

# COMBAT & CASUALTY CARE

Q1 2024  
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**ADAPTING FUTURE-READY  
OPERATIONAL MEDICINE**

## COMMANDER'S CORNER



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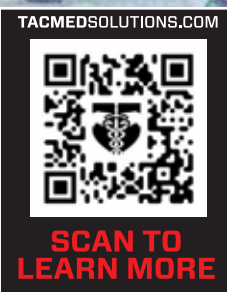
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## BRIDGING THE TRAUMATIC BRAIN INJURY AND POST-TRAUMATIC STRESS GAP

The evolution in treatment of traumatic brain injury (TBI) has led to an irrefutable link with the development of post-traumatic stress disorder (PTSD). DHA's Traumatic Brain Injury Center of Excellence (TBI CoE) is helping discover and address hurdles to positive outcomes.

By CAPT Scott Cota

## Featured Interviews



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#### **BG Clinton Murray**

Commander  
U.S. Army Medical Center of Excellence  
25th Chief, U.S. Army Medical Corps  
Ft. Sam Houston, TX

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### FIELD TRAUMA CARE FOCUS

#### **COL Jennifer Gurney**

Chief  
Joint Trauma System, Healthcare Operations  
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Falls Church, VA



### Critical Supply Conveyance No Matter the Dimension

In January, Defense Logistics Agency Troop Support Medical Transportation Team marked 6,000 freight shipments using a new system that delivers bulk orders of key supplies.

By Alison Welski, DLA Troop Support



### LEADERSHIP PERSPECTIVE

#### **COL James Jones**

Director  
Medical Capabilities Development Integration Directorate  
U.S. Army Futures Command  
Austin, TX



**Cover:** Tactical Air Control Party Airmen with the 124th Fighter Wing's Air Support Operations Squadron practice Tactical Combat Casualty Care (TCCC) at the Orchard Combat Training Center in southern Idaho. TCCC allows military personnel to deliver lifesaving medical care designed to stabilize injuries in preparation for transit. (U.S. Air National Guard photo by Staff Sergeant Joseph Morgan)

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# COMBAT & CASUALTY CARE

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## INSIGHTS

From the field of battle to the facility of treatment, the pace of operational medicine is dictated by the needs of those deserving the finest care that those responsible for their care can provide. The women and men of the medical wing of the U.S. Department of Defense are those responsible for delivering the right response for the right trauma within the critical "golden hour" from point of injury.

In the Q1 2024 edition of *Combat & Casualty Care*, we focus on the drivers of medical treatment so essential to the best chance our nation's combat wounded have for survival and optimal recovery. At the foundational level of DoD's mechanism for putting quality medical professionals into the force is the U.S. Army Medical Center of Excellence (MEDCoE), Ft. Sam Houston, TX. Heading up the MEDCoE is the 25th Chief of the U.S. Army Medical Corps, BG Clinton Murray, tasked with ensuring the most advanced training, logistics, evacuation and triage protocols, and technology is fielded in support of those fighting to defend U.S. global national security interests. With the Army's modernization as preparation for a future dominated by large-scale combat operations (LSCO) within a multi-domain operations (MDO) environment, the challenge will be delivering prolonged point-of-injury care, at some level by even non-medical personnel, addressing injury trauma when and where it occurs.

One such form of internal trauma much like hemorrhage but even more undetectable is traumatic brain injury (TBI) which only recently has been linked to the development of post-traumatic stress disorder (PTSD). The Defense Health Agency (DHA)-aligned Traumatic Brain Injury Center of Excellence (TBICoE), under the direction of CAPT Scott Cota, is implementing scientific studies enabling the discovery of points of earlier detection for proactive treatment intervention in creating increasing numbers of positive TBI and PTSD-related long-term outcomes. Behind the scenes of a U.S. military force operating more jointly than ever before is the collection and application of information vital to the improvement of force-wide trauma care. The Joint Trauma System (JTS) is at the heart of how data is saving more lives on today's global battlefield. Overseen by the DHA and Chief of Healthcare Operations COL Jennifer Gurney, the JTS leans on medical performance optimization (MPO)-based data integration and analysis to streamline care delivery across the battlefield continuum in raising the level of proven treatment standardization.

Of course, without the development of technology capable of enabling medics to answer the call how they are needed, there would be less hope for many. Such is the mission of the Medical Capability Development Integration Directorate (MED CDID), U.S. Army Futures Command, under the direction of COL James Jones, in support of the Army Surgeon General and force medical modernization. Leading innovation in health technologies and digital integration, MED CDID is charged with leveraging what DoD operational medicine does well but can do even better.

As always, feel free to send us comments and suggestions. Thank you for your continued readership!

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## BRIDGING THE TRAUMATIC BRAIN INJURY AND POST-TRAUMATIC STRESS GAP

The evolution in treatment of traumatic brain injury (TBI) has led to an irrefutable link with the development of post-traumatic stress disorder (PTSD). The Defense Health Agency's Traumatic Brain Injury Center of Excellence (TBICoE) is helping discover and address hurdles to early diagnosis to increase positive outcomes.

By CAPT Scott Cota, Director, Traumatic Brain Injury Center of Excellence



Lorie Falaminiano, an MRI technologist assigned to Naval Medical Center San Diego (NMCS), conducts an MRI scan of a patient's brain. NMCS continues to treat patients during the coronavirus (COVID-19) pandemic while its Sailors and staff adhere to social-distancing guidelines. NMCS's mission is to prepare service members to deploy in support of operational forces, deliver high quality healthcare services, and shape the future of military medicine through education, training, and research. NMCS employs more than 6,000 active duty military personnel, civilians, and contractors in Southern California to provide patients with world-class care anytime, anywhere. (U.S. Navy photo by Mass Communication Specialist Seaman Luke Cunningham)

Historical recognition of traumatic brain injury in the military has evolved through the years particularly in relation to combat-related injuries and occupational exposures. Research, advanced diagnostic tools, and improved treatment protocols have enhanced the detection and management of traumatic brain injuries (TBIs) among servicemembers. Additionally, there has been a focus on prevention strategies and education to mitigate the risk of TBIs in military training and operations. This evolution can be summarized through key milestones.

World War II and earlier recognition of TBIs were then referred to as "shell shock" or "combat fatigue" and it was thought due to the intensity of combat, scale of exposure to shelling and large-scale blasts, but the understanding of the specific nature and long-term effects was limited.

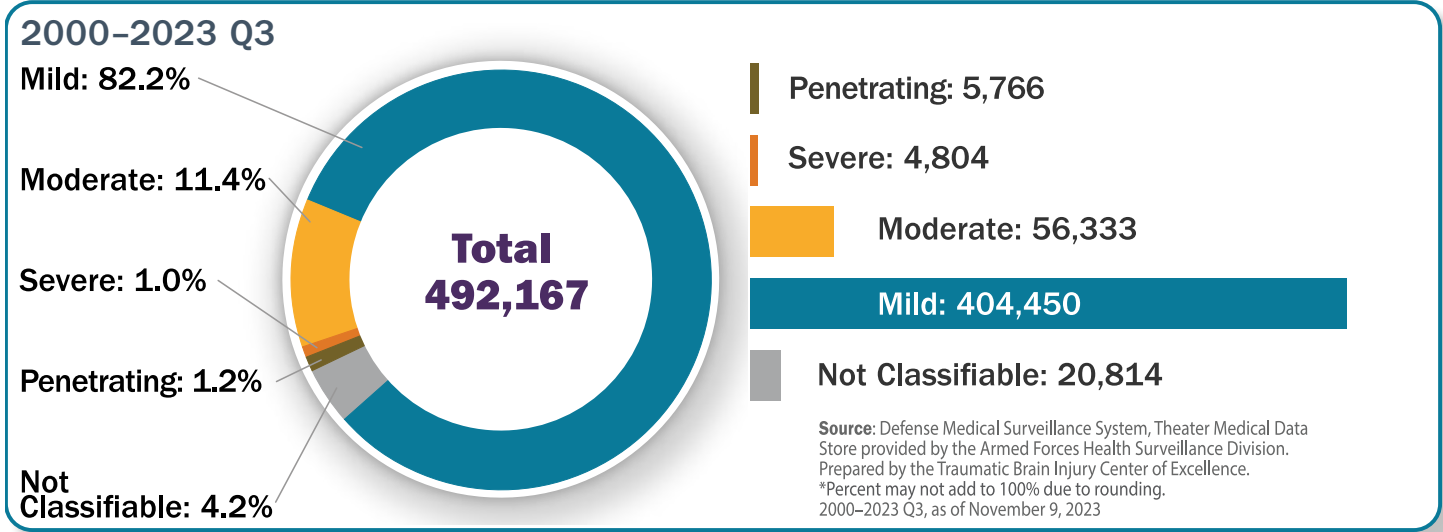
During the Vietnam War the use of helmets and body armor contributed to changes in injury patterns with increasing extremity trauma and head and neck injuries. This era increased the awareness and treatment of penetrating head injuries that led to improved

survival, better documentation and a clearer understanding of traumatic brain injury and exposures in jungle warfare. Enhanced survival due to improvements in trauma neurosurgery care and reduction of evacuation times solidified the effectiveness of in the field surgical teams and their management of these injuries.

The Gulf War saw advances in military medicine and technology to allow for improved identification and treatment of TBIs, improved evacuations times and increased treatment and evaluation capabilities pushed closer to the warfighter in the form of surgical teams, large field hospitals and point of injury field TBI management.

Post 9/11 combat with the conflicts in Iraq and Afghanistan brought a renewed focus on blast related TBIs and blast exposure, increasing attention to concussion and the long-term consequences of TBI. There were diagnostic improvements and a system of field evaluation and management that kept the warfighter closer to their units. The dawn of the holistic approach to TBI care demonstrated that these injuries led to a multitude of associated complaints that required treatment.

## DOD Numbers for Traumatic Brain Injury Worldwide



DOD TBI Worldwide Numbers: Service members can sustain a TBI during day-to-day activities, such as while playing sports or participating in recreational events, military training and military deployment. The majority of traumatic brain injuries sustained by members of the U.S. Armed Forces are classified as mild TBI, also known as concussion. (DHA)

### RECOGNIZING TBI-INITIATED POST TRAUMATIC STRESS

The association of post-traumatic stress and TBI started to show that both needed to be considered when a service member sustains a traumatic brain injury. A focus on trauma informed care addressing the impact of these injuries on the warfighter and their families had to be included in the holistic approach to TBI treatment and recovery. This was, and continues to be, a focal point of the research and activities of the military health system.

TBICoE is closing out two major active studies over the last 15 years that have led to important discoveries and opportunities in long term outcome, treatment, and rehabilitation. The military has conducted these landmark studies at Walter Reed National Military Medical Center’s National Intrepid Center of Excellence, the Intrepid Spirit Centers and at the Tampa Veterans Administration Poly Trauma Center. These studies will continue to provide groundbreaking information through continued data analysis and publication. There are also ongoing studies associated within the U.S. Department of Defense (DoD) Health System, Veterans Administration Medical System, military medical research labs, and DoD associated academic centers that continue to look for effect of exposures from all sources, causality, impact on brain health, and outcomes of treatment. The close out of the 2018 National Defense Authorization Act Section 734 longitudinal study included a large portfolio that researched the impact of low-level blast on the service member proved the feasibility of surveillance and monitoring to assess the prevalence and impact of these blast related injuries. It also provided evidence to support safety recommendations and pre-diagnosis indicators of blast related exposures.

We are to the point that these collaboration efforts have led to improved cross-functional knowledge sharing, advocacy for continued risk mitigation to exposures from multiple communities and the ability to inform the Warfighter Brain Health initiatives with validated research efforts. Our intent is to understand the

pre-diagnostic impact of blast related exposures and develop a system to inform, prevent, mitigate exposures, and optimize the brain health of the warfighter. Essentially to get at the “left of the boom” and develop criteria that describes risk to the service member, documents exposures and outcomes and provides data that can be analyzed and studied to understand the impact of those exposures on brain health. Traumatic Brain Injury Center of Excellence, or TBICoE (formerly known as Defense and Veterans Brain Injury Center), Defense Health Agency (DHA), Falls Church, VA, has played a crucial role in guiding research, disseminating the findings of that research, networking with military, international and academic partners, expanding knowledge translation, and improving the pathway of care for service members affected by TBI since its inception 30 years ago.

### TRANSITION TO PROMOTING POSITIVE OUTCOMES

The DoD has transitioned its focus toward promoting positive outcomes in service members with TBIs by emphasizing comprehensive care, holistic rehabilitation, and expanded support services for both the service member and their families. This included implementing multidisciplinary treatment approaches, providing specialized rehabilitation programs tailored to the individual needs of the service member, offering behavioral health support, and facilitating reintegration back to military service or supporting the transition to civilian life. Additionally, there has been an emphasis on research to develop innovative interventions and technologies aimed at improving outcomes and quality of life for service members affected by TBIs. Because of our data collection and reporting requirements we know that the majority of TBIs sustained in the military are considered mild TBIs (mTBIs) or concussion. In fact, of the 490,000 TBIs that have occurred since 2000 when data was first collected nearly 82% of those cases are considered mild as defined by the injury mechanism and presenting symptomology. We also know that most of those mild TBIs will recover completely

without long term symptoms if they are identified early with early intervention and a managed phased return to duty. We have also come to understand through research that the long-term impact of these injuries is multi-factorial and that we need to provide access to services and support for the warfighter throughout their career and beyond. I believe that the concept of optimizing the “human weapon system’s” brain health is a critical concept, much like tuning up and monitoring any other weapon system. This is a concept of thriving and resiliency and not a concept of degradation. Much like a professional athlete is managed so should we manage these warfighters and utilize a performance based, holistic approach to warfighter brain health.

## PRIORITIZING POINT-OF-INJURY EVALUATION

From an initial point of injury perspective, the U.S. military health system is prioritizing several key areas of evaluation when it comes to TBIs. These include:

1. **Rapid assessment:** to ensure timely evaluation of potential TBIs to facilitate early intervention and triage to appropriate care
2. **Symptom recognition:** training medical and non-medical personnel to recognize common signs and symptoms of TBIs, such as loss of consciousness, confusion, altered consciousness, memory problems, headache, and dizziness
3. **Neurological and neurocognitive assessment:** conducting thorough neurological examination to assess cognitive function, motor skills, coordination, and sensory abilities
4. **Screening tools:** implementing standardized screening tools, such as the Military Acute Concussion Evaluation (MACE2) which includes the Vestibular Oculomotor Screening (VOMS) evaluations as soon as possible after the injury to aid in the assessment and diagnosis of TBIs in the field. There is also work to evaluate technology that can be used to help screen for TBI along with the standardized tools previously mentioned.
5. **Imaging technology:** evaluating portable imaging technologies such as handheld ultrasound, infrared scanners, and portable CT scanners to assist in the diagnosis of head injuries and identify potential structural anomalies requiring that would require immediate surgical intervention or casualty evacuation to higher level of care
6. **Documentation and reporting:** ensuring accurate, detailed, and timely documentation and reporting of situation surrounding the injury, the injuries received, as well as any observed symptoms or finding that can help to guide subsequent treatment, follow-up care, mitigation to exposure and prevention of further injury.

By prioritizing these areas of evaluation and looking for ways to improve the system of care from the point of injury, the DoD aims to improve early detection and management of TBIs among service members. The intent is to ensure that events get proper documentation and care is provided through a collaborative approach that supports the service member and maintains their brain health throughout their military career and beyond.

## ADVANCING NEURODEGENERATIVE DISEASE MITIGATION

As non-acute treatment for TBIs has become more defined, advancement in neurodegenerative disease mitigation is progressing through several avenues:

1. **Research:** ongoing research efforts are focusing on understanding the mechanisms underlying neurodegenerative diseases associated with TBIs, such as chronic traumatic encephalopathy, Alzheimer’s disease, and Parkinson’s disease. Chronic traumatic encephalopathy (CTE) is a progressive neurodegenerative disease pathologically distinct from other neurodegenerative diseases, including frontotemporal dementia and Alzheimer’s disease. There currently is no clinical, antemortem diagnostic profile for CTE, and the definitive diagnosis is based on a specific histopathologic pattern of phosphorylated tau (p-tau) protein deposition in the brain that can only be observed at autopsy. The cause of CTE has been attributed to repetitive head trauma, though not specifically repetitive traumatic brain injury.

Continued research is essential for identifying potential causes, therapeutic targets, and interventions for all these associated neurodegenerative diseases.


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- **Early Detection:** developing biomarkers and imaging techniques for early detection of neurodegenerative changes following TBIs is crucial for timely intervention and monitoring of disease progression.
  - **Treatment Modalities:** exploring pharmacological, nutraceutical, and technology-based treatment including those that target neuroinflammation, oxidative stress, and protein aggregation hold promise for mitigating neurodegenerative disease progression in individuals with a history of TBI.
2. **Lifestyle Interventions:** implementing lifestyle modifications such as exercise programs, specific nutrition guidance, cognitive stimulation and improved sleep hygiene practices may help to mitigate neurodegenerative risks and improve overall brain health following TBIs.
  3. **Supportive Care:** providing comprehensive supportive care, including cognitive rehabilitation, psychotherapy, and social support services can enhance the quality of life and functional outcomes for individuals with neurodegenerative diseases related to TBIs.

Overall, advancing neurodegenerative disease mitigation in the context of TBIs requires a holistic approach to the patient and a multifaceted approach involving research, early detection, targeted

treatment strategies, lifestyle interventions and comprehensive supportive care services.

### CHALLENGES AHEAD

As the principal military organization to lead, translate, and advance brain health, TBICoE's work significantly impacts DoD operational and clinical communities, as well as other federal agencies and external stakeholders. We support the wider defense community through collaborations with combatant commands, military departments, and DoD research labs. Much of our work is a direct result of operational commands or military providers requesting information or guidance on specific topics. For instance, in 2023, we developed Anomalous Health Incident assessment training for the Defense Health Agency. I presented the first one at the U.S. Special Operations Command Warrior Care Program conference in March (Brain Injury Awareness Month) and it's now a quarterly virtual event. Low-level blast exposure was another much-requested topic, and we answered the call with new fact sheets for service members, DoD and VA providers, as well as a video, infographic, and web page. In addition, many of our resources are featured on the Military Health System's Warfighter Brain Health Hub. We focus on advancing TBI research, developing evidence-based clinical tools and recommendations, training providers on best practices, and producing brain-injury resources for service members and their families and caregivers.

Our researchers and educators are embedded at multiple military hospitals throughout the U.S. and Germany, including most Intrepid Spirit Centers. The Intrepid Spirit Centers are holistic TBI locations within the defense health agency that are regionally aligned to evaluate and treat traumatic brain injury. These locations create a unique internal feedback loop. Researchers gain firsthand knowledge of specific challenges and gaps from on-site providers, which influences the direction of their research. Findings are translated into evidence-based clinical recommendations, products, and tools designed to help clinicians with the current TBI related issues they've identified. Our TBICoE educators train thousands of military providers, service members and families a year on these resources and other current TBI topics. In December, we submitted a final report to Congress on the 26 blast-overpressure studies mandated by the 2018 National Defense Authorization Act, known collectively as the Section 734 blast overpressure studies. These 26 studies will improve the DoD's understanding of the impact of blast pressure exposure from specific tier one weapon systems on the service member's brain health and better inform policy for risk mitigation, unit readiness, and health care decisions.

As medical program director for the studies, I can attest that the work we did set the stage for the next phase of the DoD's Warfighter Brain Health Initiative Strategy and Action Plan. The plan, released in June 2022, addresses multiple concerns such as blast exposures, repetitive head impacts, and their long-term effects. In 2023, TBICoE—one of many defense entities supporting this multi-pronged strategy—fulfilled eight tasks laid out in the plan that will directly affect TBI clinical care. Our mission and the ability to collaborate by, through and with the DoD and Military Health system puts us in a good place to continue finding answers regarding warfighter brain health, but our work is not over and so we will continue to be laser focused on our mission.



The poster for the 26th DoD/VA & GOV Health IT Summit features a blue background with a circular seal at the top center. The seal contains an eagle and the text 'DEPARTMENT OF DEFENSE' and 'DEPARTMENT OF VETERANS AFFAIRS'. Below the seal, the text reads: '26th DoD/VA & GOV Health IT Summit', 'May 1-2, 2024 | National Harbor, MD', and 'Enabling Patient-Centered Care Through Innovative Health IT'. A collage of four photographs shows attendees at the summit, including a man speaking into a microphone, a group of people holding certificates, and a man presenting at a podium. At the bottom, the text says: 'Free for Active Mil/Gov', 'Email: enoreika@dsigroup.org to register', and 'Learn More: HealthIT.dsigroup.org'.



# ADAPTING TO MEET THE FUTURE OF COMBAT MEDICINE AHEAD OF THAT FUTURE

*Brigadier General Clinton Murray serves as Commander, U.S. Army Medical Center of Excellence, Ft. Sam Houston, TX, and the 25th Chief of the U.S. Army Medical Corps. BG Murray grew up in Lubbock, Texas. He received a Bachelor of Science in Biochemistry from Texas Tech University (1991), his medical degree from the Uniformed Services University of the Health Sciences (USU) (1996), and Master of Strategic Study degree from the Army War College (2015). He completed a residency in Internal Medicine at Walter Reed Army Medical Center (1999) and a fellowship in Infectious Disease at Brooke Army Medical Center (BAMC)/San Antonio Uniformed Services Health Education Consortium (2002).*

*His most recent assignment was as Commanding General, Medical Readiness Command, Europe; Command Surgeon, U.S. Army Europe-Africa; and Director, Defense Health Agency Region-Europe. Brig. Gen. Murray also served as the Commander, BAMC and Deputy Market Manager of the San Antonio Market, DHA (2021-22); Commander, Walter Reed Army Institute of Research (2020-21); Command Surgeon, U.S. Forces Korea (2019-20); Commander, 1st Area Medical Laboratory (2017-19); Deputy Chief and Corps Specific Branch Proponency Officer, U.S. Army Medical Corps (2015-17); Infectious Disease Consultant to the U.S. Army Surgeon General (2016-2020); Chief, Infectious Disease Service, BAMC (2011-15); and Program Director, Army/Air Force ID Fellowship, San Antonio (2005-11). He is a Professor of Medicine at USU, Fellow of the Infectious Disease Society of America, and Master of the American College of Physicians.*

*He deployed as the senior medical officer of a medical company, 1st Brigade Combat Team, 1st Infantry Division to Ramadi, Iraq, in 2003-04 under the 82nd Airborne Division for six months and 1st Marine Expeditionary Force for the second six months. His deployments to Afghanistan include a review of infection control procedures of U.S., Coalition, and Afghan medical treatment facilities in 2012; assessment of the NATO Training Mission-Afghanistan supporting the Afghan National Army Infectious Disease/Preventive Medicine residency program in 2013; and review of remote expeditionary surgical teams supporting special operations in 2015. He also performed research and taught in Africa, Asia, Europe, and South/Central America.*



## BG Clinton Murray

Commander

U.S. Army Medical Center of Excellence  
25th Chief, U.S. Army Medical Corps

*BG Clinton Murray, Commander of the U.S. Army's Medical Center of Excellence, Ft. Sam Houston, TX, spoke recently with Combat & Casualty Care regarding current priorities and goals that MEDCoE has as the Joint medical force shifts in support of future multi-domain operations and large-scale combat operations.*

**C&CC:** As Army modernization continues to embrace a multi-domain operation (MDO), large-scale combat operations (LSCO) future, what aspects of medical response and care do you see as most critical to supporting this force mission evolution?

**BG Murray:** The shift to multi-domain operations and large-scale combat operations marks a significant transition in Army Medicine. The past advantages of air superiority, rapid evacuation, and the security of fixed medical facilities are unlikely in future combat scenarios. Instead, we anticipate challenges like limited mobility, extended evacuation times, and the absence of traditional medical facilities due to the vast and contested nature of the battlefield.



A student, participating in the Combat Medic Specialist Training Program, calls in a Nine Line, an emergency medical evacuation request, to save a simulated patient during a field exercise at Joint Base San Antonio-Camp Bullis, TX. After 14 weeks of classroom and simulated field training, students are transported from JBSA-Fort Sam Houston to Forward Operating Base Courage for their final two weeks. Here they combine and apply their training: conducting exercises in mounted and dismounted patrols, treating patients in a mass casualty situation and transporting injured patients to a higher-level facility for care. (U.S. Air Force photo by Tristin English)

To adapt, Army Medicine must evolve in several key areas:

**Training and Preparedness:** Medical units must be trained for operations in diverse and challenging environments. This includes developing skills for handling casualties in remote, austere, and potentially hostile territories.

**Medical Logistics:** Efficient management of medical supplies and resources will be crucial. This involves strategic pre-positioning of supplies and ensuring that medical units are equipped for prolonged care.

**Evacuation and Triage Protocols:** Developing robust and flexible evacuation protocols to manage casualty care over longer, more complex evacuation routes is essential. This includes training medical personnel in advanced triage techniques to effectively prioritize care.

**Decentralized Medical Operations:** Medical units will need to operate more independently, with a focus on providing maximum care at each echelon of treatment.

**Technology Integration:** Leveraging telemedicine, portable diagnostic tools, and advanced medical technologies will be critical in enhancing care in decentralized and challenging environments.

In addition, it is imperative that we continue to engage and synchronize with other Centers of Excellence, joint, NATO and allied forces such as Australia, Great Britain, Canada, and New Zealand (ABCANZ) armies to ensure we keep Army health system doctrine current and able to easily mesh into any environment. We are always revising and improving our extensive doctrinal library to reflect the constant advances in medical treatment and technology.

I should note that returning wounded, ill, and injured Soldiers to duty is one of the most important functions Army Medicine must accomplish in LSCO. In part, that means medical capabilities, such as

rehabilitation, must be present further forward. We cannot afford to evacuate soldiers out of theater for long periods of time for relatively routine medical issues. A large part of that function is also preventing illness and injury. From our doctrine and training to our leader development, we must do more to preserve combat power and create endurance in the force.

**C&CC: From a point-of-injury prolonged care perspective, without blood availability as a driver of all else in extending the “golden hour” of care, what are some aspects you see as supplemental to primary access?**

**BG Murray:** At the point-of-injury, the most important factor will be well-trained and resilient personnel. With more austere conditions and longer evacuation times, the clinical foundation and acumen of the frontline providers will be a critical element in successful patient care. Medical professionals will need to monitor and address the changing status of injured patients as they hold them on location or move them through prolonged channels of evacuation. While technological solutions may, indeed, help, the on-site medical professionals must understand how to employ the tools and remain focused on the patient's condition and possible interventions that can preserve life and limb.

In prolonged care, especially when blood products and traditional medical resources are scarce, the focus must shift to other critical aspects. As I mentioned, continued, advanced training for our forward medical teams is crucial. This involves not only clinical skills but also the ability to make rapid, life-saving decisions in high-stress environments. Exploring and utilizing alternatives to traditional blood transfusions, such as hemostatic agents and blood substitutes, can be lifesaving in the absence of blood products. Enhancing capabilities in providing advanced critical care at the point of injury, including airway

management, bleeding control and shock management, employing remote monitoring technologies to track the health status of injured soldiers, and using telemedicine to consult with specialists in real-time for guidance on complex medical situations are all ways we can empower those forward medical teams to better save the lives of injured and ill servicemembers.

**C&CC:** In addressing the reality that non-combat related injury such as infectious disease and other environmentally caused illness is still today and likely a large challenge of tomorrow, what are some ways MEDCoE is preparing the medic to mitigate the threat?

**BG Murray:** There are significant efforts to transform combat medic training, both institutionally and in the operational forces. In the future, the 68W Advanced Individual Training will train and educate combat medic Soldiers to be better critical thinkers, go deeper into the anatomy and physiology that enables them to work through complex medical issues, and concentrate more time on illnesses and injuries during class time, rather than spend that instructional time exclusively on trauma.

We have incorporated extensive training on a broad spectrum of infectious diseases and environmental illnesses, with a focus on early detection, treatment, and containment. We are strengthening our training in preventive medicine practices to reduce the incidence of non-combat injuries and illnesses among troops. This includes water purification, waste disposal, vector control and personal protective measures. Achieving this involves using the latest medical technologies

for diagnosis and treatment, collaborating with research institutions for updated knowledge on emerging health threats, and fostering a culture where medics are trained to adapt their skills to new health threats as they emerge and continuously update their knowledge base. This incorporates providing specialized training on identifying and mitigating health risks associated with diverse environmental conditions and hazardous material exposures.

**C&CC:** With the likelihood that field medical response to LSCO will involve a need for assistance from non-medical personnel and the transference of institutional learning to the point-of-injury, what role do you see MEDCoE playing in the creation and sustainment of this need?

**BG Murray:** The role of non-medical personnel in field medical response is becoming increasingly crucial. Commanders must understand the potential impacts of any kind of medical event that causes large numbers of casualties, whether due to battle injuries or illness. That means they must better learn how to manage illness, injuries, and casualties to preserve combat power. Two years ago, we revised Army Techniques Publication 4-02.13 to address casualty evacuation and training, new Army platforms for casualty evacuation, non-Army platforms, environmental considerations, and rough terrain evacuation. In addition, it's also important that we work with other Centers of Excellence as they train and educate non-medical leaders on the considerations of casualty response, self and buddy aid, combat lifesavers, and casualty evacuation. In the area of research and development, we collaborate

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Pvt. Erin Watson, U.S. Army Medical Center of Excellence combat medic specialist, listens to instruction from the team leader while patrolling during a combat medic field training exercise at Joint Base San Antonio-Camp Bullis, TX. The purpose of the course is to expand upon Army medic base level skills on how to keep casualties of combat operations alive for 12-24 hours after engagement. After a threat is neutralized while on patrol, the soldiers transport the wounded to the nearest battalion aid station at the forward operating base to continue emergency care. (U.S. Air Force photo by Taylor Curry)

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with U.S. Army Futures Command and the U.S. Army Medical Research Development Command to ensure we take full advantage of the life-saving potential of emerging technologies and maximize the protection of the force.

In addition to preparing commanders and non-medical personnel, our approach to preparing medics includes:

- Expanded Medical Training:** Incorporating extensive training on a broad spectrum of infectious diseases and environmental illnesses, with a focus on early detection, treatment, and containment.
- Preventive Medicine Emphasis:** Strengthening training in preventive medicine practices to reduce the incidence of non-combat injuries and illnesses among troops. This includes water purification, waste disposal, vector control, and personal protective measures.
- Technological Integration and Research Collaboration:** Utilizing the latest medical technologies for diagnosis and treatment and collaborating with research institutions for updated knowledge on emerging health threats.
- Adaptability and Continuous Learning:** Fostering a culture where medics are trained to adapt their skills to new health threats as they emerge and continuously update their knowledge base.
- Environmental Health Training:** Providing specialized training on identifying and mitigating health risks associated with diverse environmental conditions and hazardous material exposures.

We continue to advocate to non-medical commanders for the continuous, comprehensive training of medical units and Soldiers. That training ensures medical Soldiers can maintain their skills and recertify in their specialty, and it keeps them up to date on latest and best practices, as well as the collective tasks necessary to employing operational medicine. They are the subject matter experts down-range, and our goal is to give them the knowledge, tools and confidence to support their units and succeed no matter where they are.

# PREPARING FOR THE FUTURE OF JOINT TRAUMA CARE NOW

*COL Jennifer Gurney is the Chief of the Joint Trauma System. Prior to assuming this position, she was a surgeon at the U.S. Army Institute of Surgical Research Burn Center. She also works at Brook Army Medical Center as a trauma surgeon. COL Gurney was the first chair of Defense Committee on Trauma, she was also the Chair of the Committee on Surgical Combat Casualty Care for three years. COL Gurney joined the Army while at Boston University Medical School on a Health Professions Service Program Scholarship and did her surgical training at Walter Reed Army Medical Center. She did a Surgical Critical Care Fellowship at Stanford Hospital and spent a year at the University of California San Francisco at San Francisco General Hospital.*

*She has deployed 8 times in support of military operations and has received a Legion of Merit with a 'C' (combat) device, three Bronze Star Medals, a Combat Action Badge and the Defense Meritorious Service Medal for wartime service. She has had the opportunity to work at every level of care after 'Role 1' in the deployed battlefield trauma system and has focused her surgical career to improving care of the combat casualty.*



## COL Jennifer Gurney

Chief

Joint Trauma System, Healthcare Operations  
Defense Health Agency

*COL Jennifer Gurney, Chief of the Defense Health Agency's Joint Trauma System (JTS), spoke recently with Combat & Casualty Care regarding current focus areas in JTS-supported operational medicine and the future of JTS readiness for application in large-scale combat operations environments.*

**C&CC:** Please provide readers with understanding of the Joint Trauma System (JTS) current and ongoing operational mission.

**COL Gurney:** The JTS saves lives with data. Our recent focuses on data collection, data integration and data analysis will help inform medical and non-medical leaders how to best save lives and resource the future battlefield. Our operational mission is epitomized by the JTS Triangle. It is the 'act, learn, adjust' model. We are modernizing our data infrastructure to be able to improve data efficiency to use clinical data to deliver trauma care on the battlefield more efficiently and effectively. The JTS saves life with data by using Medical Performance Optimization (MPO). MPO is the use of clinical (documented) data from the delivery of care along the battlefield continuum to inform and optimize along the DOTMLPF-p (doctrine, organization, training, materiel, leadership, policy, facilities, personnel) spectrum. Using the performance improvement process to inform not just along the continuum of battlefield care, but also along the DOTMLPF-p spectrum is operationalizes the mission of the JTS. We do execute this through the Department of Defense Trauma Registry (DODTR) and

the performance improvement (PI) processes. The DODTR collects, stores, and organizes clinical data for analysis allowing dissemination of comprehensive trauma data to optimize casualty care, improve readiness, and enhance the survivability of military personnel. The DODTR is the backbone of the JTS. Once we finalize some of our modernization processes, our plan is to apply this model to other military health threats to use clinical data from military relevant/battlefield pertinent disease and environment threats through this same operational cycle, saving lives with data.

**C&CC:** From a Combatant Command Trauma Systems (CTS) perspective, what are some primary target areas and associated challenges which JTS instructs, and how the CTS Assessment Team capability aims to streamline trauma care optimization?

**COL Gurney:** This is a great question. The CTS is the implementation of the MPO processes in each combatant command (CCMD). JTS can advise command surgeons on the establishment of a trauma system in their CCMD. The reason to have a system can sometimes be difficult to understand. We understand traffic systems and



Role 3 in Iraq multidisciplinary ICU rounds involving surgeons, nursing, medics, pharmacy and Role 3 leadership. (DHA)



COL Gurney performing an external fixation of the left femur in a Role 2 in southern Afghanistan. (DHA)

educational systems; but trauma systems can be more abstract when there is not regular generation of trauma patients. It would be like asking why would you set up a traffic system when there are no cars? or an educational system when there are no students? The challenge that we have in the DoD is to have this framework ready to go. And why? The 'why' is because an established trauma system will decrease mortality by 20% -- this is decreasing death from survivable injuries in one of five servicemembers once crisis or conflict begins. This is the reason that implementing a trauma system should be in every Commander's top ten because combat casualty care data is a strategic asset! What does it take to set this up? It takes leadership, policy, a PI process that supports MPO, communication amongst all roles of care, training (tactical combat casualty care or TCCC, prolonged casualty care or PCC, and Acute Resuscitative Surgical Care Role Two or ARSC/R2 training) education, a trauma medical director, and trauma program manager, to establish a functional CTS. It also takes ensuring there is a mechanism to get all trauma patients into a registry so that the clinical data will feed the operational cycle and support MPO. These processes in place during Phase 0 will allow a surge capability and capacity. We know well that the next conflict – whether maritime, ground or more likely a combination, will come with large volumes of casualties, lack of air superiority and contested logistics.

It is challenging to establish trauma systems when there is no active conflict and no wartime casualties being generated. The MTFs can contribute to the establishment of the CTS by embracing the fundamentals of establishing trauma systems. The JTS Trauma Systems Support and Consultation Branch (TSS CB) was established in 2023 and is being led by trauma surgeon who is extremely experienced in both military and civilian system development. The TSS CB supports the development of trauma centers and trauma systems in the MHS. The TSS CB was recently in Japan working with the MTFs in Okinawa and Yokosuka evaluating their potential to become American College of Surgeons (ACS) verified Level 3 Trauma Systems. The MTFs maintaining trauma center capabilities and having PI and registry processes are fundamental to the rapid establishment of the trauma system during contingency operations;

after all the same people in uniform who work at MTFs are the people who deploy and work at the Role 2 and Role 3 MTFs. So, going back to the JTS Operational Cycle – having processes in place that enable clinical data to not only improve clinical care through the PI process, but also impact the entire DOTMLPF-p cycle through Medical Performance Optimization.....it's all one system!

**C&CC: With many of today's battlefield casualties non-combat related, talk to any focus areas the JTS is addressing to boost outcomes?**

**COL Gurney:** While trauma is the number one cause of death on the battlefield – there are many other diseases, or Military Health Threats (MHT) that affect battlefield attrition. From a line commander's perspective, an individual lost to the fight, is lost to the fight. So, unquestionably systems need to be in place to use the JTS MPO process for other MHT. Joint Operational Medicine Information Systems (JOMIS) enable work to develop clinical tools to support physicians, nurses, and medics in documenting clinical care better. I have to say that one of the most frustrating things about being deployed was the lack of good documentation tools. JOMIS has listened to the clinical community and has products like the Battlefield Assisted Trauma Distributed Observation Kit (BATDOK) and Trauma Advanced Care (TAC)/T6 that will facilitate clinical data capture. The entire JTS operational cycle and good data in the DODTR depends on good clinical documentation. And good clinical documentation, especially for medics in a kinetic prehospital environment is difficult!! Documentation tools must be intuitive, straightforward, require no to minimal training or 'help desks' to support deployed providers. Once these JOMIS tools get released for use, they can also support other MHT since it all comes down to capturing good clinical data. The JTS plans to expand to these MHT and use the same data processes. Once we modernize the DODTR and the JOMIS tools are implemented, this will be more feasible. In the meantime, we have placed resources on the JTS website that address non-trauma medical and surgical MHT.

**C&CC:** You mentioned that CCC data is a strategic asset, can you elaborate on this?

**COL Gurney:** Thanks for asking. Not only is combat casualty care (CCC) data a strategic asset, but this data supports CCMDs and line commanders because implementing a trauma system decreases mortality. The importance of trauma care on the battlefield is most fully understood and appreciated when it is absent, but waiting until it is needed to develop a trauma care system will result in high numbers of preventable deaths and greater numbers of lost days of effective combat power as was witnessed at the beginning of the conflicts in Iraq and Afghanistan. The battlefield presents a specialized trauma system, a combat casualty care system, that is dynamic and contingent on unique operational and resource constraints that are either owned totally or in part by the CCMDs.

From a historical perspective, the JTS was the Joint Theater Trauma System and emerged as a critical need during the last conflict when surgeons realized that U.S. service members were dying from potentially survivable injuries. A bare bones team in 2004 was rapidly inserted into U.S. Central Command and began collecting rudimentary data that rapidly demonstrated important challenges and enabled development of solutions (tourniquet use, hypothermia prevention and management kit, transfusion triggers, blood product ratios). The initial barebones team evolved and pulled combat casualty care out of the abyss of ignorance uninformed by data. The JTS relies on data to inform a learning and adaptive trauma care system to support medical performance optimization: with data-driven management of specific injuries (clinical practice guidelines); evidence-based recommendations for training of personnel (TCCC, pre-deployment training for providers); policy (Golden Hour policy); data-driven procurement (eye protection, Nomex gloves, changes in body armor); and manning and placement of surgical resources.

Combat casualty care (CCC) data informed the system, and recovered the critical data deficit, resulting in the best casualty outcomes in the history of war. Medical capabilities that are well positioned, trained and mission capable support combatant commanders in designing and synchronizing operations, allocating resources, and mission tasking. And, as mentioned, the DODTR is core to the JTS and has facilitated the best casualty outcomes in the history of war.

The JTS collects data characterizing injuries and care from point of injury on the battlefield to rehabilitation in the. The DODTR data is validated and analyzed to develop guidelines that optimize medical performance (along the DOTMLPF domains) which is then available for implementation by MHS leaders and combatant commanders. The ability of JTS to rapid-cycle information to transform battlefield care is one of DoD's greatest innovations in the last 20 years. The JTS DODTR saves lives by using data to inform each of the key organizational pillars of doctrine, organization, policy, training, and education, this is referred to as medical performance optimization. CCC data is a strategic asset supporting the National Defense Strategy.

Saving lives, decreasing lost manpower days due to injury, and improving battlefield morale pivots on a healthy trauma care system. Evolving data collection techniques of the DODTR that capitalizes on synoptic reporting and automation will allow commands to view the medical impacts of large-scale combat operations (LSCO) near real time, optimize mission planning and support warfighting

functions. High fatality rates negatively impact the warfighter spirit, undermines public support for the military's mission, encourages political discord and decreases combat effectiveness. Leaders in the combatant commands must understand all facets of the combat casualty care system and the role of the JTS to minimize preventable deaths on day 1 of the next conflict. JTS's mission is to save lives with data; data supports warfighting functions enabling a military that optimally functions with a data driven trauma system to care of every battlefield casualty.

**C&CC:** What are other things that the JTS is working on?

**COL Gurney:** Well, I guess just saying a lot is not enough of an answer! Before I go into some of the many things that JTS is involved in, I would be remiss to not mention the amazing people on the JTS team. People who work at the JTS chose to work at this incredible organization. From our data abstractors, to our PI nurses, to our chief administrator, the chief executive admin, to our data scientists, to the registry branch, to our reorganized data branches, to the Joint Trauma Education and Training Branch (JTET), to our CTS branch, to our many physician contractors and our volunteer physicians – our staff seeks out to work at the JTS. I want to highlight our many volunteers that work directly at JTS (mostly trauma surgeons) and all those who volunteer on the Defense Committees on Trauma (DCOT). These individuals volunteer their time to run PI, support the Joint Knowledge Skills and Abilities Program Management Office (JKSA PMO), help with clinical practice

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Typical example of a Role 2 Operating Room. (DHA)

guidelines (CPGs), TCCC guidelines, PCC guidelines, educational initiatives, PI projects, research projects, CTS assessments, etc. Our number of dedicated volunteers demonstrates the criticality and vitality of the JTS mission. One, of the many examples, are the Chairs of each of the DCOTs (Committees on Tactical, En

Route, and Surgical combat casualty care – CoTCCC, CoERCCC, CoSCCC) – these active-duty physicians take a huge amount of their personal time to run these committees. Another example are the trauma surgeons, who in addition to their busy schedules, support many JTS initiatives and projects such as the TSS CB and the Mil Civ Partnership Work Group – to name a couple. It is a massive privilege, and extremely humbling, to get to lead an organization with so many incredible people; they constantly inspire me to be better and work harder.

In addition to the DODTR modernization, our PI processes in the CCMDs, and the CTS development, we are focusing on implementing projects in the JTET. While the JTET was mandated in the 2017 National Defense Authorization Act (NDAA), we have not been able to fully staff or support this branch for a variety of reasons. The JTET current focusses are: TCCC Tier 4 rollout, revising the PCC guidelines and developing a PCC curriculum, implementing the Austere Resuscitative Surgical Care (ARSC) course that was developed over 2 years through a chartered workgroup, and developing a joint whole blood curriculum. Other efforts of the JTET are to get out to exercises and to support units implementing PI processes in their formations using the JOMIS developed tools. Overall, this is a huge effort and the JTET team is incredibly dedicated (and very understaffed) and working with the Defense Medical Readiness Training Institute (DMRTI) to facilitate course execution. When the JTS was officially established in the 2016 DODI (and then reinforced in 2017 NDAA) it was defined as the ‘reference body for trauma care’ in the DoD. We want to ensure that we are supporting the Services, the providers, and the deployed teams by providing valuable joint educational and training curriculum and courses. The JTS also works very closely with the Joint KSA PMO. The JKSA PMO uses data from Knowledge Assessments, Skills Assessment (KSA) and Clinical Activity Measurement (CAM) to quantitate readiness. The KSA Clinical Readiness Program is an elegant method to assess knowledge of CCC clinical information, skills from courses like ASSET+ and clinical activity to perform a comprehensive assessment of readiness to manage combat trauma.

Lastly, the JTS continues to do what was started 20 years ago by many of the legends that established the JTS: the weekly JTS Combat Casualty Care Conference. This worldwide call integrates all our functions (PI, DODTR, CTS, education, support for downrange teams, etc). The JTS recently had the 900th JTS CCC Conference; that alone is a tremendous accomplishment! The JTS PI nurses, PI physicians and the many downrange medics, nurses and physicians continue to inform, educate, and keep CCC a central focus in the MHS. This call has granted over 100,000 hours of continuing medical education (CME) to military providers. In my opinion, all the MHS should take a pause for 1 hour every Thursday to hear from providers downrange on the care of combat casualties and use the opportunity for CCC relevant CME.



# CRITICAL SUPPLY CONVEYANCE OF ANY DIMENSION

In January, the Defense Logistics Agency Troop Support Medical Transportation Team marked nearly 6,000 freight shipments using a new program that delivers bulk orders of critical supplies in record time.

By Alison Welski, DLA Troop Support



Tri-walls—corrugated boxes designed for bulk shipments of fragile material—are prepared to be filled with bulk shipments at the Medical Air Bridge in Baltimore, Maryland. Using the Defense Logistics Agency’s Medical Freight Transportation program can cut delivery time as much as half between orders being placed and received. (DLA Troop Support)

The Medical Freight Transportation program gives customers the ability to receive supplies, like medical/surgical equipment, collectively weighing over 300 pounds quickly and efficiently. Using this program can cut delivery time by as much as half between orders being placed and received.

“DLA Troop Support Medical’s Transportation team monitors overseas electronic catalogue orders and then uses its extensive network of transportation assets to meet them on time, target, and budget,” said Thor Myers, Medical Tailored Vendor Logistics Specialist.

“This system decreases required delivery timeframes while increasing customer support and satisfaction; provides primary and back-up carriers to support day-to-day steady state operations, as well as the ability to flex and add additional carriers to support increased shipments of medical supplies during contingency and/or surge operations,” said Lt. Col. Edwin Caudell, Operational Customer Facing Division Chief.

## TARGETED FOR WARTIME, READY ANYTIME

When the Defense Department has a bulk order requirement, the Medical Freight Transportation program can help by moving the bulk order that originates in the United States to the chosen destination anywhere in the world.

“All medical supply chains have both primary and secondary carriers to accommodate the transportation environment,” Caudell remarked. Specifically, if a surge requires additional capacity, or the primary carrier is unable to handle peacetime volume, secondary carriers are activated by the DLA Troop Support Medical Transportation Office.



U.S. and Peruvian Airmen assigned to the Combined Joint Task Force, Resolute Sentinel 23, help load medical supplies at Base Aérea Las Palmas to be used by personnel at Hospital Dos De Mayo, Lima, Peru, July 2023, during exercise Resolute Sentinel 23. In January 2024, the Defense Logistics Agency Troop Support Medical Transportation Team marked nearly 6,000 freight shipments using a new program that delivers bulk orders of critical supplies in record time. (U.S. Air Force photo by Master Sgt. Corban Lundborg)

“The dedicated and talented members of the DLA Troop Support Medical Transportation Team are the unsung heroes of the DLA Medical supply chain,” said Caudell. “Without their methodical and continuous efforts and attention to detail, the supply chain would be unable to support the warfighters and thousands of other DLA medical customers located outside the continental United States.”

# PRIORITIZING HEALTHCARE MODERNIZATION THROUGH TRANSFORMATIVE TECHNOLOGY

*Colonel James Jones is a licensed physician assistant, researcher, instructor, and executive manager with an exemplary record of successful medical program development, tactical execution and clinical care across 34 years of military service. He has had the opportunity to provide health care and input on policy at the highest levels of the U.S. government and has specialized in preparing for and responding to emergencies, disasters, and other challenging conditions around the world.*

*COL Jones earned a Masters of Physician Assistant Studies Degree with specialization in Family Medicine from the University of Nebraska and later graduated with a PhD in Health Science with a major in International Research and Education from Trident University, CA. He is a graduate of the US Army War College, completed a tactical medical officer fellowship at the White House and a Protective Medicine Fellowship with a focus in cardiopulmonary critical care resuscitation at the Mayo Clinic, Phoenix AZ.*

*COL Jones has served in a variety of roles to include Platoon Leader, Company Commander, Clinic Commander, Director of Training, Chief Operations Officer, Director of the Medical Evaluation and Treatment Unit, White House Medical Unit and Branch Chief, Interservice Physician Assistant Program (IPAP) and Professor of Cardiology. He served as a Deputy Director and Faculty Member for the Beth Israel Deaconess Medical Center (BIDMC) Fellowship in Disaster Medicine, Harvard Medical School, Faculty Associate at the University of Phoenix, and appointed as an Assistant Professor, Baylor University.*

*COL Jones was appointed by President Obama as the PA to the President and continued in that role until October 2018. He served as the first PA Deputy Director and Chief of Protective Medicine White House Medical Unit to serve the President and Vice President of the United States. In Mar 2020, he was appointed as the Chief Medical Advisor, Executive Office of the President and served on the COVID Task Force.*

*Combat & Casualty Care had the opportunity to speak with COL James Jones, director, Med CDID, regarding the latest priorities in the pipeline for Army medical modernization in support of the Joint medical force.*



**COL James Jones**

Director

Medical Capability Development Integration Directorate  
U.S. Army Futures Command

**C&CC: What future directions do the Army Surgeon General's (TSG 46) Army Medicine Nested Priorities indicate for Army medical modernization and new capabilities to support the Joint Warfighter?**

**COL Jones:** The Army Surgeon General (TSG) Medicine Nested Priorities provide a strategic blueprint for transforming Army medical capabilities in alignment with the Army Health System (AHS) imperatives. This transformation is geared towards enhancing the operational readiness, resilience, and reform of Army healthcare systems (AHS) to better support warfighters in multi-domain operations. The integration of these documents with the AHS imperatives lays the groundwork for a multi-dimensional approach to medical modernization, focusing on several key areas:

**Innovative Health Technologies and Digital Integration:** A central theme in future medical modernization efforts is the embrace of digital health technologies, such as wearable devices for health monitoring, telehealth services for remote care, and AI-driven diagnostic and treatment tools. These technologies are pivotal in Maximizing Return to Duty Rates by enabling continuous health monitoring and personalized care, ensuring soldiers can return to duty faster and with better support.



COL James Jones leads discussion at a Senior Leader strategic offsite to develop priorities for AHS transformation. (MED CDID)

Furthermore, digital integration facilitates real-time data sharing and decision-making, enhancing the responsiveness and adaptability of medical operations.

**Enhanced MEDEVAC and Logistics Capabilities:** The emphasis on Optimizing Ground, Air, and Sea Evacuation aligns with the push towards utilizing cutting-edge technologies and methodologies to streamline evacuation and logistics processes. The future direction involves the adoption of autonomous vehicles and drones for safer and more efficient evacuation and supply delivery, especially in contested or remote environments. This innovation addresses the imperative of Overcoming Contested Logistics by ensuring that medical support is uninterrupted even in the most challenging operational scenarios.

**Operational Medicine in Multi-Domain Operations:** The expansion of operational medicine capabilities to support multi-domain operations is a critical aspect of the future strategy. This includes developing medical support frameworks that are adaptable to the unique challenges of land, air, sea, space, and cyberspace domains. By enhancing interoperability and flexibility, the Army aims to ensure comprehensive medical support across all domains, reinforcing the imperatives of both Maximizing Return to Duty Rates and Optimizing Evacuation processes.

**Health and Well-Being of Soldiers and Families:** Recognizing that the strength of the Army lies not just in its operational capabilities but also in the health and well-being of its personnel, future directions include a strong focus on preventive medicine, mental health services, and family support programs. These efforts are designed to build resilience among soldiers and their families, addressing the broader spectrum of health needs and contributing to a holistically ready and resilient force.

**Collaboration and Reform:** The path to modernization is underscored by a commitment to reforming medical processes and fostering collaboration both within the military health system and with external partners in academia, industry, and allied nations. By leveraging collective expertise and resources, the Army aims to accelerate innovation and ensure that its medical forces are equipped with the most advanced tools and knowledge to support mission success.

**C&CC: How do the three Army Health System (AHS) imperatives help warfighters win wars?**

**COL Jones:** The Army Health System (AHS) has identified three imperatives that are critical to sustaining the fighting force's effectiveness and survivability on the battlefield: Maximizing Return to Duty Rates, Optimizing Ground, Air, and Sea Evacuation, and Overcoming Contested Logistics. These imperatives are strategically designed to ensure that the Army maintains operational advantage through superior medical readiness and support capabilities.

**Maximizing Return to Duty Rates:** This imperative focuses on enhancing the physical and psychological resilience of soldiers, ensuring rapid recovery from injuries, and facilitating swift return to duty. By implementing advanced medical interventions, rehabilitation technologies, and comprehensive combat and operational stress control programs, the AHS aims to reduce downtime and maintain unit strength. Keeping soldiers healthy and ready to return to duty not only preserves combat power but also boosts morale and unit cohesion, essential elements for winning wars.

**Optimizing Ground, Air, and Sea Evacuation:** Effective medical evacuation (MEDEVAC) systems are vital for saving lives and sustaining military operations. Optimizing these systems involves employing a mix of transportation assets, innovative triage and treatment protocols, and real-time medical tracking to ensure that wounded personnel receive timely and efficient care. By leveraging advancements in telemedicine, unmanned systems, and aeromedical evacuation capabilities, the AHS enhances its ability to provide life-saving care under the most challenging conditions. Streamlined and adaptable evacuation processes ensure that soldiers receive the best possible care regardless of the operational environment, thereby improving survival rates and operational effectiveness.

**Overcoming Contested Logistics:** The modern battlefield, characterized by dispersed operations and sophisticated threats, presents significant logistical challenges for medical support. Overcoming these challenges requires the development of resilient medical supply chains, adaptive logistics strategies, and the integration of autonomous delivery systems. By innovating in medical logistics, the AHS ensures that medical supplies, equipment, and personnel can reach forward-deployed units even in contested or denied areas. Implementing robust and flexible logistics solutions enhances the AHS's ability to sustain operations in diverse environments, ensuring that warfighters have the medical support they need to achieve mission success.

Together, these imperatives form the cornerstone of the Army's approach to medical modernization and readiness. By focusing on maximizing return to duty rates, optimizing evacuation systems, and overcoming logistical challenges, the AHS directly contributes to the Army's ability to win wars. These efforts ensure that the Army can project and sustain combat power, protect the health and well-being of its soldiers, and adapt to the evolving demands of multi-domain operation.



The Prolonged Care Augmentation Detachment (PCAD) a new capability was experimented with at Project Convergence in November 2022. PCADs provide extended care and enroute care capabilities and capacity to Role 2 medical companies and resuscitative surgical detachments operating forward of brigade combat teams when medical evacuation is delayed or denied. (MED CDID)

### **C&CC: What are the Army's 10 Medical Functions and their significance in operational medicine?**

**COL Jones:** The Army's 10 Medical Functions serve as the foundational framework for delivering comprehensive healthcare and readiness across all phases of military operations. These functions include Medical Command and Control, Medical Treatment, Medical Evacuation, Medical Logistics, Hospitalization, Preventive Medicine, Combat and Operational Stress Control, Dental Care, Veterinary Services, and Medical Laboratory Services. Each function plays a critical role in ensuring that military personnel receive the necessary medical support, from frontline treatment to rehabilitation, thus maintaining force readiness and effectiveness.

### **C&CC: How does the integration of Concept Required Capabilities and technological advancements shape the strategic vision for the Army's medical modernization efforts, particularly in enhancing the 10 Medical Functions to meet the demands of future operational environments?**

**COL Jones:** The Army Medical Concept for 2028 delineates Concept Required Capabilities (CRCs) as the linchpin for evolving the Army's medical capabilities in anticipation of the demands of future operational environments. These CRCs underscore the strategic imperatives of enhancing medical situational awareness, accelerating medical decision-making, integrating autonomous systems in medical care, and ensuring scalable medical logistics to support dispersed operations. The essence of these capabilities lies in their collective aim to improve medical response times, adaptability, and effectiveness across a spectrum of operational contexts, thereby ensuring that the health system can swiftly and efficiently address the needs of warfighters in the field.

Parallel to the conceptual framework provided by the CRCs, the Army's strategic approach to leveraging technology for enhancing the 10 Medical Functions embodies the practical application of these capabilities. Through the adoption of telemedicine, artificial intelligence (AI), and robotics, the Army is not just envisioning future medical support but actively constructing the foundation for its realization. Telemedicine expands the reach of medical care, bringing expert diagnostics and treatment to soldiers in remote and austere environments, thereby enhancing medical situational awareness and decision-making capabilities. AI and

machine learning revolutionize medical logistics and decision support, optimizing the allocation of resources and treatment strategies to ensure that medical support is both efficient and effective. Robotics and autonomous systems transform the landscape of medical evacuation and care delivery, improving the safety and efficiency of operations and contributing to the scalability of logistics in support of dispersed units.

This strategic synthesis of CRCs with technological enhancements to the 10 Medical Functions represents a comprehensive blueprint for the future of Army medical operations. It reflects a deliberate and informed approach to modernization, one that acknowledges the complexities of future battlefields and the paramount importance of maintaining a medically ready and resilient force. By focusing on these strategic priorities and leveraging the latest advancements in technology, the Army positions itself to not only meet but exceed the healthcare needs of its personnel, ensuring they are prepared, protected, and capable of achieving mission success.

This unified strategic vision encapsulates the Army's commitment to innovation, readiness, and excellence in healthcare support. It underscores the Army's proactive stance in anticipating future challenges and crafting a medical system that is robust, responsive, and adaptable. Through this vision, the Army Medical Department ensures that it remains a critical enabler of operational success, enhancing the overall effectiveness and survivability of the force in the face of evolving global threats.

### **C&CC: How are the Army's medical modernization efforts aligning with joint and coalition operations?**

**COL Jones:** The Army's medical modernization efforts are intrinsically designed to foster a high degree of interoperability with joint and coalition partners, reflecting a strategic commitment to enhancing collective medical support capabilities in multi-national operations. This alignment is crucial, given the increasingly interconnected nature of modern military engagements, which often involve a complex tapestry of allies and partners working together to achieve common objectives. The core strategies for achieving this alignment include:

**Standardization of Medical Procedures and Protocols:** A foundational element of enhancing interoperability involves the standardization of medical procedures, equipment, and protocols. This ensures that when Army medical personnel operate alongside their counterparts from other services or nations, they can do so seamlessly, with

minimal friction or misunderstanding. Standardization extends to clinical practices, medical evacuation procedures, and the use of medical equipment, creating a common operational framework that supports effective collaboration.

**Advanced Data Sharing and Communication Technologies:** The integration of advanced data sharing and communication technologies is vital for real-time information exchange among joint and coalition forces. Implementing secure, interoperable health information systems enables the efficient sharing of medical records, situational reports, and logistics data, enhancing the collective situational awareness and coordination of medical support across the coalition.

**Joint Exercises and Training Programs:** Regular joint exercises and training programs are key to operationalizing the concept of interoperability. Through these exercises, medical personnel from the Army and its partners can practice working together in simulated operational environments, identifying and addressing any gaps in interoperability. These training opportunities also foster mutual understanding and trust, which are indispensable in high-stakes operations.

**Collaborative Research and Development Initiatives:** The Army engages in collaborative research and development initiatives with allies and partners to co-develop the next generation of medical technologies and capabilities. These collaborations often focus on areas such as combat casualty care, infectious disease management, and medical logistics solutions, ensuring that innovations are interoperable and relevant across a broad spectrum of operational contexts.

**Policy and Doctrine Development:** Working closely with joint and

coalition partners, the Army contributes to the development of shared medical policy and doctrine. This collaborative approach ensures that strategies and guidelines reflect a comprehensive understanding of the challenges and opportunities in joint and coalition medical operations, facilitating a unified approach to health service support.

**Leveraging Multinational Medical Units:** The establishment and utilization of multinational medical units and facilities offer a practical mechanism for enhancing interoperability. These units, staffed by personnel from multiple nations, operate under unified command structures and procedures, providing a living laboratory for interoperability and a platform for delivering integrated medical support in operations.

These strategic efforts underscore the Army's commitment to ensuring that its medical modernization initiatives not only advance its capabilities but also enhance the collective medical operational capacity of joint and coalition forces. By prioritizing interoperability, standardization, and collaboration, the Army contributes to building a more resilient, effective, and cohesive medical support framework for future operations, thereby strengthening the overall readiness and response capabilities of the allied and partner forces.

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| <b>APR 23 – 25</b><br><b>MDEX</b><br>Warren, MI<br>Mdex-ndia.com   | <b>AUG 13 – 15</b><br><b>GVSETS</b><br>Novi, MI<br>Ndia-mich.org                        |
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