM) Health R&D Summit 2024 was a groundbreaking event that brought together the 2024 San Antonio Military Health and Universities Research Forum (SURF), the Military Medical Industry Day (MMID), and BexarBio pitch competition. This significant gathering took place on June 24-25, 2024 at The Henry B. Gonzalez Convention Center, in downtown San Antonio, Texas initiating a new era in research forums by uniting academia, industry and military researchers into one venue.

Co-sponsored by SURF committee, VelocityTX, the 59th Medical Wing, the Institute of Surgical Research (ISR), the Naval Medical Research Unit San Antonio (NAMRU-SA), City of San Antonio and Bexar County Economic Development Councils, the AIM Health

R&D Summit highlighted the dedication of these organizations to advancing medical research and enhancing healthier outcomes through collaboration and partnerships. The summit stayed true to SURF's mission of fostering research collaborations among military and industry partners to enhance health outcomes and readiness.



The combined structure of the AIM Health R&D Summit provided an avenue for participants to share research findings, best practices and policy insights. This event not only solidified connections among scholars and practitioners from the San Antonio Military Health System (SAMHS) and academic institutions but also fostered relationships with public entities, government agencies, private organizations, small businesses and industry partners. This extensive networking opportunity represented a marked improvement in promoting collaboration, across sectors across of the entrepreneurial spectrum.

San Antonio, Texas is well known for its presence in government and civilian healthcare and biomedical research, development, and innovation, making it an excellent choice for hosting the AIM Health R&D Summit. The city boasted a research community with players

like the San Antonio Military Market, the University of Texas Health Science Center at San Antonio (UT Health San Antonio), the University of Texas at San Antonio (UTSA), the University of the Incarnate Word (UIW) and the Veterans Administration (VA) leading the way in healthcare innovation. Key role in unifying these efforts was the presence and leadership of the Defense Health Administration (DHA), from U.S. Air Force Chief Master Sgt. Tanya Johnson, DHA senior enlisted leader providing a keynote address to Dr. Sean Biggerstaff, deputy director for DHA's Research and Engineering Directorate briefing the future investment strategies for medical research and development.

The 10th annual San Antonio Military Health and Universities Research Forum (SURF) continued its tradition of drawing presenters from across the country. This event showcased the work of students, trainees, faculty and staff members highlighting research breakthroughs and progress. The primary goal of the SURF conference remains centered on fostering research partnerships among institutions, military entities and industry stakeholders to enhance health outcomes and readiness.

## Science and Technology Contact Information



### Our Vision

Grow Medical Leaders, Drive Innovations in Patient Centered Care and Readiness

### Our Mission

Conduct clinical studies and translational research and apply knowledge gained to enhance performance, protect the force, and advance medical care and capabilities

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