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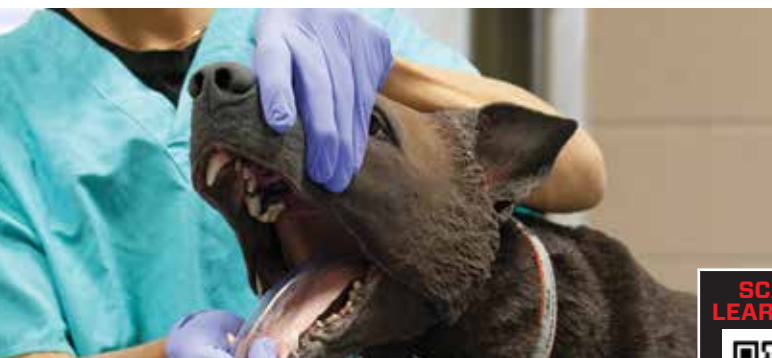


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NO FEAR OF THE AUSTERE

The U.S. Army's 25th Infantry Division Jungle Medicine Course was created at Schofield Barracks, Hawaii, to train combat medics in the medical knowledge they will need to operate in the jungle environment and preserve the fighting force.

By CPT Katie Harper, CPT Kyle Mogensen, and MSG Waylon Wren

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Director
Special Operations Combat Medic Course
Joint Special Operations Medical Training Center
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Ft. Bragg, NC



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COMMANDER'S CORNER

COL Andrew L. Landers
Commander
Landstuhl Regional Medical Center
Landstuhl, Germany

Cover: Soldiers try to revive a simulated casualty during the culmination of a Special Forces qualification course at Ft. Bragg, NC. (U.S. Army)

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INSIGHTS

Those we call our "Silent Professionals", or Special Operations Forces (SOF), are not dependent on many assets. There is one asset, however, they never leave home without: the combat medic. From blood transfusions to mobile oxygen resuscitation, the men and women who call themselves "Silent Medical Professionals" are as critical a part of the SOF mission as the mission itself.

The Spring Special Operations Medical Association (SOMA) edition of *Combat & Casualty Care* takes a close look at the specialized training that Special Operations Combat Medics (SOCM) and conventional force medics receive before they can be called battlefield medical professionals. In an exclusive interview, Major Brett Ambroson, MD, Director, Special Operations Combat Medic Course, Joint Special Operations Medical Training Center (JSOMTC), Special Warfare Medical Group (Airborne), Ft. Bragg, NC, speaks with *C&CC* about a 36-week, rigorous instruction focused on producing tactically advanced, certified paramedics and advanced medical providers for SOF units under U.S. Special Operations Command. The SOCM course trains and creates a baseline interoperable SOF medic capable of interacting and integrating with both U.S., allied, and international medical assets. Students receive follow-on assignments to 1st Special Forces Command, 75th Ranger Regiment, 160th Special Operations Aviation Regiment, Army Special Operations Command, Marine Corps Special Operations Command, and partner nation SOF units worldwide.

From cross-functional global operations to austere, jungle-laden environments, the U.S. Army's 25th Infantry Division, Schofield Barracks, Hawaii, oversees a Jungle Medicine Course (JMED) where field medics are prepared to address threats posed by tropical conditions such as viral and insect-carried diseases such as malaria, snake and spider bites, and hyperthermia, all within the guise of large-scale combat operations (LSCO). In an exclusive interview with Staff Sergeant Marco Munizgarcia, Health Care Sergeant with the 130th Engineer Brigade, we hear about trauma response covered by JMED and prioritization of the "Golden Hour", that critical sixty minutes following point-of-injury that can mean life or death depending on treatment rendered. Going beyond fundamental concepts in tactical combat casualty care, JMED trained medics are taught Joint Trauma System techniques to ensure optimal patient stabilization before transport.

This edition of *C&CC* also spotlights trauma care from an international perspective including a Commander's Corner interview with COL Andrew Landers, Commander, Landstuhl Regional Medical Center (LRMC), Landstuhl, Germany, who speaks to multi-focal specializations that multidisciplinary surgeon teams address in surgical and trauma care. As a primary Level I trauma center, LRMC executes skills in advanced trauma life support at the core of the center's role as a central receiving trauma center for battlefield-wounded casualties in transit from the Middle East and across Europe to points beyond. And from the industry side, we get a peek at a new oxygen delivery, mobile resuscitation system being used by the British and French special forces. Called 'FIDO', this closed-circuit oxygen rebreathing device for acute, in-field oxygen treatment, developed by Mirola Rescue AB, a Swedish medical technology development firm, was created to replace old, cumbersome free-flowing oxygen delivery systems.

As always, we welcome any comments and thank you for the continued readership!

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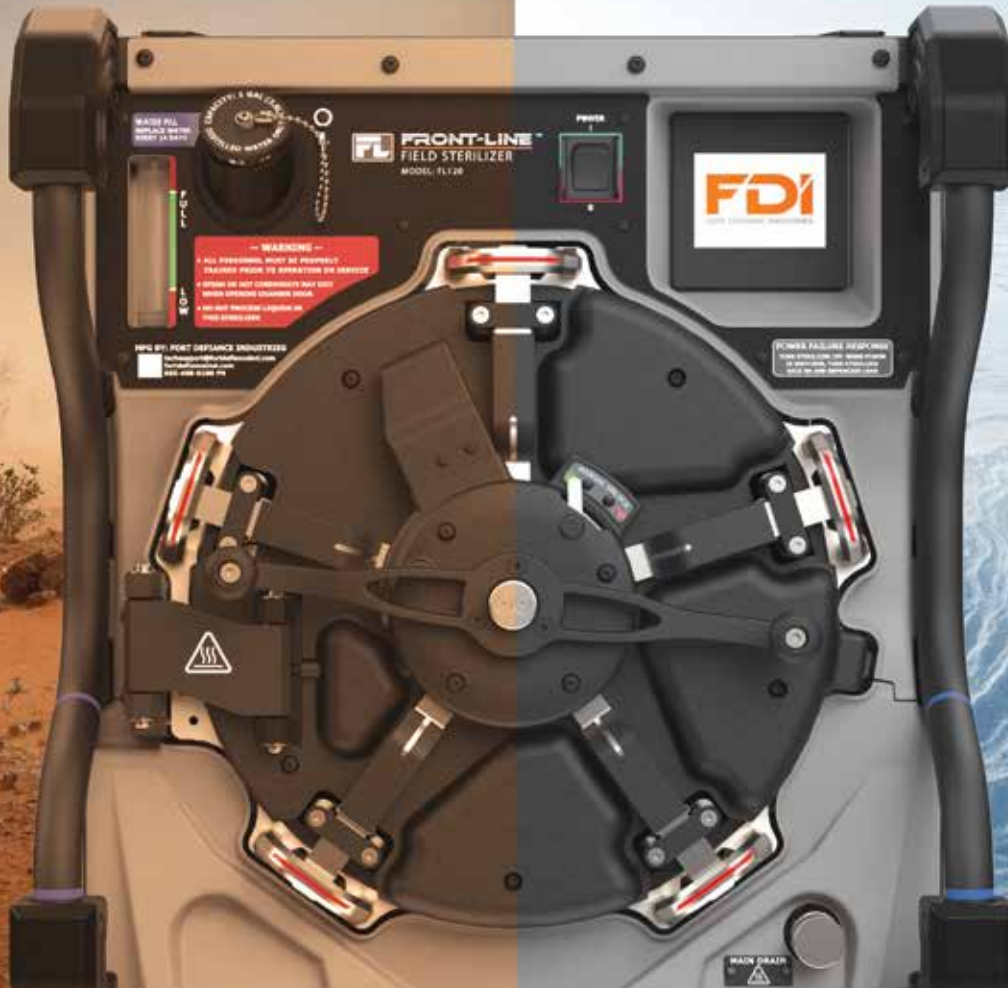
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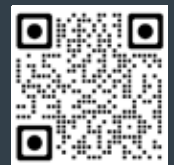
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NO FEAR OF THE AUSTERE

The U.S. Army's 25th Infantry Division Jungle Medicine (JMED) Course was created at Schofield Barracks, Hawaii, to train combat medics in the medical knowledge they will need to operate in the jungle environment and preserve the fighting force.

By CPT Katie Harper, MC, CPT Kyle Mogensen, SP, and MSG Waylon Wren, USA 325 BSB, 3 IBCT, 25th Infantry Division



U.S. Army Soldiers with 25th Infantry Division carry a casualty to a high angle extraction point during a jungle medicine exercise at the Lightning Academy East Range. This training provides Soldiers the skills they need to navigate a jungle environment for medical evacuations. (U.S. Air Force photo by Airman 1st Class Caroline Strickland)

The 25th Infantry Division, Schofield Barracks, Hawaii, is the United States Army's premier jungle warfare expert and America's Pacific Division. Combat units across the 25th train on special techniques to survive, fight and win in jungle terrain. As the division prepares for large-scale combat operations (LSCO), loss of the Golden Hour, and additional difficulties that only a jungle environment can present, the need for specialized training related to medical challenges is clearly identified.

AN UNDENIABLE COMBAT THREAT

The U.S. Army has been fighting wars in jungle terrain since the Spanish-American War. The 25th Infantry Division honed their jungle

warfare skills fighting in Guadalcanal and New Guinea during World War II, the Korean War, and the Vietnam War. Jungle warfare introduces many different hazards, diseases, insects, animals, and environments that threaten the health of the fighting force. History has taught us that often the biggest threat to the United States Army is disease non-battle injuries (DNBI). During World War II, malaria and dysentery were significant contributors to the eventual surrender of U.S. forces in the Philippines. In the jungles of Vietnam and the Pacific theater in World War II, DNBI accounted for over 65% of battlefield admissions. Since World War II, the fatality rate from combat injuries has decreased from 19.1% to 9.4% in Operation Iraqi/Enduring Freedom, reinforcing the importance of medical training to continue this downward trend.



Soldiers with the 25th Infantry Division communicate with the flight medic on the casualty condition during a jungle medicine exercise at the Lightning Academy East Range, Hawaii. During this training Soldiers were able to practice treating a patient, coordinating with a helicopter crew to request assistance and the handing off a patient to the crew for follow-on care. (U.S. Air Force photo by Airman 1st Class Caroline Strickland)

Studies involving all U.S. conflicts in the Pacific theater note the greatest impact on American combat strength was the cumulative effect of disease. Combat medics are proficient in Tactical Combat Casualty Care (TCCC) and treating traumatic injuries, but receive minimal training in regards to jungle medical threats such as malaria, waterborne illnesses, snake envenomation, or pharmacology outside of traumatic injury treatment. Prolonged field care performed by medics will be critical in the LSCO environment. Medics will need to consider and address the impact of a jungle environment on patient care. During prolonged field care, patients will require blood products. Combat medics must understand the risks and considerations for blood transfusions and demonstrate proficiency initiating a walking blood bank. Patient evacuation is anticipated to be prolonged and challenging in future conflicts and combat medics must understand how to move a casualty from the point of injury, through the thick vegetation and variable terrain of the jungle to reach a higher level of care.

FOURTEEN-DAY REMOTE, INTENSE PREPARATION

Schofield Barracks is a remote, outside the continental U.S., installation and, being in the middle of the Pacific Ocean, provides some logistical challenges. Due to the remoteness of 25th ID and the cost of sending Soldiers temporary duty to attend training the Jungle Medicine course was created. The Jungle Medicine (JMED) Course was implemented initially in 2022 and facilitated on a larger scale in 2023. To date, over 300 total medical personnel have participated in the course. Currently, the JMED incorporates more than eleven conventional Army units, the 3rd Special Forces Group, the 75th Ranger Regiment, and U.S. Navy corpsmen. For the 2023 JMED, the pass rate for the didactic portion of the course was > 95%. The medics attending it provided feedback and overwhelmingly endorsed the importance and significant value gained by attending the course. It was noted that a substantial gap in knowledge and medical skills was addressed. Attendees provided consistent feedback that the course provided invaluable lessons and techniques that they intend to implement at the unit level. This course provides the opportunity to fill a knowledge deficiency in jungle medicine training for all services.

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"The medics that have attended the Jungle Medicine Course are better prepared to operate independently in treating a wide variety of illnesses and complaints, administering blood products and evacuating casualties in a jungle environment," emphasized CPT Kaitlin Harper, Emergency Medicine Physician.

The JMED, developed and implemented at Schofield Barracks, HI, provides the education that history demonstrates is paramount to conserving combat power. Spanning two weeks, the course starts with an initial week covering classroom didactics and hands-on training facilitated by 25th Infantry Division Doctors and Physician Assistants. During the didactic portion of the course, medics are lectured on malaria and mosquito borne illness, jungle dermatology, envenomation, environmental threats, and common orthopedic injuries. They are taught how to purify water, jungle pharmacology, prolonged field care, and to recognize and treat diarrheal illness. The classroom lectures are followed with hands-on training. Medics are taught patient evacuation methods in jungle terrain. They are taught and must demonstrate proficiency in evacuation methods using ropes. These rope skills include mechanical advantage, high angle extraction, z-pulley and

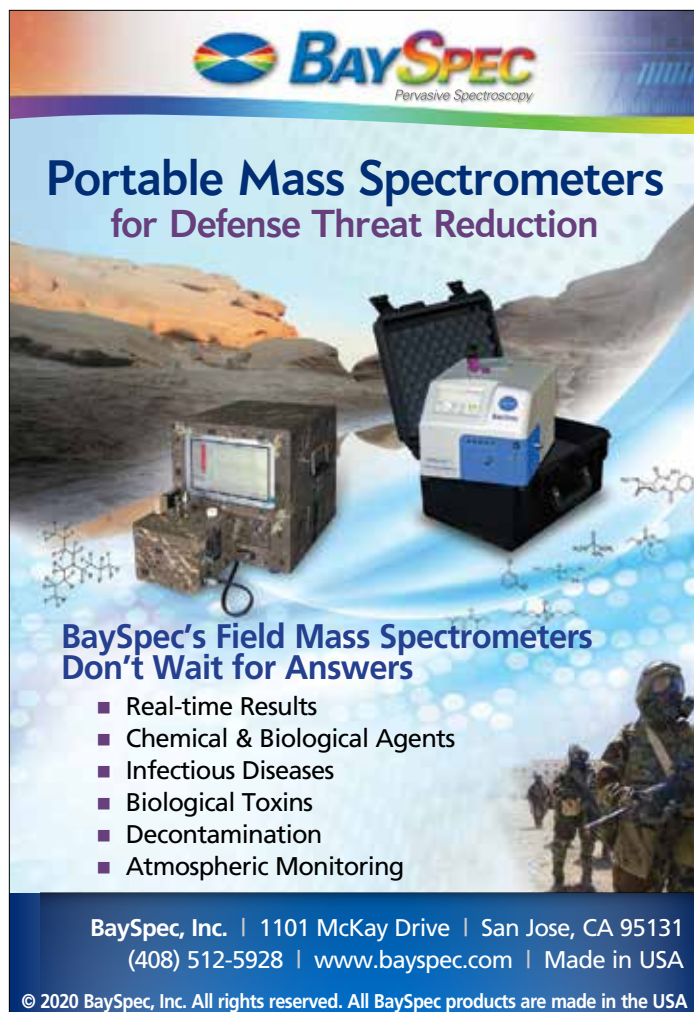


one rope bridge to transport casualties over water and uneven terrain. Medics then perform autologous blood transfusion and learn the importance of the walking blood bank. "The medics that have attended the JMED are better prepared to operate independently in treating a wide variety of illnesses and complaints, administering blood products and evacuating casualties in a jungle environment," emphasized CPT Kaitlin Harper, Emergency Medicine Physician.

At the completion of the first week, a fifty-question test is administered for medics to demonstrate retention and proficiency in jungle medicine. The second week of the JMED is training with perfused cadavers. In the field environment, students practice placing advanced airways, needle decompression of a pneumothorax, chest tube placement, intubation, junctional tourniquet uses and cricothyroidotomy. These procedures are all performed on cadavers perfused with bovine blood simulating life like patients. Although the course training is focused for combat medic education, the JMED is applicable for advanced training of any medical military occupational specialty (MOS). The current training support package (TSP) has been approved for 18.5 hours under review with the Combat Medic Sustainment Division (CMSD) to provide continuing education units for licensed medical providers.

CRITICAL READINESS SUSTAINMENT

History demonstrates the significance and importance of quality health care in a jungle environment to conserve the fighting force and maximize combat power. Combat medics make up the second largest MOS in the Army, their skills and competencies are key for mission success and U.S. military superiority. While the United States is not currently at war, training is paramount for the development and skill maintenance of combat medics. For the 25th Infantry Division to continue to be America's jungle warfare experts, combat medics must learn the jungle-specific medical skills provided by the JMED to save lives. The first time a combat medic treats a casualty in the jungle should not be on the battlefield.



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RAPID CASUALTY RESPONSE WITHOUT RESTRAIN BY TERRAIN

Staff Sergeant Marco A. Munizgarcia entered the Army in February 2013 and completed Advanced Individual Training as a 68W Healthcare Specialist. He served in the 14th CSH, 690th Ground Ambulance Company as an Ambulance Aid/Driver. SSG Munizgarcia's following assignment was a year in South Korea with the 210th Field Artillery as a Health Care Specialist. Upon completion of his tour, SSG Munizgarcia PCS'd to Fort Bragg, NC, and served in the HHC/1-73CAV/2BCT/82nd ABN DIV. Where he served several roles from senior line medic, the treatment squad leader, and PSG during Operation Inherent Resolve, Syria. Upon returning to Fort Bragg, he attended the Advance Leaders Course in Fort Sam Houston, TX. SSG Munizgarcia proceeded to PCS to Schofield Barracks, HI, and served in HHC, 84th EN BN as the Battalion Aid Station NCOIC. He currently works as a Health Care Sergeant in 130th EN BDE at Schofield Barracks.

Combat & Casualty Care had the chance to speak with Staff Sergeant Marco Munizgarcia, 130th Engineer Brigade, regarding his Jungle Medicine Course training and related field experience addressing critical, real-world tactical combat casualty care application which is often the difference between life and death.

C&CC: Despite the evolution in point-of-injury medical care in combat, the largest challenge remains to stop bleed outs and replace blood lost. Can you speak to a real-world scenario or two where application went beyond the classroom in saving a life?

SSG Munizgarcia: It is always beneficial to train on plugging holes, stopping the bleeding, and replacing blood. The Jungle Medicine Course (JMED) drove these concepts home with cutting-edge training, following Joint Trauma System (JTS) Clinical Practice Guidelines (CPG) guidelines for both Tactical Combat Casualty Care (TC3) and Prolonged Field Care (PFC). The course offered experts from all areas of the Army including physicians, physician assistants (PA), registered nurses (RN), Ranger, and Special Forces Medics. When developing training, leaders are always challenged with building the most realistic feel to it. JMED did just that. Yes, there are courses out there that train with putting on TQ, stopping the bleeding, and/or blood transfusions- but have you done that middle of the jungle in kit with a cadaver perfusing blood? Whether you are an experienced medic or straight out of AIT there is no replacement for this type of training. Students moving their team through rough terrain with casualties while getting repetitions of providing medical care is realistic and challenging. I remember my team moving in the middle of the trauma lane, my brow sweating, chest pumping, and having to check the tourniquet (TQ) and the inguinal pressure dressing after hoisting 200+ pound re-animated tissue up a steep hill was intense. The value of JMED is irreplaceable.



SSG Marco A. Munizgarcia

Health Care Sergeant
130th Engineer Brigade
Schofield Barracks, HI

C&CC: As technique has evolved in addressing the challenge of airway, resuscitative response, talk about some real-world applications bolstering readiness.

SSG Munizgarcia: Repetition with skills and equipment is what is going to keep a medic proficient at their craft. JMED gives medics the opportunity to see what putting in a chest tube in feels and looks like. It also gave the opportunity to use various airway interventions from NPA to intubation. It is not expected that every medic is proficient at the more advanced skills, but it is about getting familiar with them. Whether you are a line medic or part of a role II the knowledge of understanding what needs to happen to save a casualty vs not knowing can make all the difference. It is important to take the practicality of these skills in a real-world setting. Understanding, yes as a medic you may be versed in these advanced skills i.e., chest tube and intubation, but does that mean it is part of your loadout? Will you have the paralytics on your mission? Can you carry the extra load through your terrain? These were the types of questions I bestowed to my medics on deployment after checking their aid bags.



SSG Munizgarcia participated in hot/cold load training to learn how to hoist a SKED litter. Hoist operations were a section of JMED. (130th EN BDE)

C&CC: From a prolonged field care perspective in a future large scale combat operations setting, what are some likely challenges understood from lessons learned that pose the largest threats to achieving positive casualty outcomes?

SSG Munizgarcia: In my opinion, a challenge I've encountered is understanding the resource limitations within your area of operation (AO). What class VIII and medications do you have on hand? How long can you keep pushing drugs or blood on a patient? What does your resupply look like? When is it time to make that difficult decision or can I keep up resuscitation efforts? Understanding these questions and when it is time to make those judgment calls is imperative for prolonged field care scenarios. The JMED course put these ideas and others in every student's mind. I am one for always putting in the reps; this is no different when training prolonged field care scenarios. It is not always the "sexiest" part of medicine sitting on a patient- keeping urine output, changing bandages, or monitoring a patient over +48 hr. JMED offers these repetitions and lessons from various levels of medicine and experience.

C&CC: With illness caused by air and waterborne disease being the biggest threat to combat operations in tropical environments, speak to some presently evolving mitigation techniques either in use or projected for use in the future.

SSG Munizgarcia: Most Soldiers are familiar with iodine to treat water to make it safe for consumption. It has been around for over 50 years as it is very effective against bacteria and viruses. We all know how "tasty" it can be and it is proven to be a good emergency water treatment. The JMED slides taught us the World Health Organization (WHO) recommends limiting iodine water disinfection to a few weeks. Moving through the jungles and being able to keep the adequate hydration is a vital part of carrying out the mission. When planning

life support it is always important to have contingency plans. JMED covers eleven methods of treating water. As an avid hiker/ climber, I am familiar with my load out when it comes to water. I can tell you I will not be carrying boxes of iodine tablets or gallons of chlorine. It is always good to go back to the basics- boiling water. Given the tactical environment, boiling is the safest method for purifying water. It also requires minimal equipment to complete. All that is honestly required is a heat-safe container such as the metal canteen cup that is issued and a fire source. There is no real need for a thermometer as it is an easily recognizable endpoint. The Ranger instructors brought up some good, outsourced filtration systems that are out there for purchase. These are easy to look up online and they come in varied brands. The best part is they can be lightweight and are a good addition to any unit's PACE plan.

C&CC: Feel free to speak to other goals/challenges in preparing Army medics for a multi-domain operations future.

SSG Munizgarcia: The goal is to get proficient in medicine and build the Army medic's critical thinking. The "golden hour" will not always be there. Following the TC3 guidelines is a great start- Combat Medics as a core own that; we are proficient. This algorithm is not for prolonged care. How do we train medics on prolonged field care? Every patient is not the same. Would it be beneficial to start sending 68Ws to an ICU rotation for their annual training? Training must adapt to prepare us for large scale combat operations.

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SPECIAL OPERATIONS COMBAT MEDICINE: UNIQUE SKILLSET FOR UNIQUE MISSION

By MAJ Richard Dickson, Special Warfare Medical Group (Airborne)



Students in the Special Operations Combat Medic Course at the U.S. Army John F. Kennedy Special Warfare Center and School prepare a simulated patient for movement during field 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 and qualify as highly trained combat medics with the skills necessary to provide initial medical and trauma care and to sustain a casualty for up to 72 hours. (U.S. Army photo by K. Kassens)

The mission of the Special Warfare Medical Group (Airborne) based out of Ft. Bragg, NC, is to educate and train the full spectrum of United States Special Operations Command (USSOCOM) Combat Medics through superior teaching and instruction based on educational goals and curriculum development that is synchronized with the requirements of the force.

Medical courses are taught at the Joint Special Operations Medical Training Center (JSOMTC), a 75,000 square-foot facility, located on our main campus at Fort Bragg, N.C. We train more than 1,400 students annually from the U.S. Army Special Operations Command, the Navy Special Warfare Command, the Marine Special Operations Command, and the Air Force Special Operations Command.

JOINT PREPAREDNESS, SIMULATION TO REAL WORLD

The JSOMTC, Ft. Bragg, NC, falls under the SWMG and uses a variety of different simulators while training students to replicate medical care in austere environments and under combat conditions. Simulators support training in everything from Advanced Cardiac Life Support (ACLS) to Prolonged Field Care (PFC) to canine combat

trauma. The simulators used are primarily in three different blocks in the Special Operations Combat Medic Course: Trauma I & Trauma III and during the Special Forces Medical Sergeants Course.

The JSOMTC will create well-educated and professionally trained NCOs with a solid understanding of the knowledge and skills required by the force to provide standard of care medical treatment, regardless of the conditions. We will ensure they have a thorough foundation in medicine which fosters a career of life-long learning in order to adapt to ever changing medical challenges posed by an uncertain operational environment."

PUSHING THE VIRTUAL TRAINING ENVELOPE

Medical training, particularly for special operations forces, must remain challenging and present the most realistic models available for combat medics to become proficient in the evaluation, stabilization, and treatment of casualties in the most demanding and austere of environments. To meet this daunting task, the JSOMTC has tested a variety of simulators to best meet the necessary training objectives taught. The challenge continues to be balancing realism with cost, sustainment, and consistency.

EVOLUTION OF A LIFESAVER

Arterial lacerations, penetrating chest wounds, blast trauma, and other kinetic injuries can quickly become life-threatening. Seconds may mean the difference between life and death. In the early years of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), combat medics often carried trauma shears and hook knives for patient exposure, however, switching between them was cumbersome, inefficient, and often impossible in the heat of battle. In 2005, Ripshears, LLC came up with a better idea: combine the two cutting tools into one, hence the first RIPSHEARS prototype was born. We spent the next few years refining our design and materials, and establishing domestic production capability in between rigorous training and deployment cycles before hitting the market with the RS-1 RIPPER and RS-2 RIPSHEARS models in 2010.

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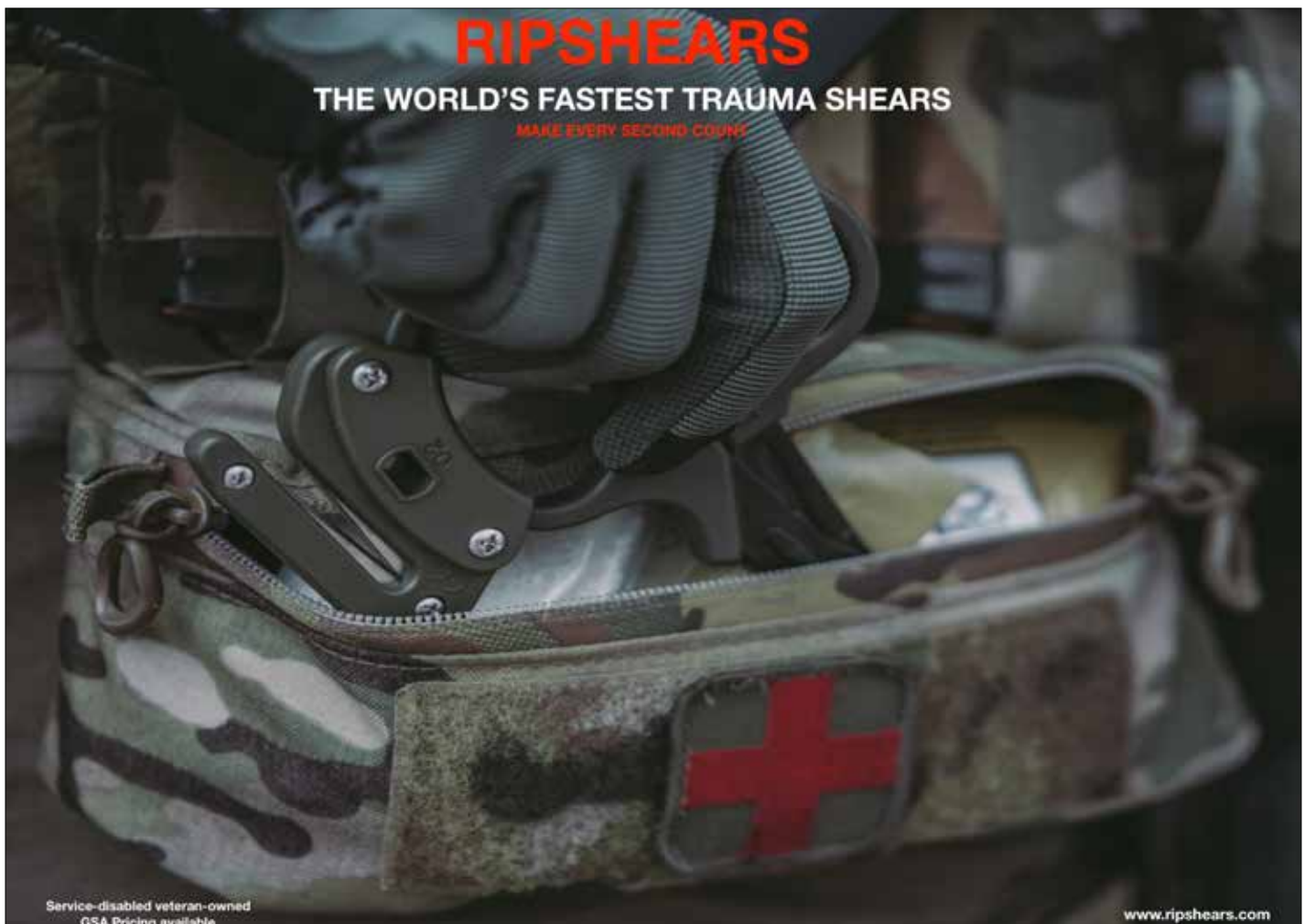
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Numerous competitors have tried and failed to match our speed, safety, effectiveness, and especially our prices. See our entire lineup at www.ripshears.com. GSA pricing available. Cage Code 8JRR1. Made in USA with TAA-compliant shears (RS-4 made in Taiwan). CE-approved. Autoclavable to 143C/289F.



ADVANCING POINT-OF-INJURY CARE IN COMBAT MEDICINE

Major (Dr.) Brett Ambrosion presently serves as Officer in Charge/Course Director for the Joint Special Operations Medical Training Center (JSOMTC) Special Operations Combat Medic (SOCM) course, Fort Bragg, North Carolina. Prior to obtaining his undergraduate degree, MAJ Ambrosion served enlisted time as an Army Engineer Diver and Non-Commissioned Officer, deploying to Iraq in 2003-04. He received his Bachelor of Science in Biological Sciences cum laude from Washington State University. He was commissioned as a 2nd Lt. and attended medical school at the Uniformed Services University F. Edward Hebert School of Medicine. MAJ Ambrosion completed his residency training in Emergency Medicine at Carl R. Darnall Army Medical Center, Fort Hood, Texas.

After completion of his residency training, MAJ Ambrosion served as the Diving Medical Officer for the United States Army John F. Kennedy Special Warfare Center and Schools (USAJFKSWCS) Special Forces Underwater Operations Detachment in Key West, Florida. In 2020, MAJ Ambrosion was assigned to Special Warfare Medical Group (Airborne) as the SOCM Course Director and serves in that position.



MAJ Brett Ambrosion, MD

Director, Special Operations Combat Medic Course
Joint Special Operations Medical Training Center
Special Warfare Medical Group (A)

Combat & Casualty Care had the opportunity to speak with MAJ Brett Ambrosion, OIC and Director for the Joint Special Operations Medical Training Center (JSOMTC) Special Operations Combat Medic (SOCM) course, Ft. Bragg, NC. The training offers prospective SOCMs both broad and specialized education in what it takes to be a field medic in various combat environments around the globe along with the skills needed to treat myriad combat-related injuries.

C&CC: Speak to your role as Course Director for the Special Operations Combat Medic course, and SOCM's mission focus.

MAJ Ambrosion: I am the course director for the Special Operations Combat Medic (SOCM) course at the Joint Special Operations Medical Training Center (JSOMTC), an educational facility under the Special Warfare Medical Group (Airborne), which is a proponent of the U.S. Army John F. Kennedy Special Warfare Center and School (USAJFKSWCS) umbrella. SOCM is responsible for producing Special Operations Advanced Tactical Practitioners (SO-ATP), a certification required for all enlisted medical providers under U.S. Special Operations Command (USSOCOM), and a prerequisite for Special Forces Medical Sergeants and Special Operations Independent Duty Corpsman serving the United States Marine Forces Special Operations Command (MARSOC).

SOCM is a 36-week, rigorous period of instruction focused on producing tactically advanced, certified paramedics and advanced medical providers for SOF units under USSOCOM. SOCM is the longest and most difficult course under the JSOMTC course catalog. Our graduates provide multi-patient, multi-system trauma care and prolonged casualty care alone, and in resource limited environments. Our curriculum is validated and certified within USAJFKSWCS, Army Training and Doctrine Command (TRADOC), and is an Associates Degree producing course through the Uniformed Services University. We train students with follow-on assignments to 1st Special Forces Command, 75th Ranger Regiment, 160th Special Operations Aviation Regiment, United States Army Special Operations Command, MAR-SOC, and partner nation SOF units worldwide.

My specific role is to ensure our curriculum is up to date with specific directives from USSOCOM, updated Joint Trauma Service Clinical Practice Guidelines, Tactical Combat Casualty Care (TCCC), feedback from operational units, and general medicine best practices. I work closely with over fifty active duty and civilian cadre to develop, sustain, and update course curriculum, procedural skills, clinical clerkship sites, and field training.



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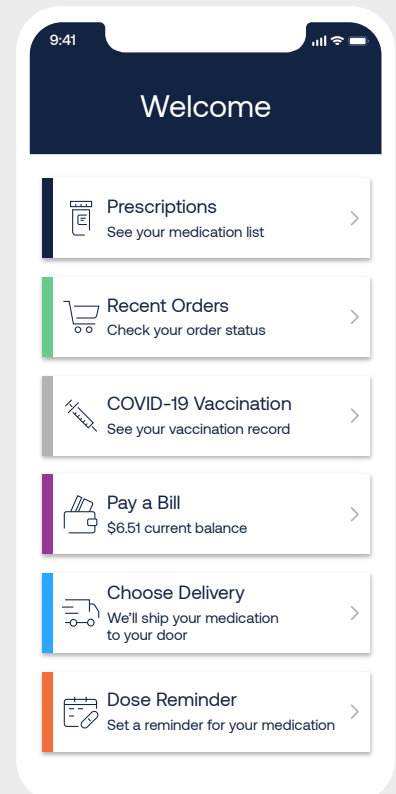
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Set up dose reminders. Stay on track with your treatment with automated alerts reminding you when it's time to take your medications.





U.S. and NATO SOCM students carry a patient for evacuation after coordinating with a 44th MEDBDE Medevac helicopter. This activity reinforces integration of SOF and Conventional assets on the battlefield. (SWMG (A))

C&CC: With the specialization the SOF face globally, often in coordination with allied SOF, what are some areas of standardization that SOCM is focusing on to ensure effective response?

MAJ Ambrosion: SOCM trains and creates a baseline interoperable U.S. SOF medic capable of interacting and integrating with U.S., allied, and international medical assets. To do this, we focus training on common skills, common equipment, and common internationally recognized courses and credentials. Examples include TCCC, National Registry Emergency Medical Technician and National Registry Paramedic. Some of these instructional pieces are the same conventional force medics receive, but they're taken beyond the conventional force teaching, expanding on base algorithms and testing students on critical thinking, reasoning, multi-tasking, and other SOF specific skills. One reason for this is that our student population is a mix of prior trained conventional medics, prior MOS soldiers, or recruits with zero medical background. Another reason is that we now integrate so much with conventional and international units, a common base language can only be beneficial.

We integrate international students from partner nations in our course who often stay in touch with classmates and return to their home countries able to teach tactical medicine within their own operational lens. Anecdotally, I've spoken with multiple graduates who have run into international classmates overseas during deployments or allied training exercises. The shared language and experience of going through SOCM enhances our international partnerships and camaraderie between providers. SOCM also exports cadre instructors to allied nation schools to help with curriculum development and medic education.

C&CC: As field medic readiness standards rise to meet current and future SOF mission complexities, what are some environmentally specific challenges JSOMTC is addressing?

MAJ Ambrosion: One of the biggest challenges currently being addressed is the U.S. Military posture move from counterinsurgency operations and the Global War on Terror to Large Scale Combat Operations (LSCO). DoD Operational planning and doctrine has already been moving back to large area, denied space, and cyber prior to Russia's Ukraine invasion. We are now seeing these concepts play out in real-time.

The last twenty-plus years have seen our medics shaped through wars in Afghanistan and Iraq, among other low-scale conflict zones. We have trained with the assumption of having air superiority, the ability to rapidly evacuate patients to a nearby Role 2 or Role 3 medical asset, the ability to transfuse blood close to point of injury, and that our point of injury medical care provides a superb survivability rate. These assumptions were essentially a reality throughout much of the last two decades, especially within the special operations community. If you didn't suffer a catastrophic injury, you were most likely going to make it to evacuation and higher medical care. With the current conflict in Ukraine, we are seeing a shift back towards what large scale continental war zones and its injuries/casualties may look like

Some challenges we address with the new shift in potential conflict is how we change our training. Currently, we place a large focus on Prolonged Casualty Care (PCC), giving our medics the skills and training to care for a critically injured patient for up to 72 hours. We've adjusted how we train triage and mass-casualty scenarios based on large unit conflict, area-effect high-explosive weaponry, low medic-to-

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- Massive hemorrhage control (tourniquet application and wound packing)
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- Pleural needle decompression (multiple sites)
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- Tibial intraosseous site

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patient ratios, etc. We have started to move away from fixed structure treatment facilities to smaller, mobile CASEVAC platforms and alternative treatment sites. We've also started to re-integrate low tech along with high tech treatment and monitoring capabilities.

C&CC: From a cross-training perspective, in what ways are Special Operations Combat Medics asked to understand more tactical combat casualty care (TCCC) skills than in the past?

MAJ Ambrosion: Historically, the SOCM curriculum has been taught based on a mix of Advanced Trauma Life Support and TCCC. Some of the processes and verbiage had been changed to accommodate for the more advanced skills, procedures, and thought processes our students use to care for multisystem trauma patients, but the overarching algorithms and treatment protocols for trauma were the same or very similar. Over the last year, the SOCM course has been re-aligning its educational objectives to start teaching formal TCCC from the beginning of the course. As mentioned above, many students have zero medical background. The DoD language for trauma is TCCC. By shifting our education back to TCCC and having our students build from that, they can now communicate effectively with other DoD medical assets in the care, stabilization, transport, and evacuation of combat wounded.

As for skills, those have not really changed. Conventional medics are now being familiarized with many of the advanced procedures SOCM medics perform, and now, SOCM medics are being formally

trained on the algorithms and procedures their conventional counterparts are learning. All this is paramount in furthering the interoperability of conventional and SOF forces.

Lastly, the mission of many SOF medics is to train their teammates and partner nation forces on combat casualty care. TCCC is a very digestible, easy to understand language for both medical and non-medical personnel when taught appropriately. Having a strong background in TCCC helps our medics train their teams and partners, therefore becoming even better force multipliers for patient care on the battlefield.

C&CC: Feel free to speak to other achievements/goals moving forward.

MAJ Ambrosion: The SOCM medic continues to evolve and improve based on the current and past performance of combat trauma practitioners. Our educators, cadre, and support have hundreds of years of combined combat medicine experience. The ability to impart direct knowledge onto our students from other SOF medics is invaluable. The end-user of our product, the units described above, deserve the best trained point of injury medics in the world.

Some of the goals of SOCM moving forward are integrating newer, more reliable telemedicine capabilities, training on advanced diagnostic tools such as pocket-ultrasound, and integration of conventional assets/units such as Dust-Off MEDEVAC and Forward Resuscitative Surgical Detachments, or FRSDs.

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SCAN ME

LANDSTUHL: ONE STOP, MULTI-CAPABLE TRAUMA CARE

For over 40 years, Landstuhl Regional Medical Center (LRMC), Landstuhl, Germany, has been a staple in military medicine, supporting operations across three continents and four United States Combatant Commands including European Command, Central Command, Africa Command and Special Operations Command.

By COL Andrew L. Landers, Commander, Landstuhl Regional Medical Center



Healthcare staff at Landstuhl Regional Medical Center (LRMC) treat a simulated trauma patient during a mass casualty exercise at LRMC. The medical center is the only medical facility outside the United States verified as a Level II Trauma Center by the American College of Surgeons. Previously verified as a Level III Trauma Center, LRMC's Level II designation reflects the medical center's commitment toward maintaining a robust trauma program in compliance with 286 criteria focused on immediate and comprehensive care following trauma incidents. (LRMC)

Since the 1980s, LRMC Role 4 hospital has been an evacuation site for various mass casualty events, such as the 1983 bombing of the Marine Barracks in Beirut, Lebanon, where 31 marines were medevac'd to LRMC, the Ramstein Air Show "Flugtag '88" disaster at nearby Ramstein Air Base, in 1988, which led to the transport of 175 casualties to LRMC within 10 minutes, and more recently, the treatment of more than 20 U.S. Service Members and Afghan evacuees following the Aug. 26, 2021 Kabul attack during Operation Allies Refuge. Unfortunately, there are many similar stories to tell of LRMC, however to most audiences, when they hear of casualties being evacuated to Germany, the thought cognates with survival. While the Military Treatment Facility (MTF) prepares for potential mass casualty events biannually, it's the training, education and coordination of services these medical professionals provide which may impact the operating forces even more.

Although LRMC provides 52 medical specialties to troops deployed across this side of the world, the challenges of trauma response remain in the process rather than the care provided. Joint operational medicine

utilizes the Theater Medical Data Store (TMDS) for transfer of patients' electronic medical records, however trauma response times may not allow for the proper upload or transfer of medical information, such as paper documents, notes, etc. The process is further complicated by Forward Operating Bases controlled by Coalition Allies not linked with TMDS, placing greater dependence on paper charting and data. One tool the Military Health System (MHS) has deployed is MHS Genesis, a DoD-wide electronic health record system connecting medical and dental information across the continuum of care, from the battlefield to MTFs. We recently kicked off our own MHS Genesis transition, scheduled to fully deploy in fall of next year.

MULTI-FOCAL SPECIALIZATIONS

Yet, the heart of our surgical and trauma capabilities remains our surgeon-led multidisciplinary teams. Similar to Forward Surgical Teams (FSTs), our trauma team activation is triggered by the Emergency

Department and followed up with one of three activation levels, full activation within 15 minutes of activation and consists of trauma surgeon, Intensive Care Unit (ICU) nurse, radiology tech, respiratory tech, pharmacy, anesthesia, Operating Room (OR) staff, nursing supervisor, blood bank, and radiologist. The partial activation requires members to be present in 30 minutes and consists of Emergency Response (ER) physician, ER nurse and an ER tech. Finally, our lowest level of trauma response involves patient assessment by a trauma surgeon within 60 minutes of activation. To continue our mission of providing medical services to an estimated empanelment of 205,000 beneficiaries here in Europe, the Deployed Warrior Medical Management Center (DWMMC) manage the medical care of inbound deployed warriors. The DWMMC, a program developed during the wars in Afghanistan and Iraq and funded by U.S. Central Command, is responsible for the coordination, reception, triage and patient movement of all ill, wounded or injured warfighters from four combatant commands and other regionally aligned military forces. In addition to patient reception and movement, the air evacuation section of the DWMMC also develops flight manifests for patients either returning to duty or transferring care to a stateside healthcare facility. This is done in close coordination with our Air Force counterparts and the Critical Care Air Transport Teams (CCATT) at Ramstein Air Base, which also has team members integrated in normal operations at LPMC.

IMMERSIVE SKILLS-BASED APPROACH

In addition to joint service operations, LPMC is preparing medical personnel, beyond their own footprint, by partnering with Europe-based, deploying and deployed units to improve medical coordination and capability through various initiatives while reducing mortality rates at lower echelons of care. To ready personnel, over the past few years, the LPMC Education and Training Division forged a premiere medical simulation center, known as the European Medical Simulation Center (EMSC), to provide troops scenario-based simulations aimed at testing capabilities at Roles 1-3 levels of care. The EMSC is a state-of-the-art simulation center specifically designed for our unique position as a permanent forward-deployed medical center, offering combat medic training courses like Medical Trauma Team Training (MT3), Medic Table 8, Advanced Trauma Life Support, Blended Basic Life Support, Blended Pediatric Advanced Life Support, Trauma Nursing Courses, Tactical Combat Casualty Care (TC3), and Blended Advanced Life Support, while also continuing simulation support for our MTF staff. The simulation technology mainly uses two types of manikins to achieve this. The first are low-fidelity manikins, which allow for scenario-based battlefield care operations such as burn injuries, tourniquet applications, needle decompression, all of which provide instant feedback to our instructors who remotely control and monitor the care received. In our courses, troops can drag, drop and pick up the manikins, all while testing their abilities to conduct a medevac simulation. Inside the hospital we conduct regular mass casualty exercises, mock code responses and skills fairs, to train and evaluate staff on the response procedures, times and communications during such events. For these scenarios we tend to use high-fidelity manikins designed to simulate heart attacks, illnesses, diseases and even birthing simulations (the manikin literally births a baby manikin). So, we're preparing our staff on two fronts, the battlefield injuries common downrange, and those common within the hospital setting. Our advanced simulation training area has also expanded over the past few years, providing medical staff with a replicated Role 2 aid station, tent and all peripherals inside. This addition allows responders to practice reception and evacuation of patients, while working in a very

chaotic, austere environment.

Because we are the closest Role 4 facility to deployed areas, we offer downrange providers the ability to connect with our specialists for surgical or specialized interventions via Web Real-Time Communication (WebRTC). LPMC is the central hub of Virtual Medical Center Europe (VMCE), providing in-home and battlefield real-time communications. These communications take place with a variety of equipment, from specialized clinical access stations, basically a doctor's office on wheels, complete with web camera, monitor, and specialized medical instruments, to traditional telephone encounters. Trained presenters act as the doctor's hands, checking the patient's range of motion, eyes, ears, etc., and relaying that back to the doctor during the encounter. For more austere environments where connectivity is limited, providers may rely more on telephone encounters. The entire audio/visual system is currently upgrading to implement MHS Video Connect platform, and teams are continuously deploying to align connectivity at remote locations, including the U.S. Navy's Expeditionary Medical Facility at Camp Lemonnier, Djibouti, essentially bringing the experience and services of more than 40 specialties to those Role 1-3 facilities and more importantly, care closer to the point of injury.

Additionally, because musculoskeletal injuries are common in high-impact, physically-demanding occupations, best practices and science-based interventions are shared across the theater throughout a network of 20 medical facilities as part of LPMC's Extension for Community Healthcare Outcomes (ECHO) Tele-Mentoring Program, which serves as a regional hub. The program welcomes presenters from across the MHS to discuss medical cases with other specialists to develop multidisciplinary solutions to improve patient outcomes. LPMC's use of the platform has helped reduce noncombat medevacs of Service Members serving overseas to LPMC, saving millions of dollars in logistics, increasing unit readiness by taking care of Soldiers where they are at and minimizing time away from duty.

LOOKING TO CHALLENGES AHEAD

The future of LPMC sees increased coordination between the services as part of the larger, Defense Health Agency (DHA) transition, in addition to an eventual move of clinical services to the strategically located Rhine Ordnance Barracks Medical Center circa 2028. When this new medical campus opens, it will replace and co-locate the Landstuhl Regional Medical Center, constructed in 1953, and the 86th Medical Group Clinic to become the largest U.S. medical center on foreign soil, providing primary care, specialized consultative care, hospitalization and treatment for more than 205,000 U.S. military personnel, DoD and interagency civilians and dependents in Europe. Beyond Inter-Service relationships, LPMC has been evolving and practicing current relationships with German Armed Forces (Bundeswehr) Medical Services and medical facilities across three German states. Most recently, LPMC earned a unique partnership into the German Society for Trauma Surgery, or Deutsche Gesellschaft für Unfallchirurgie – DGU, the first American trauma center in coalition with a foreign trauma network. With this partnership, we hope to develop an enduring process of operations, so we may depend on our German counterparts and they may depend on us as needed.

No matter what the future holds, whether tomorrow or seven years from now, I am sure of one thing; the Soldiers, Airmen, Sailors, Marines, Civilians and Local Nationals will continue to uphold the Legacy of our hospital, a Legacy of high-quality, safe and compassionate patient care, a Legacy of "Selfless Service."

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KEEPING ACCESS TO VITAL

The latest in mobile resuscitation devices is saving lives by revolutionizing pre-hospital emergency oxygen delivery.

By Christophe Galan, Mirola Rescue AB



Weighing 1.5 kilograms, Mirola Rescue's FIDO portable oxygen rebreathing device provides a full hour of oxygen with use of a 40 centiliter capacity bottle. FIDO is currently in use with the British and French Special Forces and awaiting approval for use with all North Atlantic Treaty Organization nations. (Mirola Rescue AB)

Oxygen is the most used drug in emergency medicine. For a long time, the medical oxygen market has needed an oxygen delivery device that is smaller, dramatically more efficient, and more easily deployed in the field in emergencies.

Founded in 2016, Mirola Rescue, a Sweden-based medical technology research and development firm, has developed 'FIDO': a closed-circuit oxygen rebreathing device for acute, in-field oxygen treatment that was created to replace old, cumbersome free-flowing oxygen systems with large cylinders. As of March 2020, FIDO has been medically certified achieving Certification by European Union and has received great interest from Special Forces around the world. FIDO is currently in use with both the British and French Special Forces, with additional unit deliveries to be announced soon. FIDO is also in the final stages of receiving a North Atlantic Treaty Organization (NATO) Stock Number which will clear it for use among NATO nations.

Due to its design as a closed-circuit re-breathing device, FIDO uses O₂ very efficiently, employing a significantly smaller oxygen bottle without compromising quality or output. FIDO is four times smaller and 90% lighter than existing systems on the global market, with double the run time. As a comparison; with a 5-liter gas cylinder and 200 bar, FIDO can provide a continuous 12-hour treatment.

FIDO'S KEY CHARACTERISTICS:

- Weight only 1.5 kg
- Provides 60 minutes of oxygen treatment with only a 40 centilitres

oxygen bottle

- Delivers between 52% and 89% of O₂ (adjustable)
- Generates warm return air to the patient, about 33 degrees Celsius and humid air <95%
- The input pressure level of FIDO is 4.5 bar and 200 bar in the cylinder
- 100% mechanical, no need for electricity or battery to use it
- Medically certified (CE Ila), we operate according to ISO standard 13485
- Approved for national and international air transport according to IATA-DGR
- Developed to withstand all conditions

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- Due to lightweight packaging, it is easy to keep mobile.
- FIDO can be used in demanding situations and can be deployed in less than 30 seconds.
- Several hours of oxygen can be shared by simply splitting the weight of the extra small bottles.
- Special Forces use the FIDO in field-hospitals, on aircraft, in battlefield medic kits, and on naval ships and battlefield vehicles.
- Much less compressed oxygen is required, improving safety in challenging environments.
- The warm return air of 33 degrees generated is of added value especially for diving sickness and in extreme cold environments.

More info: www.mirola.se

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X-RANGER: PORTABLE, LIFESAVING RADIOGRAPHY

Serving in the military requires service men and women to be reliable, strong and adaptable. MinXray, a military-approved supplier of portable digital imaging equipment, built these needs into the X-Ranger Wireless Complete Battery-Powered Portable DR System.

By Katie Robertson, MinXray, Inc.

ROBUST, DEPENDABLE

When military medical responders are working, they need diagnostic equipment that will bring the same level of capability to the field as it does to a clinic. The X-Ranger is a compact, wireless, battery-powered hand-held, radiographic imaging system that is easily transported, providing reliable imaging capabilities, regardless of available power. Designed for care in forward-deployed military outposts, the X-Ranger combines MinXray's powerful TR90BH X-ray generator with a Csl digital flat panel detector and system laptop with imaging software for a complete system that military personnel can depend on.

IMPACTFUL, SUSTAINABLE

Neither the X-Ranger's size nor the demanding field conditions stand in the way of superior diagnostic imaging. The system is certified to meet the Food and Drug Administration (FDA) requirement for full-body imaging. Potential security weaknesses were also anticipated and fortified to bring the X-Ranger up to the strict cybersecurity requirements of the U.S. armed forces. The combat-ready X-Ranger comes with a ruggedized laptop or tablet and is housed in a compact, military-grade transport case.

MULTI-TASK READY, ANY PLACE OR TIME

The X-Ranger system sets up in under a minute and has the unique capability to provide the precise radiographic requirements of service members, military service animals and can include a Nondestructive Testing (NDT) imaging/security screening module for threat detection, all in the same system. It can deploy with military medical responders into trauma scenes, natural disaster zones or any location where standard radiographic imaging equipment is unavailable.

To learn how the X-Ranger System can provide added medical and security support for your troops visit www.MinXray.com/military or call 1-800-221-2245.



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The **X-Ranger** is a compact, military-grade portable battery-powered x-ray system

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- Casualty Care
- Veterinary Applications
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or visit minxray.com/military

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SAFEGUARDING CRITICAL SUPPLY

The Defense Logistics Agency partners with federal agencies and small businesses to further secure the pharmaceutical supply chain.

By Alison Welski, Defense Logistics Agency



Maj. Andrea Russell, 9th Medical Support Squadron pharmacy element chief, pours pills into a medicine counting machine at the clinic at Beale Air Force Base, California. Through teamwork, innovation, and efficient utilization of resources, the Pharmacy plays an integral part in the 9th Medical Group's mission to support worldwide operational readiness and the 9th Reconnaissance Wing U-2/RQ-4 high-altitude mission. (U.S. Air Force photo by Senior Airman Valentina Viglianco)

To ensure the military medical community has the best products and services they need to tackle daily emergencies worldwide, the Defense Logistics Agency (DLA) Troop Support medical supply chain worked with industry to create an active pharmaceutical ingredient quality assurance platform.

SPOTLIGHTING AND REMOVING LIMITS TO AVAILABILITY

Developed through DLA's Small Business Innovation Research program, the Provenance Pharmaceutical Solutions software catalogs and tracks medications for the warfighter. DLA researched and partially implemented the platform in 2021 to assist the agency with meeting administrative executive orders and congressional mandates established in 2019.

"The program highlights where there may be problems sourcing a particular API and helps us plan for any potential supply chain interruptions," said Air Force Lt. Col. Francisco

Boral, DLA Troop Support Customer Pharmacy Operations Center division chief. "We need to consistently maintain that the highest level of supply is available to our warfighter [and] this includes gaining a greater understanding of the pharmaceutical landscape."

PPS can now completely map all 200 drugs on the FDA's essential medicine list and is used in the field to train medical operations teams. DLA plans to extend PPS support to all pandemic and emergency stockpiles. Eventually, the program will partner with the Department of Health and Human Services to support the national strategic vaccine stockpile.

PPS is currently under review by the Trade Agreement Act, which maintains that the highest quality products are acquired by the federal government. The program will also further safeguard the quality of the Joint Deployment Formulary and Joint Trauma System pharmaceutical supplies that are critical to the first 30 days of a mission.

A MULTI-LAYERED, PROACTIVE PROBLEM IDENTIFIER

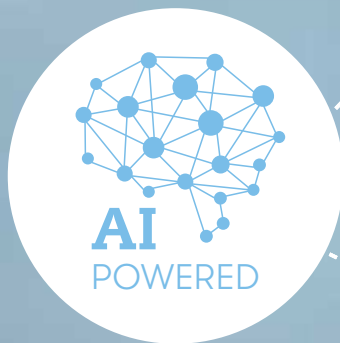
Essentially an early warning detection program for risks and potential supply disruptions due to man-made or natural disaster events, PPS also calculates overall risk analysis scores for each ingredient and key materials. Using information on item availability and potential threats to the pharmaceutical supply chain, the program alerts users when supplies of API are limited, or challenged including threatening weather, geopolitical situations, or glitches in the system that may impact availability.

"PPS identifies even the smallest risk within the supply chain with precision," explained Navy Lt. Cmdr. Samuel Mendoza, DLA Troop Support Customer Pharmacy Operations Center branch chief. "Removing non-TAA compliant pharmaceuticals and strategically finding alternate sources makes sure our troops across the sea get the best quality pharmaceuticals. This program helps us identify problems and solutions. We do not want to be reliant on just one source for an API since we do not want local sourcing issues impacting the entire supply chain."

AIDING IN FEDERAL SUPPLY CHAIN READINESS

To support DLA's Whole of Government effort to help reduce redundancies across government agencies, DLA presented the PPS to stakeholders including the Office of the Assistant Secretary for Preparedness and Response Landscape Analysis Working Group, the Federal Forum at the American Pharmacist Association and the American Society of Health-System Pharmacists, the Food and Drug Administration, Department of Veterans Affairs, HHS, U.S. Pharmacopeia, and Civica Rx.

The PPS is also included with the Acquisition and Medical Material Management Working Group, an intergovernmental agency overseeing sustainability of products procured by the government; and the Medical Category Management Strategic Objective, ensuring a high level of oversight.



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CALENDAR OF EVENTS

June 8 - 11

**International Hazardous Materials
Response Team Conference**
Baltimore, MD
iafc.org/events

June 21 - 22

**Training & Simulation
Industry Symposium**
Orlando, FL
ntsas.org/events/2023/6/21/tsis-2023

June 26 - 27

AUSA Warfighter Summit & Expo
Fayetteville, NC
meetings.ausa.org/warfighter23

June 26 - 29

NSMMS & CRAFT
Tucson, AZ
usasymposium.com

June 27 - 29

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Washington, DC
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June 28 - 29

**Automated ISR & Battle Management
Symposium**
National Harbor, MD
autoisr.dsigroup.org

July 12 - 13

DoD Energy & Power Summit
National Harbor, MD
power.dsigroup.org

July 24 - 26

CBRN Defense Conference
Baltimore MD
ndia.org/events

July 26 - 27

DoD Information Warfare Symposium
National Harbor, MD
informationwarfare.dsigroup.org

August 15 - 17

**Ground Vehicle Systems Engineering
Technology Symposium**
Novi, MI
ndia-mich.org/events/gvsets

September 5 - 7

Commercial UAV Expo
Las Vegas, NV
expouav.com

September 13 - 14

Military Tactical Communications Summit
National Harbor, MD
tacticalcommunications.dsigroup.com

September 18 - 22

EMS World Expo
New Orleans, LA
emsworldexpo.com

October 9 - 11

AUSA Annual Meeting
Washington, DC
meetings.ausa.org

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- > DLA DAPA Agreement: SP0200-03-H-0008
- > DLA VIPA Agreement: VMP-1412-03
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