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Q2 Spring 2019
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Director
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¹Lurie KG, et al. *J Med Soc Toho*. 2012;59(6):304-315.

²Convertino VA, et al. *Resp Care*. 2011;56(6):846-857.

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IMPROVING THE MILITARY HEALTH SYSTEM THROUGH REFORM

The Defense Health Agency is continuing to guide a 21st century Military Health System (MHS) as overseer of a globally-accessible network of health care providers, enabling streamlined care any place, any time.

By Vice Adm. Raquel Bono

Features



COMMANDER'S CORNER

Providing Full-Spectrum Care for Total Force Readiness

COL John J. Melton

Commander
Womack Army Medical Center
Ft. Bragg, NC



SOF Medic: Optimizing Point of Injury Care

Combat & Casualty Care spoke with combat medics SFC Eric Henne and SGM David Hayes regarding their experiences providing tactical combat and casualty care in prolonged point of injury field scenarios.

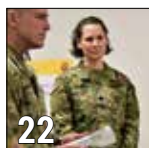
Interview by Christian Sheehy



Staying Ahead of Force Medical Need

U.S. Army Medical Department Center and School Health Readiness Center of Excellence is working to align medical application with force modernization initiatives.

By Jay Harmon



Addressing Neurotrauma and Psychological Health

USAMMDA's Neurotrauma and Psychological Health Project Management Office is developing new paths for detection, protection, prevention, and treatment of PTSD, TBI, and other disorders.

By Jeff Soares and Ashley Force



Expanding the Patient-Provider Connection

The U.S. Department of Veterans Affairs (VA) is working to advance communication options for positive outcomes both short and long term.

By Stephanie Deaner

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Cover: West Virginia Army National Guard combat medics and aircrew from Company C, 2-104th General Support Aviation Battalion (MEDEVAC) secure mannequins during a combat simulation exercise held at Volkstone training area on Camp Dawson, WV, a 10-day long 68W sustainment training, which tested each medic's communication, tactical movement, and medical assessment, triage, and treatment skills. (ARNG photo by Edwin L. Wriston)



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By Daniel Boelman

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Mailing Address

Tactical Defense Media, Inc.
PO Box 12115

Silver Spring, MD 20908-0115 USA

Telephone: (301) 974-9792

Fax: (443) 637-3714

www.TacticalDefenseMedia.com

circulation@tacticaldefensemedia.com

editorial@tacticaldefensemedia.com

advertising@tacticaldefensemedia.com

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INSIGHTS

In the Q2 Spring 2019 issue of Combat & Casualty Care, we examine what it takes to keep the world's premier military healthy, from command surgeon to field medic, with attention paid to the U.S. Special Operations Forces. As American global interests expand, so goes the critical role of the nation's combat medics, tasked with addressing combat and non-combat injuries in places where rapid evacuation may not be immediately possible.

With a resurgence of prolonged field care (PFC) as a necessity of tactical combat casualty care (TCCC), greater treatment prior to medical evacuation (MEDEVAC) to a higher-level care has become more the norm. In an exclusive interview with two SOF medics, readers get insight into some of the challenges facing those responsible for bringing quality care to the point of injury. Capabilities in damage control resuscitation (DCR) and damage control surgery (DCS) are poised to bring care, once only available at the facility level, right to the point of injury. Out of Ft. Bragg, COL John Melton, Commander of Womack Army Medical Center (WAMC), speaks to the execution of Joint Health Service Functions to effectively generate readiness for the Army Total Force, Joint Force, and All-Volunteer Force.

Perhaps the single largest upgrade to U.S. military health has been the creation of a globally accessible electronic health records network. The Defense Health Agency (DHA), led by its director, VADM Raquel Bono, has been assigned as overseer of the Military Health System (MHS) and the administration of MHS GENESIS, the software application supporting an MHS-wide capability to provide active servicemembers and veterans with 24-7 access to their personal health information. This is only one aspect of health modernization being undertaken by DoD, and is being reflected by the U.S. Army Medical Department Center and School (AMEDDC&S) Health Center of Excellence (HRCOE), the Army's proponent for medical capability development and training.

The U.S. Department of Veterans Affairs (VA) is also on the modernization trail offering VA Video Connect, the latest in video-voice telemedical consultation to veterans and their families, eliminating the need for live doctor-patient meetings. DoD is working to bring much of what enables telemedicine in the civil sector to its mission operations as well, extending care that once was only available at higher care echelons to MEDEVAC and field-level scenarios.

Your comments and suggestions are welcome. Thank you for the continued readership!

Christian Sheehy

Editor

christian@tacticaldefensemedia.com

Cathy Kieserman

Office Administrator

cathy@tacticaldefensemedia.com

Jittima Saiwongnuan

Graphic Designer

jittima@tacticaldefensemedia.com

Sonia Bagherian

Publisher

soniab@tacticaldefensemedia.com

Ellie Collins

Circulation Manager

elliec@tacticaldefensemedia.com

General Inquiries

editorial@tacticaldefensemedia.com

contact@tacticaldefensemedia.com

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DHA IMPROVES MILITARY HEALTH SYSTEM THROUGH REFORM EFFORTS

The Defense Health Agency (DHA) is leading a historical effort to reform the Military Health System (MHS). Here's how we're doing it.

By Vice Adm. Raquel Bono, DHA Director



Vice Adm. Raquel Bono speaks to women physicians about her career path at the 2019 Female Physician Leadership course. (DHA)

MHS Transformation – Where We Are and Where We're Going

I'm excited about our progress and where we're going. The Defense Health Agency (DHA) has implemented some of the most important and impactful health reforms across the Department of Defense, delivering an integrated system of readiness and health. The spectrum of reforms isn't just about managing military hospitals and clinics. It includes standardizing the delivery of care across military medicine, developing common policies and procedures, and better integrating military and private sector care.

There's no doubt the multi-year transition of military hospitals and clinics from the services to the DHA is one of the more notable pieces of these reforms. On Oct. 1, 2018, eight military treatment facilities came under DHA's authority, direction and control. This coming October, all medical facilities in the eastern United States – more than 50 percent of the military hospitals and clinics in the U.S. – will shift to the DHA.

This transition enables the MHS to better support medical readiness, improve the patient experience, and deliver more cost-effective, integrated care. Throughout this transition, we're also using a comprehensive performance management system to monitor key indicators of readiness, quality, safety, access, satisfaction, and cost.

It's automated too – almost everyone in our system has access to it and can see how we are doing, what's on track, and what needs attention.

To be clear, these reform efforts are critical components of DHA's overarching combat support mission. The National Defense Strategy underscores the changing global security landscape, recognizing the evolving needs of the warfighter and the Department's prioritization of force readiness. The DHA plays a significant role in that effort by both advancing the health and readiness of U.S. forces and managing the medical readiness platforms that keep the medical force ready to support operations worldwide.

Our accomplishments thus far have taken a village. I meet every week with the Surgeons General, the Joint Staff Surgeon, and Mr. McCaffery – the Principal Deputy Assistant Secretary of Defense for Health Affairs – to work through the details to ensure we get this right for our commanders, our staff, and the patients we serve. I'm proud of the work we've done together, and I look forward to what we will accomplish in the coming years.

An Update on MHS GENESIS

MHS GENESIS, the Department's new electronic health record, is a critical tool to advance a more integrated system of health and

readiness. Two years ago, we began deploying MHS GENESIS, and we're on track to see it fully deployed across the Military Health System during the next five years. We initially deployed MHS GENESIS to four military hospitals in the Pacific Northwest. These sites have helped us identify some of the challenges involved in implementing MHS GENESIS so we could build a roadmap for successful future deployments. The leaders and staff at each initial site made invaluable contributions providing us with a more refined process as we begin implementation at the next wave of sites this year in northern California and Idaho.

My colleagues and I have traveled to implementation sites so we can hear first-hand about the challenges and lessons learned from our amazing on-the-ground staff. In April, the MHS Functional Champion, Maj Gen Lee Payne, visited Nellis Air Force Base, the Marine Corps Air Ground Combat Center Twentynine Palms, and Fort Irwin to formally initiate MHS GENESIS implementation at the sites which will go live in 2020. I am also planning to visit the initial operating capability sites in the Pacific Northwest where I expect to hear about areas we can still improve, develop solutions and share best practices.

MHS GENESIS has already led to more effective care. In 2018, for example, we had an 88.5 percent average in discharge medication reconciliation compliance. We also avoided 2,300 duplicate lab orders. That's huge progress, and I'm confident as deployment continues, we'll see even bigger improvements.

Our health care provider teams and our patients deserve a state-of-the-art tool we envision MHS GENESIS delivering. While change of this magnitude can be challenging, I'm the leadership and medical staff at

our military hospitals and clinics will safely implement MHS GENESIS and rapidly take advantage of the opportunities this new technology affords us.

Advancing Force Health with Partnerships

We have an active partnering strategy in the DHA. We enjoy a lot of synergy and progress when we pursue and forge dynamic partnerships – with our interagency colleagues, allies, local communities, and external medical organizations.

There are several areas where we've built strong partnerships with other agencies in ways to help us accomplish our mission. For instance, the Department of Veterans Affairs and the U.S. Coast Guard in 2018 decided to adopt the same electronic health record we are using for MHS GENESIS. This is really important, especially as it relates to the VA. Use of a single electronic health record makes it easier to transfer data between the two agencies, providing seamless care for our nation's veterans. When we are fully deployed, medical data from the DoD and VA will be stored in a single database. This paves the way towards better integration and improved access to a longitudinal health record for our service members and veterans. And we are working closely with our colleagues in the VA to manage this deployment in a unified way.

The MHS is an important part of the larger federal response to natural disasters or man-made events. The National Disaster Medical System is the federally coordinated system overseen by the Federal Emergency Management Agency supporting local or national medical

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capabilities. At any point during an emergency, we might be called upon to provide manpower, equipment, patient movement, or direct hospital care.

I'm also proud of the work we have done in the DHA to reach out to allies. We have liaison officers from the United Kingdom, Germany, and Japan working with us here in our headquarters – providing an active sharing of information about each other's military health systems.

This arrangement is helpful for technical interoperability and for the cultural sharing that goes on too. The UK military has done a lot of work on a regional approach to its health system, and we've had terrific exchanges with both their liaison officer here, as well as their leadership in London.

A good example of a strong military-civilian partnership is what you see in San Antonio, where we are part of the city's trauma response system. If a medical event occurs, and the San Antonio Military Medical Center is the closest medical facility – we take the patient. It doesn't matter if they are military or civilian. This is good for our force readiness mission and good for San Antonio.

Related to these community partnerships is our commitment to transparency and drawing necessary comparisons with our civilian colleagues. We've put our hospital performance out in the public space in a few new ways in the last year. First, our quality and safety information is on the Center for Medicare and Medicaid Services' "Hospital Compare" website. Anyone can see how we are doing and compare us to other hospitals in the area. In December, I also announced DoD was joining Leapfrog – a private, non-profit health care organization that puts hospitals' safety, quality and satisfaction scores online for the public to see. It's very patient-friendly and easy to follow. Walter Reed National Military Medical Center is already sharing its data with Leapfrog, and in the coming years, we are going to bring all DHA hospitals onto Leapfrog.

We're always looking to create partnerships in academia, industry, and partner nations to advance our medical research and development efforts. Our goal is to ensure we can care for our warfighters whether they are in Bethesda, Maryland, or in an austere location. We believe partnerships are a very important avenue for achieving that objective.

Enhancing Operational Capability to Support Operations Worldwide

There are challenges to providing uninterrupted medical care to our members in some of the most austere or dangerous locations on earth. But this is a global team effort, and it couldn't be truer than in circumstances like this. Combat support is at the core of the DHA, so it should come as no surprise we work closely with the Joint Staff Surgeon and the services on operational support matters. With their help, we provide critical combat support capabilities across all phases of military operations. These include: the Joint Trauma System (JTS), which generates evidence-driven recommendations to improve combat casualty care; the Armed Services Blood Program, which distributes blood and blood products for combat casualty care and other needs; and the Armed Forces Medical Examiner System, which provides medical-legal services, feeding real-time lessons learned to the military medical enterprise to improve our capabilities.

We are using data to drive improvement. Our JTS team recently assessed the delivery of medical support to more than 500 casualties from a seven-month period in 2018. They looked at every aspect of support including hemorrhage control, blood transfusion, airway management, pain management, and equipment performance. I was

impressed with our overall performance – we were able to do the right thing at the right time in difficult circumstances. And, I was just as impressed with the detailed analysis that lets us know where we can bolster training or improve documentation.

Most importantly, our work starts even before a single person deploys. DHA has a world-class global health surveillance capability ensuring our forces have the right health protection well in advance of deployment. We also train our medics and corpsmen to be able to operate independently in austere locations and for extended periods of time. DHA then supports those deployed forces with a global network of hospitals and clinics and civilian health providers.

We've also recently placed liaison officers within combatant commands and the Joint Staff Surgeon's office to provide direct contact with the DHA. These liaisons help us better understand combatant command needs, and to give them more direct access to DHA's capabilities. These are critical elements to advancing the health and readiness of U.S. forces, and managing the medical readiness platforms keeping the medical force ready to support operations worldwide.

Reflecting on the Last Three Years

These last three years as DHA Director have been some of the most rewarding throughout my long tenure in the Navy. For those who may not know, I am retiring in September. So I'd like to take this opportunity to first discuss my team at the DHA and my colleagues in the Army, Navy, and Air Force. I've been honored to serve with some of the most dedicated, hardworking public servants in our industry, and the teamwork I've seen during these four years has pulled us through some complex challenges.

It's truly been an exciting time to be part of DHA and the Military Health System as we are undergoing the most significant organizational changes in history. I've relished the opportunity to work directly with our beneficiaries, our operational mission commanders, and, of course, our elected officials to design a responsive, integrated system for the people we serve.

I've already mentioned some of our top achievements – the ongoing transition of MTFs to the DHA, the deployment of MHS GENESIS, and our aim to strengthen partnerships with the Combatant Commands, Military Departments, the VA, academic and industry partners, as well as partner nations. All of these efforts advance military medicine towards greater integration and a higher quality system.

We've also done a lot of work with the TRICARE Health Plan. During my tenure, we awarded several major contracts which allow for more efficiency by reducing overhead and streamlining administrative processes. We also implemented an "open season" – a new concept for our beneficiaries, bringing it in line with civilian health care plans. We moved our TRICARE Retiree Dental Program to the Office of Personnel Management, where beneficiaries now have a choice of dental plans under the Federal Employee Dental/Vision Insurance Plan. And, by the way, we provided more than 300,000 families with a vision plan that didn't exist before.

Finally, we are investing in data analytic tools that allow us to see more clearly on how we are doing in access, quality, safety, and cost information. We are more transparent with this information more than ever before. Our performance metrics are on every MTF website. It's also on www.health.mil and, as I mentioned earlier, it's on CMS' Hospital Compare website and on Leapfrog. So, I'm really proud of the way we are relying on data to optimize transparent health care delivery.



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COL Melton is a graduate of the U.S. Military Academy, West Point, New York (B.S. 1992), the Foster School of Business, University of Washington, Seattle, Washington (M.B.A. 2004), the Command and General Staff College (2008), and the Army War College (M.S.S. 2015). Prior to this assignment, COL Melton served as the Commander, Irwin Army Community Hospital and Director of Health Services for Ft. Riley, Kansas.

Other key assignments include: Deputy Commander/Chief of Staff, Womack Army Medical Center, Ft. Bragg; Deputy Commander/Chief of Staff, Martin Army Community Hospital, Ft. Benning; Commander, U.S. Army Health Clinic Bamberg and Director of Health Services for Warner Barracks, Bamberg, Germany; Chief, Resource Management/Chief Financial Officer, Landstuhl Regional Medical Center, Landstuhl, Germany; Executive Officer, 43rd Area Support Medical Battalion, 62nd Medical Brigade, Ft. Lewis; Chief, Program Analysis & Evaluation, 18th Medical Command, Yongsan, Republic of Korea; Chief, Resource Management, 121st General Hospital/U.S. Army Community Hospital-Seoul, Yongsan, Republic of Korea; Chief, Program & Budget, Brooke Army Medical Center, Ft. Sam Houston; Commander, Headquarters Company, 52nd Evacuation Battalion, Yongsan, Republic of Korea; Executive Officer, F-Company, 702nd Main Support Battalion, 2nd Infantry Division, Cp Casey, Republic of Korea; and Treatment Platoon Leader, F-Company, 702nd Main Support Battalion, 2nd Infantry Division, Cp Casey, Republic of Korea.

COL Melton is a certified Defense Financial Manager, board certified in Healthcare Administration, and a Fellow in the American College of Healthcare Executives. COL Melton is also an Arbinger Advanced Facilitator and TeamSTEPPS Master Trainer.

COL Melton holds active memberships in the American College of Healthcare Executives, American Society of Military Comptrollers, Healthcare Financial Management Association, Association for Patient Experience, International Honor Society Beta Gamma Sigma, and the Medical Service Corps Silver Caduceus Society.

COL Melton's awards and decorations include the Legion of Merit (with 1 Oak Leaf Cluster), Bronze Star Medal, Meritorious Service Medal (with 5 OLC), Army Commendation Medal (with 4 OLC), the Army Achievement Medal (with 4 OLC), Meritorious Unit Citation, Expert Field Medical Badge, Parachutist Badge, and the Order of Military Medical Merit.



COL John J. Melton

Commander
Womack Army Medical Center
Ft. Bragg, NC

Combat & Casualty Care had the opportunity to speak with COL John Melton, Commander, Womack Army Medical Center (WAMC), Ft. Bragg, NC, regarding current focus areas and efforts at WAMC.

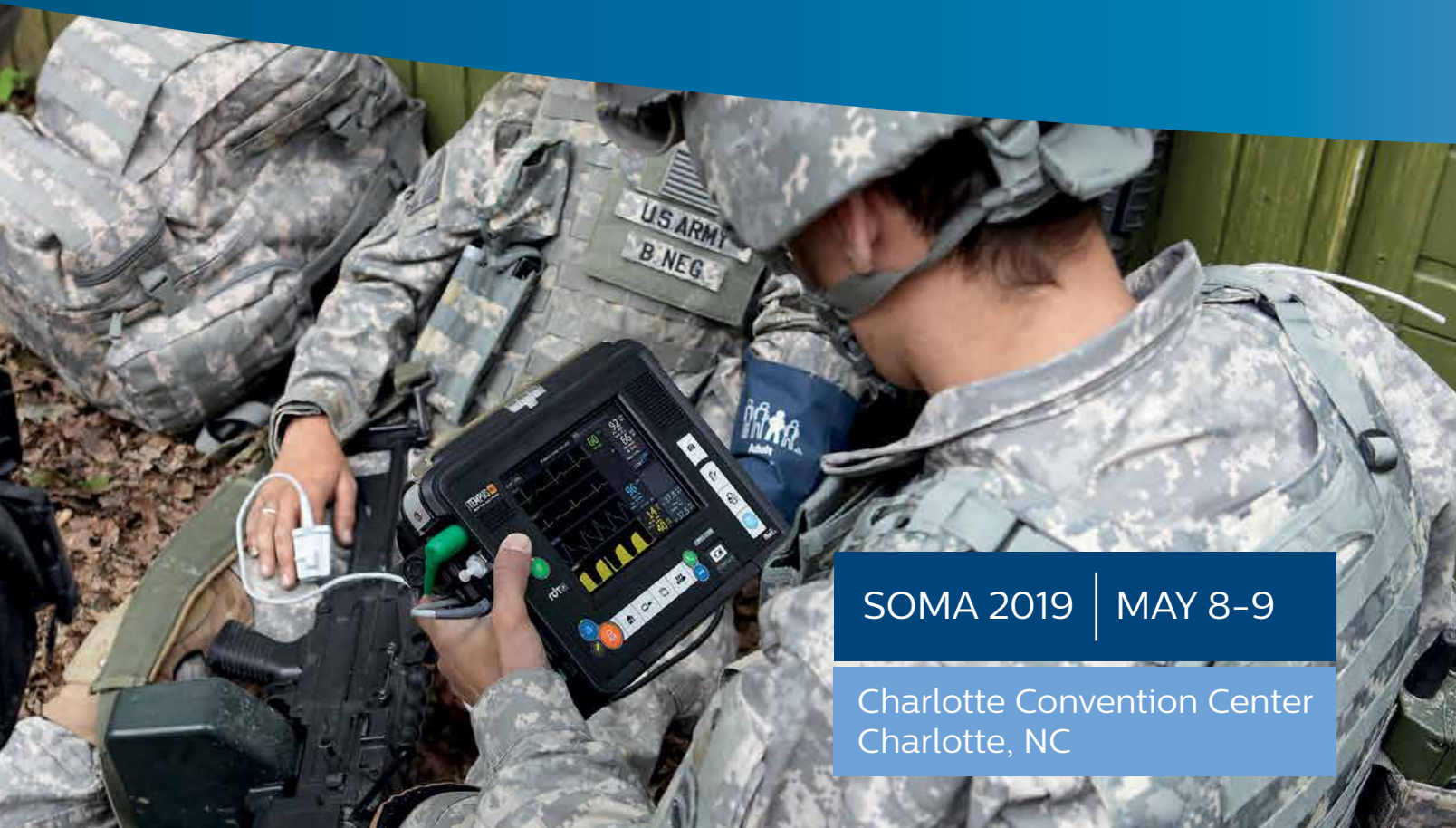
C&CC: Please tell us about your role as WAMC Commander and current mission focus.

COL Melton: As the Womack Commander, I am responsible for and manage the Fort Bragg Military Health System in executing Joint Health Service Functions to effectively generate readiness for the force whether it be the Army Total Force, Joint Force, or All-Volunteer Force and their families. I serve in a dual-hatted capacity as the Army Readiness/Defense Health Agency Medical Treatment Facility Commander in Direct Support to the Senior Commander and all Fort Bragg tenant organizations.

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physically and cognitively “Ready to Fight Tonight” and proficient in their respective critical medical wartime skills.

C&CC: From a clinical-specific perspective, what are some areas of concern today that are preparing WAMC to handle types of casualties being seen?

COL Melton: To realize the transformational changes directed in the National Defense Authorization Act legislation, we must continue to reorganize resources and pursue partnerships that afford opportunities for higher complexity patient volume. This allows us to tailor curriculum pathways to achieve currency and sustain proficiency for both teams and individual occupational specialties at home station.

Integrating didactic instruction, preceptor teaching, clinical experience, live tissue training, and evidence-based clinical simulation opportunities under various conditions is essential. This construct leverages our expertise in support of operational medicine thereby reducing the variance in casualty management processes in full mission profile training.

C&CC: From a forward operations perspective, how is WAMC helping “push forward” skills application to better address point of injury trauma requiring immediate care, particularly in life-threatening situations?

COL Melton: There is a need to rapidly build and sustain a prolonged field care capability at point of injury that decreases the number

of preventable trauma deaths and enhances survivability in close combat, specifically at Role 1 which includes self-aid, buddy-aid, and first-responder care. We resource and integrate curriculum pathways to enhance the capability for both medical and non-medical Soldier specialties to support an effective Role 1 casualty management system.

As an example, every month we start an accredited development program for our supported units for the Combat Medic (68W). This program includes a twenty week enhanced Paramedic certification program, a two week Flight Paramedic certification course, a five day Delayed Evacuation Casualty Management course, a three day Tactical Combat Casualty Care course, a six week Inpatient Unit preceptor training rotation, a six week emergency room preceptor training rotation, a six week Advanced Life Support EMS Unit preceptor training rotation, skills sustainment clinical rotation opportunities, and skills validation recertification.

We can design and tailor training pathways to satisfy their needs, depending on the supported unit commander's training and readiness requirements, similar to range control.

C&CC: From a communications standpoint, can you talk about any key program efforts that WAMC is helping to advance?

COL Melton: Womack Army Medical Center and Soldiers from the 44th Medical Brigade had the opportunity to field test innovative technology in Army medicine to improve patient's care October 3 using Medical Hands-free Unified Broadcast (MEDHUB). MEDHUB

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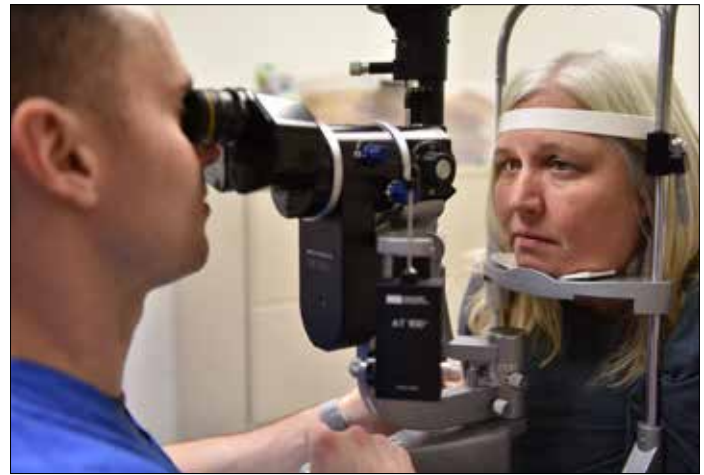


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uses mobile pressure sensors, accelerometers and other technology cleared by the U.S. Food and Drug Administration to improve the communication flow between patients, medics and receiving hospitals. As of today, Army medics document all pre-hospital or pre-medical treatment facility interventions on a Tactical Combat Casualty Card. Documentation by the medics is handwritten and important in order to guarantee fluidity in patients' care from first responders to the transfer of patients into the hospital of a military treatment facility. This system really fills an operational gap of ours where we're not able to take those trending sets of vitals in the back of the ambulance and project that information forward. MEDHUB's suite of technology autonomously collects stores and transmits non-personally identifiable patient information from a device, such as a hand-held tablet, to the receiving hospital via existing long-range Department of Defense communications systems. The receiving hospital displays the information sent from MEDHUB on a large screen so clinicians can see what is inbound, including the number of patients and their vital statistics.

The Womack Emergency Room had the opportunity to test the pilot system during real-world tragedies with Soldiers from the 44th MED. Often there is little to no communication before an ambulance arrives at the emergency room. Medics either get a call from range control with some information or an ambulance just shows up. They can't prepare for how many patients or what the injury or injuries are. It could be an amputee or a cut. MEDHUB is being developed through a project with the U.S. Army Medical Material Agency (USAMMA) and the U.S. Army Medical Material Development Activity (USAMMDA) both subordinate organizations of the U.S. Army Medical Research and Materiel Command (USAMRMC). Now we have the opportunity to properly assess an emergency and gather the appropriate staff and resources for the patients. The USAMRMC will continue testing the system with users and are on track for wider Department of Defense use by 2019.

C&CC: With lessons learned from expanding surgical capabilities across DoD, can you speak to ways WAMC is advancing efficiencies in field surgical care?



Dr. Anton Vlasov examines a patient's eye using a slit lamp microscope at the Womack Ophthalmology clinic. (Photo by Brenda Gutierrez)

COL Melton: We are executing multiple initiatives the build the requisite clinical capabilities and medical education capacities to optimize Womack as a training platform.

As the Role 4 providing definitive care, we serve as a readiness training enabler for Fort Bragg. As Low Titer Group O Whole Blood becomes the standard for the Role 1 first responder, we are expanding the program in training, testing, collection, and storage for our supported units. Low-density specialties rotate in Womack for skills proficiency, Role 2 forward resuscitation surgical teams perform surgeries as a team in our surgical suites, and we support Role 3 combat support/field hospital training exercises.

We have entered into multiple resource sharing and partnership agreements that afford opportunities for higher complexity patient volume. This provides the means for both individuals and teams to sustain skills proficiency closer to home station. Civil-military medical sustainment skills programs closer to home station avoids TDY costs and time away from families. Just recently, a vascular surgeon returning from deployment completed a rotation at a Level 1 Trauma Center in Durham, NC, as part of a new agreement.





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Spc. Nathaniel Coleman, a treatment non-commissioned officer with the 690th Ground Ambulance Company, 28th Combat Support Hospital, 44th Medical Battalion, demonstrates the Medical Hands-free Unified Broadcast (MEDHUB) equipment to senior leaders at the Womack Army Medical Center. (Photo by Ms. Ellen Crown, AMC)

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In May, we are hosting the American College of Surgeons and the North Carolina Office of the Emergency Medical Services to verify and designate Womack as a Level 3 Trauma Center. We are growing four new Graduate Medical Education programs. The Accreditation Council for Graduate Medical has approved our new Internal Medicine and Transitional programs which are required for our new general surgery and orthopedic programs we are applying for later this year.

C&CC: In terms of day-to-day healthcare, what are some ways WAMC promotes better force health, even for transitioning servicemembers?

COL Melton: Population-focused health care is the active process to assess the health care needs of a specific population and organize work flows for the population as a whole rather than for individuals. This expedites Soldier disposition for Return to Duty or separation which affects the P-Level Manning of an Army Operational Force unit.

For example, one problem is that musculoskeletal disorders constitute the largest class of injuries sustained our tactical athletes and the highest number of non-deployable Soldiers. Synchronizing work flows around this at-risk population allows for the active profile management and integration of multi-discipline practice guidelines to streamline the assessment, diagnosis, treatment, rehabilitation, and reconditioning to prevent re-injury. This is also nested with the Holistic Health and Fitness (H2F) System, a comprehensive approach to health, nutrition and fitness using evidenced-based strategies to optimize the ground combat power readiness of each and every Soldier tactical athlete.

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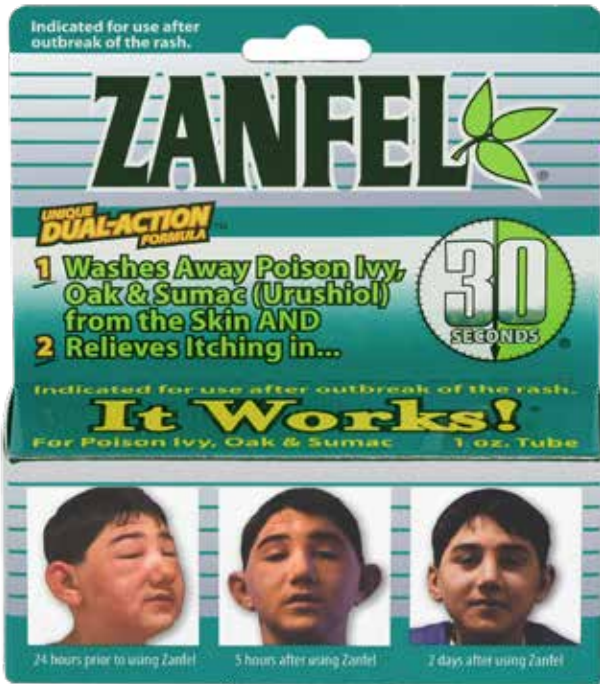
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Zanfel Laboratories, Inc., is the manufacturer of the leading over-the-counter (OTC) treatment for poison ivy, oak, and sumac related allergic contact dermatitis. Zanfel Poison Ivy, Oak and Sumac Wash is the only product clinically shown to remove the plants' allergenic oil, urushiol, from the skin any time after exposure, or after outbreak of the rash.

By Daniel Boelman RN, BSN



For years, the goal of over-the-counter (OTC) poison ivy treatment was to temporarily reduce itching with products containing calamine, diphenhydramine, or hydrocortisone. Systemic corticosteroids can be effective, but don't provide immediate relief, and involve a wide range of adverse effects. Zanfel was introduced in 1999 as a safer, and more effective alternative to these existing treatment options. After exposure to poison ivy, oak, or sumac plants (or exposure to a contaminated piece of clothing or gear), urushiol oil is absorbed into the skin in a matter of minutes. For sensitive individuals (approximately 85% of the population), the result is a T cell-mediated, delayed hypersensitivity reaction. Without treatment, the reaction involves three to six weeks of erythemic lesions with severe itching, edematous papules, and sometimes vesicles or bullae.

Multi-Treatment Capability

Zanfel reduces both itching and objective signs of dermatitis. Zanfel is a soap mixture of ethoxylate and sodium lauroyl sarcosinate surfactants. It has been demonstrated that this soap forms a complex micelle that surrounds urushiol and removes it from the layers of the skin. Zanfel renders the urushiol totally inactive by complementing the

polarity of the urushiol to form a micelle. The reaction allows the product to quickly and effectively bind urushiol before being rinsed away with water, another highly polar substance. Many cases of poison ivy require only one application on each affected area before itching is relieved and the body is put in position to heal. Zanfel can provide relief at any point during the dermatitis cycle. The product is safe for use on the face and genitals and can be used by pregnant or nursing women, and children. There are no known side effects. For widespread or systemic reactions, Zanfel can be used in conjunction with prescription steroids to provide complete relief.

Zanfel is also an effective treatment for reactions that result from exposure to poison ivy's relatives that grow in Central and South America, the Caribbean, and East Asia. Recent data has shown that the product is also extremely effective for reducing the itching, pain, and redness that is associated with many insect bites and stings. Zanfel is available in a 1 ounce tube that contains 15 applications (each application will treat an area of skin the size of an adult face or forearm). The product has a 10-year shelf life and is stable at both high and low temperatures.

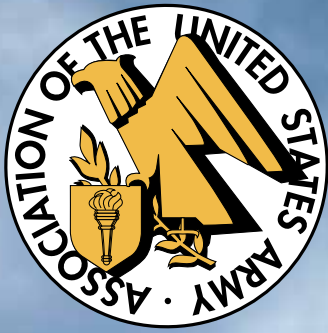
Zanfel Laboratories recently introduced a 1/8 ounce, individual-use packet, for use with IFAK kits. Key product capabilities are:

- Superior force protection and readiness through rapid and improved return to duty (RTD) rate, after exposure, or after outbreak of the rash.
- Improved training success, as a result of reduced student recycle rates.
- Significant and immediate cost savings to the unit and medical command.
- Reduced cost to the force and dependents globally for DoD.

It's important to provide accurate information about common allergic skin reactions since myths and misconceptions about poison ivy, oak, and sumac are numerous. Ineffective and potentially harmful home remedies are used at an alarming rate. Untreated cases can lead to bacterial skin infections and other complications. Zanfel Laboratories has a free training program that covers poisonous plant identification, rash prevention, decontamination, and rash treatment.



Both training materials and Zanfel product information can be ordered by contacting Zanfel Laboratories at 800-401-4002, or customerservice@zanfel.com



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MAMC Facilitating MHS Genesis

From a new triage workflow to standardized order sets to communication shortcuts, the emergency room team at Madigan Army Medical Center is constantly finding new ways to use or improve MHS GENESIS.

The section's largest project by far was revamping the triage notes to improve the workflow, add stronger psychology documentation and bolster falls prevention, according to Krista Marcum, a staff emergency room nurse who runs operations for the ER's nursing section and leads performance improvement as well. In total, revising the notes took about nine months of coordinated effort.

"There was some fine adjusting to it, but I think overall it is much more user-friendly and what we've been able to do is build in more safety features that trigger the physician to be aware of the suicidal patients or the high-risk falls patients," said Marcum.

"The Madigan team has been very responsive to the introduction of MHS GENESIS and its continued deployment across the Military Health System," said Maj. Gen. (Dr.) Lee E. Payne, MHS Functional Champion. "User feedback from Madigan and the other IOC locations (Bremerton, Oak Harbor, and Fairchild) plays a very important role in improving the record as the Defense Health Agency continues further deployments across the entire system. In addition to these improvements the DHA Functional Champion uses this information to help Cerner improve the Millennium health record we use across their entire enterprise."

Super User Dana Engness, a registered nurse in the ER, took part in revamping the note as well, to include testing it out

before it went live. She said the ER team was able to suggest and help implement practical changes, such as including international traveling in the initial triage screen, and moving items like tobacco usage and medication lists to the second screening that is done in patient rooms. The team uses the comment section on their patient tracking board to note status changes such as if standardized order sets are complete or if a patient is at X-ray or ready for a CT scan. Since other specialties can see the comments as well, the use of this function speeds up communication and patient care. The tracking board, which pulls data from MHS GENESIS, overall offers the team greater oversight of their patient population from the waiting room to the ER bed or urgent care, offering a finer safety net. Even ER-driven projects such as their early evaluation team, which allows patients in the waiting area to get head starts on orders and labs, improved by taking advantage of MHS GENESIS tools.

"MHS GENESIS has played a key role in that because our super user has been able to put in standardized order sets under her shared name," emphasized Marcum. "Any nurse can go in there and actually pull up these standardized orders, and we know they're the most accurate order."

Madigan is working on a Lean Six Sigma project to shorten the admission process time from the ER to inpatient floors, and improved communication and MHS GENESIS play key roles in those plans. Likewise, the electronic health record is a part of many of the 16 ongoing performance improvement projects in the ER.

More info: health.mil

Military Healthcare Transition Focuses on Process Improvements

Since 2001, the military medical establishment has learned much about caring for trauma.

Many American service members alive today who have fought since 9/11 would have died in previous wars. Thousands more have benefitted from state-of-the-art care and the experience that military medical providers have learned in 18 years of war.

The lessons of the battlefield were learned through experience and repetition, and DoD and Congress want to ensure those lessons are not forgotten.

At the direction of Congress, the military health care system is going through a substantial set of changes in its structure and how it will operate, said Robert Daigle, the Defense Department's director of cost assessment and program evaluation.

"Our No. 1 priority ... is to maintain the quality of care for both the wartime mission and the beneficiary population," Daigle said in a recent interview. "Our goal ... is to improve

the readiness of the military health care personnel for the wartime mission."

From Capitol Hill to the Pentagon to military treatment facilities around the world, all are working together to make the transition as seamless as possible, the director said.

Management of the military treatment facilities will transition from the services to the Defense Health Agency (DHA). The agency will focus on providing high-quality care for beneficiaries, enabling the services to focus entirely on medical readiness for the wartime fight.

The military treatment facilities will move to the agency over a three-year period. Officials will be able to examine the changes, assess how the transition is working and adjust as needed, Daigle said. Currently, the facilities at Walter Reed National Military Medical Center in Bethesda, MD, and those at Fort Belvoir, VA; Fort Bragg, NC; Jacksonville, FL; and Keesler Air Force Base, MS, come under the Defense Health Agency. This transitions more than

1,000 headquarters medical staff from the services to DHA.

"The second major muscle movement in this is to reshape the military medical force for the wartime mission," Daigle said. "In some specialties, we have too few providers – emergency medicine for example. In other cases, we have more than we need."

The latest budget request calls for more than 100,000 active-duty military medical professionals, with more than 60,000 in the reserve components.

The budget reallocates 14,000 positions from medical specialties into other critical shortfalls in the services' operational force structure, Daigle said. If the service needs cyber, infantry or aircraft maintenance personnel, it will be able to apply these slots to those fields, he added, noting that most of the slots reassigned will be personnel who seldom deal with patients directly.

More info: health.mil

POINT OF INJURY CARE FOR ENHANCED OUTCOMES



Students in the Special Operations Combat Medic Course at the U.S. Army John F. Kennedy Special Warfare Center and School prepare an intravenous bag during training at Fort Bragg, North Carolina. Enlisted service members who completed the course specialize in trauma management, infectious diseases, cardiac life support and surgical procedures, with a basic understanding of veterinary medicine and dental medicine. (U.S. Army photo by K. Kassens)

Combat & Casualty Care had the chance to speak with two Special Operations Forces (SOF) combat medics, Sergeant First Class Eric Henne, 18 Delta, Senior Enlisted Medical Advisor, U.S. Special Operations Command Central, and Sergeant Major Dave Hayes, U.S. Special Operations Command, Senior Enlisted Medical Advisor, about some of their experiences in the field. Focus areas include the continued need to keep bleed mitigation and resuscitation capabilities at the ready in support of SOF operations including whole blood for casualty stabilization until evacuation to higher level care.

C&CC: How have you seen trends in tactical combat casualty care leaning with the advent of a greater push for prolonged field care capabilities?

SFC Henne: From my experience, I actually started out in the 82nd as a regular 11 bravo infantry man in 2003. The big focus was to stop the bleed. The biggest thing right off the bat as far as progression, as far as the Global War on Terror (GWOT) is concerned, is the availability of equipment and the quality of equipment from the first tourniquets that we've seen to the present. The second generation of Combat

Application Tourniquet (CAT) that we have now as part of SOF tactics techniques and procedures, including junctional tourniquets, is a testament to greater quality, but also greater diversification in terms of where you're putting them on the body. Upgrades to accommodate larger body size in casualties as well as weather-related wear and tear are within the scope of today's requirements.

Change in fluid resuscitation protocol has been a big thing since I came in. In the past, immediate reaction to an operator being shot was to start giving crystalloids, particularly to get a pulse back. You had saline and then fluid alternatives for trauma resuscitative fluid replacement. The evolution in point of injury care has led to a redefining of baseline qualifications of what a SOF medic should know. The idea of prolonged field care has historically seen SOF address challenges in "austere" or clandestine environments. If you look at the evolving battlefield particularly through lessons learned in recent conflicts such as Iraq and Afghanistan, the idea of the "Golden Hour", as mandated by the Secretary of Defense, has changed. In the not too distant past, an 18 Delta Special Forces Medical Sergeant might be responsible for as much as 72 hours of patient care from point of injury.

Often, you're looking at low mission signature, where definitive medical care is in the hands of a field operator with evacuation timing dependent on operational tempo and environmental conditions. As the battlefield's been changing, so have our tactics. And now we're starting to see, even with the completion of the wars in Iraq and Afghanistan, the GWOT continues and we're still operational in places where 18 Delta has a primary role. It's the need to conduct unconventional warfare (UW) that has pushed the envelope in prolonged field care more than anything else.

As the battlefield has changed, the trend has been moving toward being able to get casualties to a point of damage control surgery (DCS) access really fast. With increasing capabilities in damage control resuscitation (DCR), a greater number of casualties can be handled at the DCR level, with some not needing DCS-level care immediately. At the DCS level of higher definitive care, telemedicine is becoming a solution where the logistics of casualty retrieval are complex and field care is prolonged by necessity. Sometimes you've got to sit on a casualty for days or even weeks depending on mission set and tempo. And then you can get into real serious constraint of logistical supplies, such as the need for whole blood when medical evacuation is not immediately available.

C&CC: In situations where medical evacuation is not an immediate option, tell us about other ways operators can address casualty needs.

SGM Hayes: In situations where medical evacuation (MEDEVAC) is not an immediate option, you can only put so many bandages on a wound. One of the SOF truths is that we need help from Conventional forces where MEDEVAC may be more robust simply based on mission profile. It's during these situations where MEDEVAC, combined in some cases with telemedicine, can and will be huge in a prolonged field care situation where a casualty cannot be evacuated soon after injury. From the initial point of trauma where you're trying to get a person stabilized with DCR care, putting surgical capability at an operator's disposal through telemedical means if nothing else can be critical to patient survival. In essence, it's as if we're able to expand medic capabilities to include treatment of greater injury severity at the point of injury, making positive outcomes much more likely once casualties can be moved to a higher level of care.

A big challenge for SOF is streamlining data integration so you can get connections both back to the point of trauma and forward to the facility, so there's never a loss of information. Continuing to maintain a data stream, even if not voice, is critical in tracking a casualty from point of injury to surgical care. There are some applications looking at allowing ease of documentation in communication with systems in order to transfer patient data. And when I say track, I'm talking about trending patterns within vital signs type tracking via radio frequencies or telephonic means. From a SOF medic perspective, the big challenge is how to get a casualty from point of injury to definitive care the quickest and in the best shape for higher level care. We start with every 18 Delta having basic field surgical capability with continual fine-tuning where documentation and communication is easier via applications such as telemedicine. We're bridging gaps as far as moving patients from the point of injury to definitive care by augmenting capabilities within our current kit. I think that's the way we've advanced and will continue to advance. Bringing surgery generally reserved for second and third levels of care right in the field to the point of injury is coming down the pike with automation that medics will be able to use. Pushing assets closer to the point of injury is as important for SOF combat medicine as it is for Conventional. You have two choices, get the injured person to a higher level of care more quickly or bring that higher level of care to the field.

C&CC: From a surgical access challenges perspective, how are SOF medics working to close the gap between point of injury and facility-level care?

SFC Henne: One of our biggest challenges in SOF field medicine is we're dealing with a smaller, limited pool of surgeons in the military. The Joint Trauma System (JTS) can help offset this reality by implementing changes and adjusting training so that medics have the knowledge they need on the ground to provide definitive care in preparation for the next level of treatment, be it surgical or otherwise. We have seen advancements in quality of care from the Conventional side to include improvements in SOF DCS assets from point of injury to MEDEVAC, bringing higher levels of care to the actual MEDEVAC situation.

SGM Hayes: As SOF continues to work in more austere, remote locations throughout the world, what will continue to be more critical in keeping patients alive from point of injury until we can get them to a surgeon is the availability of whole blood. Along with whole blood accessibility, advances in monitoring and documentation such as special operations systems for tracking patients while they're being evacuated via Bluetooth while automatically providing care gives access to their medical record, is also critical. This will allow a medic to provide hands-on care to multiple casualties knowing that automation will provide information as to what's going on with each patient in real time. Most important in my opinion, is how we can intervene and inject dollars into how we're training medics and point of injury providers so we keep critically-injured folks alive when they reach a surgeon.

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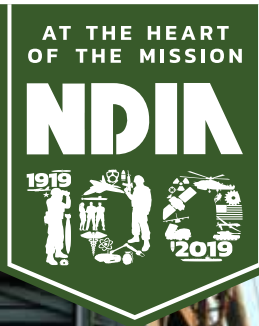
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STAYING AHEAD OF FORCE MEDICAL NEED

The U.S. Army Medical Department Center and School Health Readiness Center of Excellence is one of DoD's newest centers of excellence working to align medical application with force modernization initiatives.

By Jay Harmon, Deputy to the Commanding General, HRCoE



Flight paramedic instructor Sgt. 1st Class Reid Carpenter wirelessly adjusts the setting of a medical patient simulator as two Army Health Care Specialists (68W), also known as combat medics, practice treating an injured patient inside a UH-60 Blackhawk trainer during hands-on simulation training as part of the AMEDDC&S HRCoE Flight Paramedic Course. (Jose E. Rodriguez, HRCoE Public Affairs)

In October 2018, the U.S. Army Medical Department Center and School, Health Readiness Center of Excellence (AMEDDC&S HRCoE) was realigned from the U.S. Army Medical Command to the U.S. Army Training and Doctrine Command (TRADOC). The HRCoE is now one of nine Centers of Excellence under TRADOC; each has a different specialty or branch focus, from Aviation to Signal to the Maneuver branches.

HRCoE is still the Army's proponent for medical capability development and training. The mission is to envision, design, train, educate, and inspire the world's premiere medical force to enable readiness and strengthen America's Army. The AMEDDC&S HRCoE does this through two functionally aligned constructs: the center and the school.



Jay Harmon
Deputy to the CG, HRCoE

The school mission is facilitated through two training brigades and the Directorate of Training and Academic Affairs (DoTAA). They focus on the development and execution of training and education. Annually, the CoE trains over 37,000 in 104 officer and warrant officer areas of concentration and 24 enlisted medical military occupational specialties within Initial Entry Training (IET), Advanced Individual Training (AIT), Professional Military Education (PME) and advanced professional development courses.

The envision and design missions fall primarily within the center. The Capability Development and Integration Directorate (CDID), Center for Prehospital Medicine (CPHM), AMEDD Personnel Proponency Directorate, the AMEDD Board, and other directorates work together to accomplish those functions. The

Directorate of Simulations (DOS) is the HRCOE's newly established directorate with unique functions that facilitate into both the center and school concept and internal and external functions.

We must ensure that Army Medicine remains an integral part of the Army Modernization Strategy and Future Force Modernization Enterprise (FFME). CDID and DOS are focused on ensuring Army Medicine capabilities are designed to support Large Scale Ground Combat Operations in the Multi-Domain Environment. This will include HRCOE's ability to synchronize health service support and force health protection across the Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities, and Policies (DOTmLPF-P) domains while maintaining the commitment to "Conserve the Fighting Strength" of the Army and the Joint Force.

Gaining New Perspective

With the transition to TRADOC, HRCOE looked at other centers of excellence and realized that, while they had staff elements working around training simulation development, mainly within the CDID, DoTAA, and CPHM, there was a need for a dedicated Directorate of Simulations (DOS). Colonel Rob Hennessy is currently the Director, CPHM, and Medical Director, Operational Medicine and Sustainment (OMS), but will soon transition to serve as the Director of the new DOS within HRCOE. "I see it as a function of the DOS to manage live, virtual, constructive and gaming efforts to identify medical simulation solutions and systems in support of the sustainment and modernization of Army lethality and readiness," said Hennessy.

Within HRCOE's DOS is the OMS Division and the Army's Medical Simulation Training Center (MSTC) Program of Record. The DOS will also assist with development of the medical simulation (MEDSIM) requirements to support the envisioning and designing of MEDSIM as well as a "suite" of medical simulations to support the execution of training. "A key purpose of using advanced simulation is to provide proficiency through repetition, training and mission rehearsal capability," noted Hennessy. "This will be critical to execute the training, both within the HRCOE and the operational force, to provide Prolonged Care and Prolonged Field Care to meet future operational requirements."

The Challenge

The CDID is focused on many issues and initiatives across a wide spectrum of medical capabilities ranging from medical force structure modernization, medical capability and capacity, materiel requirements and medical doctrine to integrating and supporting the efforts throughout the other Doctrine, Organization, Training, Materiel, leadership, personnel, facilities, and policies (DOTmLPF-P) domains. A major concern shared by all is the provision of prolonged care within Multi-Domain Operations.

CDID and DOS are taking a fresh look at the operational medicine needs and the issue of prolonged care and prolonged field care from HRCOE's perspective of envisioning, designing and training the future medical force. In an effort to address prolonged care and prolonged field care capability, the CDID and DOS collaborate with training developers. This ensures that the training not only mitigates the operational risk, but that the simulations are capable of supporting the training requirement and ensuring maximum benefit to the force within



Colonel Rob Hennessy
Director, CPHM



Sgt. Maj. Litt Moore
Chief Medical NCO, CDID

the Total Army Concept. "We strive to ensure integration of initiatives from other medical and non-medical capability and training requirement and capability generating organizations, such as CDIDs from the other Centers of Excellence within the Army and multiple research and development organizations within the force," emphasized Sergeant Major Litt Moore, HRCOE CDID Chief Medical Noncommissioned Officer.

Another CDID function is medical modeling to help determine medical force structure needs. "The CDID studies lessons learned to identify trends and best practices from the Combat Training Centers to assist with modeling and integrate with the other CDIDs to form a comprehensive view of the Army's future force structure needs," Moore added. Simultaneously, the newly developed HRCOE DOS is primarily focusing on medical simulation (MEDSIM) requirements to support training in prolonged care and increase clinical and trauma care training. "The DOS is working with medical simulation and research, development, technology, and education (RDT&E) organizations to facilitate the development and fielding of simulations to support the MEDSIM training

needs of the Army," said Hennessy.

"HRCOE also strives to integrate with various medical exercises, such as the Joint Warfighting Assessment, to assess and provide input to combat trauma scenarios where on-site surgical care is critical," Hennessy confirmed. "HRCOE interests remain centered on training critical skills required for care at the point of injury before casualties reach trauma centers and expanding that training across the continuum of care."

Nested Priorities

The HRCOE CDID is looking at increased medical capabilities at the Role of Care I through Role of Care III. "The CDID works with the DOS, CPHM, DoTAA, and other external organizations to develop capability requirements throughout the DOTmLPF-P domains," Moore indicated. Examples include the medical input for the Individual First Aid Kit (IFAK), a Soldier system managed through the CDID at the Maneuver Center of Excellence. "This is to increase medical capability and healthcare provision in the Role of Care III to Role of Care IV within the medical community," he continued. This collaboration includes medical doctrine revision, doctrine updates, medical force structure revisions, medical equipment requirements, and medical evacuation requirements. "We also ensure medical input into other non-medical focused areas like the Soldier/Squad Virtual Trainer (S/SVT) or Head-Up Display (HUD) 3.0 where Medical could be injected into Infantry," said Hennessy.

While the DOS is primarily focused on MEDSIM that supports the training requirements for increased healthcare capabilities at the Role of Care I through Role of Care III, Hennessy clarified, "emerging requirements will expand the MSTC capability, potentially combining exercises where a single scenario takes a casualty from point of injury, evacuation, and surgical intervention, spanning the continuum of care." Treatment capabilities at each echelon affect the patient's condition at the higher levels of care.

Additionally, the DOS works with other MEDSIM organizations throughout the military and civilian sectors to ensure the Army Medicine's MEDSIM requirements are met to support operational

medicine training. The DOS is also integrated into military and civilian groups, such as the Defense Health Agency Medical Modeling and Simulation Office, Joint Program Committee (JPC)-1, JPC-6, and the Federal Medical Simulation Training Consortium, to facilitate MEDSIM development while capturing MEDSIM lessons learned for dissemination to other organizations within the HRCOE and Army Medicine as needed.

Virtual Capabilities

The HRCOE DOS is also looking toward the virtual environment to determine how virtual reality (VR) may be used to augment more traditional methods of medical training. "Virtual interactive environments are in broad use by law enforcement and transportation agencies, bridging the gap between traditional simulators and real-world activities in order to deliver highly realistic training. It makes sense to harness this type of technology for Army medicine in order to augment traditional moulage and interactive simulation," Hennessy clarified.

From a DOS standpoint, virtual environment medical training is especially beneficial for the training scenarios and the evaluation of decision-making skills. "Using these virtual tools, we will be able to assess whether the trainee is developing those critical thinking skills such as when to return fire and when to approach a casualty in the tactical environment," said Hennessy. Follow-on interactive simulation also plays a key role in the evaluation of hands-on skills such as transfusion delivery and tourniquet placement. Hennessy believes that using augmented reality, or combining virtual reality and physical environment, is critical to medical training and testing. "Tactical medicine is unique in the fact that it involves critical decision-making processes and problem-solving while performing hands-on tasks that require fine-motor skills that depend on tactile feedback," said Hennessy. "We expect medical trainees to do all of this while maintaining a tactical posture and situational awareness," he continued. Using augmented reality training is ideal for tactical pre-hospital medicine. Together these kinds of technologies create situations that maximize the nuanced aspects of tactical combat casualty care for medical personnel.

Combat Medic Training

The HRCOE DOS is very early in its implementation of more enhanced simulations in training our combat medics and providers. "We already recognize some hurdles we must overcome to deliver maximally valuable solutions such as standardization of simulation training and maintenance of equipment," noted Hennessy. To develop solutions for these challenges, the DOS works with the Army's Synthetic Training Environment Cross-Functional Team to ensure medical training equities are synchronized with the other domains within the synthetic training environment. "Training is key to solving the problems of prolonged care, and because of the uniqueness of prolonged care scenarios, simulation will be essential to that training," said Hennessy.

To maximize training benefit, training must incorporate a "suite" of simulations ranging from moulaged role players to the virtual reality to engage the optimum level of Soldiers' senses without under or overloading those senses. The CDID has participated in multiple medical simulation research and development efforts on the subject. More recently, the DOS, CDID, DoTAA and other medical and operational



Soldiers learn during Tactical Combat Casualty Care scenarios using high-fidelity manikins that incorporate the latest in computer hardware technology, are commonly wireless and can be programmed to provide for a very realistic full-body patient presentation at AMEDDC&S HRCOE. (Jose E. Rodriguez, HRCOE Public Affairs)

entities have participated in a working group to revise a capability document to optimize the capabilities in MSTCs across the Army.

"Ultimately, the capability of a combat medic is limited to the availability of critical gear to address injury," Moore explained. Therefore, another area in development at HRCOE is an enhanced carry configuration to better distribute weight for the extended range required in prolonged field care. The CDID consistently works with the Army's medical materiel development and acquisitions organizations and medical research and development organizations to reduce the equipment size and weight demands for the Combat Medic medical equipment set while maintaining, and in some instances increasing, the set's capabilities to meet the current and future operational requirements.

"The Combat Medic medical equipment set is consolidated into the standard equipment set cyclical review process," Moore said, "The CDID continues to analyze future requirements to ensure that not only the Combat Medic medical equipment set is up to date, but other medical equipment sets remain current as required through scheduled cyclic reviews."



William O'Neal
Command Sergeant

Futures Focus

As the Army Futures Command, sister services, and Coalition Partner forces prepare for Multi-Domain Operations and the challenges it will present, all organizations within Health Readiness Center of Excellence will continue to strive to meet the medical training and readiness of the current and future force.

Command Sergeant Major William "Buck" O'Neal, is the HRCOE Command Sergeant Major and admits that the Army, and along with it, Army Medicine are going through a very complex time of change. "Even though we are charging the DOS and CDID with the task of continuing to develop our capabilities, simulations, and training, I want people to understand that combat medics, and our medical force as a whole, are fully capable of accomplishing their current mission," said O'Neal. "Our new focus is to elevate Army Medicine training methods and deliveries to meet the challenges of a future Multi-Domain Operational environment and identify and fill potential gaps."

By Harnessing the transformational power of 21st century technology, we are going to fundamentally transform how we train and equip our medics and soldiers. ■

ADDRESSING THE CRITICALITY OF NEUROTRAUMA AND PSYCH HEALTH

By Jeffrey Soares and Ashley Force, USAMMDA public affairs



Dr. Krista Caudle, product manager for the Neurotrauma and Psychological Health Project Management Office at the U.S. Army Medical Materiel Development Activity, and Army Lt. Col. Kara Schmid, project manager for the NPH PMO at USAMMDA, briefed Army Lt. Gen. Paul Ostrowski, principal military deputy to the Assistant Secretary of the Army for Acquisition, Logistics and Technology, during the U.S. Army Medical Research and Materiel Command VIP visit. (Photo by USAMRMC Public Affairs)

The mission of the U.S. Army Medical Materiel Development Activity's Neurotrauma and Psychological Health Project Management Office (NPH PMO) is to rapidly develop and field, across the continuum of care, U.S. Food and Drug Administration-approved medical solutions that aid in the detection, protection, prevention and treatment of neurotrauma and psychological health conditions, such as traumatic brain injury (TBI), post-traumatic stress disorder (PTSD), and suicide. The NPH PMO currently supports the development of biomarkers for TBI, non-invasive assessment devices for TBI, clinical drugs and therapies to treat TBI, and novel markers and treatments for PTSD and other psychological health conditions.

Most recently, the NPH PMO, in conjunction with its commercial partner, received FDA approval to market the first-ever blood test, the Banyan BTI™ (Brain Trauma Indicator), used for the evaluation of instances of mild TBI. This revolutionary product/device will help to eliminate unnecessary computed tomography scans and potentially harmful radiation exposure, as well as the associated risks and costs of the procedure.

USAMMDA's public affairs team met with Army Lt. Col. Kara Schmid, NPH PMO project manager, to discuss the current and future efforts of her team. Schmid has been with USAMMDA since 2015, and has been working on brain injury products since 2006.



Lt. Col. Kara Schmid

USAMMDA: Please describe the mission of the NPH PMO.

Lt. Col. Schmid: Our mission is to rapidly develop and field U.S. FDA-approved medical solutions across the continuum of care, that aid in the detection, protection, prevention and treatment of neurotrauma and psychological health solutions, such as TBI and PTSD. Our team focuses on providing effective medical solutions for brain injuries and conditions such as PTSD and suicide.

USAMMDA: What are some types of brain-related injuries that the NPH PMO investigates?

Lt. Col. Schmid: Warfighters sustain brain injuries in the garrison environment and in the deployed environment. So, in a deployed setting, they can get a brain injury from an improvised explosive device going off, hitting their vehicle; they can get a brain injury from being shot in the head if their helmet doesn't work to protect them. They can also get an injury in the deployed environment from training exercises.

They can also get brain injuries from car accidents, and from "goofing off," unfortunately. We all like to have fun, so sometimes our sporting events can cause brain injuries. On the garrison side, there are many types of training accidents that can cause brain injuries, like sporting events, and the occasional issues that come on the weekends (perhaps alcohol-



Army Cpt. Sarah Sanjakdar, assistant product manager for the Neurotrauma and Psychological Health Project Management Office at the U.S. Army Medical Materiel Development Activity, discusses the Laboratory Assay for Traumatic Brain Injury program with Army Gen. John M. Murray, commander of the Army Futures Command, during a VIP Medical Lanes visit hosted by the U.S. Army Medical Research and Materiel Command, Fort Detrick, Maryland. (Photo by Ashley Force, USAMMDA public affairs)

related), where someone may get into a car accident. So, brain injury is really not specific to being deployed.

USAMMDA: What about psychological health issues?

Lt. Col. Schmid: Those tend to happen more frequently in the deployed environment. As you can imagine, our Warfighters are asked to do something that no one else wants to do – they're asked to potentially injure other human beings, and that can be psychologically devastating. It's a high operational tempo, and so the brain deals with those unique situations, when you're in the deployed environment, by compensating and allowing Warfighters to do their mission. The psychological reactions you have in your brain during that time are actually healthy and necessary. However, this becomes an issue when the Warfighter returns to the United States, back home, and it's still happening. Your brain hasn't "shut off," and returned to normal mode, and you continue to be hyper-aroused – hyper-aware of everything and hyper-vigilant.

If you spend time in an environment where you're under fire, and you're constantly engaged in combat, then you can develop a constant fear of explosives going off. For instance, in combat, vehicles are often used by the enemy as explosive devices. If that's something you're exposed to for a year while you're deployed, and you've been constantly watching for vehicles or dangerous-looking persons that could have placed a suspicious package somewhere, this remains in your mind. So, imagine that Warfighter coming back home, trying to reintegrate into a normal home life, and they have to go into the parking lot of a store where there may be a hundred vehicles – this could be something that triggers an overwhelming level of distress, a stress signal in the brain. Then you could have a difficult situation where no actual danger exists. So, it can create an environment where you're just continuously re-living the psychological trauma you went through in combat.

PAO: Can everyday tasks then become more difficult?

Lt. Col. Schmid: They can be, but not for everyone. And this is something that we're trying to figure out. Why are some people able to turn off the

response while others cannot? That's one of the PTSD problems that we're trying to research and solve.

USAMMDA: What are some other psychological health issues you're working on, and how does the NPH PMO fit into solving these for the Warfighter?

Lt. Col. Schmid: Well, it's a bit difficult, because we're looking at brain injury, which is a physical injury to the brain, and psychological health trauma, which still may be a "physical" thing that's occurring in the brain, but not as easy to detect. The problem with the brain is that it's very unique – it's in charge of everything the body does, and it's made up of lots of different cell types. In comparison, the liver is made up of liver cells, which all pretty much do the same thing, but the brain is composed of many different types of cells, all of which have many different jobs and functions. So, in some injuries of the brain, for example, a gunshot wound, this would leave tissue damage that is visible and can be treated with surgery. But the psychological injuries are much harder to see.

I believe within the total spectrum of brain injury and psychological health problems, we're trying to figure out the whole gamut of treating these issues so we can help our Warfighters. We are looking to identify the injury when it happens, or as quickly as it becomes a problem, and find out how to diagnose it as soon as possible. On the battlefield, we're trying to provide solutions for triage – when there are numerous injuries, how can we determine who needs to be treated first? Sometimes, brain injuries can be more silent, so if someone experiences an IED explosion inside a vehicle, they can have multiple injuries – they can be bleeding from a limb, or have a head injury and be unconscious. And it's difficult to tell if they have an internal head injury if it's a closed-head situation, so the medic may just focus on the bleeding limb, not knowing the patient also has a head injury. We're trying to provide effective medical solutions for those medical providers in the field. How can they identify and triage those patients, and get them to more definitive care? And then on the back end, how do we help them to restore function, if function is lost? As you can see, the NPH PMO is responsible for providing medical solutions across the entire spectrum of brain injury and psychological health.

USAMMDA: Can you talk more about the types of injuries you see on both sides of brain trauma, the physical and psychological aspects?

Lt. Col. Schmid: On the physical brain injury side, these types of wounds can cause significant problems for the patient. One issue is, if someone experiences a brain injury on the more “mild” side, like a concussion, there is a window of time during which if they are not given treatment or rest, and they go back out and experience a second concussion, then the injury can be more devastating, and this could compound the results of the first concussion. When it comes to more significant brain injuries, the brain controls everything in the body, so the Warfighter could have considerable loss of function that impairs readiness and the ability to go back out and fight.

On the psychological health side, these types of problems have been around for many years, and they have been called different things at different times. When a Soldier starts to experience these problems on the battlefield, however, the goal is to treat them as far forward as possible – to get the person help in dealing with what we call “combat stress.” We try to help them immediately, to keep them deployed and able to fight. But when these Soldiers come back home, in “Reset” mode, having these psychological health concerns affects their ability to do their jobs overall. They could experience lack of sleep, nightmares, things that keep them awake, headaches, which impacts their ability to function properly.

USAMMDA: Can you describe your personal involvement with brain injury research over the past decade?

Lt. Col. Schmid: I’ve had the opportunity to be involved with TBI products from all different aspects. On the science and technology research side, from a portfolio aspect, to the lab side working at the Walter Reed Army Institute of Research, and now on the product development side – so I’ve been able to see it from all different angles. To see the Laboratory Assay for TBI (LATBI) project go from an idea that two researchers had, which was, can we create an assay to detect brain injury like we can for some of the cancer diagnostics, and go through animal research to see if these proteins exist – then take that through clinical trials in humans to validate it, and then go to biotech device companies to create actual solutions and products that the Warfighters can use. It’s been a tremendous effort from all aspects of our higher headquarters, the U.S. Army Medical Research and Materiel Command, in working together to get that over the goal line. I believe that developing a product takes significant time and money, and the Department of Defense has done a tremendous job in the use of its time and money to see the product through to completion in the last 18 years.

And when we did identify a product, we then worked to identify what we already had fielded, so we didn’t have to field an entirely new capability. With a pre-existing product, we tried to see how we could modify that to include our brain injury assay. That was a unique opportunity to work with some of the large pharmaceutical companies, to put the assay on something that we already were using in the deployed environment.

USAMMDA: What sets the NPH PMO apart from other PMOs within USAMMDA?

Lt. Col. Schmid: As I mentioned earlier, I believe the brain is the most important organ we have because it’s responsible for everything.

The NPH PMO is looking at ways to protect, treat and restore brain function as a whole. So, it’s the “brain health” PMO of USAMMDA. Also, because we are a small PMO, we have a smaller number of large programs, and our goal is really to get solutions fielded to the Warfighter.

One of our programs, the LATBI, is the first blood test for detecting brain injury. To me, that’s very exciting for the NPH PMO to be involved in the first-ever development of a solution. It’s also exciting in the area of brain health. A great deal of research funding has been focused in this area over the past decade, and I think over the next decade, we’ll see solutions coming from this field. I really think it’s going to be an exciting time for the NPH PMO over the next ten years, to discover what those solutions may be.

USAMMDA: Can you tell us about some other recent success stories?

Lt. Col. Schmid: We just started two new efforts regarding drug treatments for both brain injury and psychological health, PTSD specifically. The exciting thing about these projects are that they are group-type awards, where we’re really trying to make a difference. I think the topic of drug treatments has been a difficult one for both areas, and we’re trying to find ways to improve what we call the “Phase 2 clinical trial time.” We hoping to really understand the mechanisms of drug action and getting the data necessary to move a product into Phase 3. Both efforts are large and inter-governmental, with private industry, academia and the government working together.

Both are large Private–Public Partnerships, and the goal is to find ways to get drugs that we think will be successful into the Phase 3 world. So many drugs have been failing to show promise in their final clinical trial, which means that a lot of money has been invested in something that did not work in the end. Our goal is to form successful partnerships, so we can start to enhance the quality of the Phase 2 trial portion. I think that the small companies can benefit from this because many companies have stepped back from PTSD and brain injury research in the last 20 years due to poor return on investment, as the drugs have not been working effectively for quite a while. We are working with small biotech companies lately, and often these are funded with venture capital, so they need to see things work quickly in order to push the projects into later stages of development. They take more risks in the early development phase, and move on to large clinical trials more quickly. With the help of the NPH PMO, and the funding of the DoD behind it, we can help to do what is necessary in the Phase 2 period, to de-risk the program going into Phase 3. We can really answer the questions necessary to design a Phase 3 trial that we believe will work.

And both groups are pursuing the adaptive clinical trial design, which is a new effort that the FDA supports. It involves how clinical trials are designed, and the statistical evaluation. Although both projects are going to employ these new methods, they have just gotten started, so it will be a few years before we really see how it will impact the field. But it’s very exciting!

Editor’s Note

Lt. Col. Kara Schmid has been selected as the Joint Product Manager for Chemical Defense Pharmaceuticals. Louis Jasper is the new Project Manager for the Neurotrauma and Psychological Health Project Management Office.

EXPANDING THE PATIENT-PROVIDER CONNECTION

The U.S. Department of Veterans Affairs (VA) is working to advance communication options that bring patients and care providers closer to discuss important health concerns for the greater likelihood of positive outcomes both short and long term.

By Stephanie Deaner, PhD, Telehealth Program Manager, Great Lakes Veterans Integrated Service Network (VISN 12)



Navy veteran Mark Doyle and his wife, Bonnie, participate in a virtual meeting from their home with Jonathan Hessinger, Psy.D., a clinical psychologist at Hines VA Hospital using VA Video Connect. (Daniel DuVerney, Hines VA Media Service)

VA Video Connect is just one of the latest technologies available through VA's Office of Connected Care. VA providers love it and veterans don't know how they survived without it. Through VA Telehealth Services, veterans can access VA care at the time and place that's most convenient to them. While some veterans may be reluctant to try something new, VA Video Connect is one of the fastest growing areas of virtual care.

"The idea can be a little intimidating to first-time users because it is a different experience," said Jonathan Hessinger, Psy.D., a clinical psychologist who is part of the Trauma Services Program at Edward Hines, Jr. VA Hospital in suburban Chicago. "But veterans tell us that using video quickly becomes no different than standard face to face care."

In 2018, more than 28,600 veterans received a video visit into their home or other place of choice. This is a 113% increase from the year before.

The Bigger Picture

VA Telehealth is delivered via several different avenues, including synchronous telehealth, asynchronous telehealth and remote monitoring. Synchronous Telehealth allows real-time interaction,

through video conferencing, between patients and their VA care teams – increasingly from the veteran's home or mobile device.

Asynchronous Telehealth allows clinical staff to capture and share images, sounds or data with other specialists for help in diagnosis and delivery of care. And Remote Patient Monitoring, referred to as Home Telehealth, uses remote monitoring technologies, sometimes combining elements of both Asynchronous and Synchronous Telehealth, to collect clinical information from veterans for case management by their Care Coordinator. VA Video Connect is part of the synchronous telehealth platform, which encompasses more than fifty clinical applications such as Primary Care, Mental Health and some Specialty Care services. VA Video Connect provides veterans access to their health care team from just about anywhere, using encryption to ensure a secure and private session. VA Video Connect works on nearly any device that has a mobile or internet connection and a web camera. This includes desktop computers, laptops, tablets, and smartphones.

"I have seen veterans on each of these platforms, and it truly depends on veteran preference what they use," said Dr. Hessinger.

As technology has advanced, so have our options. Increasingly VA providers are seeing patients via their smartphones because they're more convenient and allow veterans to schedule an appointment to

take place without having to take time off from work or school. As mobile technology improves, so does the reliability and ease of using secure video on a wide range of mobile devices.

Miriam R. Mourad, Ph.D., is a clinical psychologist at the Capt. James A. Lovell Federal Health Care Center in north Chicago. She uses VA Video Connect in her work with veterans who have Post Traumatic Stress. "In the past, patients had to go to one of our community-based clinics for a video appointment with their provider at the medical center," said Dr. Mourad. "Now, if your device has internet access, a camera, and speakers, we are able to conduct the session. About forty to fifty percent of my patients are using their smartphones for their appointments." It's simple. The provider makes the appointment. Both provider and patient receive an email with a link to a secure connection. Each clicks the link and enters a virtual video chatroom at the time of the appointment.

Virtual as Preferred Choice

Virtual care eliminates commute time, other transportation issues and the need to take time off work or school. We've also heard from Veterans who find it difficult psychologically to walk through a waiting room filled with veterans on their way to an appointment. Virtual appointments give them access to the help they need without those concerns. These are among the many reasons more than 393,000 veterans used synchronous real-time telehealth in fiscal year 2018, up nearly 17% from the year prior.

Beyond convenience, virtual visits have been a gamechanger for U.S. Navy veteran, Mark Doyle who suffers from migraines that make it difficult for him to drive to his weekly appointments at Hines VA Hospital. "Without this technology, I wouldn't be able to get the care I need," said Doyle. "Virtual visits make it easy whether I'm feeling well that day or not. I still go to Hines for some appointments but having the option to use video has really made a difference in my life."

While some veterans may be uncomfortable with the idea of seeing their provider in this manner, most indicate that it has become normalized after just a few sessions. Research also indicates there are no observed differences in mental health treatment outcomes whether a veteran is seen via telehealth or in person. Lenny Koehler served as a Gunner's Mate in the Navy during the Vietnam War. He credits his therapy with Dr. Hessinger for helping him to work through night terrors, anxiety and anger management issues that he's been dealing with for almost 50 years – and the two have never met in-person.

"My experiences in Vietnam created problems after I got back," said Koehler. "Therapy's been a real blessing. I am seeing good, positive changes because I recognized that nothing's going to change unless I seek out something that's going to get this to change. I'm glad that I did."

VA providers work with their patients to see which services are clinically appropriate. Veterans can then decide whether they want in-person care or telehealth. Many veterans choose to use both, depending upon the specific care and the timing of the appointment.

Increased Capacity, Efficiency, and Productivity

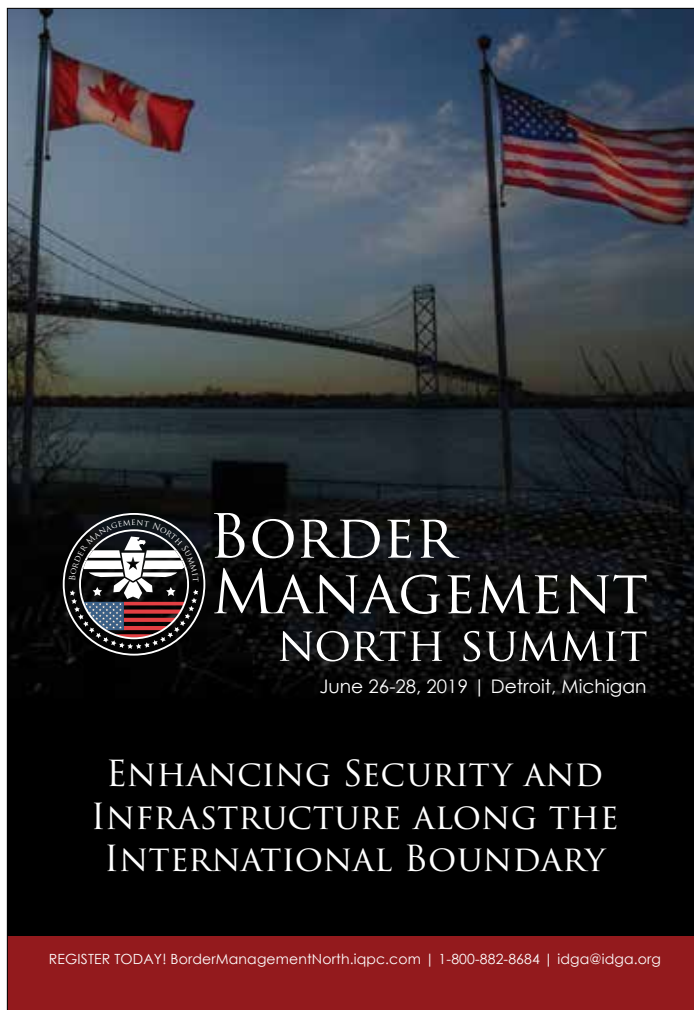
Veterans aren't alone in saving time by using VA Video Connect. VA providers can see more patients by cutting down on travel. For example, telehealth allows providers from Hines VA to see patients in rural areas across Chicago's surrounding counties without ever leaving their office. Because many veterans rely on others for transportation to their appointments, they often cancel or simply fail to show up for appointments for reasons outside of their own control. Whether it's bad weather, a bad day, or chronic pain, virtual appointments eliminate many of the issues that keep veterans from showing up for their appointments.

"I have a patient who suffers from migraines," said Dr. Hessinger. "On days where he can't drive, he would have canceled his appointment. Now, I am still able to meet with him by setting up a virtual appointment in place of our scheduled face-to-face meeting. I get to see my patient and he appreciates the flexibility that still allows him to get the care he needs."

No shows are a real problem with nearly 14% of appointments scheduled in fiscal 2017 resulting in no shows. This creates real issues because that's time that a provider could have used to see another veteran.

What's Included

VA currently sees patients using telehealth across the system of care. For instance, trained nurses or health care technicians at community-based outpatient clinics can use telehealth instruments to take pictures for dermatology or optometry that were previously offered only at the medical center. The specialist reviews the images to determine if treatment is necessary, an example of Asynchronous Telehealth.



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One of the most popular uses of telehealth at the Lovell Federal Health Care Center in north Chicago is a program for weight loss that involves healthy eating and exercise, a Synchronous Telehealth program. "Many of our patients truly enjoy the MOVE! program," said Dr. Mourad. "VA Video Connect makes it convenient for them to access all of the features and benefits of this program. Without that convenience, it's very unlikely they would have the same level of commitment or success."

Even rehabilitation services such as speech and language pathology are available through VA Video Connect. And in the coming years, all providers will have the training and equipment they need to offer virtual appointments where it makes sense. "As a psychologist, many times people are visiting me due to high levels of stress that are interfering with their daily lives," said Dr. Hessinger. "The way I see it, if the flexibility of telehealth can decrease the stress of accessing care, then telehealth is actually a vital part of the plan to address their recovery goals."

There are many reasons why the number of virtual appointments continues to grow, but they may not be the right choice for every veteran or every appointment. Some services still need to take place in person and in a health care setting. These are decisions that are best discussed between veterans and their providers to come up with the best individual plan.

Truly Visionary

Telehealth is at the leading edge of VA's vision for connected care. The relationship between provider and patient is changing with advances in technology, and the connected patient is a more satisfied patient. VA Video Connect is increasing access to care one veteran at a time, but in the future, it could be groups of veterans in virtual chat rooms helping one another. You can imagine how this could change the lives of veterans who could benefit from group activities but struggle in large rooms or noisy settings.

In addition to VA Video Connect, My HealtheVet www.myhealth.va.gov, VA's award-winning online personal health record, gives veterans, service members and their dependents access to VA health care information and services anytime, from just about anywhere. With more than 4.6 million users, My HealtheVet lets veterans use Secure Messaging to communicate about non-emergency matters with their VA care teams; review lab results, clinical notes and other records from their VA electronic health record; schedule and manage medical appointments online; refill VA prescriptions; record their diet, exercise and health history; and more.

The proliferation of apps could be considered the next frontier



Vietnam veteran Lenny Koehler and his wife, Janet, want other veterans to know there's no shame in seeking therapy through VA. Cognitive Behavioral Therapy via telemental health has been lifechanging for them. (Daniel DuVerney, Hines VA Media Service)

in healthcare. VA Mobile develops health apps for veterans and VA care teams that increase access, communication and coordination of care. The apps provide veterans with increased opportunities to actively participate in their health care and lead healthier lives. Apps for VA care teams transform the way clinicians and patients interact and ultimately improve the health of Veterans by leveraging the power of mobile technology. VA Mobile apps are available now from the VA App Store: www.mobile.va.gov/appstore.

"When working with veterans with PTSD, I often recommend apps as part of their treatment," said Dr. Mourad. "There are apps that allow patients to complete homework assignments, log their thoughts, or access relaxation techniques on their own devices and I've found that many patients prefer this to paper handouts," she added.

We've only scratched the surface with connected care. Aligning these programs and technologies enables VA to deliver on our promise to provide personalized, proactive, patient-driven health care to our nation's veterans. ■

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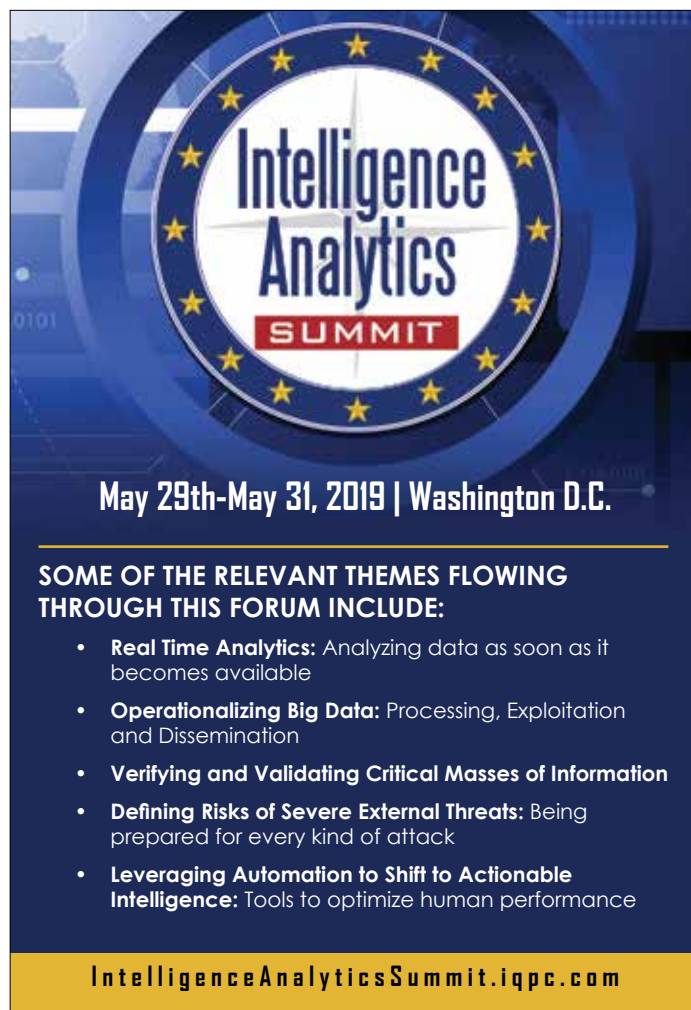
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