Maximize your response no matter how rugged the terrain.

Turn your ATVs into rapid response vehicles with Intelagard’s SwiftCAF ATV system. Use the Intelagard SwiftRunner to turn your UTV into a dynamic response vehicle for maximum maneuverability and unparalleled capabilities.

Powerful and effective, Intelagard equipment will quickly become your most versatile weapon of choice. Intelagard’s advanced CAF systems are self-contained, easy to use, and work equally well for fire suppression, hazmat remediation, and decontamination ops. These multi-asset systems were designed to switch between applications quickly and with few adjustments.

Contact Intelagard today at 303.309.6309 or visit us at www.intelagard.com

INTELAGARD®
Features

Tactical Emergency Medical Support: TEMS for Local Law Enforcement  By Gerald “Wook” Beltran, D.O.
Todays’ TEMS incorporates the tactical paramedic into the SWAT team or Special Response Team (SRT), allowing for integration of medical planning into the operational plan.

Mission Medevac: Latest MRAP Ambulance Gets Care There  By Kevin Hunter, C&CC Editor
A new casualty evacuation, or CASEVAC, kit is being fielded that converts any M-ATV into an ad-hoc casualty evacuation platform within a matter of minutes.

Civilian Casualty Care: A Host Nation Perspective
DoD’s Office of Force Health Protection and Readiness (FHPR) International Health Division develops policies that support health sector capacity in all phases of international conflict and disaster relief. 
Q&A with Dr. Warner Anderson, Director of the DoD FHPR International Health Division

DoD Force Deployment: Adaptability on a Global Scale  By Matt Pueschel
Medical humanitarian assistance missions illustrate DoD’s adaptable capabilities to respond effectively to meet emergent needs on a small or large scale, coordinating multinational efforts for sustainable solutions.

Trauma Care: Finding Balance  By Barb Ruppert
Trauma care professionals are calling for greater information sharing and methods standardization in bringing advances in critical care for those in need.

Haiti Earthquake: A Call to Action  By Michael Jorgensen, PA
A physician assistant, RN and former U.S Navy corpsman tells of his experiences and lessons learned assisting disaster medical relief operations in Port Au Prince.

Training Centers of Excellence
Combat & Casualty Care spotlights key training and education providers from joint and special ops medical training commands teaching basic and advanced lifesaving techniques used in critical combat care.

Departments

2  Insights

20  Industry Partner
Disaster at Home: Ft. Bragg
Emergency response efforts in the wake of recent tornado activity in the Ft. Bragg area show the power of teamwork.

22  MedTech

27  DARPA Dots
Insights

With advances in data collection and sharing capabilities enabling a growing interaction between military and civilian medical response counterparts, critical information gathered from emergency scenarios is driving R&D efforts to ensure the best care for both civilian and warfighter patients alike. From tactical critical care response for battlefield casualties to natural disaster preparedness on national and international scales, the challenges faced by personnel on the front lines of medical madness may have different causes but often carry the same traumatic results.

In this, the Second Quarter 2011 issue of Combat & Casualty Care, C&CC sheds light on the world of trauma care from the streets of Haiti to the mountains of Chile to here at home. In an exclusive interview with Dr. W. Rich Dalton, Commander, Defense Medical Readiness Training Institute (DMRTI), Ft. Sam Houston, TX, offers his insight into what it takes to produce the world’s finest military medics, prepared to respond from land, sea or air. From a global disaster relief perspective, C&CC profiles the state of U.S. international response, both in combat-related and natural calamity-oriented casualty situations where proper techniques and timing are often the difference between manageable and uncontrollable realities.

On the home front, the evolution of Tactical Emergency Medical Support (TEMS) capabilities in application with local law enforcement, is gaining momentum as lessons learned on both combat tactical and civil SWAT levels are increasingly shared resulting in a benefit to personnel in both environments. With the recent deadly storm activity in the southeastern U.S., emergency response teams from both the civil and military sectors have been joining forces in providing efficient and effective post-event assistance.

In this issue of C&CC, a new feature column entitled DARPA Dots offers readers the latest R&D efforts being undertaken at the Defense Advanced Research Projects Agency in the advancement of defense medical technologies. In the issue’s ongoing Training Centers of Excellence feature, the Specialized Tactics for Operational Rescue and Medicine (S.T.O.R.M.) brand of tactical medical support is spotlighted. This support is viewed by many as critical to a variety of military and civilian first response rescue.

As always, feel free to contact me with your comments or concerns. Thanks for your continued readership!

Shean Phelps
Editor
Combat & Casualty Care
The Importance of Establishing a TEMS Program in Support of Local Law Enforcement

By Gerald “Wook” Beltran, D.O.

**History**

Tactical Emergency Medical Support’s (TEMS) origins can be traced to the development of specialized high-risk law enforcement teams in the 1960s and 1970s. The Special Weapons and Tactics (SWAT) teams were developed in response to multiple events that resulted in bystanders or law enforcement personnel put at risk, injured, or killed. One of the most notorious of these events occurred in 1966, when Charles Whitman opened fire relatively unimpeded for almost 96 minutes from a clock tower on the campus of the University of Texas in Austin. His shooting spree resulted in 48 gunfire casualties; among them, 15 were dead, 31 were injured.

With the development and utilization of SWAT teams came slow, gradual recognition of the need for medical capacity. Specialized military units have long recognized the need for this capability, but recognition in civilian teams has taken longer to achieve. SWAT participants have an estimated injury rate of 1.8 per thousand officer missions, while bystanders have an injury rate of 3.2, and suspects 18.9 per thousand officer missions. Historically, the SWAT team was medically supported by an EMS unit staged in a safe area away from the incident. This often caused a delay in care to the injured while the SWAT team cleared the incident zone as well as extracted the injured to the safe area where Emergency Medical Services (EMS) was standing by. More recently, recognition has occurred that medical capabilities may be required in the incident zone where there is a real threat of injury from suspects. Additionally, there has been recognition of the need for maintenance of operational security.
Often, law enforcement operations are hesitant to include medical personnel in planning due to security concerns. This reality was highlighted during the then Bureau of Alcohol, Tobacco, and Firearms (BATF) high-risk response team's operation at the Branch Davidian Compound in 1993 near Waco, TX. Local EMS had been advised of the pending operation, but did not maintain strong security, and the target learned of the pending operation. The element of surprise was lost, and four Federal Agents were killed when suspects opened fire on them as agents made contact.

**Tactical Medical Providers**

TEMS incorporates the tactical paramedic into the SWAT team or Special Response Team (SRT). This allows for integration of medical planning into the operational plan, maintenance of operational security, knowledge of team tactics and members, rapid extraction of the injured, and immediate medical care in the field.

One of the most important roles of the tactical paramedic is to assist the Team Commander with medical pre-planning on any activity. This role includes providing the Team Commander with medical insights into environmental threats/hazards (e.g. altitude, weather, toxins, etc.), equipment needs (e.g. eye protection, hazmat, etc.), and planning contingencies (e.g. patient extraction routes at and from scene, helicopter landing zones, etc.). In planning an operation, these insights can reduce patient morbidity and mortality.

Security is enhanced with the incorporation of TEMS paramedics into the team. As TEMS participants are a key integral member of the SWAT team, they are less likely to discuss upcoming missions and/or targets. In addition, they have a better understanding of the risks in any breach of security compared to their counterparts staged safely in a medical unit away for the scene, thereby reducing risks to themselves, other members of the SWAT team, and bystanders.

Enhanced knowledge of SWAT tactics and the individual team members improves rapport and the ability to respond quickly and cohesively in dynamic, stressful situations. TEMS paramedics understand SWAT tactics better than the medical service unit that is staged safely away from the scene does. They regularly train with the SWAT team, and know the personalities, capabilities, and medical issues of each team member.

TEMS providers appreciate the importance of rapid extraction of the injured. They are trained on the techniques and methods to rapidly move the injured to a safer area where life saving medical interventions can be performed with minimal risk to the patient and to the paramedic. Delay in this environment, especially with the potential for penetrating trauma, can have serious adverse consequences.

Knowledge of the zones of care is essential to rendering safe, medical care. TEMS paramedics understand these zones and the implications of rendering care in each. The hot zone is defined as the area with the greatest risk; the threat is immediate and direct. The risk can arise from a person, or an environmental or hazardous material source. The warm zone is defined as the area with potential risk.; the threat is not immediate or direct. The cold zone is identified as the area without danger or threat; typically, this is where non-TEMS medical resources are staged.

TEMS providers have to make quick decisions on medical management in a potentially dangerous environment. Evaluation and management of the patient in the hot zone is performed only if it is safe to do so. It is limited to patient extraction, checking and opening an airway, and application of a tourniquet when life-threatening bleeding is present. Evaluation and management of the patient in the warm zone relies on consideration of the threat and the potential benefit gained from treatment. Treatments or interventions such as definitive airway (i.e. intubation), establishment of intravenous access and drugs, and protective cervical spine devices should be balanced against potential threats. Medical care rendered in the cold zone (the area without threat or danger) is similar to that provided by a staged medical unit, as it poses minimal risk potential to the injured or medical provider.

Rendering care to the injured in an austere environment is an integral part of a TEMS provider's training. They are knowledgeable in treating not only life threatening injuries, but also the more mundane. For example, during training exercises and active missions, the provider may evaluate insect bites, lacerations, scrapes, contusions, diarrhea, vomiting, inebriation, strains, and sprains. Force health protection and optimal team performance requires that the TEMS provider be able to evaluate and manage these occupational health issues. Being able to distinguish between life-threatening injury or illness from the more mundane is a critical skill TEMS providers cultivate. This ability to function well in an austere environment makes them an ideal asset during disasters. They are familiar and comfortable with operating in an environment that lacks much of the medical equipment conventional EMS has readily available. They become invaluable medical assets in any disaster operation, as they carry their own medical supplies, and know how to extract the injured from dangerous environments.

**Weapons**

By its inherent nature, TEMS requires provider familiarity with weapons. Knowledge of the team weapons, including non-lethal, allows for better understanding of the types of injuries suspects, SWAT operators, and bystanders can sustain during an operation.

There are many different firearm vendors. Each weapon requires its own method of being rendered safe. This is especially important if an officer is injured during a mission.
An armed confused, injured, distressed individual has the potential for causing injury to others. Knowledge about the team’s weapons and how to render them safe will reduce risk to other team members. One study demonstrated that about 62% of EMS personnel have discovered a weapon and that weapons familiarization may benefit medical providers.

There are also several different non-lethal devices used to incapacitate a suspect, while simultaneously reducing the risk of injury and death. These include chemical irritants (such as Oleosin capsicum and tear gas), electrical weapons (such as TASER), kinetic impact projectiles (such as bean bags), and noise/flash diversionary devices (such as flash/bang grenades). TEMS provider familiarity with the multitude of injuries from the various devices is important to reduce time to diagnosis and management.

**Medical Director**

Each TEMS team should have a medical director whose role is medical oversight on all TEMS activities. This individual provides medical control at the scene or from the command post during a real event.

Medical oversight starts during development of the TEMS team. The Medical Director has the responsibility to ensure that proper training, role delineation, record maintenance, documentation and documentation standards, equipment, and operational support is in place for successful TEMS team implementation and integration. Ensuring adequate funding is in place improves the likelihood that the team will be able to fulfill its role during a tactical operation.

Usually, one of the first hurdles to address in developing a TEMS unit is whether the TEMS paramedics will carry weapons. Many civilian team TEMS paramedics are not law enforcement trained or certified. The decision whether the TEMS providers should carry a weapon should be made jointly with the SWAT commander. Advantages to the providers being armed include the ability to provide protection to self and patient, increased weapons familiarization and safety when rendering a weapon safe, and reduced need for SWAT operator security. This is balanced against the risk of possible reduced weapons proficiency (since this is not the primary role of the medical provider), role confusion, and liability.

Once the TEMS team is active, the Medical Director must also ensure that a Continuous Quality Improvement (CQI) and Continuous Quality Assurance (CQA) process is in place. Constant feedback to the TEMS providers is essential in identifying areas of improvement and excellence. Documentation of this process should be maintained and stored separately from other documentation. Understanding the agency’s state laws governing CQI information disclosure protection will help to understand the legal risks with CQI information.

The Medical Director must also ensure that training occurs on a regular basis. Most SWAT teams have training twice per month as described by the National Tactical Officers Association (NTOA) SWAT Standards document. The TEMS providers should be present during these exercises to ensure team cohesion as well as familiarity with team tactics. SWAT and TEMS members will learn from each other during these joint exercises. SWAT members will learn from the TEMS members about what medical capabilities exist, and what their role is when there is a casualty; TEMS members learn what security capabilities exist, and what their role is when events become critical. The NTOA standards identify that there should be a minimum of 8 hours per month devoted to medical training.

A challenging aspect for TEMS Medical Directors is the liability assumed for this activity.

Most individual insurance policies do not protect the Medical Director beyond direct patient care. In their role as TEMS Medical Directors, existing insurance liability policies will not likely cover torts arising from this activity. Unless there is a clause in the contract that covers activities related to medical direction for TEMS, physicians should purchase or have the agency purchase an additional medical insurance liability policy that will provide them with adequate coverage.

**Summary**

In conclusion, TEMS is a relatively new field to most law enforcement agencies in the United States. The need arose due to high-risk law enforcement operations, specifically SWAT or SRT operations. Its role continues to expand as recognition of its capabilities in reducing patient mortality and morbidity increases. TEMS providers not only render care to law enforcement officers, but also suspects and bystanders. Their role is crucial for morale, planning, and threat/hazard mitigation in dangerous environments. With their ability to function in austere environments, they are the ideal front line medical provider in most situations.

For your complimentary subscription, please visit our website at tacticaldefensemedia.com

Contact: contact@tacticaldefensemedia.com
The U.S. Army Medical Materiel Development Activity (USAMMDA) is at the fore of efforts to ensure that effective combat casualty care is on point and on time.

By Kevin Hunter, C&CC Editor

The U.S. Army Medical Materiel Development Activity (USAMMDA) is currently supporting joint urgent requirements for a Mine Resistant Ambush Protected (MRAP) ambulance vehicle capable of negotiating the rough terrain environment found in Afghanistan. A new casualty evacuation, or CASEVAC, kit is being fielded that converts any M-ATV into an ad-hoc casualty evacuation platform within a matter of minutes. Each portable kit contains two spine boards with restraint systems and litter straps to transport wounded warriors to the vehicle. Troops can then use their personal first-aid kits to begin initial care while transporting the casualty transported to an evacuation point.

Developed in cooperation with the MRAP all-terrain-vehicle program office, the new platform is an M-ATV-like ambulance with the protection capabilities of an MRAP and casualty care facilities.
of a medical platform. An initial M-ATV tactical ambulance variant was unveiled in February 2010. Maintaining M-ATV TAK-4 independent suspension systems, 16” of independent wheel travel with a 2-channel central tire-inflation system with 4 terrain settings, the platform uses a 370hp engine, with an Allison 3500 SP transmission, and seats 3 crew members plus 2 litters or 4 ambulatory patients in side-by-side litter layout.

**GETTING CARE THERE**

Unlike the MRAP ambulances in Afghanistan that were designed to operate in Iraq, the M-ATV-like versions are being built from the ground up for conditions in Afghanistan. The vehicle has an improved suspension systems and offer more mobility and speed than MRAP models. Equipped with state-of-the-art field medical supplies organized according to injury, including breathing problems, bleeding, hypothermia and broken bones, each M-ATV ambulance has a medical kit bag inside with components attached by fabric fasteners, enabling medics easy removal access when it becomes necessary to treat patients outside the vehicle.

“What we are doing is getting better technology far forward to the wounded, and as a result, we are seeing a decrease in mortality,” Jaime Lee, a product manager at the U.S. Army Medical Materiel Development Activity’s Medical Support Systems Division. These new ambulances are designed to negotiate Afghanistan’s rough, narrow roads, kits that quickly convert standard combat vehicles for casualty evacuation, and state-of-the-art field medical packages are improving battlefield medicine and saving lives.”

“In my opinion, the work that Medical Systems Support Division is doing has been absolutely critical to our military’s mission in Iraq and Afghanistan,” said Col. Russell E. Coleman, commander of USAMMDA. “The CASEVAC and medical evacuation capabilities that they have fielded have saved the lives of many of our deployed servicemembers.”

**TIMELY CARE IS KEY**

Defense Secretary Robert M. Gates has pressed hard for the past two years to bring medical care in Afghanistan in line with what’s available for U.S. troops in Iraq. This includes medevac capabilities that ensure wounded troops get advanced medical care within one hour of their injury, which is a factor that medical experts agree makes a major difference in survival rates.

USAMMDA has been focused on getting improved care to the soldier in far forward areas, during what the military medical community calls the ‘golden hour’ — the all-important first hour after a soldier has been wounded.

“Unlike in the past, when medics always had to organize their own supplies, the components for the new ambulances arrive in the theater ready to use,” Lee said. “What we have done here is take a whole bunch of subject matter experts and configure it to a standard format. Now, when medics get it, they pull it straight out of the box, hang it up and it’s ready to go.”

**AGILE EVACUATION**

In situations where an ambulance isn’t on the scene to evacuate a wounded warrior immediately, troops now are gaining a new “scoop and run” capability to get the casualties to advanced-level care more quickly.

“This will have a significant impact on the force and will really help to evacuate casualties,” Lee said.

As part of the new M-ATV-like ambulance casualty care arsenal, the platform has an oxygen concentrator for creating medical-grade oxygen from ambient air. The technology eliminates the need for previously-carried bulky oxygen tanks that, if hit by a fragment, could turn into a projectile and kill passengers in the vehicle. The oxygen concentrator also eliminates the logistics burden of having to refill oxygen bottles in the combat theater.

“The goal is for every M-ATV in Afghanistan to be equipped with the new kits,” Lee noted. About 300 were delivered last year, with another 1,800 expected to be delivered this summer.

More info: www.usammda.mil

---

**2011 Special Operations Medical Association (SOMA) Conference and Exhibition**

December 10 – 13, 2011

Tampa Convention Center, Tampa, Florida

**MARK YOUR CALENDAR**

Join the thousands who will be attending this year's conference at the beautiful Tampa Convention Center. See twice as many exhibitors, our floor has doubled in size.

This annual event has “SOLD OUT” the last four years, you don’t want to miss it.

CEU’s issued for conference attendance.

**WWW.SOMAONLINE.ORG**

Visit our website for more details on how to obtain exhibition space and to register.
A native of Parowan, Utah, Captain Dalton graduated with honors from Southern Utah State College (now Southern Utah University) in 1978 and earned his medical degree from Georgetown University in 1983 via the Health Professions Scholarship Program. After completing a surgical internship at Naval Medical Center, San Diego, California, he served tours at Naval Hospital Subic Bay, Philippines and as Winter-Over Physician at McMurdo Station, Antarctica. Returning to San Diego in 1987, he deployed to the Persian Gulf with a Surgical Support Team.

In 1988, Dr. Dalton began residency training in Emergency Medicine at Naval Medical Center, San Diego. Upon completion, he continued on at Naval Medical Center, San Diego as teaching staff in the Emergency Department. During his staff tour there, he had the opportunity to deploy several times, including Operations Desert Storm (Bahrain), Restore Hope (Somalia), Full Accounting (Laos), and Provide Promise (Croatia). Following San Diego, Dr. Dalton's duty stations included Naval Hospital Rota Spain as Department Head, the Chemical Biological Incident Response Force (CBIRF) as Medical OIC and Defense Medical Readiness Training Institute (DMRTI) as Deputy Commander.

In 2003, Dr. Dalton returned to full time clinical practice initially at Naval Hospital Jacksonville, Florida where he had the opportunity to deploy in support of Operation Iraqi Freedom and then as Emergency Department Head at Naval Hospital Sigonella, Italy. Following Sigonella, CAPT Dalton served with the II Marine Expeditionary Force as Force Surgeon for II MEF at Camp Lejeune, North Carolina and II MEF (Fwd) in Iraq and since June 2010 as the Commander of the Defense Medical Readiness Training Institute (DMRTI) in San Antonio, TX.

CAPT Dalton is Board Certified in Emergency Medicine and a Fellow of the American College of Emergency Physicians. He is Fleet Marine Force qualified. His personnel awards include the Legion of Merit, Defense Meritorious Service Medal, Meritorious Service Medal, Navy Commendation Medal with four gold stars, Navy Achievement Medal with one gold star, Air Force Achievement Medal, Antarctic Service Medal with winter-over clasp and numerous unit and campaign awards.

Q: Can you please illustrate or describe your role as Commander of the Defense Medical Readiness Training Institute; Please describe any other roles you play and your define your command's strategic mission and objectives?

A: As the DMRTI Commander…

Our DMRTI mission is to support the Department of Defense (DoD) and our global partners through innovative design and delivery of contingency readiness training. We continuously seek to provide a complete portfolio of courses and services to ensure we meet the training needs of our customers. My staff readily responds to requests from Combatant Commands, as well as the Reserves and National Guard, for training in support of various exercises and operations throughout their regions. We hope to be the first choice for readiness training and constantly seek opportunities to align our services seamlessly and effectively with the Services' needs.

Q: What areas of focus does DMRTI concentrate on for maximal application to current Warfighter operations overseas?

A: Utilizing advanced medical and information technologies, medical training capabilities, and organizational linkages, DMRTI draws from resources across all the military medical services. This
combined with our partnerships with other federal health agencies enable DMRTI to provide information on operational and medical teaching capabilities that are linked and delivered seamlessly across Service and organizational boundaries. Science and technology, research, and development form the basic foundations for most of our innovations. We anticipate incorporating further technological advancements in all areas of medicine in the coming years.

DMRTI has the capability to rapidly project a multi-capable, multi-service medical teaching team that can be tailored to meet the training needs of an emerging or changing mission. We have applied lessons learned from the recent wars in Iraq and Afghanistan as well as utilized military medicine’s incredible advancements in how we care for and treat our wounded. When casualties occur, the medical instruction we provide helps ensure rapid and appropriate initial treatment, stabilization and evacuation of the injured personnel. Prompt treatment of combat casualties is vital for the preservation of life and limb and in the maintenance of the fighting force.

Q: As applies to Combat Casualty Care, can you please provide your and your command’s role in the advancement and modernization of battlefield and disaster medical care?

A: DMRTI facilitates the interaction that occurs between medical professionals from all services, DOD and international military organizations at locations around the globe. These providers come together and are provided the opportunity to train on the most current and relevant combat care techniques, but more importantly, they come together to develop relationships and to learn best practices from their peers. Our training provides a foundation for cooperation and joint service performance in the field.

Q: What is your assessment of the relevance and impact of these innovations on combat casualty (US and Host Nation) morbidity and mortality?

A: How we collectively respond to the medical challenges facing combat casualties today will likely set the scene for decades to come. With each successful course completion, we increase our interoperability with host and partner nations, non-governmental and interagency organizations. Our focus is multi-disciplinary-based care, bringing together medical treatment providers. We adapt our capabilities to best treatment of casualties based on types of injuries that are historically and currently occurring in the combat zone. As the overseas contingency operations evolve and become increasingly more dangerous, we are seeing an increased demand for expeditionary combat casualty care in support of joint operations.

Q: Can you briefly describe any burgeoning developments in medical readiness and training that will facilitate more effectual battlefield care?

A: The development and implementation of life like simulation training is and will continue to provide the most practical and real world training that has ever been offered. Providers today are training on computer operated systems that can simulate a host of patient responses to injuries and treatment. Simulation training has advanced the relevant skills of our providers in ways not possible in the past. Our simulation training also assists in tackling the increased demands of a high operational tempo and diverse deployment environments and missions.

DMRTI is focused on training that ensures competent and well rounded medical professionals. Our cornerstone course is the Combat Casualty Care Course (C4). C4, along with our professional medical education courses, that include Advanced Trauma Life Support (ATLS), Trauma Nurse Core Course (TNCC), Pre-Hospital Trauma Life Support (PHTLS), Emergency Nurse Pediatric Course (ENPC), Advanced Burn Life Support (ABLS), Tactical Combat Casualty Care (TC3), and Emergency War Surgery Course (EWSC), are designed to produce tactically and technically proficient medical personnel. These courses reinforce current medical practice and military doctrine.

Our professional medical managers courses, including Joint Operations Medical Managers Course (JOMMC), Homeland Security Medical Professionals Course (HLSMPC), Medical Stability Operations Course (MSOC), Emergency Medical Response to Weapons of Mass Destruction (EMRWMD), and the Public Health Emergency Management Course (PHEMC) are designed to provide medical managers and planners skills needed to effectively operate in a variety of situations ranging from traditional military operations to civil support operations and natural disasters. These courses provide a wealth of information and offer a unique opportunity for participants to meet and form contacts with professionals from all branches of service as well as partner nations. For instance, our newest course, the Medical Stability Operations Course, brings together experts from with different backgrounds ranging from the UN, USAID, International Organizations, Civil Support, and NGOs, to cover topics which familiarize DoD healthcare personnel with the complexity of military medical diplomacy within the context of US. strategy and international relations.

Our Emergency Preparedness Response Courses (EPRC) provides the DoD standard training for CBRNE at the Basic, Operator, Clinician and Executive levels. These courses form the foundation for the DoD CBRNE education system, offering invaluable and consistent training at all levels of responsibility.

Our Incident Command System (ICS) Courses, developed and managed in cooperation with FEMA, include the Hospital Incident Command System (HICS), Intro to ICS for Healthcare/Hospitals (ICS 100), Applying ICS to Healthcare Organizations (ICS 200), Intermediate ICS for Expanding Incidents (ICS 300), Advanced ICS for Command and General Staff (ICS 400), ICS Overview for Executives/Senior Officials (ICS 402), NIMS Overview (ICS 700), and National Response Framework Introduction (ICS 800). These courses ensure that our military officers are armed with the skills and knowledge to assist with emergencies in the United States and that they are able to seamlessly integrate with civilian authorities during such emergencies.
DoD's Office of Force Health Protection and Readiness (FHPR) International Health Division develops policies that support health sector capacity in all phases of international conflict and disaster relief.

Q&A with Dr. Warner Anderson, Director of the DoD FHPR International Health Division
The Department of Defense Office of Force Health Protection and Readiness (FHPR) International Health Division develops U.S. Military Health System [MHS] policies that support global DoD stability missions in at-risk, conflict, post-combat and disaster settings. The division developed a new DoD Instruction 6000.16 in May 2010 that outlined medical stability operations [MSOs] as a core U.S. military mission that the MHS must conduct in conflict and non-combat environments. The instruction calls for the MHS to work closely with U.S. government interagency, non-governmental organization (NGO) and international leaders, and be prepared to reestablish or maintain health sector capacity for countries in need when local or civilian professionals are unable to do so. Military health support for stability operations can include direct humanitarian care to the local population, medical logistics, health sector development, or mentoring host country military medical personnel. The division emphasizes working closely with local leaders from the outset to ensure the existing healthcare system is not undermined and medical capacity building projects result in sustainable, positive improvements.

Dr. Warner Anderson, Director of the DoD FHPR International Health Division, is a retired U.S. Army Reserve Colonel detailed from the U. S. Indian Health Service. His military service began when he joined the U.S. Army National Guard’s 20th Special Forces Group (Airborne) at age 17 and served for seven years as an enlisted Special Forces Engineer and Medical Sergeant as well as doing work as a Psychological Operations designee. After completing college and medical school, he re-entered military service as a medical officer 18 years later, serving as Chief of Internal Medicine for a Mobile Army Surgical Hospital (MASH), medical consultant at the U.S. Air Force Para Rescue School, and then as the 19th Special Forces Group (Airborne) Surgeon. He once again volunteered for active duty after the September 2001 attacks and was activated to serve at the Joint Special Operations Medical Training Center (JSOMTC) as Deputy Commanding Officer. He deployed to Iraq in March 2003 as a U.S. Army Special Forces mobilized reservist attached to the National Public Health Team of the 352nd Civil Affairs Command.

After recovering from serious combat injuries sustained in Iraq, he led that team in reestablishing health services in Iraq. He returned once again to Iraq in 2006 as Surgeon and lead medical operator for the burgeoning Iraqi Counterterrorist Force, providing combat casualty care for Iraq’s Special Operations Forces as well as enemy combatants and rescued hostages. He completed a residency in Internal Medicine at the University of New Mexico, and served as Chief of Emergency Medicine at the Public Health Service’s largest hospital in Gallup, N.M. His awards include the Legion of Merit, Bronze Star with Valor Device (2 oak leaf clusters), the Purple Heart, Special Forces Tab, Combat Action Badge, Army and Public Health Service Flight Surgeon Badges, Parachutist Badge, and he has been previously recognized as the New Mexico State EMS Physician of the Year.

C&CC: DoD medical assets are often utilized to care for Afghan civilians or Afghan National Security Forces. Is this typical across Afghanistan and was it similar in Iraq?

Dr. Anderson: “We understand that anecdotally about 70 percent of beds in deployed U.S. medical facilities, such as Army combat support hospitals (CSHs), Navy fleet hospitals or EMEDS (Air Force expeditionary medical support facilities), are often occupied by Afghan nationals, either military or civilian. When I was hospitalized in April of 2003 in the 10th CSH in Dogwood, Iraq, there were two other American patients when I was admitted, three Iraqi children under age 5 with their mothers present, and two enemy prisoners of war. It was difficult to get a good night’s sleep after having been shot. I was awakened at 5 a.m. by an Army anesthesiologist who asked me how to administer an anesthetic to a two-year old Iraqi child who needed orthopedic surgery. The point is even then we had a significant population of Iraqi civilians and Iraqi POWs treated by our providers, but as far as I know there was no really robust planning for taking care of civilians prior to deployment. And many of the military health care doctors who deployed were not gynecologists, pediatricians or anesthetists with experience taking care of young children or treating gynecologic and other issues not associated with the care of a combat soldier. In 2006, I returned to Iraq to work with an Iraqi counterterrorism force, and we had a major problem moving Iraqi military patients out of the CSHs because at that time many of the host nation hospitals had been taken over by (cleric Muqtada al-;) Sadr’s Shiite Mahdi Army militia. We hadn’t planned to provide long-term care of Iraqis in our facilities. In 2008, during a tour of parts of Afghanistan with the then-Central Command surgeon, we observed that about 60-70 percent of our beds were occupied by host nationals. The implications are that we may not be planning as comprehensively as we should for the workload, specialty care, the language and cultural capability that is needed to treat civilians, nor for developing the host nation capacity necessary to move these patients from U.S. facilities to those of the host nation. You see this in Afghanistan right now.”

C&CC: What types of host country medical issues are DoD providers seeing?

Dr. Anderson: “There are four categories of host country patients that come in and that require slightly different emphasis, but all become patients and require the same standard of care under international law. The first is enemy combatants who have been wounded or disabled on the battlefield, and are not a physical threat anymore so you are obligated under international law and U.S. doctrine and law to provide the same care you would to any other person. The second is civilians who are wounded in the line of fire from either side. They are often taken care of initially by our field medics, who send them to a host nation hospital or a U.S. facility. Host nation hospitals may not have the capability to take care of them—they may not have a pediatrician, orthopedist or another specialist that may be needed. There also may not be a
mechanism to get them there. We have an evacuation chain set up for injured Service members to be sent to U.S. hospitals, so that is the more natural chain for the medic to utilize. The third type of patient is the host nation military member fighting alongside us. We are always trying to develop their capacity (through military to military training, including medical), but often their wounds or illness will exceed their healthcare capacity so we have an ethical obligation to treat them, and to avoid the economic impact of potentially losing that person we have trained. The fourth type of host country patient is one who comes to us by accident. They are host nation civilians who may be injured in the course of their daily routines, for example in domestic or vehicle-related accidents that commonly occur in the street in some developing countries. Host nation civilians who work with the U.S. military in forward operating bases will bring these injured people to us; they are a key part of Special Forces medics’ outreach at times because they are working closely with the local population and providers to develop their health care capabilities. The basic medical physiological principles in approaching all these cases are exactly the same as if they were U.S. patients, but everything else surrounding that care will be different. For example, the ability to communicate with the patient who speaks another language, the cultural understanding it takes to supervise the care of females in Afghanistan, and the follow up issues of what to do with a patient after you have provided acute surgery such as an amputation. At times, an added complication is that host nation civilians may stay longer (in our facilities). We have to think about all of this ahead of time and develop tactics, techniques and procedures well in advance.”

C&CC: The International Health Division is in the process of identifying U.S. Military Health System (MHS) training capabilities and preparedness gaps for these missions and prioritized solutions such as pre-deployment Medical Stability Operations (MSO) courses. How prepared is the MHS to effectively support stability operations?

Dr. Anderson: “At the policy level, we need to develop solutions that will work, regardless of your area of operations. Deploying individuals need to receive some basic training and principles in approaching MSOs ahead of time. There is recognition of the need for cultural expertise. I'll provide an example of a Marine Reconnaissance Corpsman who came across an Afghan woman who was severely injured by an IED. He needed to examine her to provide proper care, but the Afghans had an issue with her being examined by a man and being exposed. It is a huge taboo in a culture where honor is considered more important than life. He had to negotiate with the crowd to allow him to examine her. Through an interpreter, he made the point that it was a necessary and neutral examination. And that led to
a successful engagement, as well as future civic activities with the patient’s village.”

C&CC: What is the risk/benefit in utilizing DoD medical resources in these sometimes dangerous health engagements?

Dr. Anderson: “The U.S. military providers are medical people. They care about helping host country civilians who are hurt and they practice good medical ethics. It’s also the most cost-effective way. You have to plan to use U.S. resources early on, and start to develop the host nation capacity and capability very early on. And not necessarily building a surgical center of excellence, but determine together with the host country providers and leaders what kinds of medical problems they see frequently and then help them develop competency in that. For example, if there are land mines in the area and they see a lot of traumatic wounds, develop their capacity to perform and care for amputations and rehabilitate patients. In other areas, it may be common to see burn patients or other types of wounds or illnesses, so you help them develop their capabilities to treat that. However, you don’t have to develop a mega-surgical center that is unsustainable to do it.”

Q: Providing extended care in U.S. facilities can be costly. How do you address injured host country patients in the field that may require protracted treatment or rehabilitation? What should DoD medical deployers consider on a practical level when engaging with the host country on healthcare issues?

Dr. Anderson: “There is a tendency among good-hearted Americans to send the patient to places that already have capacity. I’ve been in that situation and it can be heart-rending so you try to do what’s right. I was personally responsible for the transfer to the U.S. of a 2-year old Iraqi girl who had congenital deafness to be fitted with cochlear implants and afterwards for the first time ever she said the word ‘Daddy’ to her father. It was very heart-warming, but she went back to Iraq and we lost track of her to follow up, so we don’t know how she is four years later. I’m also aware of a U.S.-trained Iraqi Special Forces soldier who was injured in a joint combat operation and lost an arm and one leg at the hip and had multiple abdominal and pelvic injuries. He was in a U.S. military field hospital and when it reached the point to be transferred for extended rehabilitation, there was no place for him to go other than sending him home to suffer slowly and be a burden for his family. So we had him convalesce and rehab in a CSH and eventually we were able to move him to a medical center in Kurdistan.

But in a lot of places that our Military Health System facilities are operating, there are also NGOs (Non-Governmental Organizations). Some are unfriendly towards the military (perhaps in trying to maintain the perception of neutrality), but others are quite friendly and there are even NGOs that would likely be willing to deploy with the military to take care of health problems that we encounter among the host country population. It is common for the military to think they are the only ones there, only to find out later that there was an NGO-run hospital right around the corner the whole time. They may have a lengthy history and cultural expertise working with the population and we could partner with them instead of operating separately. I think we hear thousands of stories of MHS personnel who received excellent on-the-job training by treating patients or working on medical outreach missions in [other] countries, but it is not institutional knowledge or part of institutional policy, so as they leave we will lose that expertise we gained the hard way. We’re trying to formalize training. We’re looking at what’s happened historically and saying if this is what happens in the counterinsurgency that typically follows combat operations, and if this is what the military is spending money and most of its time doing, then we should start planning and training appropriately and effectively for it.”

--- Interview compiled by Matt Pueschel, Office of Strategic Communications, Force Health Protection and Readiness, Falls Church, Va.
Medical humanitarian assistance missions illustrate DoD's adaptable capabilities to respond effectively to meet emergent needs on a small or large scale, coordinating multinational efforts for sustainable solutions.

By Matt Pueschel
Strategic Communications Specialist and Writer, Supporting the Office of Force Health Protection and Readiness (OFHPR)

DoD's large scale medical relief effort following last January's crushing Haiti earthquake has received acclaim in serving as a platform to build from for future disaster responses that require extensive military and civilian coordination. The U.S. military's ability to respond quickly and efficiently and facilitate a smooth hand-off of care was further evidenced in its much smaller scale and shorter term humanitarian assistance response to the 8.8 magnitude Chile earthquake of Feb. 27, 2010.

Both medical humanitarian assistance missions illustrate DoD's adaptable capabilities to respond effectively to meet emergent needs on a small or large scale, and in a coordinated fashion with civilian and host nation providers while at the same time steering its efforts toward sustainable, longer term solutions.

**Lessons from Chile**

The nature of DoD's medical relief mission in Chile particularly reflects evolving department policies to approach international medical humanitarian assistance missions in a way that provides emergent, needed aid while also helping the host country build and sustain its own capacity to deliver care.

“From a disaster standpoint, we'll still provide resources from the U.S. government to help meet their short-term need, but we're trying to do that with an eye towards how that can be sustained after we leave,” advised Col Jim Fike, USAF, MC, Air Force International Health Specialist Liaison to the International Health Division in DoD's Office of Force Health Protection and Readiness. “A good example of that would be in Chile where we responded with an expeditionary medical support (EMEDS mobile field hospital) from the Air Force but within a matter of 28 days we had oriented the Chilean providers in that area to run the facility. The U.S. military withdrew after an appropriate transition period, but the facilities were left behind to meet a sustainable need for the Chileans while they had time to actually rebuild their hospitals and facilities.”

Chilean authorities declared a state of emergency and requested assistance through the U.S. embassy, which issued a disaster declaration Feb. 28, and cleared the way for U.S. military support. The U.S. Agency for International Development's Office of U.S. Foreign Disaster Assistance (USAID/OFDA), the lead federal agency for U.S. foreign assistance, requested medical support for the country and orchestrated U.S. government relief. U.S. military operations were carried out in support of USAID and coordinated by U.S. Southern Command.

After the declaration, USAID deployed a Disaster Assistance Response Team (DART) to Chile to conduct assessments of humanitarian conditions in the affected areas and work with the U.S. embassy and Chilean government to prioritize and coordinate OFDA-funded relief. An Air Force international health specialist, Lt Col Juan Ubiera, USAF, BSC, Chief of Global Health for the Southern Command surgeon's office, was also sent to Chile in advance of the U.S. military relief team to meet with Chilean officials to assess their most urgent medical needs. The EMEDS team, which included members from 16 Air Force bases, then deployed to support the relief efforts to fill those needs. Composed of 83 Airmen, including 69 medical personnel, the team conducted humanitarian assistance in Angol, southeast of Concepcion, which suffered considerable damage. The Air Force members arrived on
March 9, and with the help of members of the Angol community, the Chilean Army and USAID, the EMEDS was set up in an area where medical facilities were too severely damaged to use. The team built, staffed and equipped the EMEDS to help serve the more than 110,000 people in the Angol area, where the regional hospital and its 190 beds had been lost in the earthquake.

Working alongside Chilean civilian medical personnel, the EMEDS team provided surgical, primary care, pediatric, radiological, gynecological, laboratory, pharmaceutical, and dental services. After the hospital opened March 13, Chilean and U.S. Air Force medics treated more than 300 patients and performed about 40 surgeries. Modular tents were added to expand the patient and post-operative capacity of the EMEDS to meet the medical needs of the community. Due to Chile’s significant progress in meeting these emergent humanitarian needs, the DART team demobilized on March 23. The next day, U.S. government officials donated the OFDA-funded EMEDS field hospital and equipment to the Chile Ministry of Health and the Angol community. The U.S. Air Force medical team working in the unit completed its mission March 26, when the EMEDS functions were wholly assumed by local Chilean medical staff. The EMEDS package left behind will augment health care capacity in the region for the next two to three years while the Angol hospital is being rebuilt. “That EMEDS asset was left behind for the Chileans to use and to sustain until they could have hardened facilities rebuilt to their normal level of care,” Col Fike said.

After the USAID and Air Force teams left, an OFDA representative stayed on to ensure the transition remained smooth for the Chileans. Aiding the transition were Chilean surgeons and nurses, who had worked side-by-side with the U.S. teams. The Chileans were engaged from the outset, working closely with the U.S. teams to learn the layout and equipment. In addition, Lt Col Ubiera said a U.S. Air Force team conducted a follow-up site visit in October to ensure the facility was still operating well. They found that the EMEDS package that was left was still being utilized as a key healthcare access point, primarily for orthopedic and general surgeries, and its 40 beds were at about 90 percent occupancy. Since April, Chilean providers had performed about 650 surgeries and had more than 14,000 patient admissions. The Chileans have remained resourceful, as well, connecting into local power and water, adding a bathroom and waiting area, and building shelters over the ECU to keep it warm in winter. In the follow-up visit, the Air Force team assisted Chilean technicians in properly wiring the facility to ensure the two ECUs would function well in the summer. The follow-up visit illustrates DoD’s developing focus on building and sustaining host country capacity in its humanitarian assistance missions within an interagency approach. As further evidence, USAID/OFDA has a local consultant who remains engaged with the U.S. military and local Chilean authorities to ensure the continuing successful transfer of care.

DoD’s developing emphasis on working closely with international and interagency partners on mission planning and implementation reflects recent NATO recommendations that military medical humanitarian outreach projects, including those in unsecured areas like Afghanistan, should focus on partnering with host nation and civilian experts on capacity building rather than focusing solely on short-term direct care. “Providing direct patient care missions is good at solving a short-term need for a small community and has been one of our mainstays in international engagements. However, working with the host nation to develop their health care system, whether it be through training their healthcare providers, presenting ideas as to how to improve their facilities, personnel, and deployable capabilities, and concentrating on long-term sustainable aspects of their own health care system, is a better use of resources,” Col Fike advised. “Historically, when we’ve been called in to provide medical assistance it’s been for direct patient care for a short time to a focused population. In the case of disaster response, medics often provided direct patient care, then departed after a few weeks or months without consideration of how the host nation would sustain the support that we gave them. That’s changing both on the level of how we respond to disasters, as well as how we handle our peacetime engagements.”

Examples of this change in emphasis include DoD’s evolving approach to its annual four-month Humanitarian Civic Assistance (HCA) hospital ship missions to Latin America and the Pacific, as well as in global land-based operations. “When we send the [ships] out, it’s not only with the intention of providing sole patient care, but also to work with the host nation community to meet its health care goals. That may include training people, building facilities that support the outreach clinics, or changing the way they do business from a medical logistics standpoint,” Col Fike said.

The Navy-led HCA missions bring together all of the military Services, as well as the U.S. Public Health Service, State Department, non-governmental organizations (NGOs) and international partners. “We often deploy with very robust hospital and surgical capabilities, but often what is needed in global medical missions is more of a preventive medicine and public health-focused approach,” said Dr. Warner Anderson, Director of the International Health Division (IHD). “In Haiti, they did need orthopedic and trauma surgeons, which DoD provided, but most humanitarian assistance missions require a public health focus. The majority of humanitarian assistance settings are not combat casualty care. With the hospital ships, for example, medical providers treat many patients, but it’s important to examine how that helps the population long-term and assure we train enough local personnel to sustain or improve care once the ship leaves. We have to work with host country health advisors and our interagency civilian counterparts during humanitarian missions to create a lasting benefit that is sustainable.”

Col Fike said changes in training must accompany this evolving focus. “Although the HCA missions have traditionally been used to train U.S. medics in disaster preparedness and tropical medicine, there must be an appropriate synergy for our training and what we’re doing for the host nation,” he advised. “The Services are doing better ensuring the host nation is involved in logistics planning and the structure and development of the actual mission and how it would meet their
requirements and support their goals. I think every Service plans that as a primary consideration as opposed to an after-thought. The International Health Division has worked with several of the combatant commands through the Joint Staff to consider sustainability and measures of effectiveness, and make sure we’re not just capturing how many patients we’ve seen, but also the impact of that care on the host nation."

IHD, which develops U.S. Military Health System policies that support DoD global stability missions, is leading a joint medical stability operations (MSO) working group to address gaps in MHS training for these missions and prioritize solutions. Although there are several MSO pilot courses and education programs taking place across DoD, the goal is to develop and standardize a baseline training to enhance the military’s preparedness for MSOs that are conducted across the range of disaster, combat, post-conflict and at-risk settings. More specialized courses focused on specific regions, language and culture will be subsequently developed in a modular format. In addition to training, the working group is analyzing personnel and resource gaps and requirements to effectively accomplish these missions, as well as potential doctrinal and organizational changes. "One of the difficulties in working internationally is that not only is no healthcare system the same as our own, but the context is different, the language is different, and there are linguistic subtleties," said Col Fike. "There is a level of cultural awareness in developing the ability to be conscious of your actions and proposed actions so you don’t impose something that may be inappropriate."

Dr. Anderson emphasized that it is important for DoD providers to take the opportunity to learn from their host country medical counterparts, so that a mutual exchange and understanding is taking place. One of DoD’s strengths in international missions has been military-to-military medical capacity building and mentoring, so in settings where the country’s military and civilian healthcare systems are closely aligned there can also be carryover that improves the civilian health sector.

**Haiti’s Example**

The devastation wrought by the 7.0 Jan. 12, 2010 Haiti quake that struck the greater Port au Prince region killed about 230,000, left hundreds of thousands injured, more than two million without shelter, and many in relief camps exposed to subsequent health risks. The Chile earthquake and resulting tsunami left 565 dead or missing, and 370,000 houses and 130 hospitals damaged in the affected areas. The peak of the Haiti earthquake response involved more than 22,250 U.S. military responders and lasted for several months. By contrast, only about 150 DoD personnel deployed to Chile and worked with local and interagency responders to provide relief for a few weeks, until local capacity could be sufficiently sustained. DoD’s response included medical, airlift and engineering support.

The Jan. 12, 2010, Haiti earthquake response illustrated how DoD’s unique and rapidly deployable skills in battlefield medicine and medical logistics can support and significantly enhance civilian healthcare disaster relief and humanitarian assistance capabilities. "The military and NGOs really had to rely on each other to make sure that people were helped," said Dr. Lynn Lawry, IHD’s senior health stability and humanitarian assistance specialist. "It’s almost impossible to be able to get ships to these areas, so they do need to rely on the military for helicopter support for moving patients from military platforms to the ground and vice versa."

DoD engineers helped rebuild the port early on to improve the flow of aid, and trained 160 Haitian engineers in the process. Given the large number of severely injured survivors, DoD also provided badly needed expertise in acute surgery and orthopedics. U.S. military medical responders performed 1,025 surgeries and treated 9,758 patients, while numerous DoD ships, fixed wing aircraft and helicopters conducted 343 medical evacuations and delivered millions of pounds of aid and medical supplies.

Communications was an early issue among all of the different entities operating in Haiti, but that improved over the course of the relief effort. "The interface that existed among the various U.S. entities that were involved in Haiti was much better than in prior disaster responses," Col Fike advised. "The majority of the information was a cohesive government flow as opposed to different things coming from myriad sources. It highlights the fact that the different agencies and NGOs are beginning to work more efficiently with one another; many of the lessons learned emphasize the advantage of that, and will be sustained for future operations."

Dr. Lawry, who traveled to Haiti under the auspices of an NGO on Jan. 17 to assist with civil-military medical relief coordination, participated in nightly U.S. government interagency health meetings at the U.S. embassy in Port au Prince that were led by USAID and included DoD, HHS, the State Department, Department of Homeland Security, Federal Emergency Management Agency, CDC and the Haitian government. She also was part of a medical relief team composed of volunteer emergency physicians and nurses who helped staff the overwhelmed university hospital in Port au Prince. The hospital was secured by the U.S. military’s 82nd Airborne Division, and Dr. Lawry served as a liaison to DoD when the NGO doctors needed medical supplies or help with the movement of patients, requests that DoD answered rapidly. When the Navy’s hospital ship Comfort arrived on Jan. 19, the hospital’s most critical patients were transferred by Navy helicopter to the ship’s operating rooms and beds.

Challenges included initial confusion on what types of patients to transfer, field litter ambulance and facility locations, transfer times and incomplete communications between all of the rescuers involved. That improved over time as the U.S. government dispatched satellite phones to facilitate communications. Dr. Lawry suggested minor refinements to future responses should include up front patient discharge planning.
The 98th Civil Affairs Battalion (Airborne) also deployed a planning team to Haiti on Jan. 16 to form the core of the Joint Task Force (JTF) Haiti Humanitarian Assistance Coordination Center (HACC), which was directed at meeting mission requirements outlined by Southern Command and included representatives from other agencies. About half of the HACC’s members operated from the U.S. embassy in Port au Prince as DoD’s interface with USAID/OFDA. The other members worked at the U.N. Logistics Base, partnering with the U. N. Office for the Coordination of Humanitarian Affairs, the U.N. Stabilization Mission in Haiti, partner nation militaries, and the international humanitarian community within the U.N.’s health cluster team. HACC healthcare professionals collaborated with other providers working to deliver and coordinate trauma, emergency, and interim care, and established partnerships with several NGOs and private and international volunteer organizations. This provided the JTF with a more complete understanding of the priorities, capabilities and challenges within the international humanitarian community, and of earthquake affected Haitians. Healthcare capability assessments of clinics and hospitals were also conducted on the ground, which helped foster several key relationships with host nation and international medical professionals, which led to faster delivery of DoD and NGO resources. Dr. Lawry said her main role was to help make the handoff of care smooth between DoD, volunteer and local providers. She also provided an updated guide to assist the military on working effectively with NGOs [http://www.fhpr.osd.mil/intlhealth/news.jsp?newsID=130]. “I think I was able to help keep people from doing harm and to think more about a long-term, internationally acceptable coordinated process,” she said.

Matt Pueschel provides communications support to the International Health Division in the Department of Defense Office of Force Health Protection and Readiness. He received a Bachelor of Arts in 1994 from the University of Massachusetts, Amherst, with a major in Journalism and minors in English Literature and Spanish. He completed an international education exchange program in Seville, Spain, in 1993, and graduated from an advanced journalism studies program at the National Journalism Center in Washington, D.C., in 1995. He worked at Memorial Press Group in Plymouth, Mass., as a general newspaper reporter from 1995-1999 covering local and state government, human interest, enterprise and breaking news. He went on to cover the national-level news of multiple federal health agencies and Congress for U.S. Medicine newspaper in Washington, D.C., as a staff correspondent from 1999-2001 and as editor-in-chief from 2001-2008 before joining the strategic communications department at Force Health Protection and Readiness in 2008.

USSOCOM has approved T1G to administer Sustainment Training for Special Operations Forces Medics. Meets all requirements of ATP Refresher Certification. Email info@T1G.com for more

www.T1G.com 866.496.9916
On both military and civilian fronts, today’s trauma care practices remain unstandardized, leading many experts in combat casualty care to look to the adoption of one set of tools and techniques from highway accident to IED blast response.

The medic who rushes to a war zone bombing ... the ambulance speeding to a major car accident ... the surgeons trying to save a shooting victim ... trauma care takes so many different forms that a national U.S. research strategy to improve the level of care has yet to become a reality.

**ALL TOO FREQUENT, FAMILIAR**

The deaths and serious injuries caused by trauma are taking a devastating toll on our nation. According to the Army’s Combat Casualty Care Research Program, nearly half of those severely wounded in recent wars have not been able to return to duty. In addition, approximately 20 percent of all combat deaths are considered potentially survivable, had advanced, appropriate care been immediately available.

On the civilian side, trauma deaths have reached epidemic numbers. In the United States, according to the National Trauma Institute, someone dies from a traumatic injury every three minutes, and trauma is the leading cause of death of children.

Yet military doctors in the field have the same problems storing blood today that plagued doctors decades ago, and no one yet knows the best way to treat a head injury or whether drugs can stem internal bleeding. Unfortunately, the funds devoted to trauma research, which could find answers to these bedeviling questions, are a small fraction of the country’s research dollars.

**SHARED SOLUTION**

Recognizing the need to develop a national strategy, the U.S. Army Medical Research and Materiel Command’s Telemedicine and Advanced Technology Research Center gathered representatives of several key trauma organizations earlier this year in San Antonio, Texas. The panel discussed the critical research needs in trauma and how together they could leverage each organization’s strengths for a more effective approach.

TATRC Trauma Portfolio Manager retired Col. Thomas Knuth, MD, chaired the meeting. He explained, “Over the decades, funding and public awareness of trauma needs have waxed and waned as wars come and go. We need to create an overarching strategy for exactly what to study and how to fund it, so we can continue building on the knowledge we’ve gained.”

Much has been done to reduce death and disability from trauma injury. But gaps remain in creating more effective trauma care for U.S. soldiers and civilians, in everything from injury prevention and disaster preparedness to medical treatment and infection control to the technology used for communication and medical monitoring.

Knuth pointed out that advances in military trauma care during the Vietnam War 40 years ago improved local and state civilian trauma systems, and what has been learned during the wars in Iraq and Afghanistan is helping the country move toward a seamless trauma system on the national level. “The military actually has a global system now. It’s amazing how many NATO countries are communicating weekly across continents in the
care of patients,” he said. “We need to translate that to civilian and future military efforts. That’s a good example of where we could go through the collaborations that may come out of this national meeting.”

National Collaborators

TATRC is headquartered at Fort Detrick, Md., and manages approximately 800 research projects throughout the country. Its trauma portfolio includes 50 to 80 projects at any one time. Through an extensive network of partners, TATRC explores models of high-risk and innovative research, and puts research findings into the hands of warfighters.

Another USAMRMC unit represented at the meeting was the Combat Casualty Care Research Area Directorate, known as RAD II, which also collaborates closely with Navy and Air Force research efforts. RAD II conducts basic and applied research and advanced technology development to reduce the number of deaths on the battlefield, limit brain damage, improve en route care and improve acute care of battle injuries. It invests in related projects at other institutions, including universities, industry and military medical organizations such as TATRC and the U.S. Army Institute of Surgical Research.

Also a meeting participant, the USAISR is in a unique position to conduct both laboratory and clinical trauma research. It is located at Fort Sam Houston in San Antonio, Texas, adjoining Brooke Army Medical Center, a level I trauma center. It operates the nation’s only military burn center and is the home of the Joint Theater Trauma Registry, which all branches of the military use to electronically compile combat trauma data for use in improving equipment and care.

Lessons Learned, Applied

According to USAISR Cmdr. Col. Lorne Blackbourne, “The institute takes the clinical problems identified on the battlefield into our research laboratory for further investigations and solutions, and then validates those solutions in the clinical setting before they are returned to the battlefield.”

Out of the collaboration between USAISR and civilian trauma centers in San Antonio grew the National Trauma Institute, the final participant in the meeting. NTI was established in 2006 as the country’s first formal military and civilian partnership in trauma care. The not-for-profit organization’s goals are to coordinate and fund trauma research nationally and apply it to fully benefit both the military and civilians.

NTI is working to develop a national trauma clinical trials network to coordinate studies at multiple sites. A network is important because no single trauma center admits enough critically injured patients to provide substantiated support for improvements to medical care, NTI also holds an annual trauma symposium for military and civilian trauma researchers and providers, and is beginning a development program to raise private dollars for trauma research.

Hope for the Future

This meeting reaffirmed efforts by the organizations to increase coordination among military branches, other federal agencies and civilian institutions most effectively.

TATRC Deputy Director Col. Ron Poropatich said, “We are all ready to take it to the next level to meet the challenges and opportunities of today and the future.”

RAPID ACCESS TOOL FOR ARMORED VEHICLE RESCUE

This innovative tool provides personnel operating in high-threat environments with a proven method to breach armored vehicles and other ballistically protected spaces.

The Rapid Access Tool breaches armored vehicles in approximately 60 seconds.

- Field Expedient
- Rugged
- Compact
- Light-weight
- Simple to Use

P. O. Box 1320 • Williamsburg, VA 23187
www.RapidAccessTool.com
In recent weeks, the Ft. Bragg community fell victim to one in a series of destructive tornadoes to hit the U.S. The only thing more powerful than the event was the emergency response effort that followed which minimized much of the storm’s potential negative impact.

By J.B. Gleason, C&CC Contributing Writer

This year’s storm season has already begun taking its toll on the nation. According to the National Oceanic and Atmospheric Administration and the National Weather Service, 701 tornados have struck the U.S., 509 touching down in April alone. The April total is more than 2 and one-half times the national average over the past three years, with the most historically devastating months of May and June still to come. Across the meteorological community, forecasts of a record year of severe storms are being predicted.

“Preparedness and responsiveness is essential to any community’s ability to take action in the wake of these devastating storms. On April 16, a category F4 tornado (winds speeds of 207-260 mph) tore through Fayetteville, NC, leveling hundreds of homes and businesses and leaving more than 200,000 local area citizens without power. Fortunately for the city, Fayetteville is home to Ft. Bragg, one of the Army’s largest installations and home to thousands of medically-trained first responders. Immediately following the storm, many of these professionals took to the streets to assist the city’s emergency management services.

“We pulled seven people from cars”, said Jamie Slife, a Marine stationed at Ft. Bragg, who was driving down Yadkin Road when the tornado touched down. Slife quickly linked up with several Army personnel and began rendering assistance.

Corey Russ, owner of Combat Medical Systems (CMS), a medical equipment supply company, and a retired Army special forces medic, arrived at his storefront (also on Yadkin Road) minutes after the tornado barreled through the heavily hit business district.

“My initial thought was that the area looked exactly like it had been hit by artillery or a bombing run,” said Russ, whose business was badly damaged.

**Readiness to Respond**

**Experience to Respond**

Founded in February 2008 by a team of experienced military medical personnel and industry product specialists, CMS attempts to simplify tactical medicine in order to decrease pre-hospital mortality. “We do this by providing and developing innovative products that simplify tactical medical care at every level,” said Russ.
Product development is key at CMS as the company constantly looks to the men and women in the field to offer ideas and feedback in this process. “We are located right outside Ft Bragg, NC which allows us to stay very current with medical trends in order to identify those requirements,” noted Russ. “We understand that tactical medicine is difficult and that your needs will continue to evolve in the face of emerging missions.”

During the recent event, Russ was able to make great use of the specialized emergency and combat medical equipment CMS specializes in, handing out several Mojo brand aid bags to medics and first responders arriving on the scene. Also a manufacturer of medical litters, CMS contributed AllEvac APE litters to transport six non-ambulatory casualties aboard three pickup trucks to ambulances marshaled in a business parking lot a half mile away.

“It just seemed like the only logical thing to do,” said Russ. “At that point, all you’re concerned with is doing whatever you can to help.”

**Efficiency in Response**

The assistance of Russ and Slife and others like them aided immensely in the recovery efforts that day, according to EMS officials. Within 36 hours of the twister hitting the area, EMS had accountability of all the injured and had completed its search and rescue efforts.

“The response of the soldiers and medically-trained citizens in the area greatly assisted our efforts throughout the first 24 hours,” said Fayetteville Fire Chief, Benny Nichols. “Their skills and services in this situation were very important to our rescue and recovery attempts.”

Nichols and the entire Fayetteville EMS were already on standby for the approaching storms, but as he stated during a phone interview, “You never really know if or when a tornado will strike, and if it does, you need every trained individual you can get.”

The tornado destroyed almost everything in its 10-mile long and half-mile wide path. It also took a human toll of one dead and 85 injured. However, without the immediate outpouring of response on behalf of the community, in this case the military community specifically, “that number may have been higher,” said Nichols.

“They did what they did because they are members of this community, and because of their sense of duty. This could have been much worse,” said Nichols. “It was a total team effort.”

---

National Solar Technologies (NST) is a manufacturer and integrator of solar power sources and solar powered lighting systems. With over 12 years of project experience, NST has the knowledge and confidence to provide our customers with reliable solar energy systems. NST has supplied thousands of solar powered lighting systems and solar power sources to the US Military and US Government agencies. We are here to help you with all of your remote/tactical power requirements and lighting applications.

National Solar Technologies (NST) is proud to be a GSA Contract No. GS07F-0108J

Some Examples of NST Projects Are:

- DHS: RVSS Camera Tower Sites Solar Power Sources

Ph: (800) 310-7413 or (716) 683-2505  E-mail: pv@nationalsolaronline.com  Web: www.nationalsolaronline.com

National Solar Technologies  166 Taylor Rd.  Depew(Buffalo), New York 14043 USA
Combat Support Low-temp Sterilizer

Sterilucent Inc, a Minneapolis MN based company, has announced that they are in the final stages of development for a low temperature sterilization device intended for use by the Army and Marines at field combat medical support locations. The ruggedized, low temperature sterilizer will be portable and self-contained, allowing military healthcare professionals to sterilize a wider range of instruments while using a fraction of the power of the current steam sterilizer called “Big Bertha”. “Big Bertha” relies heavily on high wattage electrical power, something that is at a premium for Combat Support Hospital operations. “Big Bertha” requires 9 KW of power, a plentiful supply of clean water and the necessity of separating its operation from the surgical suite because of its extreme heat and moisture,” said Mark Arnold, Product Manager U.S. Army Medical Material Agency. “The new possibilities of the Sterilucent system are very attractive because it consumes about the same power as a personal hair dryer, can be set up anywhere as needed, and has simple, fool proof procedures for its operation.”

The Sterilucent Model MSD will provide fast, cold and dry turnaround of instrumentation, eliminating a common problem associated with steam - items still being wet from condensed steam. The low temperature process allows for immediate use of instruments and also enables the use of heat sensitive medical devices that can’t withstand temperatures normally found in a steam process.

“In austere environments, existing commercial off-the-shelf technology isn’t reliable and doesn’t meet Army specifications,” said Sterilucent CEO David Bell. “We believe that the Sterilucent MSD will be an important improvement in the initial treatment of wounded combat soldiers as well as those who need heat sensitive medical devices for the latest minimally invasive surgery techniques.” Development of the Sterilucent MSD has been substantially funded by the Army, Marines, and National Institutes of Health (NIH). Necessary regulatory testing for the sterilizer is being completed in preparation for the Food and Drug Administration (FDA) approval process. When Sterilucent is ready to submit its premarket clearance to the FDA, it will include a letter of support from the U.S. Army, requesting an expedited review as provided in the law.

More info: Dave.Bell@Sterilucent.com

Oxygen Generation

Health System Chart SeQual Technologies, Inc., a developer of oxygen systems used worldwide, has announced the commercialization of the SAROS™ Oxygen System, Model 3000 for use in military health system, battlefield, emergency response and disaster relief efforts. The commercialization of SAROS is a major milestone for both Chart SeQual and the U.S. Army Medical Research and Materiel Command (MRMC). SAROS is a 10 pound oxygen concentrator that produces medical grade oxygen and operates on a 2- pound rechargeable lithium-ion battery, AC and 24 Volt vehicle power anywhere in the world. Its “D” cylinder shape allows the product to replace existing high pressure oxygen cylinders and large oxygen generation equipment used in field hospitals, casualty evacuation, en-route care and on the battlefield. SAROS is FDA cleared, Joint Airworthiness Certified and has completed testing to MILSPEC 810 Requirements. The U.S. Army, Navy and Special Operations have been deploying SeQual’s first initiative Army project - the Eclipse® Oxygen System – since 2008 to support outfitting medical evacuation vehicles, far forward teams and expeditionary forces around the world. In addition to the lifesaving benefits, SAROS solves a major logistical challenge and potentially saves the Military Health System tens of millions of dollars a year.

Both the Eclipse and SAROS operate at altitudes of 18,000 feet, extreme temperatures and environments of dust, water and rain. SAROS delivers up to 3 liters per minute of a continuous supply of oxygen in both a normal mode and tactical mode for austere missions. The pulse flow features and algorithm delivers a bolus of oxygen at the very beginning of the inspiratory cycle of a patient's breath and the device servo controls to maintain the FIO2 as a patients’ breath rate is changing.

More info: www.sequal.com
or www.chart-ind.com
MedTech

**Digital Patient Care Systems**

Army National Guard (ARNG) soldiers will soon have the ability to digitally document patient care and manage medical supplies during disaster relief and homeland security missions in the U.S., according to a new partnership between the Army National Guard Bureau and the Army's Medical Communications for Combat Casualty Care (MC4) program at Ft. Detrick, MD. In January, MC4 fielded 60 systems and trained two dozen members of the North Carolina Army National Guard.

“Since the Army National Guard is the first military responder to any type of natural disaster or emergency, it is important that our soldiers know how to use MC4 systems before they deploy to areas of need,” said Earl Williams, Army National Guard Bureau logistics management specialist. “Cadres from each state will learn to set up, use and support the MC4 equipment. They will then teach the other soldiers in their respective states during weekend training sessions. The train-the-trainer sessions offer the best scenario to disseminate the system knowledge to the users.”

ARNG soldiers from the 54 states and territories will learn to digitally capture patient data and reorder medical supplies with MC4 systems during disaster relief and homeland security missions. Moving forward, MC4 and the Army National Guard Bureau will develop a plan to train the remaining 53 states and territories.

More info: www.nationalguard.mil

**Life Support Medevac Transporter**

A new life support transport system has been developed by Thornhill Research, Inc. called MOVES™. The system is the world's first integrated one to be driven by an onboard oxygen concentrator which can maintain delivered oxygen concentrations (FIO2) of 85% for ventilated patients without the need for oxygen cylinders.

The system comprises a ventilator, suction system, and patient monitoring module which monitors and displays a patient's vital statistics. The unit weighs 60% less and uses up to 65% less space than today's standard transport life support systems.

MOVES recently completed air worthiness testing by the U.S. Aeromedical Airworthiness Laboratory at Ft. Rucker, AL with testing that included temperature, altitude, shock vibration, EMC, sand, dust, and rain.

The system attaches to patients and fits in any vehicle, rotary, or fixed wing aircraft.

More info: www.thornhillresearch.com

**Lighting the Way**

Five soldiers lay wounded in a field. Who should receive help first? A San Antonio businessman has come up with a solution to conducting battlefield triage that already is catching on in the military. Juan Cienfuegos is the founder of Southwest Synergistic Solutions, the company that manufactures a new line of triage technology called E/T Lights. A single light beams four colors based on the condition of a patient — red, yellow, green and blue. Instead of using four different chemical light sticks, a soldier can carry one device that is slightly larger than bulbs commonly used in Christmas decorations.

The technology was developed in conjunction with Air Force medics and also is being used by a Marine battalion and Army medics. “The lights can be used for triage, equipment marking and indicating emergency landing zones,” Cienfuegos said. “A corpsman home from Afghanistan sparked the idea. He said he was carrying too many bags with different colored chemical light sticks, getting shot at and it was just too much stuff.” He wanted to lighten his load, improve his time per patient and make sure that support was able to distinguish who on the battlefield went on the helicopter first.”

The lights are small enough to be controlled by one hand, making it possible for a patient to visually announce his own priority to medical support.

More info: www.triagelights.com

**Full-Spectrum**

Support General Dynamics Information Technology (GDIT), a business unit of General Dynamics (GD), has been awarded a task order to support the U.S. Army's Program Executive Office, Enterprise Information Systems (PEO EIS), Medical Communications for Combat Casualty Care (MC4) Product Management Office (PMO). The task order is valued at $154 million over five years if all options are exercised. As part of the contract, GDIT will provide the full spectrum of pre-deployment, deployment, on-site, re-deployment and garrison support to MC4 PMO system activities at as well as worldwide training events, including combat areas and contingency operations use.

More info: www.gdit.com and www.firerescue1.com
Medical Management of Complex National Disasters

by Alan Moloff, D.O., MPH, COL (ret), U.S.

Disaster. The term conjures up a variety of images: the great San Francisco earthquake, the influenza pandemic of 1917-1918, tornadoes, scenes from the 9/11 terrorist attacks, Hurricane Katrina, subway bombings in London, the blizzard in the northeast United States, the shootings in Tucson, Arizona, and the recent tsunami in Japan.

In general terms a “disaster” means different things to different people. There are a variety of reasons for this, such as direct personal involvement and suffering, physical proximity to the event, friends and relatives at the disaster site, frequency and intensity of media reporting of the event, scale of the event in terms of geography and loss of life. As such, there are a number of definitions of “disaster”. Some of these definitions include: - A sudden calamitous event bringing great damage, loss or destruction - An emergency that disrupts normal community function - A natural or man-made event that suddenly or significantly disrupts the environment of care

**All-purpose Medicine**

Disaster medicine can be described as the provision of health care to disaster survivors as well as the medically related aspects of disaster preparation, planning, mitigation, response and recovery. Disaster medicine is the comprehensive, interrelated, multidisciplinary and multilevel training, education, planning, logistical and patient care requirements to prepare for, care for, and return individuals and communities to pre-disaster conditions.

The concept of “disaster medicine” is very old; different terms for the concept have been used over the years. Much of the original work was done by the military for military and civilian mass casualty events, planning for casualties from weapons of mass destruction and response to natural disasters. The term “disaster medicine” became more commonly used beginning in the 1980’s and more widely recognized after 9/11 through
a series of Homeland Security Presidential Directives and the National Disaster Life Support training programs. As of 2005 the American Board of Disaster Medicine was created and a new physician specialty and certification in Disaster Medicine was developed. Disaster survival begins with you the individual, your family, and is integrated through increasingly complex municipal, county, state and federal emergency response systems. The overarching strategic integration, coordination, planning and response guidance comes from the National Response Framework (NRF). The entire process of disaster planning, preparation, mitigation, response and recovery is a complex multidisciplinary process. This process must be ongoing, iterative and open to experts in all disciplines and yet be understandable and responsive to lay persons that might be in the affected area.

**Mass Care Response**

There is great variability around the country regarding the capabilities and resources available for immediate local response. However, this is where disaster planning, preparation and response begin. Almost all municipalities and counties now have some form of Emergency Operations Center (EOC), redundant communications systems and personnel trained to some degree to begin the initial disaster response. Most municipalities now have radiation and chemical detection systems for their first responders, bomb detection, disarming equipment and training, as well as trained hazardous materials teams (HAZMAT). Almost all police forces have at least part time, trained Special Weapons and Tactics (SWAT) teams trained in disaster response as well.

Healthcare organizations have a variety of requirements to support a Mass Casualty Incident caused by a disaster. These requirements come from a variety of sources. These include local and state laws, the Joint Commission for Accreditation of Health Care Organizations (JCAHO) Emergency Management Standards, and national standards from the National Incident Management System (NIMS). Local private sector volunteer organizations’ and non-governmental organizations’ resources are critical to early and effective response and support for the affected population.

For example, the Red Cross provides rapid sheltering, feeding and clothing in communities across the U.S. Local governments respond to emergency requirements on a daily basis. When an event occurs that requires additional resources, they may request these based on mutual aid and assistance agreements with neighboring jurisdictions. If the event requires even greater additional resources, they will go to their state for assistance and support. Individual states have significant additional capabilities and resources, and can provide assistance to local governments. These include, but are not limited to, emergency management and homeland security liaisons, law enforcement and specialized incident teams, public health and specialized medical teams, transportation agencies, and the state National Guard. If additional resources are required, the state may request assistance from other states through interstate mutual aid and assistance agreements, such as the Emergency Management Assistance Compact. If an incident requires resources beyond local and state capabilities, there is a formal process for the state’s Governor to request federal assistance. This assistance can come from any federal agency and/or department. There are a wide variety of federal operations and “fusion” centers that evaluate the local/state request, coordinate the federal response, determine the sourcing for assistance, and deploy available resources and capabilities to the incident location.

The Incident Command System (ICS) is a nationally standardized, on scene, all-hazards organizational and management system that is flexible, adaptable and scalable. It can be utilized to respond to a minor event (such as a small wildfire), and can be “scaled-up” to include coordinating a national response for events such as 9/11 and/or Hurricane Katrina. It can be viewed as the “playbook” or common language to allow personnel and resources from disparate organizations to come together quickly and begin to work effectively. The ICS provides consistent roles, responsibilities, processes, common terminology, administrative and logistical procedures for response to national disasters.

The National Incident Management System (NIMS) provides the detailed information and “implementing guidance” to support ICS and disaster planning, prevention and response. NIMS establishes nationally standardized language, terminology, management practices and principles, individual and organizational training standards, information and communications systems, resource management and a variety of supporting technologies. The National Response Framework is the national strategic guide and coordination document for the disaster response system of the United States. It consists of a core document and a variety of annexes that provide additional planning and coordination guidance:

- **Emergency Support Function (ESF) Annexes** – These annexes group federal resources and capabilities into functional areas to support states during a disaster response:
  - ESF #1 Transportation
  - ESF #2 Communications ESF #10 Oil and Hazardous Materials Response
  - ESF #3 Public Works and Engineering ESF #11 Agriculture and Natural Resources
  - ESF #4 Firefighting ESF #12 Energy
  - ESF #5 Emergency Management ESF #13 Public
Safety and Security
- ESF #6 Mass Care, Emergency Assistance, Housing and Human Services ESF #14 Long-Term Community Recovery
- ESF #7 Logistics Management and Resource

Support ESF #15 External Affairs
- ESF #8 Public Health and Medical Services
- ESF #9 Search and Rescue
- ESF #10 Oil and Hazardous Materials Response
- ESF #11 Agriculture and Natural Resources
- ESF #12 Energy
- ESF #13 Public Safety and Security
- ESF #14 Long-Term Community Recovery
- ESF #15 External Affairs

Support Annexes – These describe how federal, state, tribal, private sector, volunteer organizations and non-governmental organizations (NGOs) coordinate and integrate administrative, financial and other resources in response to a disaster.

Incident Annexes – These are more detailed response plans to significant and specific threats to include, but not limited to, such things as biological, nuclear/radiological, mass evacuation and terrorism incidents.

PUBLIC SERVICES

The Emergency Support Function Annex # 8 (Public Health and Medical Services), is the ESF annex that details federal health support and planning for potential or actual events. The primary agency that coordinates the federal support is the Department of Health and Human Services (DHHS) and the Secretary of the DHHS leads the response. There are a number of other Departments and Agencies that are tasked to support this ESF to include the Departments of Defense, Veterans Affairs, Agriculture, Energy, Transportation and Homeland Security. Two major organizations that provide Resources and core functional capabilities to ESF

Annex #8 is the U.S. Public Health Service (USPHS) and the National Disaster Medical System (NDMS). The USPHS can provide up to five multidisciplinary Rapid Deployment Force (RDF) teams to provide medical care. These RDF teams include Applied Public Health teams equipped and manned to accomplish an array of public and environmental health requirements, as well as Mental Health Teams that can assess stress and suicide risks within the affected population, manage responder stress, and provide therapy, counseling, and crisis intervention.

ESF Annex #8 - Core Functional Areas
- Assessment of public health/medical needs
- Health surveillance
- Medical care personnel
- Health/medical/veterinary equipment and supplies
- Patient evacuation
- Patient care
- Safety and security of drugs, biologics, and medical devices
- Blood and blood products
- Food safety and security
- Agriculture safety and security
- All-hazard public health and medical consultation, technical assistance, and support
- Behavioral health care
- Public health and medical information
- Vector control
- Potable water/wastewater and solid waste disposal

The main NDMS teams consist of 55 Disaster Medical Assistance Teams (DMAT’s), three Disaster Mortuary Operational Response Teams (DMORT’s), four Veterinary Medical Assistance Teams (VMAT’s) and a National Medical Response Team (NMRT). NDMS also has national visibility of hospital capabilities (general and specialized bed availability) and can coordinate for the movement of patients to reduce morbidity and mortality associated with a national disaster. Detailed descriptions of the various DHHS, USPHS and NDMS capabilities are beyond the scope of this article and are available on their respective websites.

RESOURCES

Another important component of the NIMS is the Strategic National Stockpile (SNS). This is a tailored source of medical supplies to treat large numbers of trauma, chemical and biological casualties. The SNS can provide an initial “push package” of supplies anywhere in the U.S. within 12 hours of a request being authorized. The Department of Defense (DoD) also plays a large role in the continuum of disaster planning, preparation and response. U.S. Northern Command (USNORTHCOM) is a unified command established in 2001 to provide command and control of DoD homeland defense efforts and coordinate defense support of civil authorities. USNORTHCOM’s civil support mission includes domestic disaster relief operations to include response to fires, hurricanes, floods and earthquakes. Support may also include counter-drug operations and management of the consequences of a terrorist event employing a weapon of mass destruction.

The command provides assistance to a “Primary Agency” when tasked by DoD. DoD has specified support missions for all of the various Emergency Support Functions. Virtually all deployable medical and non-medical assets may be tasked to provide support and augmentation as required to civil authorities for each of the ESF’s and the core functions of ESF Annex #8. Each service is also capable of providing specialized teams in support of chemical, biological and nuclear events.

There is a minimum of one Civil Support Team in each state. The Civil Support Teams’s mission is early detection and initial assessment of an actual or potential chemical, biological, radiological or nuclear event. There are other DoD organizations such as the CBRNE Enhanced Response Force Package and the CBRNE Consequence Management Response Force designed to augment local and state medical and non-medical capabilities.

contact@tacticaldefensemedia.com
Deep Bleeder Acoustic Coagulation
Program Manager: Cindy Daniell, Ph.D.

The goal of the Deep Bleeder Acoustic Coagulation (DBAC) program is to develop a portable, lightweight, noninvasive, automated system for the detection, localization, and coagulation of deep bleeders that is operable by minimally trained personnel in the combat environment. The DBAC system will cover the full range of life-threatening bleeders from the fast bleeder, which causes progressive shock in 30 seconds, to the slow bleeder, which causes progressive shock in 8 hours. Notable progress to date includes:

- Doppler-based automated bleed detection algorithms. Software is based on unique spectral and power Doppler bleeder signatures that, when coupled to volumetric data, allows for automated bleed detection and localization.
- Extensive modeling and testing of high-intensity focused ultrasound (HIFU) delivery and dosing. Results show that tissue can be raised to within the range of 70 °C to 95 °C to safely achieve acoustic hemostasis within an operationally relevant timeframe of 30 seconds.
- Creation of unique materials to enable the testing of the DBAC devices on a full-sized leg mockup. Materials include blood mimicking fluids and tissue mimicking phantoms capable of enduring the high temperatures produced by HIFU devices. In addition, minimally perturbing thermal sensors monitor temperature rise in these phantoms, and new computational techniques extend the usefulness of these phantoms.
- Device conformability and future field use. Current work is under way to incorporate flexible material and lightweight components into the mechanical structure of the device.

Restorative Injury Repair
Program Manager: Mildred Donlon, Ph.D.

The Restorative Injury Repair program will achieve its goals by developing a comprehensive understanding of the wound environment, including cellular elements, matrix, inflammatory mediators, growth factors, nutrients, substrate utilization, biofilms, and ultimately processes of morphogenesis leading to anatomic and functional restoration. Phase I accomplishments include demonstrating formation of a blastema at a non-regenerating wound site in a mammal; Phase II efforts are focused on full restoration of a functional multi-tissue structure in a mammal.

Plasma Sterilization of Wounds and Medical Devices
Program Manager: Viktoria Greanya, Ph.D.

The Plasma Sterilization program is investigating the ability of a plasma, or partially ionized gas, to kill pathogenic bacteria on the surface of the skin, thereby leading to improved wound healing outcomes and reduction of secondary infections. Preliminary research has indicated that a nonthermal, atmospheric pressure plasma can drastically reduce the population of a wide range of pathogenic bacteria placed on skin surrogates in controlled experiments. By investigating how these results translate to living skin, the program will build the foundation for a novel medical technology.
On Jan 12, 2010, I was enjoying a rare break with co-workers at our Level One Trauma Center in Northern California. As a physician assistant for an orthopedic trauma service, it caught my ear when a teammate told us a major earthquake had hit Haiti and that there was an urgent need for orthopedic teams.

Two weeks later, I departed for the Dominican Republic. I had tremendous difficulty finding a group or teammate to go with, so I went alone. My only point of contact was St. Damien’s Pediatric Hospital (turned trauma center) in Port Au Prince. I was told that if I could get to Santo Domingo, then ground transportation into Haiti would be arranged, as Port Au Prince’s airport was still inoperable.

I’m not an ex-Pararescueman, Navy Seal, Ninja or Jedi, but five years as a Navy Corpsman with the U.S. Marines did prepare me for a few things. This was a solo act, so what I carried was all I could count on. Old habits die hard, so the Leatherman, Headlamp and duct tape were packed first. The plan was to work in surgery, so I packed things like “gigli” saws for amputations instead of blood pressure cuffs. I had my trusty Blackhawk bag, my ruck, and one other invaluable bag: military guys call them “E&E” kits; survivalists call it a “B.O.B”, and Doctors Without Borders calls them “Run Away Bags”. Call it what you will, but it was the one item that wouldn’t leave my side for the next three weeks: it contained my passport, cash, credit...
card, malaria meds, F.A.K, knife, headlamp and of course, water. If all else failed, I hoped it would be enough to get me (possibly on foot) to the only secure area of Haiti, which was Port Au Prince airport. That was the idea, at least.

I arrived at my destination after an eleven hour bus convoy (with two breakdowns along the way). To say the scene was surreal is an understatement. As I stood standing on a dusty rooftop overlooking the U.S Embassy, I witnessed Medevacs flying patients to the U.S.S. Comfort, U.K. troops in Landrovers, and of course, the patients; scores of them were lined up on cots outside the Hospital. Tents, let alone hospital beds, were packed with earthquake victims.

During my jetlagged briefing, I discovered I would be assigned to the mobile teams running clinics throughout the city. (So much for the gigli saw). I departed the next day in a pickup truck into the ubiquitous, terrifying traffic of Port Au Prince. I had a driver, a translator, and one day to orient prior to becoming team leader for the Christ Roi clinic, a small building along an alley amidst the destruction of the quake and the subsequent “tent cities”. This clinic had a local team of nurses and a pharmacist who had maintained the clinic despite their own dire situation of family loss and homelessness. They were the true heroes. The young, old, healthy, sick, and pregnant all came to us for trauma suffered and also for the ensuing epidemics that we feared would commence. During one clinic, I decided to give away some crates of milk that were about to expire. Within five minutes, I was dealing with my first, and hopefully last, mob situation. It was unsafe for our drivers to stay during clinic, so they had already left and we had no phone to summon help. (Even if I did, who would I call, 1-800-Marines?) Although we managed to get the situation under control, this story could have ended quite differently.

Some victims couldn’t come to the clinic, which meant we went into the “tent cities” to find them. When people are in that situation, they are desperate to a Darwinist level. Knowing where your teammates and your exits were at all times was the name of the game. What we saw in those tents was simply apocalyptic.

Mobile Teams returned before dusk for safety concerns, and my usual evening was spent in the Triage tent of St. Damien’s.

Triage Haiti-style means do all you can so the patient doesn’t have to wait four days to be seen in the E.R. One afternoon, after suturing two brothers who got into a knife fight over rice, I had an infant present with “abdominal pain”. As I lifted her little shirt, I was faced with the first eviscerated bowel I’d ever seen. After the initial expletive, I was suddenly back in Field Med School at Camp Pendleton training to dress them ad nauseam: 1. Frantically find the ABD dressing in med bag. 2. Soak it in saline. 3. Wrap the bowels 4. Haul ass to the ER. The ER wouldn’t let me in, so I took her to the OR to show the General Surgeon (with whom I’d shared a beer the night before). After his initial expletive, she was admitted. I never found out what happened to her; such was life in Haiti.

Flexibility is the name of the game in a disaster. I was trained to assist our only Anesthetist. My last evening was spent assisting on a crash C-Section; the mother lived but the baby didn’t. In Haiti, it seemed every successful story had a “but”; we tried to focus on the successes. Being in Haiti was an honor for me. We were struggling to help a culture of people whose greatest priority is family and kindness towards others. When asked what the hardest part of being there was, I believe most of us who went would say “leaving”.

www.tacticaldefensemedia.com
Poised at multiple points were TEMS (Tactical Emergency Medical Support) paramedics assigned to the Sandy Springs, Georgia Special Weapons and Tactics (SS SWAT) Team. The team was assigned to Joint Task Force (JTF) IDA, a joint task force operation comprised of federal, state and local law enforcement agencies. The Department of Defense elements also included a Weapons of Mass Destruction team. Coincidentally, SS SWAT is a multi-jurisdictional team consisting of experienced operators from three jurisdictions: Sandy Springs, John's Creek, and Dunwoody, Georgia. The 16 paramedics, assigned to the SWAT team are firefighters from Sandy Springs and John's Creek, Georgia Fire Departments.

A well-organized émigré group had entrenched themselves in the community and been responsible for multiple felonious acts including illegal drug manufacturing, distribution, and sales as a means to support domestic and international terrorism.

The Sandy Springs SWAT Team, along with other elements of JTF IDA had been assigned multiple targets in their community. SS SWAT, with their tactical paramedics, conducted a simultaneous multi-point operation. At the designated time, SS SWAT initiated a High Risk Warrant Service (HRWS), raided a clandestine drug lab, contained, and neutralized a sniper, dealt with a barricaded suspect, pursued an active shooter, and dealt with a potential hostage crisis in a schoolhouse. A BOLO (Be on the look out) report yielded two high value suspects who held theatre patrons hostage, wounding several in the process. SS SWAT contingently went over to hostage rescue mode with accompanying paramedics. The results: suspects were subdued; hostages were extricated, triaged and treated by tactical paramedics.

The aforementioned operation is part of an exercise for the Specialized Tactics for Operational Rescue and Medicine (S.T.O.R.M.) Medic Course conducted for the paramedics of the Sandy Springs, Georgia SWAT team. The scenarios, an integral part of the S.T.O.R.M.Course’s Medical Threat Assessment (MTA) domain, allows the students of the S.T.O.R.M. Medic course to plan and prepare for real world contingencies they may face in their duties as tactical paramedics.

The S.T.O.R.M. Medic Course is a joint effort of The National Tactical Officer’s Association (NTOA) and The Center of Operational Medicine (COM) of The Georgia Health Science University (GHSU).

The S.T.O.R.M. family of courses consists of the following:

S.T.O.R.M. Medic: 4-5 days, for the EMT who is physician assigned to a verifiable tactical medical role. Length of course depends on inclusion of the instructor module. The instructor module is designed to allow graduates to train local tactical operators and patrol officers in the S.T.O.R.M. Operator or S.T.O.R.M. Self-Aid, Buddy Aid (SABA) course, respectively.

S.T.O.R.M. Operator: 2 days, for the non-medical tactical operator

S.T.O.R.M. Team Leader: 2 days, for the non-medical tactical team leader to learn and apply basic medical concepts including the tactical implications of casualty collection point selection and mass casualties.

S.T.O.R.M. Medical Director: 2 days, for the non-tactical Medical Director of a tactical medical program to learn and apply the medical interface to the tactical arena.

S.T.O.R.M. SABA (Self Aid, Buddy Aid): 1 day, for the non-medical patrol officer.

The S.T.O.R.M. courses were developed more than two years ago when an expert group of TEMS operators and medical directors from The National Tactical Officer’s Association, The Center of Operational Medicine, Medical College of Georgia (now Georgia Health Sciences University) and industry, as well as the American College of Emergency Physicians (ACEP) met to establish a contemporary approach to Tactical Emergency Medical Support for the Law Enforcement community. The basis for a contemporaneous approach was the need to have an operator-centric, evidence-based medicine course based on the tenets of the military’s Tactical Combat Casualty Care (TCCC). The other important criteria were the need for high-caliber instructors with significant field tactical medical experience. What emerged were eighteen
distinct domains (among them are TCCC, Medical Threat Assessment, Remote and surrogate treatment, etc.), upon which the entire family of S.T.O.R.M courses is based.

The instructors for the course are drawn from expert Tactical Medical Providers nationwide. For example, the instructor cadre for the recent Sandy Springs, Georgia course were as follows: Two Law Enforcement Officer-Operator/Paramedics from the Los Angeles jurisdiction; one Law Enforcement Officer-Operator/Paramedic from Tucson-Pima County, Arizona jurisdiction, and one Operator/Paramedic from the Army/Joint Special Operations community, each with greater than 25 years of field experience. All instructors are vetted by the National Tactical Officer’s Association and The Center of Operational Medicine. Physicians and Physician Assistants are an integral part of the cadre, however, the course remains TEMS-Operator centric. During any call-out or pre-hospital situation, a Medical Director has to be available; in the case of the S.T.O.R.M. Medic course, a Medical Director is either present or on-call.

S.T.O.R.M. Medic courses have been conducted throughout the United States Future courses include The National Tactical Officer’s Association Convention in Richmond, Virginia, 18-23 September 2011. Currently, S.T.O.R.M. Medic is taught through a direct request system to the National Tactical Officer’s Association (www.ntoa.org) or The Center of Operational Medicine (www.mcgcom.com). The courses are either open or closed per the request of the jurisdiction sponsoring the course. The future will allow for courses on request, but the mainstay of future courses will be through regional training locations, with training being scheduled several times a year.

The strategic direction of The S.T.O.R.M. courses has engendered a call for standardizing a National TEMS curriculum. The summer of 2011 will see the meeting of experienced TEMS operators and Medical Directors to continue the process of finalizing a National TEMS curriculum. A standardized national curriculum will allow supervisory TEMS operators and Medical Directors to verify that incoming medical personnel who have attended such a course meet the requirements to work as TEMS operators. There are several excellent courses currently available, besides S.T.O.R.M, such as the CONTOMS course. The plan is for S.T.O.R.M. to be one of several nationally approved courses. S.T.O.R.M. is a growing, vital, in-demand course that supports the present and future needs of the TEMS community nationwide.

Philip A. Carmona, NREMT-P, RN
US Army Special Forces, Ret.
Associate Director, Chief Operations Officer
Center of Operational Medicine
Georgia Health Sciences University
pcarmona@georgiahealth.edu
Advances in Poly-Trauma/Burn Casualty Care: Brooke Army Medical Center
Since Operation Iraqi Freedom began, Brooke Army Medical Center (BAMC), Ft. Sam Houston, TX, has treated more than 900 seriously burned servicemembers.

U.S. AMEDD Center and Schools
Tactical Combat Medical Care (TCMC) Course: Update
TCMC provides soldier-students with advanced skills for wielding critical combat medical care techniques in the field.

SOF MED R&D: Equipping a Medical Operator
The wartime SOF Medic is often alone and unsupported, but responsible for the health care of the team. C&C looks at how recent combat experiences have changed this role.

Casualty Evac: Pararescue: U.S. Air Force pararescue forces (PJ) for worldwide rescue and recovery.
Pararescue jumpers, or PJs, are not only trained as airborne emergency medical technicians, offering basic trauma care, but also perform battlefield surgery.

Recurring Highlights
DARPA Dots: A look at some of DARPA’s key R&D programs
MedTech: Latest Releases
MedEvac Spotlight: AutoMedx SAVe (Automated Ventilator)
Career OPS: Civilian job opportunity listings

For your complimentary subscription, please visit our website at tacticaldefensemedia.com
The advertisers index is provided as a service to our readers. Tactical Defense Media cannot be held responsible for discrepancies due to last-minute changes or alterations.

30 Day Eval Program

We offer multiple headset technologies

Digital Ears®
The Ultimate Soldier System

INVISIO® X5 DUAL HEADSET

- Clarity in high noise
- Talk even at a whisper
- Works under gas mask
- Provides 360° Awareness
- Certified hear-Pro

INVISIO® X6 DUAL CUSTOM

- Custom fit to your ear
- Certified hear-Pro
- Works under gas mask
- Provides 360° Awareness
- Stays secure in your ear

INVISIO® X50 Multi-Com PTT

- Control Multiple Radios
- Works with Mobile Phones
- Integrates into vehicle ICS
- Simplified button layout
- Submersible IP68 Rating
- Optional sniper/wireless PTT’s

The X50 can work with practically any 2-way radio or vehicle/aircraft intercom

Recommended Digital Ears® Accessories

M80 Rail Mount Wireless X50 PTT

PTT 401 Finger Switch

P-16 Dual T Switch

SPS-2MP Halo Switch

X50 Cable Mobile Phone

30 Day Eval Program

New York (845) 278-0960
California (310) 457-7401
Texas (469) 362-0121
Indiana (574) 264-7217

Setting the standard for over 40 years

www.TEAheadsets.com

2010 © Television Equipment Associates, Inc. All Rights Reserved
Simple, Reliable, Accurate, Portable

Fast and Easy

- Easy Transport-test everywhere
- Precise and accurate- built-in Intelligent Quality Control (IQC)
- Self calibrates with every test run
- Results in under 11 minutes
- Fully automated with full-color touch screen
- Intuitive user interface
- LIS connectivity

Exceptionally Versatile

Wide range of CLIA waived panels to increase your on-site diagnostic capabilities

Comprehensive Metabolic Panel
ALB, ALP, ALT, AST, BUN, Ca, Cl-, CRE, GLU, K+, Na+, TBIL, tCO2, TP

Basic Metabolic Panel
BUN, Ca, Cl-, CRE, GLU, K+, Na+, tCO2

Lipid Panel
CHOL, CHOL/HDL*, HDL, LDL*, TRIG, VLDL*

Lipid Panel Plus
ALT, AST, CHOL, CHOL/HDL*, GLU, HDL, LDL*, TRIG, VLDL*

Liver Panel Plus
ALB, ALP, ALT, AMY, AST, GGT, TBIL, TP

General Chemistry 6
ALT, AST, BUN, CRE, GLU

General Chemistry 13
ALB, ALP, ALT, AMY, AST, BUN, Ca, CRE, GGT, GLU, TBIL, TP, UA

Electrolyte Panel
Cl-, K+, Na+, tCO2

Kidney Check
BUN, CRE

Renal Function Panel
ALB, BUN, Ca, Cl-, CRE, GLU, K+, Na+, PHOS, tCO2

MetLyte 8 Panel
BUN, CK, Cl-, CRE, GLU, K+, Na+, tCO2

*Hepatic Function Panel
ALB, ALP, ALT, AST, DBIL, TBIL, TP

*Basic Metabolic Panel Plus
BUN, Ca, Cl-, CRE, GLU, K+, Na+, tCO2, Mg, Lactate Dehydrogenase

*MetLyte Plus CRP
BUN, CK, Cl-, CRE, GLU, K+, Na+, tCO2, CRP

*Biochemistry Panel Plus
ALB, ALP, ALT, AMY, AST, BUN, Ca, CRE, CRP, GGT, GLU, TP, UA

For more information contact: Randy Knick at 612.850.1193 or e-mail randyknick@abaxis.com

©2011 Abaxis, Inc. 3240 Whipple Road, Union City, CA 94587 Piccolo xpress is a trademark of Abaxis, Inc.

*Moderately Complex