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The Command Corner
Letters to the Editor
Enhancing Strategic Oversight of Intra-Theatre AE
An Azimuth Check on the Trail of Shared Responsibility
MEDEVAC Force Structure Through 10 Years of War
Data Informs Operational Decisions: Tactical EVAC
Advances in Blood Component Therapy
The Patient Evacuation Coordination Cell
Medical Support to Civilian Authorities
Professionalizing Army Aeromedical Evacuation
En Route Care
Cabin Space Study
Crossroads
Medical Research to Support Future Patient Evacuation
The Army MEDEVAC Officer
To Arm or Not to Arm
Unpartnered MEDEVAC Ops
Out of the Valley of Death
Feedback Forum
Turning Pages
57th Medical Det. Heraldry

CWO Mike Novosel

MAJ Charels L. Kelly

"I'll leave when I have your wounded."
- MAJ Charles Kelley

MEDEVAC

UNITED STATES ARMY
Aviation Digest
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The Doctrine Division, Directorate of Training and Doctrine (DOTD), U.S. Army Aviation Center of Excellence (USAACE), Fort Rucker, AL 36362 produces the *Aviation Digest* quarterly for the professional exchange of information related to all issues pertaining to Army Aviation. The articles presented here contain the opinion and experiences of the authors and should not be construed as approved Army policy or doctrine.

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ABOUT THE COVER

The past, present and future of aeromedical evacuation.

Editor's Note

"I'm okay, I knew you'd come."
-Wounded Marine in Afghanistan upon the arrival of an Army MEDEVAC Helicopter

The world knows the U.S. Army provides the "gold standard" in modern battlefield medical evacuation (MEDEVAC) and no military force in the world is better than the U.S. Army at aeromedical evacuation. The 92 percent survival rate for wounded in Afghanistan is the highest in history due to a large part to the supremacy of our aeromedical evacuation capability and the battlefield support network.

The current operational context has focused efforts on the helicopter as the main element of the pre-hospital military medical care system. The goal of the right patient, right platform, right time, and right place requires the right talent with the right equipment. Army aeromedical evacuation crews and helicopters are purpose built, manned, trained, and equipped to provide advanced in-flight trauma care for wounded Soldiers, Sailors, Airmen and Marines. To the aeromedical evacuation crew, the wounded is more than just a mission to a point of injury. To them, they are coming to save a person on the absolute worst day of their life.

In this edition, the reader becomes aware of the initiatives in the aeromedical evacuation mission along with their impact on the lives of those in harm's way. One is the development of the Critical Care Flight Paramedic and En Route Critical Care Nurse Programs that increase the skills and capability of en route aeromedical missions. Additionally, one learns how blood product transfusion capability aboard MEDEVAC aircraft is a force-multiplier in terms of increasing the probability of patient survivability as it expands the en-route medical treatment tool kit for our flight medics.

Dustoff Soldiers everywhere should be incredibly proud to be part of the evolution and development of the aeromedical evacuation mission. Their efforts have truly bolstered our en-route medical capability to help us succeed in our Nation's wars and keep the solemn promise to provide our Soldiers with the best medical care in the world.

ABOVE THE BEST!

LTC Fernando J. Guadalupe, Jr.
Chief, Doctrine and Tactics Division
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LTC Fernando J. Guadalupe, Jr. is the DOTD Doctrine and Tactics Chief at the United States Army Aviation Center of Excellence. LTC Guadalupe has served with the 25th Infantry Division (Light), 10th Mountain Division (Light), 1st Infantry Division, V Corps, 12th Combat Aviation Brigade, and the National Training Center at Fort Irwin, CA. He has three deployments to Iraq where he served as a commander, operations officer, division planner, and deputy commanding officer. Most recently, LTC Guadalupe commanded 2916th Aviation Battalion at the NTC. He has 20 years of service and is qualified in the UH-60A/L/M, UH-72A, UH-1H, and OH-58A/C.

Table of Contents

Pg. 2 — Editor's Note

The Command Corner — Pg. 4

Pg. 5 — Letters To The Editor

Enhancing Strategic Oversight of Intra-Theater Aeromedical Evacuation — Pg. 6

Pg. 10 — An Azimuth Check on the Trail of Shared Responsibility

MEDEVAC Force Structure Through 10 Years of War — Pg. 14

Pg. 17 — Data Informs Operational Decisions: The Tactical Evacuation Project

ADVANCES IN BLOOD COMPONENT THERAPY — Pg. 21

Pg. 23 — The Patient Evacuation Coordination Cell

MEDEVAC Support to Civilian Authorities — Pg. 25

Pg. 27 — Professionalizing Army Aeromedical Evacuation En Route Care

Cabin Space Study — Pg. 29

Pg. 31 — CROSSROADS

Medical Research to Support the Future of Patient Evacuation — Pg. 33

Pg. 35 — The Army MEDEVAC Officer

TO ARM ... OR NOT TO ARM? — Pg. 37

Pg. 43 — UNPARTNERED MEDEVAC OPERATIONS IN AFGHANISTAN

Out Of The Valley Of Death — Pg. 46

Pg. 49 — feedback FORUM

TURNING PAGES — Pg. 50

Pg. 51 — 57TH MEDICAL DETATCHMENT

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Visual materials such as photographs, pictures, charts, graphs, or drawings supporting the article should be included as separate enclosures. All visual materials should be high resolution images (preferably set at a resolution of 300dpi) saved in TIF or JPEG format.

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The Command Corner

Given the criticality of the mission and the central role that the Army Aviation-Army Medical Department (AMEDD) Team plays in the evacuation and en route care of our wounded, it is appropriate that we've dedicated this entire Aviation Digest to Aeromedical Operations. Although it's been a long and sometimes turbulent flight path, the combined efforts and teamwork of Army Aviation and AMEDD over the last 10 years has produced an Aeromedical Evacuation (AE) system that has no peer in the world. There is no more important or noble mission more deserving of our efforts for perfection than AE. I want to thank the contributors and our Army AE teammates for their articles in this issue to help further the professional discussion for us to get even better at caring for and saving our wounded.

Our branch, like the remainder of the Army, is going through significant changes due to declining resources and mandated force structure and personnel reductions. Executing the Aviation Restructure Initiative (ARI) allows us to best protect the gains we've made in AE over the last 10 years. Savings from ARI allows us to sustain the momentum to modernize our entire UH-60 fleet (both MEDEVAC and Assault) across all three Components (COMPOS) while protecting other key future modernization efforts like the Improved Turbine Engine Program (ITEP), Integrated Aircraft Survivability Equipment, Mission Command Network capabilities, and Future Vertical Lift (FVL). The ARI also protects a greater ratio of medical evacuation (MEDEVAC) structure to ensure that we continue to maintain the right capacity given the size of the future force while also converting all of our COMPO 1 installation MEDEVAC units from LUH to HH-60s. This provides us a deeper bench for wartime requirements and a better MEDEVAC platform in support of the Combat Training Centers, Ranger School, Yakima Training Center, and Fort Rucker.

As we look to Force 2025 and beyond, the AE team is fully involved in the requirements development of the key modernization programs mentioned above. The ITEP will dramatically increase the power margins for our current UH-60 fleet. With initial fielding starting in FY25, the 3000 shaft horsepower and 10-20% savings in fuel efficiency provided by ITEP will provide our HH-60s a much needed power margin to operate in the high/hot (6K 95 degree) environments to bridge the gap to FVL. In FY31, we will start low rate production on FVL Assault. FVL will be a game changing capability for MEDEVAC. With greater range, speed, and payload, the golden hour will be a much bigger geographic ring and will reduce the number of bed down locations that require maintenance, communications, and security. And the new Integrated Aircraft Survivability Suite and Mission Command Capabilities will increase AE survivability in advanced threat environments along with improving air-ground operations to increase situational understanding during complex evacuations in contact. Continuing to protect these future investments through the continued implementation of ARI will allow us to continue to improve our reaction time, range, and speed of operations so we can continue to increase patient survivability.

The demand signal for Army AE assets will continue despite force structure and personnel reductions. Our AE leaders at all levels continue to produce exceptional work. They ensure the "Golden hour" standard of care is achieved, continue to raise our survival rates, and deliver AE assets at decisive points on the battlefield. It is clear that we have a constant focus and desire to provide the very best en route medical treatment to our Soldiers on the ground. This MEDEVAC edition of Aviation Digest articulates some of these changes, and leaders must disseminate these ideas and lessons learned so that we remain agile and responsive to requirements that best support the Nation's needs in order to win in a complex world.

I encourage our leaders to share and discuss these articles so we continue to support ground maneuver commanders with the capabilities they have come to expect and deserve. "I'll leave when I have your wounded" rings as true today as it always has – maintaining shared trust and understanding with commanders and Soldiers on the ground. Thanks for your continued efforts as your serve our Nation and support our Soldiers.

Above the Best!

Mike Lundy
Major General, USA Commanding

Letters to the Editor

In response to CPT Bolton and MAJ Robinson's article, "Expanding the AMSO Track" (Aviation Digest, Jul-Sep, p36). Their article is, for the most part, spot on. I attribute their views, however, to aviation mission survivability officers (AMSO)/tactical operations (TACOPS) officers not being fully engaged in their unit's collective training events. That could be due to poor mentorship resulting in lackluster initiative by the AMSO or lack of integration within or direction provided by the S-3 or commander. I get it. There are some studs who find ways to integrate into the unit's plans and operations and there are duds.

For your consideration, I have been an AMSO/TACOPS officer with the 101st Combat Aviation Brigade (CAB) and am currently employed as the 25th CAB AMSO. I felt that it was important for our AMSOs to be engaged in unit plans and operations, particularly joint operations with the U.S. Navy such as the integrated maritime exercise Koa Kai and Rim of the Pacific, the world's largest international maritime warfare exercise. I insisted that AMSOs at every level within the CAB participate in force on force division level command post exercises involving mission planning for air assault and deliberate attack missions involving Joint Air Attack Teams. I encouraged every AMSO to perform liaison officer duties with the brigade combat teams to improve air-to-ground integration. Finally, I had a troop AMSO plan personnel recovery training with the Coast Guard. The short of it is that the AMSOs in my units took the initiative to know their job and were proactive in ensuring the commander knew what that job involved. AMSOs within my units were engaged in AMSO tasks.

As Army Aviation focuses on manned-unmanned teaming, the AMSO track will become more important to ensure that pilots are aware of airspace command and control and one system remote video terminal/remote optical video enhancement receiver frequencies for unmanned aerial systems/persistent surveillance in order to tie all of that information into targeting data in coordination with the unit S-2.

I disagree with CPT Bolton and MAJ Robinson's assessment that TACOPS should fulfill the role of a flight operations officer. The position doesn't exist on the table of organization and equipment. If the position did exist, it would be best served by the flight operations non-commissioned officer-in-charge with input from the battalion standardization pilot, TACOPS, and aviation safety officers. The second battalion TACOPS officer referred to in their article is an element of the aviation liaison element.

Bottom line, I do appreciate MAJ Robinson and CPT Bolton's article. They present valid points; but expanding the TACOPS track means keeping the TACOPS officer engaged in the tasks designated for their position. Include the AMSO in staff meetings, direct the brigade and battalion TACOPS officers to provide mentorship, fund training opportunities for professional development such as the Personnel Recovery or Joint Firepower Courses, and further the AMSOs' utility in the unit. These tasks will allow AMSO/TACOPS officer to be more productive and give the commander the aviation planning cell that they require.

CW4 Tobias Long
AMSO, 25th CAB

In response to CPT Bolton and MAJ Robinson's article "Expanding the AMSO Track" (Aviation Digest Jul-Sep, p36.) I appreciate the authors' time spent attempting to expand the Aviation Mission Survivability Officers (AMSO) Track. The team at the United States Army Aviation Center of Excellence Directorate of Training and Doctrine has gone a long way in that regard with the soon to be released references for the Aviation Mission Survivability Program, combat survivability, and the AMSO Critical Task List (CTL) dated 28 JUN 13. These documents outline all of the responsibilities of the AMSO listed in the article and more to include: manage the Aviation Mission Planning System (Electronic Data Manager, Tactical Terrain Visualization System), Develop Aviation Mission Survivability Crew and collective training (Aviation Combined Arms Tactical Trainer), Recognition of Combat Vehicles, Computer Based Aircraft Survivability Equipment Training, and many other mission survivability tasks. The commanders guides and CTL go on further to include personnel recovery (PR) officer duties for all levels. The PR responsibilities alone can be an extensive program and a no-fail operation when a PR event happens.

The authors recommend having AMSOs complete tours within a flight operations section. I agree there should be an AMSO in an S-3 section. However, I fail to see how tracking daily flights and airfield operations would serve to provide the AMSO with meaningful training for aircraft survivability, tactical operations, or align with the CTL and it's referencing publication. Perhaps the two AMSO positions at the battalion level and above would be better served with a position in the S-3 plans shop and another position at the special staff level to advise the commander directly on matters of aircraft survivability, PR, and standardization of the many aviation mission survivability systems.

CW3 David Caudill
AMSO, 2916th Aviation Battalion

In response to CPT Blood's article, "Improving Combat Readiness Through the Brigade Behavioral Health Team," (Aviation Digest, Apr-Jun 2014, p22.)

The article by Dr. Blood highlights the value of Behavioral Health Officers within combat aviation brigades. It is important to note that although Fort Rucker does not have organic behavioral health providers within its units the behavioral health clinic at Lyster Army Health Clinic is a valuable resource to provide these services. Psychologists, psychiatrists, and social workers form a behavioral health team and work closely with soldiers and command teams to improve psychological health and mitigate risk. All providers at Lyster Army Health Clinic are trained to work within the realm of aviation and hold a strong understanding of the duty expectations for this population of service members. With this specialized focus, they serve to enhance performance and manage psychological symptoms associated with the stressful flight training environment. Although, as CPT Blood discussed in her article, many service members are reticent to seek behavioral health services due to the perceived impact of treatment on medical clearance to fly. Seeking support at first signs of increased stress decreases the probability that symptoms will develop into a clinically significant issue that may impact medical clearance to fly. Should more serious signs of a problem arise, a provider will conduct a psychological assessment and make appropriate treatment recommendations to return the soldier to full duty within a prescribed amount of time.

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By COL Vincent Carnazza

Enhancing Strategic Oversight of Intra-Theater Aeromedical Evacuation

Aviation Digest is a great forum for our community to share relevant information. It allows us to inform, discuss, and assist, as we discern topics on the leading edge of our profession. The Medical Evacuation Proponency (MEPD), team sincerely thanks the leadership of Aviation Digest for dedicating the 2014 Fall Issue to the Army aeromedical evacuation (AE) mission. The AE Enterprise embraces this opportunity to enhance common understanding for all readers and hopes it may serve as a desktop reference. As the Director, I am inspired by the key members of the AE Enterprise that have contributed such relevant and informative articles that demonstrate the salient points of our current efforts. These authors are our subject matter experts. If you need more information, please feel free to contact any of the AE members for more information at the MEDEVAC Portal https://www.us.army.mil/suite/page/684746.

Medical Evacuation Proponency Builds Trust Within the Aviation and Medical Community.

As a part of our mission, the U.S. Army MEPD synchronizes the capabilities, requirements, and solutions for the AE mission into the holistic health service support system. Co-located with the United States Army Aviation Center of Excellence (USAACE) at Fort Rucker, MEPD has responsibility for integrating AE capabilities into the overarching Joint Capabilities Integration and Development System process as it relates to the Army's acquisition and capabilities development processes. In essence, MEPD is the champion for the end-users; we serve as the key stakeholder, the integrator, or better yet, the point of fusion across the entire doctrine, organization, training, materiel, leadership, personnel, facilities and policy spectrum known as the DOTMLPF-P process. To accomplish this, MEPD synchronizes with the Capabilities Development and Integration Directorate of the USAACE to facilitate shared understanding and integrate knowledge of emerging changes to Medical DOTMLPF-P issues. On the other hand, we keep the Army Medical Department's (AMEDD) Medical Capabilities and Integration Center and its capabilities developers informed on emerging Aviation DOTMLPF-P issues that could affect the AE mission. The MEPD works closely with both the aviation and medical materiel developers within the following agencies: Program Executive Officer for Aviation, the Utility Helicopter Program Manager, the Medical Research Materiel Command, the Project Manager Medical Evacuation (MEDEVAC), and the Product Director MEDEVAC Medical Equipment Package. MEPD also advises the Army Surgeon General and coordinates with the Office of the Surgeon General Staff, National Guard Liaison, and Department of the Army, Military Operations – Aviation on all AE programs, projects, and initiatives.

Army's Dedicated Aeromedical Evacuation System.

Historically, synchronizing the effects of intra-theater AE is complex in nature and takes strong collaboration with a multitude of organizations, staffs and their senior leaders. For example, let's take a cursory look at the basic missions. The Army Health System is a complex system of interrelated and interdependent systems which provides a continuum of medical treatment from the point of injury through the successive roles of health care. Aeromedical Evacuation is the system which provides the critical linkage between the roles of health care necessary to sustain the patient during transport. The mission of Army Aviation, as a key member of the combined arms team, is to find, fix, and destroy any enemy through fire, maneuver and wide area security. Army Aviation also provides combat support and combat service support in coordinated operations as an integral member of the combined arms team fully integrated within the joint operational framework. The complexity of our mission is apparent and recent changes in policy highlight the complexity and importance of intra-theater AE. During the Army Transformation of 2004, the Vice Chief of Staff of the Army (VCSA) directed a formal Charter for the Army AE mission between the AMEDD Center and School and the USAACE. This chartered *shared responsibility* is a first of its kind. After an in-depth review of MEDEVAC procedures, in June 2009, the Secretary of Defense (SECDEF) directed the Army to a one hour standard for the evacuation precedence of urgent/urgent surgical patients, which significantly changed the battlefield

calculus. Later that year, in October 2009, the Army grew the AE force structure by nine companies in the Reserve Component. Also, each air ambulance company table of organization and equipment grew from 12 aircraft and 12 crews, to 15 aircraft and 20 crews in an effort to handle 24/7 operations. In November 2009, the VCSA sent an AE message describing MEDEVAC as a strategic mission set, establishing patient care as the most important factor in executing MEDEVAC missions and stating the effort to save human life warrants accepting additional risk when there is a reasonable expectation of success. However, the most noteworthy policy change was in December 2010, when the SECDEF issued a new Department of Defense Directive (DoDD) 5100.01: The Functions of DoD and Its Major Components. The Army was directed to "provide intra-theater aeromedical evacuation." No other service was directed with the intra-theater AE mission and the possible implications meant that this directive may generate additional resources and funding for the Army AE mission. Without a doubt, the era directly following the 2004 Army Transformation was filled with spirited growth at all levels. It was a huge effort to concurrently execute the transformation of the Army, providing forces for two different theaters of air centric combat operations, implementing the new Army Force Generation cycle, transitioning to Aviation Task Force formations, and implementing the 2009 re-transformation of MEDEVAC. Yet, however difficult, we have grown into an era of common understanding. To increase the rate of closure, the AE Enterprise and the Aviation Enterprise have been aggressively focused on creating an Army AE strategy and battle rhythm that synchronizes our senior leadership within the AMEDD and Army Aviation in an effort to enhance senior leader strategic oversight. I am convinced enhanced oversight will generate enduring solutions and reduce the complexity of the challenges that lie ahead.

Growing the Army Aeromedical Evacuation 2020 Campaign Plan; eliminating layers and enhancing staff synchronization.

Over the past two years, MEPD has made a conscious effort to flatten information among the 34 members of the AE Enterprise. First, we leveraged the electron, by developing a comprehensive AE Enterprise Portal, sharing corporate knowledge in an effort to grow shared understanding. This portal has formalized our strategic communications, re-enforced our common message and battle rhythm, improved internal processes and calendars, and served as a repository for all AE Enterprise products. Second, we have focused the AE Enterprise monthly meeting with the integration of the aviation line community, deployed units, the Joint Staff, the United States Transportation Command, Combatant Commands, and Army Staff and matured our bonds with the other Services. This meeting has improved staff action effectiveness and efficiency in preventing and solving problems. The efficiency noticed by AE Enterprise members served as the catalyst for investing the time to build an Army AE strategy. During the MEPD FY14 Strategic Planning Meeting, we recognized the imperative to create an AE Campaign Plan. Our November 2013 MEPD message:

"There is an urgent need to synchronize and standardize intra-theater aeromedical evacuation. A five to eight year strategy that incorporates the operational effects of DoD 5100.01, accommodates professionalizing Pre-Hospital Care, addresses AE fleet standardization, and strengthens senior leaders Medical and Aviation oversight. The development of this intra-theater Aeromedical Evacuation strategy will serve as the foundation for enhanced synchronization."

We published the *Aeromedical Evacuation 2020 Campaign Plan* (AE 2020 CP) in May of 2014. MEPD collaborated with many organizations for the grass roots solution. The AE 2020 CP focuses on 5 Lines of Effort: Balanced Force Structure to meet DoD demands, Improve AE Oversight, Systems Integration and Life Cycle Management, AE Officer and Leader Development, and Professionalizing Pre-Hospital Care. The development of this intra-theater AE strategy will serve as the foundation for monitoring and measuring progress with the 5 Lines of Effort and their 35 projects and programs as the measurable objectives. This plan will facilitate daily interoperability and serve as the cornerstone for creating enduring solutions and enhancing future corporate synchronization between the AMEDD and the Aviation branch. Our efforts ensured the plan followed, nested, and aligned with Army Strategic Planning Guidance, Vision, and Army Campaign Plan end state which is to prevent, shape, and win. The AE 2020 CP also incorporated the major components of Army Medicine 2020 and the Aviation Campaign Plan. This "living document" is a first of its kind for Army AE. You can find a copy on our MEDEVAC Portal. The information may help shape efforts with how your organization influences the AE mission.

A collaboration of organizations to develop the Aeromedical Evacuation 2020 Campaign Plan

Current efforts creating Aeromedical Evacuation General Officer Steering Committee.

In May 2014, we presented the AE 2020 CP to MG Jones, the Commanding General of the AMEDD Center and School. During this brief, we discussed quarterly AE 2020 CP Updates, and the need to develop an AE General Officer Steering Committee (GOSC) with proposed commanding general representation from the AMEDD Center and School, the Medical Research and Materiel Command, Program Executive Office - Aviation (PEO-AVN), and the USAACE. In an effort to enhance strategic communications, oversight and management of the AE Charter, MG Jones agreed to the proposal.

In July and August respectively, MEPD briefed BG Marion, PEO-AVN and MG Lundy, Commanding General of USAACE; both agreed to the proposal. Currently, MEPD is working with the senior leaders in the Aviation Enterprise to leverage the Aviation Enterprise Synchronization Model for our Council of Colonels and GOSC forum.

In the future, one could probably expect two AE 2020 CP updates and two AE 2020 CP GOSCs in a year. The time to invest in this effort is now. It has been 10 years since the VCSA directed the 2004 Charter for shared responsibility of the AE mission. It is important that we begin scheduling the AE GOSC in a mutual effort to actively recognize and seize opportunities. Developing more formal lines of communications will build relationships and enhance coordination between capability developers and materiel developers for both AMEDD and the Aviation Branch and ensure our AE units are state of the art capable and mission ready in the future. With the AE 2020 CP guiding our collective efforts, coupled with quarterly General Officer updates from the GOSC, one can expect more prudent forward progress within the AE 2020 CP's 35 programs and projects. As the Aviation Branch echoes, "We must maintain shared understanding and trust with the Commander and Soldiers on the ground."

Quick Thoughts.

1) Up to 90% of all combat deaths occur on the battlefield before the casualty reaches a medical treatment facility. The emerging focus on professionalizing pre-hospital care is on-going; this significantly affects the en route care mission. The institutionalization of the flight paramedic, en route critical care nurse, and on-board blood management will challenge our AE community. The Active, National Guard, and Reserve components need to be more aggressive now.

2) The AE demand signal will not slow down with combat missions. Training with the brigade combat teams at the combat maneuver training centers, installation AE support, Homeland Defense/Defense Support to Civil Authorities tiered training,

Army support to other services, and the Humanitarian Assistance/Disaster Relief mission will all continue.

3) We need to continue to validate AE Force Structure with statistical rigor and continue to recognize the Army is the sole service with a dedicated AE system. We need to discern with senior leaders the affects from DoDD 5100.01; has the Army fully leveraged the DoD Directive?

4) Lifecycle management of the AE fleet is critically important. Currently, we have four types of platforms with multiple configurations; a prudent process review to identify how to standardize and generate commonality will reduce lifecycle cost and increase capabilities in the future.

5) Currently, there is an on-going Joint Theater Patient Evacuation Capabilities Based Assessment (JTPE-CBA) to identify gaps in the intra-theater evacuation mission. The conclusion of the JTPE-CBA will set up the foundation for working joint solutions. As we continue to grow synchronization with senior leaders within the Army's intra-theater AE system, we must be poised to address the DoD Patient Movement System, which incorporates and integrates both inter and intra-theater AE systems. Currently, DoD only has a Global Patient Movement Joint Advisory Group, in the near future we need to take the opportunity to set up an Inter and Intra Theater Aeromedical Executive Steering Committee or Joint AE GOSC.

6) Our efforts in Operation Enduring Freedom and Operation Iraqi Freedom have provided great AE experiences. The Army needs AE expertise on Combatant Command staffs and with each new operation we must be more aggressive on the detailed AE planning in the immature theater to reduce workload on the operational units. Our future success relies on leveraging all aspects of the two mutually supporting systems. Synchronization across the DOTMLPF-P at the joint level will foster a more centric system and create a focus on resourcing the patient movement system as a whole.

Full Stop.

As I line up for my final approach, into retirement June 2015, I want to make sure you hear it from me, Thank-you all! The AE Enterprise and the Aviation Enterprise have made good progress with the shared responsibility. The 91% survival rate is inspiring and demonstrates our growth and demonstrates that we have a plan for improvement. However, I continue to sense caution within our Army. I can say with certitude, we have challenging times ahead. The Army has a non-negotiable mission to win our nation's wars and AE plays a key role in maintaining the trust in that relationship. Continued fiscal constraints will force us to focus on maximizing the effects of our limited resources. We must stay focused on balancing force structure, readiness and modernization of the AE fleet. Our units must be capable, trained, and ready; we owe that to all Soldiers. All commanders will be challenged to maximize their resources. The AE Enterprise must stand prepared to act on and create opportunities with the inevitable challenges that lie ahead. We are accountable for continuing the forward progress of our AE 2020 CP programs and projects. We must continue to maintain the DUSTOFF Tradition of Excellence. Only after a quick 30 years, one recognizes how much more there is to know. Hey, with this Army Aviation Life, I realize more than ever, you must be young to undergo such experiences, to remain sane, and be able to laugh about it, while you are suiting up for the next mission.

COL Vincent Carnazza distinguished himself through 30 years of exemplary service as an Army Aeromedical Evacuation Officer. He flew in the initial assault of both Operation Just Cause and Operation Desert Storm and deployed to Afghanistan in 2008 to capture AE Lessons Learned. He served as the Commander of the 498th Air Ambulance Company, the Dean of the School of Aviation Medicine, and is currently the Director of the Medical Evacuation Proponency Directorate.

Acronym Reference

AE - aeromedical evacuation
AE 2020 CP - Aeromedical Evacuation 2020 Campaign Plan
AMEDD - Army Medical Department
DoDD - Department of Defense Directive
DOTMLPF-P - doctrine, organization, training, material, leadership, personnel, facilities and policy
GOSC - General Officer Steering Committee
MEDEVAC - medical evacuation
JTPE-CBA - Joint Theatre Patient Evacuation Capabilities Based Assessment
MEPD - Medical Evacuation Proponency
PEO-AVN - Program Executive Office - Aviation
SECDEF - Secretary of Defense
USAACE - United States Army Aviation Center of Excellence
VCSA - Vice Chief of Staff of the Army

An Azimuth Check on the Trail of Shared Responsibility

By LTC Michael R. Pouncey, USA, Ret.

In May of 2004, during the Army staffing process for the restructuring initiative entitled, "Army Transformation," the Vice Chief of Staff of the Army (VCSA) enacted an Aeromedical Evacuation Charter to specify individual and shared responsibilities between the Army Medical Department Center and School (AMEDDC&S) and the U.S. Army Aviation Center of Excellence (USAACE) to "ensure effective development, integration, and full-spectrum relevance of Aeromedical Evacuation across the Army."[1] Under Army Transformation, aeromedical evacuation (AE) companies moved under the structure and command and control of Army Aviation. As with many other changes under Army Transformation, this move presented numerous challenges and with the clarity of hindsight today, it is difficult to paint the effectiveness and relevance of AE today in any other way but in a positive light. However challenging the trail has been to get to this point, we should all be proud of our progress and, more importantly, the tens of thousands of lives we've saved together while traversing it.

Yet, we have not reached our destination, and the trail that lies ahead may prove as difficult (perhaps even more so) than the one we've traversed to this point. Even with the best land navigation skills, it is always beneficial to open up your compass for an azimuth check and adjust course as necessary. The important thing for us to focus on during an azimuth check is to determine our current location and how we will adjust course moving forward to the objective. Focusing on how we wound up off course will not make the trail ahead of us any easier. In fact, it may distract our team from moving forward in the right direction. For that reason, I would like to focus on some facts about our current location, make a few recommendations for how to move forward, and perhaps describe the objective – so we'll all recognize what our destination looks like.

So, What's Our True Location?

We are certainly on higher terrain today than we were even six months ago, before the rewrite of AR 40-60, "Army Medical Materiel Acquisition Policy" was published in May 2014. For the first time, AE capability and materiel development roles and responsibilities are clearly articulated and defined. The previous edition of this regulation was published before the Army Aviation Branch existed and had no mention of specific AE acquisition procedures. More often than not, this led to an environment where AE funding and system improvements hinged on the ability of our senior AE officers to convince either AMEDD or Aviation leaders to resource requirements from other planned programs. Whether the community knows it or not, Aviation leaders have certainly supported those efforts at every available opportunity (even prior to Army Transformation). Now that roles and responsibilities are spelled out, AE funding, capability, and materiel development processes are more closely aligned with other Army systems and will prove to be much less reactive and problematic than in years past.

Perhaps the most positive and beneficial improvement we can all acknowledge about our location today is the partnership and trust created over the past ten years of serving together as one team. We are moving forward together with momentum that could not have been achieved without the actions of Army Transformation to move AE companies under the Aviation structure. This "One Team" approach to our current and future endeavors is certainly more beneficial to the AE mission. Thus, the terrain we stand on today is much improved over that from which we've traversed to get here.

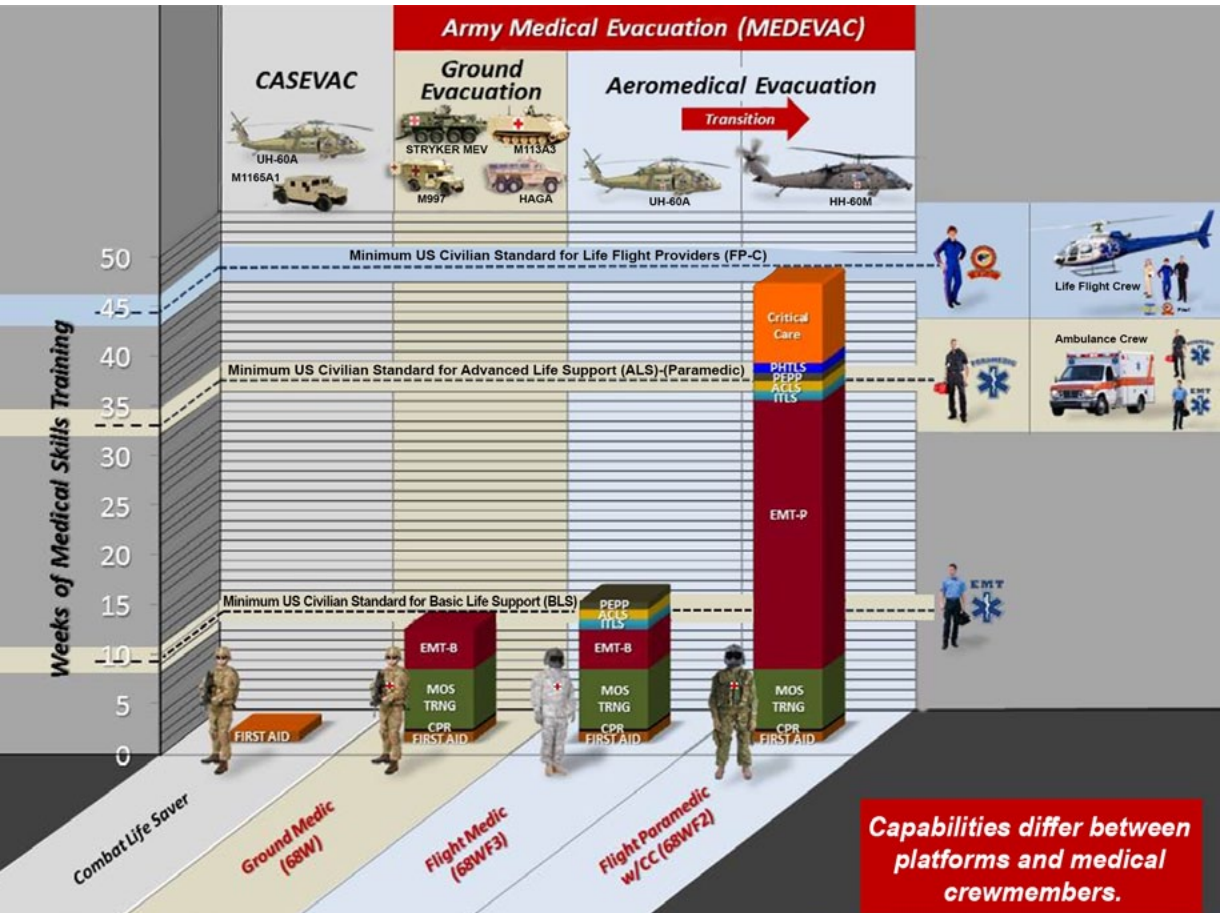
Although much improved, the terrain we inhabit together has its own set of challenges. Before we move forward, we must acknowledge at least one significant challenge that lies ahead that will only be traversed together – neither the AMEDD nor Aviation will be able to climb it alone. That particular challenge is to figure out how to train, certify, and sustain the 934+ flight medics (total across all Army components) to the new standard of critical care trained, nationally registered flight paramedic (CC-NRP) by Fiscal Year (FY) 2017. Medical studies, which we will discuss in a moment, have confirmed the capability gap and the need for additional training and certification. Consequently, the United States (U.S.) Congress directed this change to happen in a very short time period. Indeed, this is the terrain we inhabit together today. This is not speculative medical conjecture either; the reality is that our Army flight medics lack the required knowledge and skill sets to appropriately treat many of the casualties seen on today's battlefield. It's a fact. With respect to the VCSA Charter, this is an AMEDD training gap to solve; however, to train the entire 68W Flight Medic population across all components, Aviation leadership involvement to ensure effective development and integration of the training is paramount. Thus, we have a shared interest, and responsibility, to support each other and

overcome this next challenge together – as a "Unified Team."

Are We Certain That's Our Current Location?

With a recognized 91% survival rate on today's battlefield, the highest in U.S. military history, one might question whether this is, in fact, a gap requiring such interest and effort.[2] Certainly, 91% sounds almost unbelievably high considering the complex injuries sustained by our wounded Soldiers over the past 10+ years. Another notable statistic is that of all those wounded who arrived alive to a combat support hospital, 98% of them are still alive today.[3] Without doubt, much deserved credit goes to all the men and women within the military health system (MHS) that do their part to make these statistics a reality, especially the brave young men and women at the forefront of this system – the U.S. Army flight medics. Unfortunately, what these statistics won't illustrate is that of the remaining 9% of wounded who ultimately perished, how many could have potentially been saved? A recent study by the Department of Defense appointed Joint Theater Trauma System (JTTS) has concluded that with necessary improvements to the pre-hospital care environment (most notably, the increased training/certification of the flight medic) the answer is an astonishing 25%.[4] To better illustrate what those statistics mean, let's look at the actual numbers from just the past ten years – since Army Transformation. The combined total of U.S. casualties in Iraq and Afghanistan during this time period totaled 49,549; of which, 6,232 perished.[5] If we assume, at least for the moment, that we were to see the same number of casualties over the next ten years, this means that with CC-NRP aboard our AE aircraft (along with other JTTS recommendations (such as pushing blood interventions forward and medical oversight of pre-hospital care), we could potentially save 1,558 more lives over what we're able to today. This capability would also improve the level of care provided to every casualty evacuated and in turn, this could potentially lead to reduced recovery times and improved diagnosis for long-term effects of certain wounds. Moreover, it could potentially reduce overall costs associated with treating Soldiers in the MHS and the eventual health care provided by the Veterans Administration.

Simply put, the Army AE mission is to provide en route care to save lives – not just evacuate wounded Soldiers to the hospital. When it comes to saving lives on the battlefield, the flight medic is the primary weapon system in the pre-hospital environment. The emergency medical system (EMS), which we are all supported by in the U.S., is in large measure an offspring of the U.S. Army ground and AE system which returned from Vietnam. Unlike the U.S. EMS system, that has spent the last 30+ years evolving and maturing into the quality-driven, professional system it is today, the Army AE system has matured at a much, much slower rate. Case in point – the flight medic. Until improvements began a couple of years ago, the U.S. Army trained and certified flight medics to the standard just above an emergency medical technician (EMT; formerly known as EMT-Basic). Conversely, the U.S. EMS system has utilized a combination of certified flight paramedics and flight nurses on board life flight helicopters for decades. Even on the EMS advanced life support ground ambulance, the recognized standard is the emergency medical technician – paramedic. The below graphic will help illustrate the differences in standards of medical training between these capabilities.



The disparity and statistics have not gone unnoticed. In 2011, the Defense Health Board, under the Assistant Secretary of Defense for Health Affairs (ASD [HA]), published a memorandum noting the lack of appropriate capabilities with regard to our Army flight medics.[6] In turn, Congress published the FY 2013 National Defense Authorization Act in May 2012, which directed the Secretary of the Army to implement the Defense Health Board recommendations as well as directing him to ensure all in-flight medical attendants to be CC-NRP certified within three years.[7] Fortunately, the AMEDD was already moving forward with a training program to create

the CC-NRP. Following a Congressionally-directed update on the program[8] in April 2013, the AMEDD received approval to proceed with their own plan to have all flight medics trained and certified by FY 2017.[9]

The AMEDD's training program and planned flight paramedic throughput might have been a bit too optimistic as the program has proven to be difficult to execute, primarily due to the length of training coupled with the operational tempo demands that remain on AE and aviation units. As we approach the start of FY 2015, the Army should be at 60% complete on training the population of 934+ flight medics across the Army components, yet current numbers illustrate a much lower completion rate, roughly 25%.[10] It is unclear whether the suspense of FY 2017 will be met; certainly, I wouldn't expect it to be based on progress thus far. Equally uncertain is whether or not Congress will allow for another extension to the suspense. What is certain is that this is the location we find ourselves in today and it's clear that the challenge ahead of us is a significant one.

Recommendations for Moving Forward:

As previously stated, the trail ahead of us might prove even more difficult than anything we've seen before. Training and certifying our flight medics at this new level is certainly difficult, but maintaining their skills and proficiency, not just their certifications, will be an even bigger challenge. Much like an Army aviator or an Army sniper, who requires a minimum number of actual flight hours or minimum number of actual rounds fired with their sniper rifle to remain proficient, the CC-NRP will require a realistic, "hands-on" approach to sustaining their complex critical care skill set.

Potentially compounding the difficulty of the situation is that to my knowledge, the Army still hasn't ascertained how to implement the required medical oversight over these new CC-NRP. In the U.S., it would be illegal for a CC-NRP to actually carry out the extent of their medical training without appropriate emergency medicine direction and oversight. Considering the fact that the aforementioned Defense Health Board memo included recommendations for implementing the appropriate emergency medical direction and oversight, along with the fact that Congress directed the Secretary of the Army to implement those recommendations, it is certainly logical to expect additional action soon. Currently, the flight surgeons and physician's assistants within the combat aviation brigade, who are likely going to be nominated for this emergency medicine direction and oversight responsibility, are not trained or licensed in emergency medicine or emergency medicine medical direction. Thus, another gap presents itself.

Yet, we are moving in the right direction. With the recent publication of All Army Activities Distribution (ALARACT) 203/2014, the AMEDD is taking steps to broaden the acceptable standards for home station training accredited paramedic programs, as well as steps to increase the available seats at the Joint Base San Antonio paramedic course, which will likely increase overall training progress.[11] Ensuring the training remains a priority is the key. Just as Army Transformation brought about change for how we conduct and execute our wartime mission, the challenges ahead will only be solved together – as a unified AMEDD and Aviation team.

Ownership is step one. Both AMEDD and Aviation leaders need to acknowledge the significance of this challenge and the fact that a synchronized effort is required. Step two would be to create a combined AMEDD and Aviation workgroup to dissect the problem and develop new courses of action that are realistic and can meet the congressionally mandated timeline as well as the sustainment and medical oversight challenges. Step three would be an aggressive, senior leader driven effort to implement and track progress until the mission is accomplished.

We have proven over the last ten years serving together that the partnership between the AMEDD and Aviation can overcome whatever challenges we face together. The CC-NRP training program is just the next challenge and the next step toward improving the pre-hospital environment of the MHS. Let there be no doubt that with the leaders we have today, we can and will traverse this challenge with great success.

How to Recognize the Objective:

So, what does the trail look like beyond these immediate challenges and how are we going to recognize the objective when we reach it? When Army AE units are staffed with CC-NRP and they have the appropriate medical oversight and direction, along with other improvements in the pre-hospital arena (as recommended by the JTTS), then we will be well on our way to reaching the high ground.

To stand on the high ground though, we need the Department of Defense (DoD) (or perhaps just the Army) to expand current policy regarding the management of health care in the operational/pre-hospital environment. Ultimately, the quality of patient care in the entire pre-hospital

environment (including the evacuations conducted with Army aeromedical and ground evacuation platforms) should be managed with the same logic currently applied to deployed medical treatment facilities (MTFs) and/or U.S. Air Force (USAF) inter-theater AE platforms. The current DoD policy states that, "All fixed MTFs, as well as hospitals and other facilities used by managed care support contractors, shall meet or exceed the standards of appropriate external accrediting bodies. This includes accreditation of all hospitals by The Joint Commission (TJC) and participation, as directed by the ASD (HA), in all TJC quality management programs. …Operational healthcare units (not a component of an accredited MTF) are exempt from the accreditation requirement. The Military Services and the NCR [National Capital Region] Medical Directorate shall each establish and implement comparable quality-of-care oversight mechanisms for operational healthcare units under their cognizance. At a minimum, the functions of credentialing, RM [risk management], patient safety, and clinical performance improvement shall be included in the quality-of-care oversight mechanisms."[12]

For those that are not familiar with the above policy or The Joint Commission, it is the leading accreditation body or the "Gold Standard" for all U.S. hospitals, including those within DoD. Their "oversight" ensures an appropriate standard is met in the performance of health care. In accordance with the above policy, the Army establishes and implements comparable quality of care oversight mechanisms for deployed hospitals – but nothing currently exists to standardize quality of care oversight of the pre-hospital environment, specifically, the care conducted on the Army aeromedical and ground evacuation platforms. This policy gap is even further illuminated by the fact that the USAF mandates that quality of patient care standards on board their inter-theater AE platforms follow The Joint Commission standards (or equivalent recognized accrediting standards).[13,14]

Perhaps part of the policy problem is the fact that in the U.S. Healthcare system, The Joint Commission does not accredit or create standards for pre-hospital emergency medical transport services. Oversight of U.S. EMS services is provided by the National Highway Traffic Safety Administration, but they do not accredit or officially standardize EMS services for each state. For the U.S. EMS community, the recognized "Gold Standard" for accreditation, quality of patient care, safety, etc. on EMS platforms comes from the Commission on Accreditation of Medical Transport Systems (CAMTS). Although it makes sense for the USAF to follow The Joint Commission standards for quality of care (due to the fact that patients are inherently stable on inter-theater AE), the Army AE mission more closely aligns with the U.S. EMS life-flight mission (patients are inherently unstable) which utilizes CAMTS standards. In the opinion of this author, our Army policy makers should recognize the need for appropriate quality of patient care standards in the pre-hospital environment, just as they are recognized across the U.S. today, and apply them to our MHS accordingly. It's been done for the USAF inter-theater aeromedical evacuation mission, now it's time to do it for the Army intra-theater aeromedical evacuation mission. Doing so will improve the care delivered to our wounded Soldiers and ultimately save more lives.

Clearly, our objective is the high ground; characterized by appropriately trained, sustained and managed CC-NRP working in a cohesive pre-hospital care environment that includes emergency medicine oversight and direction, with appropriate policy governing the quality of care standards.

Now that we understand where we are and where we need to go, this azimuth check is complete. Let's ruck up and move out – we're burning daylight!

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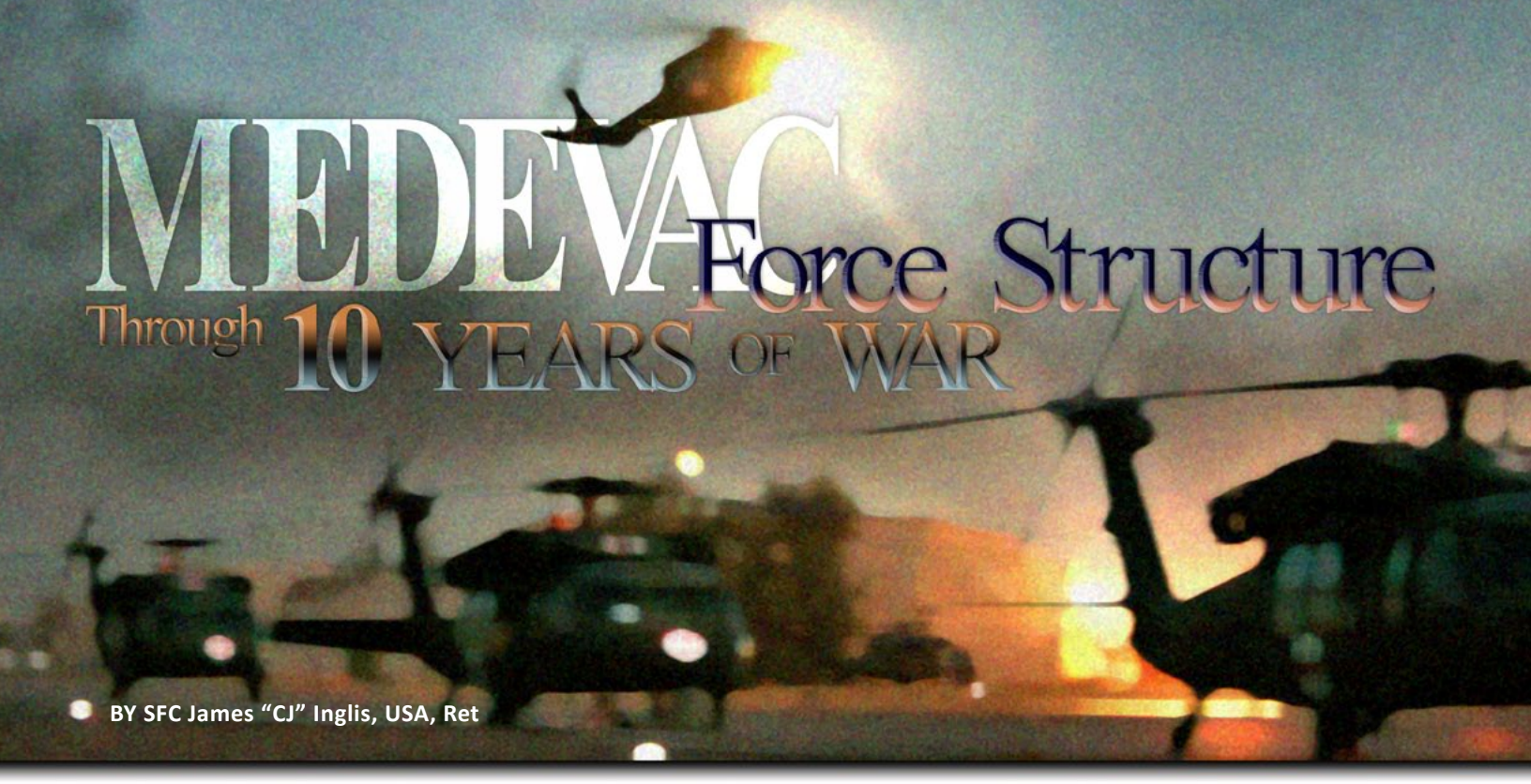
Acronym Reference

ACLS - Advanced Cardiac Life Support
AE - aeromedical evacuation
ALARACT - All Army Activities Distribution
AMEDDC&S - Army Medical Department Center and School
ASD [HA] - Assistant Secretary of Defense for Health Affairs
CAMTS - Commission on Accreditation of Medical Transport Systems
CC-NRP - critical care trained, nationally registered flight paramedic
CPR - Cardiopulmonary Resuscitation
DoD - Department of Defense
EMS - emergency medical system
EMT - emergency medical technician
FY - fiscal year
ITLS - International Trauma Life Support
JTTS - Joint Theater Trauma System
MEDEVAC - medical evacuation
MHS - military health system
MOS - military occupation specialty
MTFs - medical treatment facilities
PEPP - Pediatric Education for the Pre-Hospital Provider
PHTLS - Pre-hospital Trauma Life Support
TJC - The Joint Commission
U.S. - United States
USAF - U.S. Air Force
VCSA - Vice Chief of Staff of the Army



MEDEVAC Force Structure Through 10 YEARS OF WAR

BY SFC James "CJ" Inglis, USA, Ret

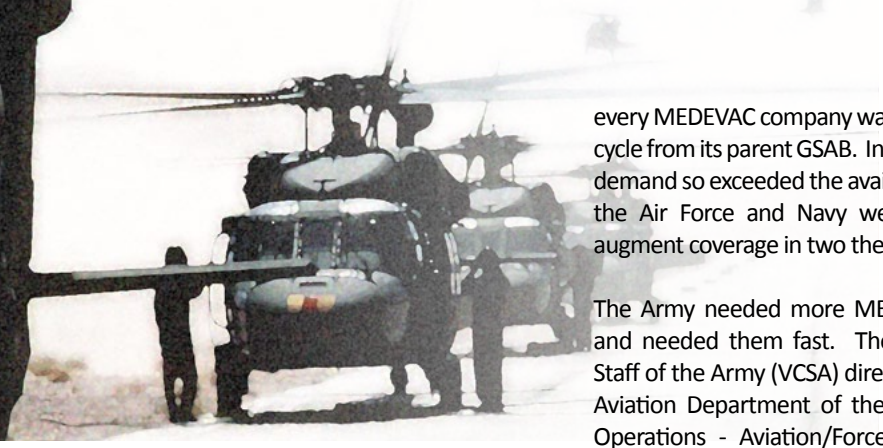
To paraphrase former Secretary of Defense Mr. Donald Rumsfeld, We go to war with the Army we have – not the Army we wish we had. The trick, though, is to have the Army you wish you had before you go to war. That is the essence of effective force design; to successfully predict, design, and build the Army we wish we had before we need to have it. Medical evacuation (MEDEVAC) force design is no exception. It has, however, been more challenging to defend simply due to the nature of change. Generally speaking, force designers make large, albeit informed assumptions, on what the world will look like well in advance when building (or cutting) structure. Those assumptions are based on known knowns, known unknowns, and best available analyses. If only we knew the unknown unknowns (except that we know they exist).

Prior to Army (Aviation) Transformation, air ambulance companies were under the purview of the Army Medical Department (AMEDD) and operated as an integrated air and ground system under the command and control (C2) of evacuation battalions. These 149 Soldier 15-ship 'numbered' (AA-level Unit Identification Code - Reporting Units) companies were effectively stand-alone organizations, predominantly self-sustaining with organic air and ground maintenance, Class I (food), Class III (fuel), flight operations, and airfield services, and were independently deployed by design. They were employed in the division, corps, at echelons above corps / theater levels, and were tactically located throughout the area of operations to best perform their mission. The number of companies required had been based on a set of rules of allocation (RoA) which were derived from comprehensive analyses and historic lessons (knowns). There were 30 fifteen-ship companies (450 aircraft), 26 of which were Go-to-War and four were Army National Guard (ARNG) UH-1 Base Generating Force (BGF) companies purposed to back-fill deploying unit home installations.

Perfect Harmony, right? Ah, the rose colored glasses of nostalgia… Let's come back to that in a minute.

For decades, a reserved (and at times not so reserved) struggle existed between Army Aviation and the AMEDD over ownership of the MEDEVAC aircraft. Aviation leaders felt the aircraft should be made available for other purposes when not directly engaged while the AMEDD (Office of The Surgeon General) fought to keep them dedicated (and designated) to the medical mission. The AMEDD had feared (with reason) that if Aviation commanders had control, mission creep would ultimately mean the demise of the dedicated MEDEVAC system and by consequence, the Health Support System. Since 1952, Army Surgeon General after Army Surgeon General successfully argued for and retained MEDEVAC as an embedded medical capability organic to medical structure. In 2004 that changed.

Transformation (or "Aviation Study 1" - as some call it in hindsight) assimilated the air ambulance companies under the C2 and organizational structure of Army Aviation. While they remained 'Medical' organizations, they became subordinate companies under the general support aviation battalion (GSAB) dependent upon the aggregate combat aviation brigade (CAB) for everything from maintenance and parts to fuel and food. Counter to AMEDD counsel, they were restructured into 12-ship / 85 Soldier companies and along with the obvious reduction in aircraft and capability, the new design was void of senior non-commissioned officer (NCO) leadership and other key strengths (medical and maintenance) the AMEDD insisted were paramount. The aggregate structure (total number of companies), as with other Aviation structures, was derived solely from 'existence-based' methodologies, discounting previous demand signals and RoA analysis. The result was one 12-ship MEDEVAC company per GSAB and because 'existence' methodology created 28 GSABs, there were 28 total air ambulance companies (or 336 total aircraft). So, with virtually no



real analysis, and against significant AMEDD objections, Army MEDEVAC aircraft capacity was reduced by 25% (organic personnel by 43%). A disaster.

In fairness though, Transformation brought a number of improvements which in all likelihood would not have occurred otherwise, at least not without additional complications—fully modernized platforms for example. The AMEDD had been unsuccessful for years in modernizing the MEDEVAC fleet and Red Cross aircraft were among the oldest in the utility fleet. Under the new CAB, all aircraft were to become fully modernized, including MEDEVAC. All 336 aircraft were to be HH-60 design. Unlike previous UH-60 platforms, where the MEDEVAC mission required a separate medical mission equipment package, the HH-60M is a factory developed medical ambulance specifically designed for the MEDEVAC mission. This aircraft carries significant additional costs and without the backing of Transformation (and Aviation branch) MEDEVAC may not have been included in modernization strategies. It certainly wouldn't have been championed by Army Aviation. Under the CAB, Air Ambulance companies also enjoy a much improved battlefield situational awareness. Access to vital intelligence, near real-time threat analysis, and gunship chase support provide the MEDEVAC aircrew a far safer mission than was possible under legacy AMEDD organizations.

Almost immediately though, as the war in Iraq continued and the MEDEVAC demands in Afghanistan (and elsewhere) increased, it became evident that MEDEVAC had been cut too thin. MEDEVAC companies were deploying far more often than the rest of the CAB and GSAB, many having as little as six months at home between deployments; the concept of battalion level modularity was shattered. The Army was 'breaking' GSABs to source MEDEVAC demand and nearly every MEDEVAC company was deploying off-cycle from its parent GSAB. In fact, MEDEVAC demand so exceeded the available inventory, the Air Force and Navy were directed to augment coverage in two theaters.

The Army needed more MEDEVAC aircraft and needed them fast. The Vice Chief of Staff of the Army (VCSA) directed Task Force Aviation Department of the Army Military Operations - Aviation/Force Management (via the Aviation Transformation Implementation Conferences [ATIC]) to address the persistent MEDEVAC shortfalls but charged that no Active Component growth would be authorized. The ATIC recommendation for nine additional Reserve Component companies (6 ARNG, 3 U.S. Army Reserve) was approved by the VCSA and validated in Total Army Analysis (TAA) 08-13 and TAA 10-15. Converting the four legacy UH-1 ARNG BGF companies into six go-to-war' UH-60 units significantly reduced overall personnel growth. Although the Force Design Update (FDU) was approved in 2008, it would be years before any of the "new" companies were ready to deploy. So, ARFORGEN challenges remained for some time. The FDU resulted in an aggregate 37 MEDEVAC companies and brought the MEDEVAC fleet back to 444 total aircraft. It did nothing however to address the organic shortfalls within the 12-ship design and it effectively acquiesced the fully modernized fleet concept which ensured at least a portion of the MEDEVAC fleet would remain legacy UH indefinitely.

The shortage of flight medic authorizations (one per aircraft) continued to overwork existing flight medics and units began routinely deploying with 8-10 additional untrained medics in order to sustain 24-hour operations. The lack of senior NCO leadership within the organization led to an absence of disciplined standards and common Soldier skills suffered. The senior enlisted Soldiers at decentralized sites were also primary flight medics and simply couldn't sustain full-time flying duty and act as a non-commissioned officer in-charge or team sergeant. The lack of senior maintenance expertise meant little to no supervision of young crew chiefs and finally, the lack of organic maintenance led to an over-reliance upon contract maintainers.

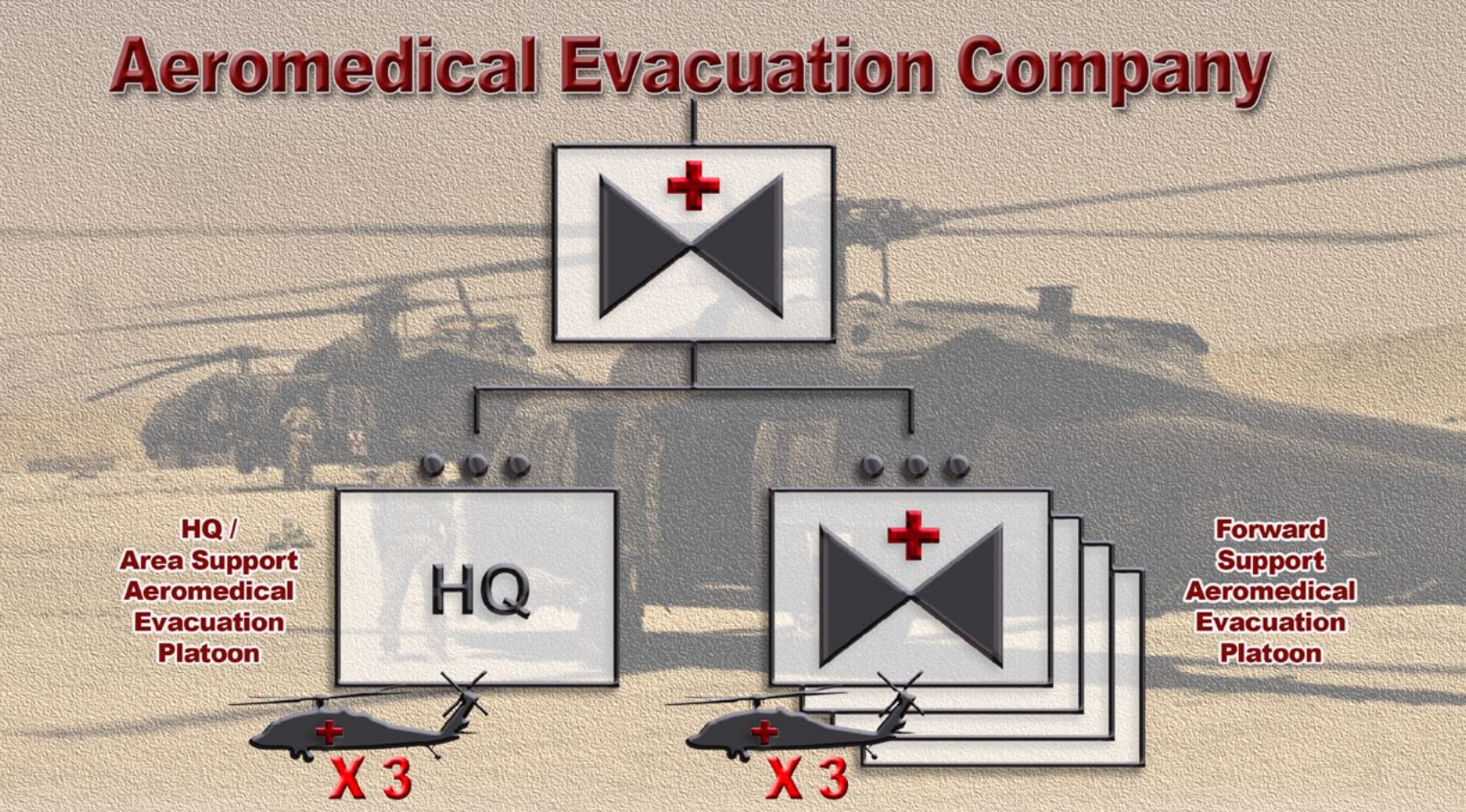
Less than a year later, demand signals changed again (unknown unknowns). Deployment policies limited the boots on ground time for Reserve Component units (nearly 2/3rd of the MEDEVAC structure), Afghanistan demand expanded, and the Secretary of Defense created a new one-hour evacuation 'Standard' for urgent and urgent surgical patients. These combined events highlighted continuing MEDEVAC deficiencies and force structure shortages.

So, it was back to the drawing board and in 2009 the VCSA approved the 15-ship MEDEVAC company FDU which increased the company from 85 Soldiers to 109 and included requisite flight medic structure to sustain 24 hour operations. The change from 'Teams' to 'Platoons' earned platoon sergeant positions which corrected the NCO leadership gap and the inclusion of a senior enlisted maintainer provided limited maintenance supervision and management. This design provided for greater task organization flexibility and proved successful in both combat and non-combat roles. It also represents the current building block for MEDEVAC under Army Aviation. Consequently, some of these design changes reflect AMEDD recommended elements dismissed during the initial Transformation design (i.e. the Army we wish we had). AMEDD planners had fought vigorously for many of these spaces during the 2004 discussions but were soundly overruled. The new design did nothing however to embed organic or dedicated maintainers and the air ambulance company remains reliant upon a centralized maintenance company and overly reliant upon contract maintainers.

The subsequent approval of an additional Active Component CAB resulted in 38 total MEDEVAC companies; still insufficient to meet all Army Force Generation (ARFORGEN) demands but it is understood that some high demand – low density units will at times rotate faster through the ARFORGEN cycle.

Prior to 2004, the relationship between the AMEDD and Army Aviation was uncertain and at times suspect. Transformation was at best a shotgun wedding and initial learning curves were steep on both sides; it was challenging. Think kicking and screaming. But collectively, hard lessons were learned. Although the sky didn't fall, there were numerous disputes along the way and it took years to correct the initial shortfalls. Big Army 'experts' found that they weren't actually

Aeromedical Evacuation Company



MEDEVAC experts and the AMEDD learned that the Health Support System didn't hinge upon the C2 of MEDEVAC. In fact, ultimately this 'marriage' has accomplished a greater than 92% survival rate; the best in history. It wasn't an easy transition, but the relationship continues to improve. Army Aviation and the AMEDD collectively advocate medical requirements and each relies upon the other for independent subject matter expertise. Another lesson from Mr. Rumsfeld is to not divide the world into us and them. Lesson learned, Sir.

In fact, as the Army again faces significant force structure reductions, Army Aviation worked first with the AMEDD to define medical (MEDEVAC) requirements and then championed those requirements within the Aviation Restructure Initiative. Unfortunately, this reduction is only partially based on actual requirements and almost entirely on budgetary constraints. Does it provide the 52 air ambulance companies Army we wish we had? No. But based on the analyses and the collective knowns, the remaining 35 go-to-war companies are as close as fiscal constraint will allow and somewhat balances the ARFORGEN gap between MEDEVAC and other surviving Army structure.

And about those rose colored glasses, nostalgia is a funny thing. In contrast on today's battlefield, a number of fundamental deficiencies within the legacy design would have produced many of the same challenges as later faced with the 12-ship design. Moreover, it would have faced perhaps even greater challenges. It was ill prepared to integrate within modern airspace management and had insufficient overall structure to meet either the ARFORGEN or One Hour Standard demands. And without the ATIC's streamlined improvement processes, and Army Aviation's support, the AMEDD would not likely have been successful in growing the necessary additional aircraft. Today's approved MEDEVAC fleet is over 600 helicopters strong (25% increase from pre-Transformation), each of which is included within various modernization strategies. That doesn't happen without Transformation and it doesn't happen without Army Aviation support. Army Aviation has embraced the MEDEVAC mission and in tandem with the U.S. Army Medical Command, becomes a much more powerful force in procuring required resources. So, all-in-all, after the bumps and bruises, MEDEVAC and the Soldiers it supports are arguably better off now than at any time before.

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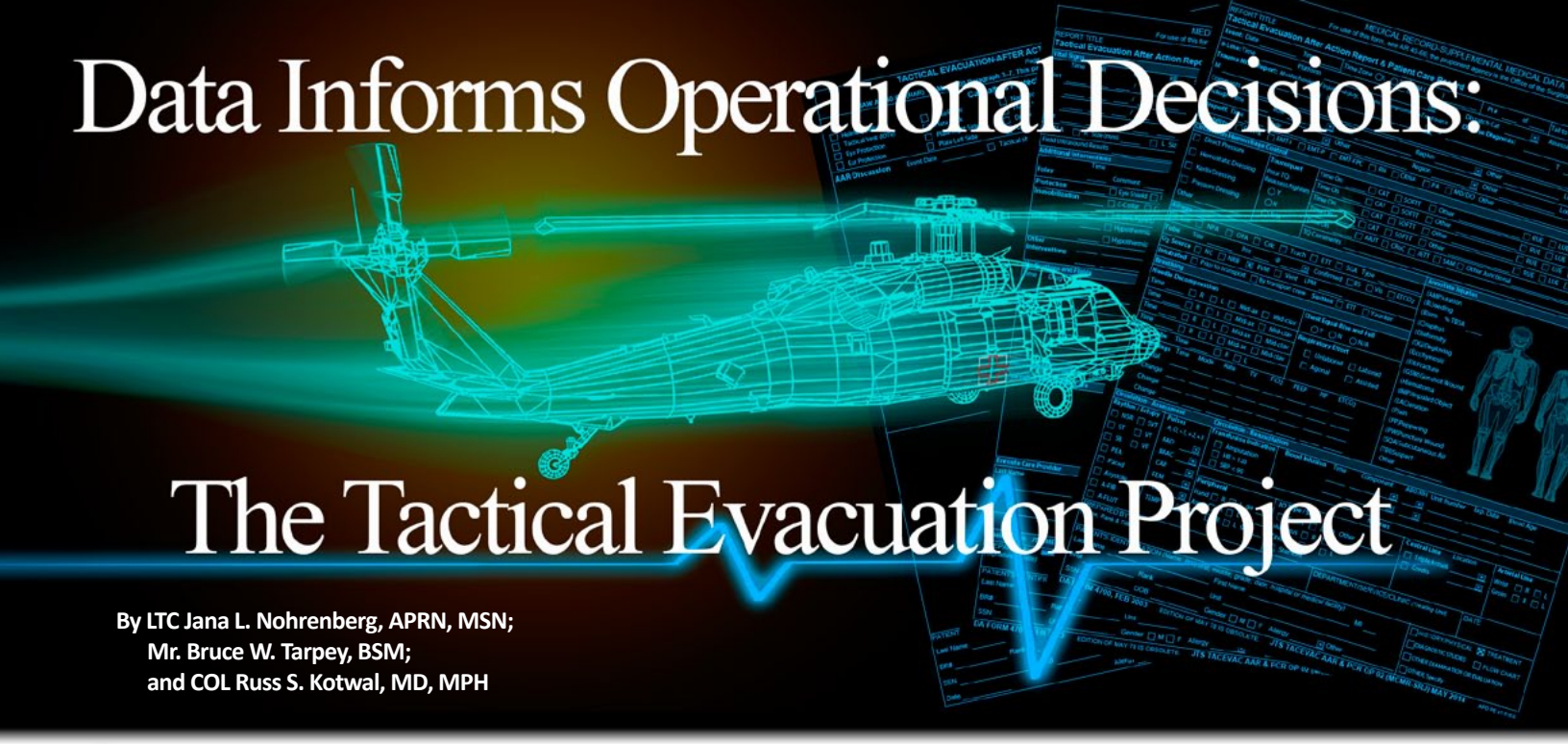
Acronym Reference

AMEDD - Army Medical Department
ARFORGEN - Army Force Generation
ATIC - Aviation Transformation Implementation Conference
BGF - Base Generating Force
C2 - command and control
CAB - combat aviation brigade
FDU - Force Design Update
GSAB - general support aviation battalion
MEDEVAC - medical evacuation
NCO - non-commissioned officer
RoA - rules of allocation
TAA - Total Army Analysis
VCSA - Vice Chief of Staff of the Army

Data Informs Operational Decisions:



The Tactical Evacuation Project

By LTC Jana L. Nohrenberg, APRN, MSN;
Mr. Bruce W. Tarpey, BSM;
and COL Russ S. Kotwal, MD, MPH

In 2006, LTG Peter Chiarelli, the Commanding General of Multi-National Corps in Iraq, questioned the impact of the expanded capability of the combat medic and combat lifesavers on the battlefield on the existing evacuation timelines.[1] He and his subordinate leaders were concerned that enhancing the capability of the pre-hospital providers would lead to a prolonging of the evacuation timeline, or the 60 minute "Golden Hour." The "Golden Hour" refers to the first hour after injury when most traumatic deaths occur, and therefore represents the time period when the opportunity to save life is greatest.

As a review, Army doctrine provides guidance for categories of precedence and evacuation timelines.[2] Priority I, (urgent) patients, are those that require evacuation as soon as possible and within a maximum of one hour in order to save life, limb, or eyesight; to prevent complications of serious illness; or to avoid permanent disability. Joint and North Atlantic Treaty Organization (NATO) doctrine also address the prioritization and movement of casualties. Joint doctrine for health service support stipulates that Priority I and Priority IA (urgent-surgical) patients are to be evacuated to the next appropriate level of care within a maximum of one hour of their injury.[3] NATO doctrine stipulates Priority 1 patients are to be evacuated within two hours.[4]

In 2007, the U.S. Army Medical Command funded the initiative entitled the "Medical Evacuation (MEDEVAC) Project" and chartered the Joint Trauma System (JTS) to provide data, analysis, and trends that could be used to guide employment of evacuation assets, optimize timing of transport and casualty care, improve casualty survival on the battlefield, and optimally design the combat trauma system.[5] The JTS is a designated Department of Defense Center of Excellence effort. Through performance improvement initiatives, JTS strives to optimize the survivability and decrease the morbidity and mortality of all wounded warriors and has an intense effort to collect combat injury and casualty care data. This includes the capture of en route care data contained in the evacuation patient care records (PCRs) as a component of the overall data set.

The JTS developed the MEDEVAC data capture tool in 2007 in response to the initial query to study the most efficacious timeline for transporting our wounded warriors from point of injury to first surgical care. The MEDEVAC project initially focused on aeromedical evacuation (AE) missions in Operation Iraqi Freedom (OIF) and found that AE missions were almost exclusively less than 60 minutes from notification to first surgical capability. As the focus shifted from OIF to Operation Enduring Freedom (OEF), the analysts noted that AE mission completion time in Afghanistan was averaging 90 minutes. After receiving briefings detailing the current status of AE missions in Afghanistan in March and June 2009, then Secretary of Defense Robert Gates directed the United States Central Command (CENTCOM) to take action to achieve AE parity between OIF and OEF to achieve 60-minute mission completion time as the standard.[6] Subsequently, the JTS modified the MEDEVAC Project to the "Golden Hour" Project to analyze the impact of this directed policy change on patient outcomes.

Both the MEDEVAC and the Golden Hour Projects noted that the greatest determining factor for survival was not only time, but rather time in conjunction with injury severity. This finding was incomplete as the primary dataset utilized was the Department of Defense Trauma Registry (DoDTR) which required admission to a Role 3* medical treatment facility (MTF) in order for the patient to be included in the registry. By definition, a casualty who is killed in action (KIA) succumbs to his injuries prior to arrival at a MTF and prior to initiation of medical treatment. So, the analysis excluded KIAs, an important population to be considered when analyzing the impact of AE time from point of injury to first surgical capability.

In 2012, as commanders in Afghanistan were forecasting the medical footprint during the withdrawal of forces and looked to optimize the medical assets and personnel on the ground, they proposed modifying

* Role 3 Medical Treatment Facility offers theatre of operations capability encompassing primary and specialist surgery, advanced and specialist diagnostic capabilities including CT scanning and X-ray through to major medical nursing specialities.

the 60 minute evacuation standard back to 90 minutes as it was in the earlier years of the conflicts in Afghanistan and Iraq. The CENTCOM Command Surgeon requested the Joint Theater Trauma System (JTTS) director to analyze any and all available data to provide support for or against the operational decision. The original project was renamed the Tactical Evacuation (TACEVAC) Project and re-scoped to have a more encompassing focus for the data collection capturing data not only from the MEDEVAC rotary-wing platforms, but ultimately capturing data from all air evacuation platforms and including the KIA information. While TACEVAC is not a doctrinal term, it has come to be commonly used to describe patient movement from point of injury to an MTF. Some also include the interfacility movement of patients within the theater of operations in the definition. The tactical evacuation phase is defined in JP 4-02 as the phase of care in which casualties are being transported to an MTF by an aircraft or vehicle, and there is an opportunity to provide additional medical personnel and equipment to maintain the interventions already performed, to further increase the role of care rendered to the casualty, and to be prepared to deal with the potential for the patient's condition to change during the evacuation.

TABLE 1.

	FM 4-02.25 2009	JP 4-02 2012		STANG 2087 2008
		MEDEVAC	Aeromedical Evacuation	
Urgent	1 hour	1 hour	N/A	2 hour
Priority	4 hours	4 hours	24 hours	4 hours
Routine	24 hours	24 hours	72 hours	24 hours

Data for this project was collected and analyzed from a variety of sources for inclusion in the TACEVAC database. Records were created on each individual and automatically scored based on the availability of five key data elements: date and time of event, patient identification, medical treatment facility data and arrival time, survival, and Military Injury Severity Score (MISS). These data elements are used to correlate evacuation times with clinical outcomes in order to provide timely feedback, guide performance improvement, optimize evacuation resources, and improve casualty survival. Utilizing these five data elements also served as a way to ensure that the data used for the analysis was as "clean" as possible affording those looking at the interpretation of the data assurance that the findings were accurate. The data sources for this revised database included the Patient Evacuation Coordination Cell (PECC) tasks evacuation assets and records of evacuation data in theater. The report provided by the PECC provides de-identified evacuation tasking logs and point-of-injury transport information. The JTS analysts also query the Combined Information Data Network Exchange as it is the CENTCOM directed reporting tool for the majority of operational reporting within Afghanistan and Iraq. In addition, the Theater Medical Data Store (TMDS) is utilized to confirm the identity of the patients listed on the PECC report or the PCR. The DoDTR was also accessed as it contains data abstracted from medical encounters and provides detailed patient information including physiology, injury severity score, and patient outcomes for casualties admitted to theater Role 3 facilities with a trauma diagnosis. Including data from these pre-hospital sources as well as the DoDTR provided greater insight into the KIA rate as well as the died of wounds (DOW) rates.

The JTS referred to the data in the TACEVAC database and analysis identified that casualty survival was significantly improved for patients with the full range of MISS after the 60 minute standard was imposed and median evacuation time went from 90 to 42 minutes. This information was provided back to the United States CENTCOM Command Surgeon in order to inform decisions concerning modifying the 60 minute standard.

Difference in KIA, Pre 9.5% (68/703) vs. Post 7.1% (217/3,039), **is statistically significant, p = 0.0434**
Difference in **DOW**, Pre 4.4% (34/737) vs. Post 2.8% (92/3,165), **is statistically significant, p = 0.0434**
Difference in **Total** Died (KIA +DOW), Pre 13.9% (101/669) vs. Post 9.9% (327/3,2565), **is statistically significant, p = 0.0023**

TABLE 2.

Data collection and analysis continues. By February 2013, there were 4,027 records containing all data elements that were included in the analysis for the "Golden Hour" project. The findings from this preliminary analysis were presented to the Joint Theater Trauma System Theater Trauma Conference in Kabul, Afghanistan on 12 August 2013.[7] The analysis showed that prior to 15 June 2009, when the goal of transport to the first capable surgical facility was 90 minutes, the actual median transport time was 90 minutes with 8.8% classified as KIA, 4.4% classified as DOW, and 86.8% casualty survival (Figure 1). After the 15 June 2009 Secretary of Defense directive was implemented that established

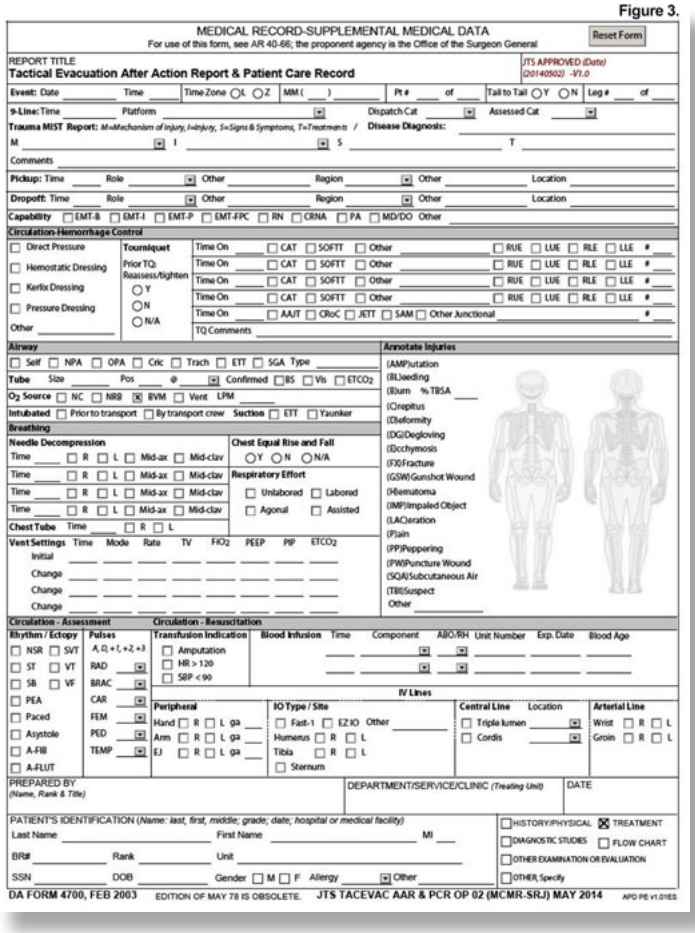
Figure 1.

the goal to transport a casualty to the first surgical capability in less than 60 minutes, the median transport time was 42 minutes, with 6.7% classified as KIA, 2.8% classified as DOW and 90.5% casualty survival (Figure 2). The differences between the KIA, DOW,

Figure 2.

and survival were all statistically significant (Table 2, left) indicating that time to the first capable surgical facility did indeed impact the casualty's survival following their battle injury.

Figure 3.



MEDICAL RECORD-SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of the Surgeon General

Reset Form

REPORT TITLE

Tactical Evacuation After Action Report & Patient Care Record

JTS APPROVED (Date) (20140502) -V1.0

Event: Date ____ Time ____ Time Zone ○L ○Z MM (___) ____ Pt # ___ of ___ Tail to Tail ○Y ○N Leg # ___ of ___

9-Line: Time ____ Platform ____ Dispatch Cat ____ Assessed Cat ____

Trauma MIST Report: M=Mechanism of Injury, I=Injury, S=Signs & Symptoms, T=Treatments / Disease Diagnosis:

M ____ I ____ S ____ T ____

Comments ____

Pickup: Time ____ Role ____ Other ____ Region ____ Other ____ Location ____

Dropoff: Time ____ Role ____ Other ____ Region ____ Other ____ Location ____

Capability ☐ EMT-B ☐ EMT-I ☐ EMT-P ☐ EMT-FPC ☐ RN ☐ CRNA ☐ PA ☐ MD/DO Other ____

Circulation-Hemorrhage Control

☐ Direct Pressure
☐ Hemostatic Dressing
☐ Kerlix Dressing
☐ Pressure Dressing
Other ____

Tourniquet
Prior TQ: Reassess/tighten ○Y ○N ○N/A

Time On ____ ☐ CAT ☐ SOFTT ☐ Other ____ ☐ RUE ☐ LUE ☐ RLE ☐ LLE #
Time On ____ ☐ CAT ☐ SOFTT ☐ Other ____ ☐ RUE ☐ LUE ☐ RLE ☐ LLE #
Time On ____ ☐ CAT ☐ SOFTT ☐ Other ____ ☐ RUE ☐ LUE ☐ RLE ☐ LLE #
Time On ____ ☐ CAT ☐ SOFTT ☐ Other ____ ☐ RUE ☐ LUE ☐ RLE ☐ LLE #
Time On ____ ☐ AAJT ☐ CRoC ☐ JETT ☐ SAM ☐ Other Junctional ____ #

TQ Comments ____

Airway

☐ Self ☐ NPA ☐ OPA ☐ Cric ☐ Trach ☐ ETT ☐ SGA Type ____

Tube Size ____ Pos ____ @ ____ Confirmed ☐ BS ☐ Vis ☐ $ETCO_2$

O_2 Source ☐ NC ☐ NRB ☒ BVM ☐ Vent LPM ____

Intubated ☐ Prior to transport ☐ By transport crew Suction ☐ ETT ☐ Yaunker

Annotate Injuries

(AMP)utation
(BL)eeding
(B)urn % TBSA ____
(C)repitus
(D)eformity
(DG)/Degloving
(E)cchymosis
(FX)Fracture
(GSW)Gunshot Wound
(H)ematoma
(IMP)Impaled Object
(LAC)eration
(P)ain
(PP)Puppering
(PW)Puncture Wound
(SQA)Subcutaneous Air
(TBI)Suspect
Other ____

Breathing

Needle Decompression
Time ____ ☐ R ☐ L ☐ Mid-ax ☐ Mid-clav
Time ____ ☐ R ☐ L ☐ Mid-ax ☐ Mid-clav
Time ____ ☐ R ☐ L ☐ Mid-ax ☐ Mid-clav
Time ____ ☐ R ☐ L ☐ Mid-ax ☐ Mid-clav

Chest Tube Time ____ ☐ R ☐ L

Chest Equal Rise and Fall ○Y ○N ○N/A

Respiratory Effort ☐ Unlabored ☐ Labored ☐ Agonal ☐ Assisted

Vent Settings | Time | Mode | Rate | TV | FIO_2 | PEEP | PIP | $ETCO_2$
Initial ____
Change ____
Change ____
Change ____

Circulation - Assessment

Rhythm / Ectopy: ☐ NSR ☐ SVT ☐ ST ☐ VT ☐ SB ☐ VF ☐ PEA ☐ Paced ☐ Asystole ☐ A-FIB ☐ A-FLUT

Pulses: A, Q, +1, +2, +3
RAD ____ BRAC ____ CAR ____ FEM ____ PED ____ TEMP ____

Circulation - Resuscitation

Transfusion Indication: ☐ Amputation ☐ HR > 120 ☐ SBP < 90

Blood Infusion | Time | Component | ABO/RH | Unit Number | Exp. Date | Blood Age

IV Lines

Peripheral: Hand ☐ R ☐ L ga ___ Arm ☐ R ☐ L ga ___ EJ ☐ R ☐ L ga ___

IO Type / Site: ☐ Fast-1 ☐ EZ-IO Other ____ Humerus ☐ R ☐ L Tibia ☐ R ☐ L ☐ Sternum

Central Line Location: ☐ Triple lumen ____ ☐ Cordis ____

Arterial Line: Wrist ☐ R ☐ L Groin ☐ R ☐ L

PREPARED BY (Name, Rank & Title) ____ DEPARTMENT/SERVICE/CLINIC (Treating Unit) ____ DATE ____

PATIENT'S IDENTIFICATION (Name: last, first, middle; grade; date; hospital or medical facility)

Last Name ____ First Name ____ MI ___
BR# ____ Rank ____ Unit ____
SSN ____ DOB ____ Gender ☐ M ☐ F Allergy ____ Other ____

☐ HISTORY/PHYSICAL ☒ TREATMENT
☐ DIAGNOSTIC STUDIES ☐ FLOW CHART
☐ OTHER EXAMINATION OR EVALUATION
☐ OTHER, Specify

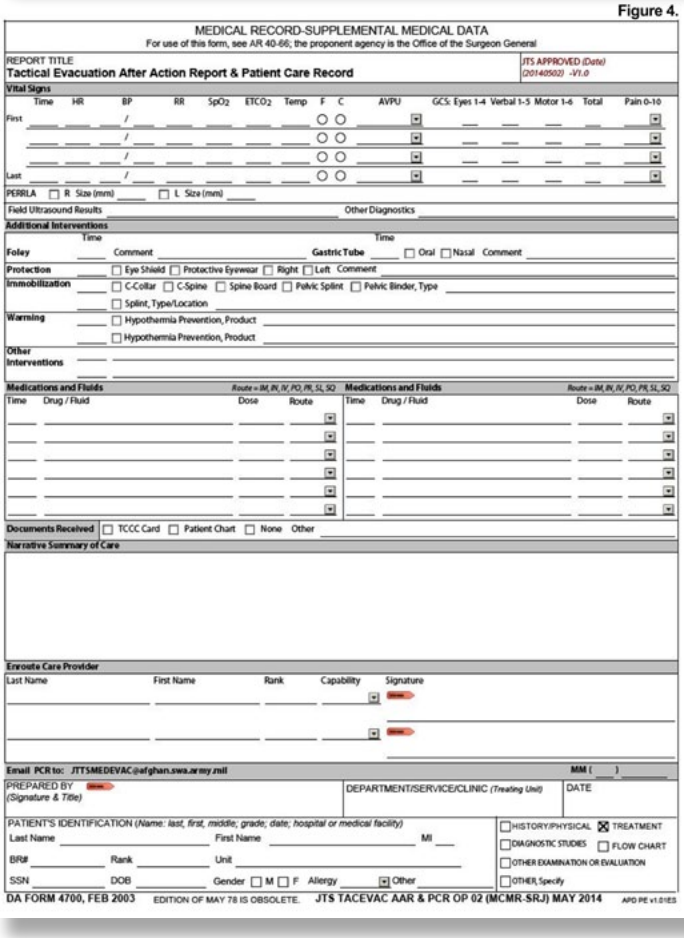
DA FORM 4700, FEB 2003 EDITION OF MAY 78 IS OBSOLETE. JTS TACEVAC AAR & PCR OP 02 (MCMR-SRJ) MAY 2014 APD PE v1.01ES

In order to optimize the utility of these databases, the JTS needs continued support from the field. Data collection and capture is still reliant upon the submission of documentation either directly to the JTS or uploaded into the TMDS for integration into the patient's medical record.

To improve data capture, the JTS has undertaken the development of a standardized PCR and after action report (AAR) documentation tool. The team examined a variety of different tools that were being utilized in Afghanistan to document provision of care while en route and created a consolidated PCR that was vetted with the community of interest. Multiple versions were trialed and the one that was ultimately implemented is shown here (Figures 3, 4, and 5). The current version took into account the data elements necessary for the database, the relevant clinical practice guidelines as well as the key clinical components from variety of tools being utilized across the force. Since the standardized tool was fielded, compliance with submission of the PCR to the deployed JTTS team has improved dramatically.

Recently, a $1.92 million project was awarded for the development of a comprehensive military en route care registry (MERCuRY project). Data from the PCRs and other existing tools for en route care documentation will be abstracted into the en route care registry for analysis. Future uses of the data in this en route care registry may include an analysis of impact on outcomes for casualties transported with varying levels of medical providers (nurse, physician,

Figure 4.



MEDICAL RECORD-SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of the Surgeon General

REPORT TITLE

Tactical Evacuation After Action Report & Patient Care Record

JTS APPROVED (Date) (20140502) -V1.0

Vital Signs

Time | HR | BP | RR | SpO_2 | $ETCO_2$ | Temp | F C | AVPU | GCS: Eyes 1-4 | Verbal 1-5 | Motor 1-6 | Total | Pain 0-10
First ____
____
____
Last ____

PERRLA ☐ R Size (mm) ____ ☐ L Size (mm) ____

Field Ultrasound Results ____ Other Diagnostics ____

Additional Interventions

Time
Foley ____ Comment ____
Protection ____ ☐ Eye Shield ☐ Protective Eyewear ☐ Right ☐ Left Comment ____
Immobilization ____ ☐ C-Collar ☐ C-Spine ☐ Spine Board ☐ Pelvic Splint ☐ Pelvic Binder, Type ____
____ ☐ Splint, Type/Location ____
Warming ____ ☐ Hypothermia Prevention, Product ____
____ ☐ Hypothermia Prevention, Product ____
Other Interventions ____

Time
Gastric Tube ____ ☐ Oral ☐ Nasal Comment ____

Medications and Fluids (Route = IM, IN, IV, PO, PR, SL, SQ)

Time | Drug / Fluid | Dose | Route

Medications and Fluids (Route = IM, IN, IV, PO, PR, SL, SQ)

Time | Drug / Fluid | Dose | Route

Documents Received ☐ TCCC Card ☐ Patient Chart ☐ None Other ____

Narrative Summary of Care

Enroute Care Provider

Last Name | First Name | Rank | Capability | Signature

Email PCR to: JTTSMEDEVAC@afghan.swa.army.mil MM ( )

PREPARED BY (Signature & Title) ____ DEPARTMENT/SERVICE/CLINIC (Treating Unit) ____ DATE ____

PATIENT'S IDENTIFICATION (Name: last, first, middle; grade; date; hospital or medical facility)

Last Name ____ First Name ____ MI ___
BR# ____ Rank ____ Unit ____
SSN ____ DOB ____ Gender ☐ M ☐ F Allergy ____ Other ____

☐ HISTORY/PHYSICAL ☒ TREATMENT
☐ DIAGNOSTIC STUDIES ☐ FLOW CHART
☐ OTHER EXAMINATION OR EVALUATION
☐ OTHER, Specify

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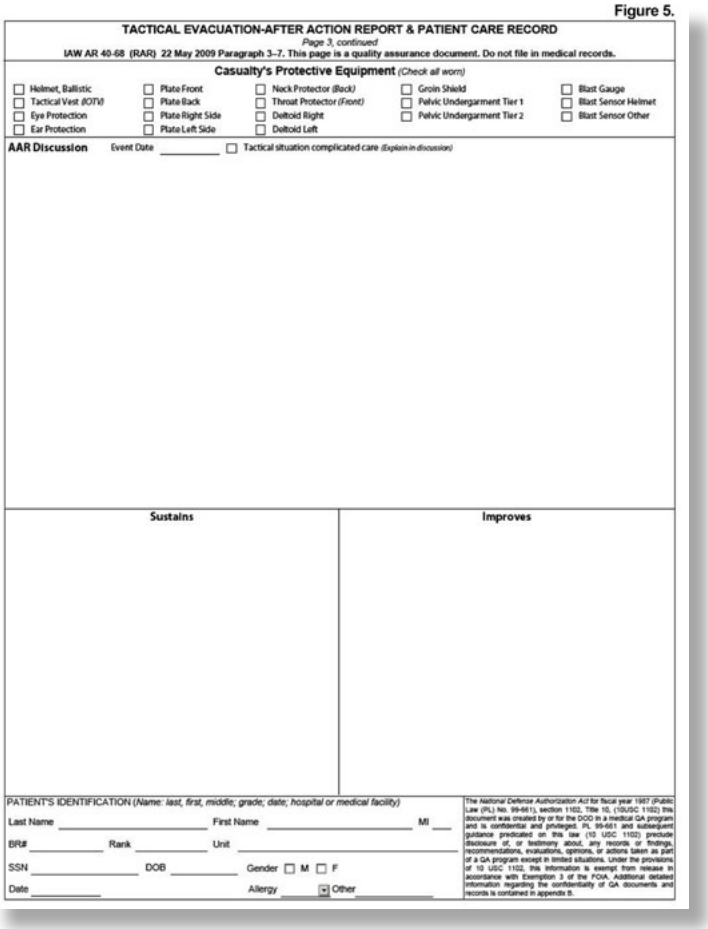
Figure 5.



TACTICAL EVACUATION-AFTER ACTION REPORT & PATIENT CARE RECORD

Page 3, continued

IAW AR 40-68 (RAR) 22 May 2009 Paragraph 3–7. This page is a quality assurance document. Do not file in medical records.

Casualty's Protective Equipment (Check all worn)

☐ Helmet, Ballistic
☐ Tactical Vest (IOTV)
☐ Eye Protection
☐ Ear Protection
☐ Plate Front
☐ Plate Back
☐ Plate Right Side
☐ Plate Left Side
☐ Neck Protector (Back)
☐ Throat Protector (Front)
☐ Deltoid Right
☐ Deltoid Left
☐ Groin Shield
☐ Pelvic Undergarment Tier 1
☐ Pelvic Undergarment Tier 2
☐ Blast Gauge
☐ Blast Sensor Helmet
☐ Blast Sensor Other

AAR Discussion Event Date ____ ☐ Tactical situation complicated care (Explain in discussion)

Sustains | Improves

PATIENT'S IDENTIFICATION (Name: last, first, middle; grade; date; hospital or medical facility)

Last Name ____ First Name ____ MI ___
BR# ____ Rank ____ Unit ____
SSN ____ DOB ____ Gender ☐ M ☐ F
Date ____ Allergy ____ Other ____

The National Defense Authorization Act for fiscal year 1997 (Public Law (PL) No. 99-661), section 1102, Title 10, (10USC 1102) this document was created by or for the DOD in a medical QA program and is confidential and privileged. PL 99-661 and subsequent guidance predicated on this law (10 USC 1102) preclude disclosure of, or testimony about, any records or findings, recommendations, evaluations, opinions, or actions taken as part of a QA program except in limited situations. Under the provisions of 10 USC 1102, this information is exempt from release in accordance with Exemption 3 of the FOIA. Additional detailed information regarding the confidentiality of QA documents and records is contained in appendix B.

physician's assistant medic, paramedic, etc.) in attendance as well as the impact of en route care provided. The potential findings from this analysis could help shape the personnel assigned to the organizational structure of MEDEVAC units in the future as well as inform best en route care practice.

Making decisions without data is like flying blind and without instruments. Data are not the only consideration in decision making – they are a means, not an end to effective decision making. Data must be applied within operational context and with logic in order to result in actionable information.

Commanders and senior leaders rely upon high quality data analysis to inform their decision making; tools such as the DoDTR and the developing en route care registry module can be leveraged to provide this when those decisions have medical impact. High quality data can be used to inform operational decisions that will continue to directly impact survival on the battlefield. The en route care registry, just as the TACEVAC database was, will be reliant upon the aviation, flight medicine, and ground evacuation communities to submit their patient care reports and after action reports to the JTS for inclusion in the database. As the en route care database is developed and matures, more analysis will be conducted to look at a variety of morbidity, mortality, and performance improvement metrics that will assist senior leaders, capability developers, and unit-level decision makers in mission planning.

LTC Jana L. Nohrenberg is currently serving as the Chief Nurse for the Joint Trauma System in the United States Army Institute of Surgical Research at Joint Base San Antonio, Fort Sam Houston, TX. Her previous assignment was as a capability developer for the Army Medical Department Center and School. She has also held numerous assignments as a critical care nurse. LTC Nohrenberg has deployed to Afghanistan and Kuwait. She has served 19 years as an Army Nurse Corps Officer.

Mr. Bruce W. Tarpey is currently serving as the Project Lead for the TACEVAC/Golden Hour Study for the Joint Trauma System in the United States Army Institute of Surgical Research at Joint Base San Antonio, Fort Sam Houston, TX. He is a retired member of the United States Air Force (2005), and has been assigned to this current position from 2007-2009, and again from 2012 to present.

COL Russ S. Kotwal served in the military for more than 29 years and he is currently in transition to military retirement. As a Family Medicine and Aerospace Medicine physician, he previously served at the Joint Trauma System, the US Army Special Operations Command, and the 75th Ranger Regiment. He is a Master Flight Surgeon and a Master Parachutist with two combat jump bronze service stars. COL Kotwal has multiple combat deployments to both Afghanistan and Iraq.

References:
1. Memorandum from LTG Chiarelli to LTG Kiley, 31 October 2006.
2. Field Manual 4-02.2, Medical Evacuation (incl Change 1), July 2009.
3. Joint Publication 4-02, Health Service Support, 26 July 2012.
4. North American Treaty Organization Standardization Agreement 2087, Edition 6, Medical Employment of Air Transport in the Forward Area, 20 October 2008.
5. Memorandum from Institute of Surgical Research to MG Pollock, 27 September 2007.
6. Memorandum from Secretary of Defense to CENTCOM Commander, 15 June 2009.
7. Kotwal, RS, and Bailey, JA. "Tactical Evacuation and Clinical Outcomes." Joint Theater Trauma System Trauma Conference, Kabul, Afghanistan,12 August 2013. Conference Presentation.

Acronym Reference

AAR - after action report
AE - aeromedical evacuation
CENTCOM - United States Central Command
DoDTR - Department of Defense Trauma Registry
DOW - died of wounds
JTS - Joint Trauma System
JTTS - Joint Theater Trauma System
KIA - killed in action
MEDEVAC - medical evacuation
MISS - Military Injury Severity Score
MTF - medical treatment facility
NATO - North Atlantic Treaty Organization
OEF - Operation Enduring Freedom
OIF - Operation Iraqi Freedom
PCRs - patient care records
PECC - Patient Evacuation Coordination Cell
TACEVAC - tactical evacuation
TMDS - Theater Medical Data Store

ADVANCES IN BLOOD COMPONENT THERAPY

Combat Trauma Medicine Aboard MEDEVAC Helicopters

By MAJ Jason Jones

On the modern battlefield, injury rates are trending toward blast injuries from explosions, including amputations, fragmentation wounds, or polytrauma cases involving several of these. Injuries sustained from an improvised explosive device (IED), for example, typically involve multiple amputations and fragmentation wounds, burns, and concussive head trauma, all in the same patient. Incredibly, these wounds are often survivable, thanks to advances in trauma medicine that begin with the first responder, through the Joint Trauma System, and through long-term care.

One cutting-edge advance in trauma medicine in use is the administration of packed red blood cells (PRBCs) on board medical evacuation (MEDEVAC) helicopters in several regions of Afghanistan. This methodology of blood component therapy is not new to trauma medicine, but the far-forward use of PRBCs, potentially within minutes of injury is definitely on the leading edge of pre-hospital care. In fact, pre-hospital use of blood as fluid therapy in trauma is not yet proven to change outcomes, as initial data is currently being collected. Bickell showed through a series of studies on intravenous (IV) fluid use[1,2] that standard crystalloid IV fluid therapy could actually increase mortality. Although the use of blood component therapy is not yet proven in a controlled study to improve patient outcomes, the January 2013 Joint Trauma System Review *Saving Lives on the Battlefield*[3] stated flatly "No one will argue against blood component therapy as the fluid of choice for hemorrhagic shock."

The administration of PRBCs in a prehospital setting is particularly challenging. Protocol includes starting an 18-guage or larger IV, but a typical candidate for blood therapy is likely to have collapsed veins. Often, an interosseous (IO) device is drilled through bone into marrow with a small handheld device. While this procedure could be straightforward in a clinical setting, conducting it on the back of an H-60 series helicopter in combat is another issue. Conditions could range from near-total darkness, extreme heat or cold, and constant motion from wind shear or flight maneuvering while working in a kneeling position over a patient. Time limitations are also a consideration, as the average en route time on a MEDEVAC flight is approximately 14 minutes. Executing the transfusion procedure under these conditions is demanding, as each step requires careful checks and monitoring. A common technique currently in use is the simultaneous start of an IV line and an IO line, then a quick check for the most rapid line to transfuse the PRBCs. In order to execute these procedures rapidly, aeromedical evacuation (AE) units throughout Afghanistan are training and employing additional available medical personnel to ride in the aircraft, using the extra personnel to assist with these demanding polytrauma cases.

SGT Bjorkland, C-2/3 GSAB crewchief ventilates a patient while flight medic SGT Learner prepares a blood unit for a transfusion near Qalat, Afghanistan.

Blood storage and management in an austere environment carries its own challenges.

Medical aircraft typically launch within a few minutes of notification, and storage and inspection requirements of PRBCs could extend the launch outside the short window necessary to provide evacuation to rapid surgical intervention. For AE units, the pragmatic use of PRBCs on any given mission was at one time nearly impossible, but since the advent of the Golden Hour Container System blood usage in this setting is now commonplace. Material science advanced far enough to create small, lightweight specialty containers that can hold a precise temperature for as many as 72-hours in cooler conditions, or as little as 24-hours in an extreme temperature environment, without electrical power applied to the containers. This advancement effectively created a "grab-and-go" blood cooler, typically carrying two units, but capable of holding up to four units, for immediate use on-board MEDEVAC aircraft. This blood unit is then hooked inline to a battery operated warming device with a disposable cartridge that brings the blood to a more suitable temperature for transfusion. The entire system can fit in a relatively small area in the back of the aircraft. It can be left on-board and checked just once daily bringing an extraordinary capability to a trained medical crew.

Along with onboard storage, improvements in refrigeration equipment in general helped to create a storage and freezing system with a small footprint, capable of being set up in an austere field environment. A typical clinical blood distribution setup can be supported in just a few square feet with two specialized electrical refrigerated units, one to freeze the Golden Hour Container and one to maintain blood units at a precise storage temperature. Coupled with battery backups, a blood storage and distribution area can be set up in the corner of a Role 1 aid station or a Role 2* facility, even at a remote forward operating base.

Improvements to the current system are already in development. C-2/3 General Support Aviation Battalion "Marne Dustoff" in southern Afghanistan began testing improved coiled blood transfusion tubing in February 2013 with excellent results. The developmental tubing kinks less, gets hung up less in the chaotic treatment area in a helicopter, and provides a quicker, more consistent transfusion flow into a patient than standard non-coiled clinical tubing. Small plastic IO stick-on guards are being fielded as well to reduce kinking and interference at the IO transfusion site.

Likely the most important element to a consistent blood usage program is frequent training. Training is vitally important for the medic; not just so the procedure is done correctly, but in some cases so the medic can remember to start the procedure at all, or make proper decisions on blood use. Given all the stresses of a combat MEDEVAC, each medical provider needs frequent iterations in trauma management using blood products to be comfortable with the proper procedure, the criteria for transfusions, and swift execution under duress. A British prehospital care study by Turner in 2000 showed that in a civilian EMS setting, paramedics failed to give fluids in 31% of indicated cases, and fluids were given wrongly (when contraindicated) 20% of the time. Add to that the challenges of a combat scene, security, and requirements to serve as aircrew and training becomes vitally important to a successful blood program.

Overall, the advancement of technology and innovation created a useful, pragmatic system for blood component therapy on board combat MEDEVAC aircraft. With new equipment, training, and testing, blood component therapy is becoming a mainstream prehospital practice on board Army MEDEVAC aircraft.

SFC Joe McCormick, C-2/3 GSAB flight medic instructs flight medics SGT Davis and SPC Cruz on blood transfusion protocols during training near Qalat, Afghanistan.

MAJ Jason Jones, Medical Service Corps, US Army, is the commander of C Company (MEDEVAC), 2-3 General Support Aviation Battalion in Kandahar, Afghanistan. He holds an MBA from the Kenan-Flagler School of Business at the University of North Carolina-Chapel Hill and a B.S. in Chemistry from Truman State University.

* Role 1: Battalion aid station providing triage, treatment, and evacuation to the next higher medical treatment facility. Care is provided by a physician, physician assistant, and/or medic. No surgical or patient holding facility. Goals are to return to duty or to stabilize and evacuate to the next higher role medical treatment facility.
Role 2: Medical company–brigade support battalion and medical company – area support. Provides basic/emergency treatment (advanced trauma management) and life-saving resuscitative surgery, including general, orthopedic, limited neurosurgical procedures, limited X-ray, clinical laboratory, dental support, combat and operational stress control, and preventive medicine.

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Acronym Reference

IED - improvised explosive device	**PRBCs** - packed red blood cells
IO - interosseous	**AE** - aeromedical evacuation
IV - intravenous	**MEDEVAC** - medical evacuation

The Patient Evacuation Coordination Cell

By CPT Anthony L. Leiding

Many of you may have heard the term Patient Evacuation Coordination Cell, or PECC, used in relation to medical evacuation (MEDEVAC) command and control (C2). While a few are intimately familiar with how the PECC operates within the MEDEVAC system, to most the day to day functions still remain a mystery and go unnoticed. The goal of this article is twofold. The first is to give an overview of the PECC, including how it is staffed and the functions that it performs. The second is to outline the advantages of the PECC when it is properly staffed, trained, and incorporated into the MEDEVAC system.

OVERVIEW

The PECC is a MEDEVAC and regulating C2 node used within each regional (and theater) command for current operations. The PECC greatly enhances the coordination and execution of MEDEVAC in an Allied environment. While the PECC is not included in United States (U. S.) joint doctrine or specifically resourced within the approved U.S. force structure, it is included in the Allied Joint Publication (AJP) 4.10(A), Allied Joint Medical Support Doctrine, and plays a large role in MEDEVAC C2 for current North Atlantic Treaty Organization (NATO) operations. The AJP 4.10A states that "the PECC provides theater level medical evacuation and regulating functions for all patients, moving beyond formation boundaries, in conjunction with force components and theater logistic and movement control agencies. It is responsible for patient tracking and the maintenance of the Medical Treatment Facility (MTF) capability database." U.S. Army division headquarters that have recently deployed to fulfill the duties of a combined joint task force (CJTF) have staffed the PECC as an ad hoc organization to perform these functions. There is no formal manning document for the PECC. The personnel who staff the PECC are assigned to the Combined Joint Surgeon's Office within the CJTF. The PECC is staffed and operated 24/7 and assigns mission approval authority to all MEDEVAC requests.

While the PECC is a relatively new concept to U.S. Army aeromedical evacuation operations, NATO forces have been using the PECC for several years. In May 2012, recognizing the need to formalize training for personnel assigned to the PECC, the NATO Patient Evacuation Coordination Cell Course (COE-MED-M4-008) was established with a pilot course conducted at Feldkirchen, Germany. The goal of this course is to provide knowledge and to exercise skills required to effectively operate within a PECC. If the PECC were codified into U.S. doctrine, the need for the creation of a PECC course offered for U.S. service members would be essential. This course would ensure standardization of procedures and that personnel assigned to the PECC received the appropriate training.

There is no formal U.S. manning document for the PECC. United States forces that staff the PECC have typically been sourced from the division surgeons section, or from a Worldwide Individual Augmentation System tasking. These personnel assigned are predominately 68Ws (Health Care Specialist) ranging in grade from E-5 to E-8, or 70Bs (Health Services Officer) ranging in grade from O-1 to O-3. Most PECCs are supervised by a 67J (Aeromedical Evacuation Officer) ranging in grade from O-3 to O-4. The 67J is typically dual-hatted as both the division evacuation officer and the PECC officer-in-charge. The bottom line is that the PECC is currently an ad hoc organization within U.S. force structure, with varying methods of sourcing. Every PECC has a similar function with individual nuances based on the command and geographic area they operate within.

ADVANTAGES

The PECC offers many advantages to the MEDEVAC system by nature of their location within the Joint Operations Center (JOC) and their ability to oversee all intra-theater MEDEVAC assets within the area of operations. The location of the PECC in the JOC provides instant access to the decision making authorities for high-risk mission approval authority. Additionally, PECC personnel are able to readily coordinate with aviation, fires, and other functional areas within the JOC. Keeping the mission approval authority at the CJTF level provides the combat aviation brigade (CAB) and aviation task force (ATF) aeromedical evacuation assets the ability to concentrate on gaining launch authority and mission execution without the concern of whether or not the mission meets the medical rules of

Coordination of patient from point of injury to medical treatment facility.

eligibility. The PECC also maintains the medical common operating picture for their area of operations and can task other types of evacuation platforms, such as ground ambulances, if conditions dictate via the 9-line MEDEVAC request.

The aeromedical evacuation flow above gives an example of how the PECC works in concert with the requesting ground unit, CAB medical operations cell (MOC), and all other stakeholders in the MEDEVAC system to streamline and execute the 9-line MEDEVAC request.

As the single-point manager for intra-theater MEDEVAC, the PECC possesses the ability to bridge the gap between evacuation platform capabilities and demands with the ever changing status of our medical treatment facilities. The PECC monitors all MTF bed statuses and evacuation platforms operational readiness rates to enable real-time status for optimal decision making resulting in the best possible patient outcomes. If an MTF is overwhelmed with patients, the PECC can dynamically redirect a mission to the most appropriate MTF. The PECC has the situational awareness to prioritize or combine patient transfer requests depending on patient condition. They synchronize the medical evacuation system to most effectively provide the patient with the right care by the most efficient means.

CONCLUSION

Codifying, manning, and training a PECC is essential as we continue to synchronize joint medical assets in order to ensure the best patient outcomes for our service members. Each service could have their own PECC for service specific operations with additional architecture for a joint PECC within joint task forces. The incorporation of the PECC into U.S. doctrine and organizations will ensure that the right patient receives the most appropriate care by the most expeditious means of evacuation. A properly staffed, trained, and integrated PECC will ensure that our MEDEVAC system is most effectively allocated.

CPT Anthony Leiding is currently serving as the Operations Officer at Medical Evacuation Proponency Directorate at Fort Rucker, AL. His previous assignments include Division Evacuation Officer, 1st Infantry Division (ID) and Forward Support Aeromedical Evacuation Platoon Leader, C Company 2-1st General Support Aviation Battalion, Fort Riley, Kansas. CPT Leiding has completed deployments to Iraq and Afghanistan both while assigned to the 1st ID. He has 7 years' service and is qualified in the UH-60.

Acronym Reference

AJP - Allied Joint Publication
ATF - aviation task force
C2 - command and control
CAB - combat aviation brigade
CJTF - combined joint task force
JOC - Joint Operations Center
MEDEVAC - medical evacuation
MOC - medical operations cell
MTF - medical Treatment Facility
NATO - North Atlantic Treaty Organization
PECC - Patient Evacuation Coordination Cell
U.S. - United States

MEDEVAC Support to Civilian Authorities

By LTC Paul R. Dueringer

Historically, aeromedical evacuation (AE) companies have collaborated with local and state partners to provide emergency augmentation and support to local communities through Military Assistance to Safety and Traffic (MAST) programs. MAST programs enabled AE companies to work with local authorities in the development of operational plans to augment civil and/or commercial emergency services with Army rotary wing AE rescue and emergency transport capabilities. Today, AE companies stand poised to leverage their traditional battlefield medical evacuation planning and treatment capabilities in order to saves lives and prevent human suffering as part of a larger Department of Defense (DoD) effort to provide a coordinated response to a broad spectrum of responses and capabilities under Defense Support of Civil Authorities (DSCA) and Humanitarian Assistance (HA) missions. While this article is too short to cover all aspects of aeromedical support, it will touch on the National Response Framework (NRF), mission responses, and potential aeromedical mission roles in support of domestic responses.

Defense Support of Civil Authorities responses can involve any or all of the following response partners: Non-Governmental Organizations, Private Organizations, local, tribal, state, and federal agencies. The varied nature of responses and responders requires a thorough understanding of both the NRF and the Incident Command System (ICS) to effectively and safely operate in the DSCA environment. The NRF helps emergency management practitioners, to include DoD planners, develop a better understanding of domestic incident response roles, responsibilities, and relationships in order for all agencies to respond more effectively and is critical in understanding how to train, plan, and employ AE assets in support of DSCA operations. Defense Support of Civil Authorities AE operations are challenging for military planners because these types of operations require a mindset that understands the AE unit may be operating in support of both military and civilian agencies as part of a larger effort, within a Unified Command (UC). It is important to note that the ICS UC structure allows multiple agencies to work together efficiently but does not affect the command authority, accountability, or responsibility of individual agencies. The Federal Emergency Management Agency provides free on-line training (http://training.fema.gov/IS/crslist.aspx) that can better assist units in training and preparing to support DSCA operations. These courses cover an array of emergency response topics and units can utilize these courses to develop a DSCA training plan that supports their respective preparedness requirements.

There has been a significant investment of resources and training in an effort to enhance the Army's wartime capability to provide rapid evacuation and enhance pre-hospital trauma care. Of particular importance to DSCA operations are the Army's flight paramedic and en route critical care initiatives. These capabilities directly translate to enhancing the operational effectiveness of AE units in supporting local, state, and federal authorities during an emergency or humanitarian response. Once the transition is completed, all Army flight medics will be nationally registered paramedics with critical care training equivalent to their civilian counterparts. This will improve the ability of AE units to integrate in and support DSCA operations and planning.

In addition, the Army National Guard (ARNG) is in the process of increasing the number of aircraft in AE companies from 12 to 15. Once complete, AE assets will reside and be able to respond in 50 states and four territories. Active Component (AC) planners and aviators need to be aware of this state response capability and understand that in accordance with the NRF principle of providing a tiered emergency response the ARNG is likely the "first line of military response" to most incidents. Therefore, AC aviation units supporting a response should make coordination with the affected state's Joint Force Headquarters and State Aviation Advisory Officer (SAAO) a top priority. The SAAO and his/her staff can play a critical role in de-conflicting operations, understanding air space requirements,

assessing logistical support requirements, and understanding how to integrate into the state's emergency plans and efforts. As always, communication and coordination with all agencies involved in an emergency response is critical. While efforts at addressing military to civilian communications are underway, it is best to plan on your military communications equipment not being fully compatible with civilian equipment. Therefore, extensive coordination and the use of Liaison Officers (LNO) will be required in order to facilitate safe aviation operations. Critical to supporting response efforts, the AE company must be capable of receiving missions from the E911 system (or relayed) so that normal procedures for mission and launch approval will be conducted in a timely manner. The LNO should be capable of assisting in establishing communications and ensuring response partners understand the capabilities provided by today's AE crews. Knowing how to "plug-in" matters and should be a top priority.

Tactically, DSCA AE support is not fundamentally different from providing wartime support. The unit needs to be proficient in the following three War Fighting Functions: Mission Command, Sustainment, and Protection and many of the same tactics, techniques, and procedures (TTP) directly translate to DSCA support requirements. AE units can provide support under immediate response, state response (Title 32 of the United States Code), or Federal Response (Title 10 of the United States Code). In order to gain a better understanding of responses, authorities and planning considerations, key leaders and planners can sign up for DoD focused DSCA training courses at http://www.arnorth.army.mil/dsca.

Perhaps the most recognizable AE mission role revolves around the point of injury response and evacuation of patients. However, this is just one role that planners and units need to be prepared to execute. AE units can play a critical part in various mission roles supporting a response. Provided they plan and train to be proficient in executing the mission, units can effectively manage risk. AE units can be called upon to support any or all of the following Emergency Support Functions (ESF): ESF #4 Firefighting; ESF #6 Mass Care, Emergency Assistance, Housing, and Human Services; ESF #8 Public Health and Medical Services; and ESF #9 Search and Rescue. Therefore, units should assess their requirements and roles in supporting the following mission roles:

- Emergency mass evacuation of special medical needs/ Special needs populations
- Movement of medical personnel
- Various rescues/extractions of patients (i.e. urban, mountain)
- Swift water/over water rescue operations
- Contagious/contaminated patient movement
- Delivery and handling of medical equipment and supplies
- Search and rescue operations
- Delivery of disaster relief supplies (i.e. food, water, fuel, and shelter)
- Wildfire fighting (water bucket) operations

The Key to an Effective Response is Threefold.

Individual Training and Education. Providing key leaders and planners training in DSCA operations and the NRF will ensure improved situational awareness and understanding of how the unit fits into the response, their role during various support missions, and the authorities they are operating under.

Train the Unit as you Fight.

Units need to develop tough realistic training that allow them to establish TTPs concerning mission approval, launch criteria, risk management measures and identifying any equipment or training shortfalls.

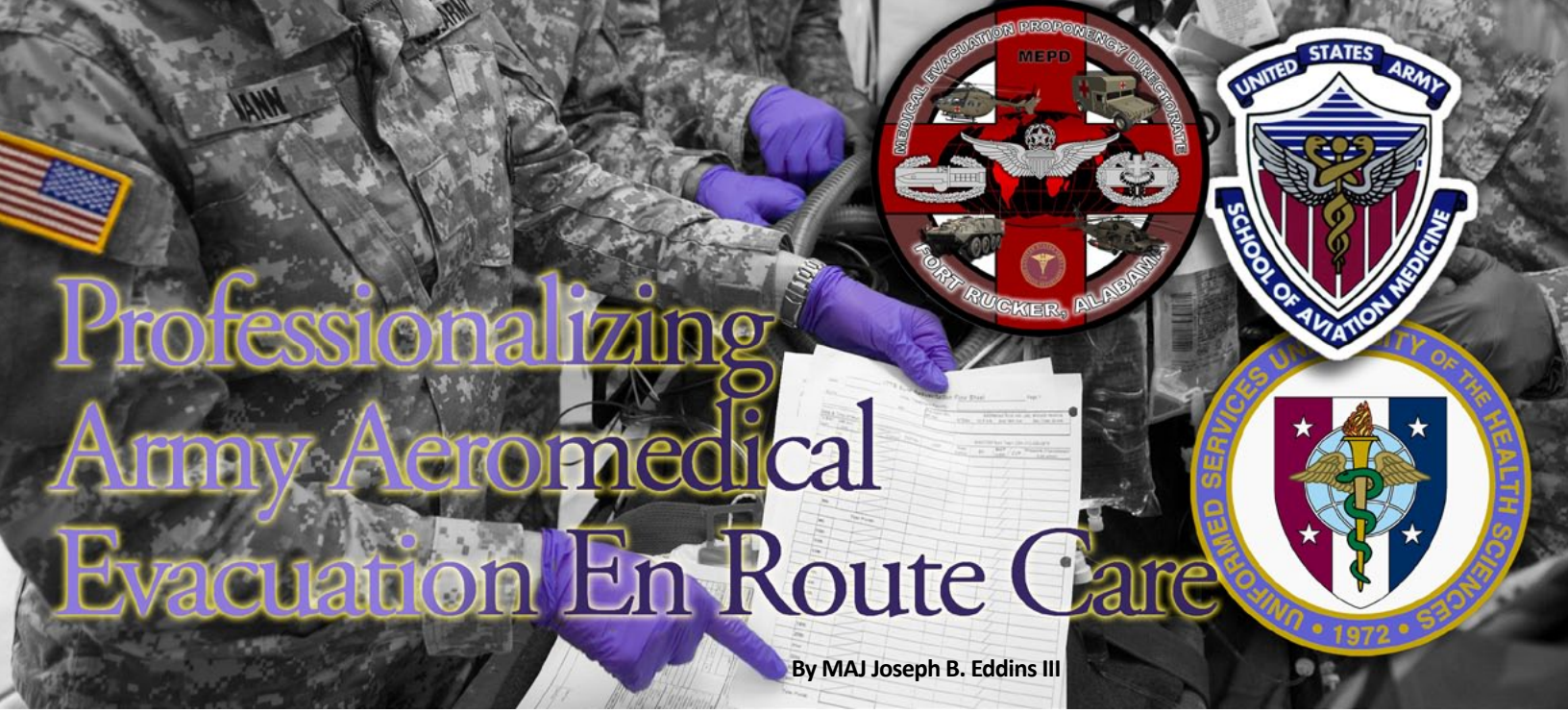
Collective Training with Response Partners.

In order to create effective working relationships units need to train with fellow response partners both civilian and DoD. Particularly critical for active component units and planners is the development of a working knowledge and relationship with their ARNG counterparts. Seeking combined response training opportunities should ensure Title 10 responders integrate into the response efforts more effectively and enhance efforts already begun by ARNG states and civilian response partners.

LTC Paul R. Dueringer is currently assigned to the Office of the Surgeon Army National Guard Bureau (ARNG) where he provides the Surgeon and Director ARNG analysis of aeromedical evacuation capabilities and emerging requirements and serves as the ARNG aeromedical evacuation subject matter expert on evacuation policy, force structure analysis, training, equipping, and readiness assessment. LTC Dureringer's previous assignments include Homeland Security Fellow, Department of Health and Human Services Asst Secretary for Preparedness and Response; G3 Air/Medical Plans, 30th Medical Command; S-3 and Executive Officer, 52nd Medical Battalion; Director of Research Support, United States Army Aeromedical Research Laboratory; S-3 Air, 1st Medical Brigade; Operations Officer, 507th Medical Company (AA); Aviation Safety Officer, Flatiron/Air Ambulance Detachment, Fort Rucker, AL; and Platoon Leader, 377th Medical Company (AA). He has deployed to Iraq and Afghanistan. LTC Dueringer has 26 years' service. He is qualified in the UH-1, UH-60, and C-12.

Acronym Reference

AE - aeromedical evacuation	**ICS** - Incident Command System
AC - Active Component	**MAST** - Military Assistance to Safety and Traffic
ARNG - Army National Guard	**NRF** - National Response Framework
DoD - Department of Defense	**SAAO** - State Aviation Advisory Officer
DSCA - Defense Support of Civil Authorities	**TTP** - tactics, techniques, and procedures
ESF - emergency support functions	**UC** - Unified Command



Professionalizing Army Aeromedical Evacuation En Route Care

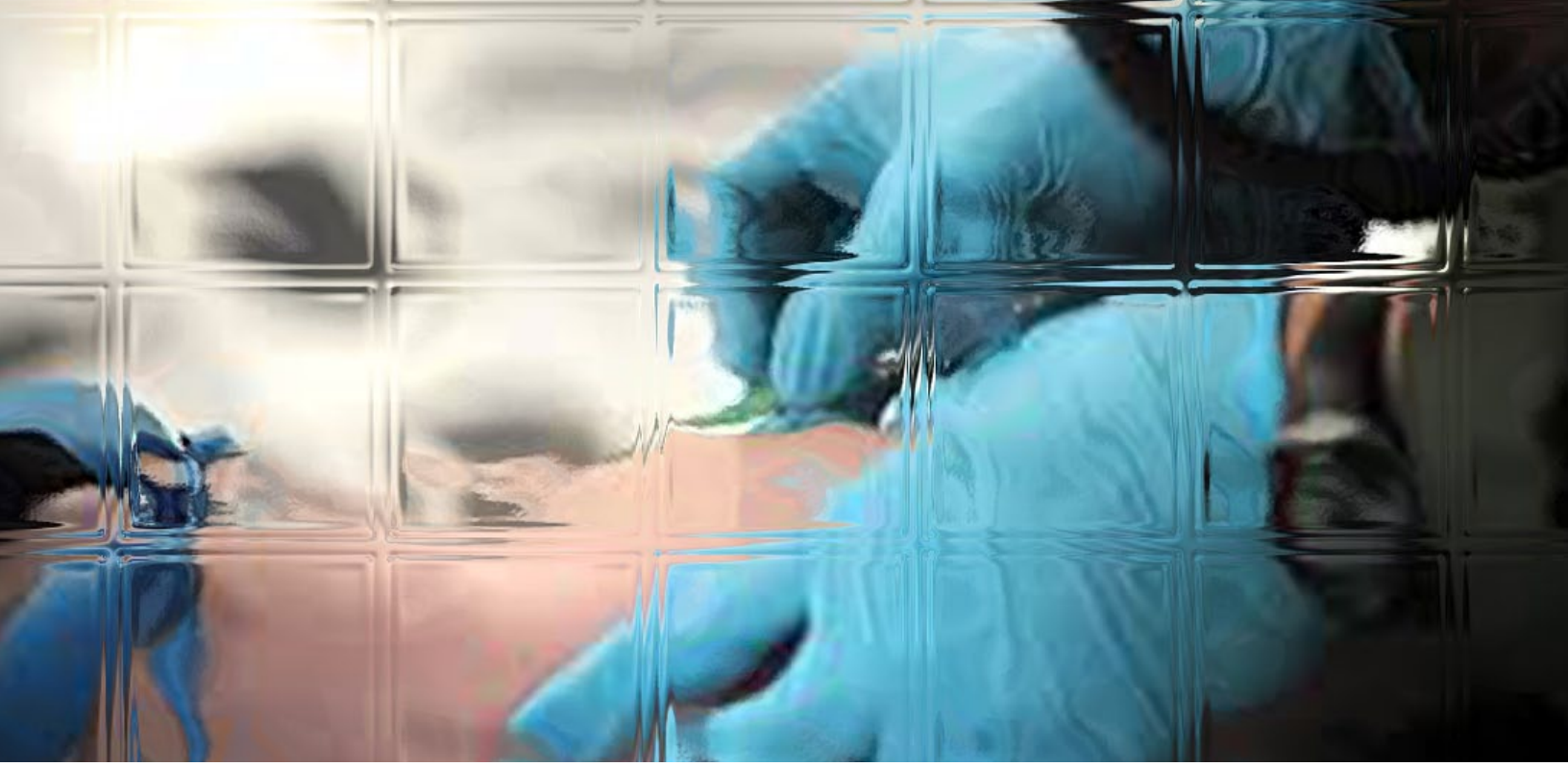
By MAJ Joseph B. Eddins III

Throughout the course of recent conflicts, the United States military has developed a robust battlefield trauma care system that is producing unprecedented battlefield injury survival rates. In fact, as many as 98% of casualties arriving alive to supporting combat hospitals are now expected to survive their injuries.[1] It would be easy to be satisfied with this survivability percentage and question concerns regarding the necessity for continued refinement and improvements within battlefield medicine. However, past and ongoing after action reviews, lessons learned, and research analyses are demonstrating the need for continued enhancements within the pre-hospital care environment. Emerging evidence demonstrates that 87% of battlefield deaths occur within the pre-hospital environment and nearly 25% of those deaths are potentially survivable if optimal care is provided on-scene and en route to the medical treatment facility.[1,2] Developing emergency medicine and trauma systems along with research driven improvements within the military pre-hospital care environment are targeting methods to improve the survival rate from potentially fatal wounds. One such enhancement is the "professionalization" of Army en route care with the goal of developing and sustaining aeromedical evacuation (AE) medical providers that meet or surpass the civilian model while utilizing an emergency medicine system standard of care.

Increasing skills and capability requirements for en route medical care provided on Army AE platforms has resulted in the development of the Army Critical Care Flight Paramedic Program, and a corresponding En Route Critical Care Nurse Program in support. Flight medic transition to flight paramedic with critical care skills training is expected to be complete by Fiscal Year 2017. This improved capability will be based on measurable skills in accordance with the National Registry of Emergency Medical Technician, Department of Transportation standard curriculum for Nationally Registered Paramedic (Army additional skill identifier F2) and the International Association of Flight Paramedics, Critical Care Paramedic Position Statement. In fact, as an additional skill identifier F2 sustainment requirement, all Army flight paramedics will complete and maintain Nationally Registered Paramedic Certification and receive tailored, recurring critical care skills training that will be provided independent of their unit training. The advanced medical skill set of the Army flight paramedic of 2015 will significantly improve aeromedical en route patient care, increase survivability during AE operations, and will enable application of emerging advancements in out-of-hospital emergency care. The new flight paramedic, with certified and credentialed skills reflective of their civilian counterparts, matches the aeromedical provider to the medical skills required to successfully manage the complex battle injury and clinically challenging patient evacuation.

All civilian paramedics work within a system of medical protocols that is provided to them by their respective medical facilities. These protocols satisfy state and/or national clinical practice guidelines (CPG) for delivery of pre-hospital medical care. However, the Department of the Army has no such standardized document or CPG established for the delivery of en route medical care during initial scene response or for inter-facility transfer, corresponding to tactical and in some cases operational intra-theater en route care. The Medical Evacuation Proponency Directorate is synchronizing efforts with the United States Army School of Aviation Medicine (USASAM) and the Academy of Health Sciences in the development of a Flight Paramedic Handbook. An Integrated Process Action Team (IPAT) has been established in order to develop and recommend appropriate courses of action to address the lifecycle sustainment of these standardized guidelines and appropriate emergency medicine oversight for all Army AE units.

The Flight Paramedic Handbook is a two book series containing standardized medical operating guidelines and procedures as well as operational guidelines for flight medicine duties, medical training, and proficiency sustainment of medical skills. The draft of Book 2 (Standard Medical Operating Guidelines) is complete and posted on



the USASAM Flight Medic homepage and the MEDEVAC Enterprise Portal. A review committee working group consisting of aeromedical and emergency medicine clinicians and subject matter experts is reviewing the draft. Upon completion, the working group is expected to formally approve the document making it the first, centrally developed, standard of care model for emergency medical care aboard Army AE platforms. Additionally, this manual will be incorporated into the Flight Paramedic Training Program, held at Joint Base San Antonio, and the Flight Medic Training Program conducted by USASAM at Fort Rucker. Upon completion of the review process, the handbook will be released to the Borden Institute* to be published as a member of the Textbooks of Military Medicine series.**

Historically, the development of unit aeromedical treatment protocols was left to the local unit medical director, typically a flight surgeon and/or aeromedical physician assistant with no residency training in emergency medicine (EM). Indeed, there is no Army requirement for an EM doctor or EM trained physician assistant to be assigned to any unit command hierarchy that is responsible for oversight of Army flight medics. With the creation of the critical care flight paramedic, and their advanced abilities in medicine compared to the basic 68W Health Care Specialist, standardization of the treatment procedures, protocols, and practices are now required to ensure all patients appropriately receive required care. These standardized medical operating guidelines and procedures must maintain relevancy and be reflective of continuous changes and updates within known and accepted emergency medicine pre-hospital CPG. The CPG, along with the hands-on skills and the knowledge that is required to perform them, are continuously changing and highly perishable. Unit medical directors must be provided the necessary tools to safely and effectively provide oversight, medical training, and management of the Aviation Medicine Program of the future air ambulance company. This was the genesis of the Flight Paramedic Handbook and the lifecycle and oversight IPAT. We are at the forefront of professionalizing Army en route care and it is important to remember that the coming years are a fundamental period for how we will train and prepare AE medical providers.

MAJ Joseph B. Eddins III is an Aeromedical Physician Assistant (APA)-Certified with a Masters Degree in Physician Assistant Studies. MAJ Eddins enlisted in November 1997 as 91D Surgical Technician with a secondary Military Occupational Specialty of 91B Combat Medic. He was commissioned in May 2003 as a Physician Assistant (PA) after completing the Army Medical Department Center and School Interservice Physician Assistant Program. MAJ Eddins is presently assigned to the Injury Biomechanics Branch at the United States Army Aviation Research Laboratory, Fort Rucker, AL. His previous assignments include Aeromedical Capability Development and Clinical Consultant for the Medical Evacuation Proponency Directorate at Fort Rucker, AL; Brigade APA, 3rd Combat Aviation Brigade; PA, 1-9th Field Artillery Regiment, 3rd Infantry Division; and PA, 1-21st Infantry Regiment, 25th Infantry Division. MAJ Eddins has four deployments with a total of 42 months in theater. He has 17 years' service.

* The Borden Institute is an entity of the Office of the Surgeon General. It is intended to foster and promote excellence in military academic medicine through the development and publication of military medical scholarship.

** Textbooks of Military Medicine is a series of texts within the Borden Institute constituting a comprehensive treatise on the art and science of military medicine.

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CABIN SPACE STUDY

Aeromedical Evacuation En Route Critical Care Validation Study

By SFC George Hildebrandt, USA, Ret.

The design of emergency vehicles has evolved over the years with the use of modeling and simulation. The Army aeromedical evacuation (AE) platforms are designed on dedicated airframes intended for the evacuation and treatment of casualties. The current platform is the UH-60. It has two variations of medical interiors to load and secure litters for transport; the HH-60 medical suite interior has motorized litter pans enabling the flight medic to adjust the height of the litter and the UH-60 AE platform uses the Interim Medical Mission Support System (IMMSS) (a rigid litter system). The United States Army Aeromedical Research Laboratory (USAARL) conducted the last definitive study to define the space required to perform medical care en route within the confines of the UH-60 platform in 1986, noting that no less than 18 inches of vertical space should be available between litter pans. The Medical Evacuation Proponency Directorate in coordination with USAARL initiated a new study (beginning in June 2013) to determine the minimum vertical space requirements utilizing the increased skills and capabilities of the Army's new Critical Care Flight Paramedic (CCFP) (68W Health Care Specialist with Additional Skill Identifier F2) to perform complex medical tasks he would be expected to perform during transport of a patient.

CONCEPT

The Aeromedical Evacuation En Route Critical Care Validation Study (AE2C2VS) was designed to identify treatment capability gaps due to suspected equipment and material deficiencies created by the addition of the new flight paramedic skills to the current air ambulance fleet. This strategy included tasks and scenarios developed in conjunction with approved protocols for rendering en route critical care to patients. The study was conducted using both the HH-60 (with integrated medical interior) and UH-60 (IMMSS installed) air ambulance aircraft. The study was designed to have a flight medic provide patient care to a victim with multiple types of injuries and care requirements in sequence to ensure space was evaluated as treatment would be performed in combat. The team did not want to evaluate any single task as it is applied to space but to evaluate the space required to continuously treat a patient with multiple injuries as seen in the current and future theater of operations.

OBJECTIVE

The objective of the study was to evaluate the adequacy of space available for care providers to perform advanced medical treatment scenarios on patients in existing medical evacuation aircraft, i.e., HH-60 and UH-60. Specifically the study provided:

- Interactive 3D imaging and mapping. Flight medics wore motion tracking suits that measured every movement of 11 points on their bodies. This allowed the team to create equivalent sized and shaped avatars of each medic. Those avatars were placed into a 3D gaming program to show movement in the platform they were working in at the time. Then the system would measure the space and location of the medic relative to the patient and the litter system.
- Video documentation of all tasks and scenarios.
- Identification of space parameters used per medical task for each scenario.
- A list of medical tasks that could be

successfully accomplished in confines of the HH-60 and UH-60.

- A list of medical tasks unsuccessfully completed in each aircraft because of vertical space constraints.
- The vertical litter clearance required to accomplish each unsuccessfully completed task.
- Recommended space dimensions required for new medical tasks performed by the CCFP.

The study was able to accomplish all the above objectives, and will provide the capability requirements developer and capability materiel developer the information required to provide the best care for the wounded warrior.

METHODOLOGY

Three test participants (TP) were selected for the study (TPs A, B, and C1). A fourth TP (C2) was selected as a backup to one of the TPs as he was unavailable due to other

commitments for all testing events. All TPs were experienced flight medics, and their proficiency to perform the medical tasks, in accordance with current CCFP standards, was validated by a medical validator (MV). The MV, a qualified U.S. Army aeromedical physician assistant, assessed all medical tasks performed by the TPs during testing to ensure that they performed at the CCFP skill set level. Test participants of various representative heights were selected to analyze space requirements - the shortest TP was 4'11" and the tallest 6'5".

Each of the TPs performed a medical scenario that incorporated 43 medical tasks to treat a trauma patient. That medical scenario was performed in multiple litter configurations and platform designs. The patient had no initial treatment and all treatment was completed on the aircraft in a single litter position.

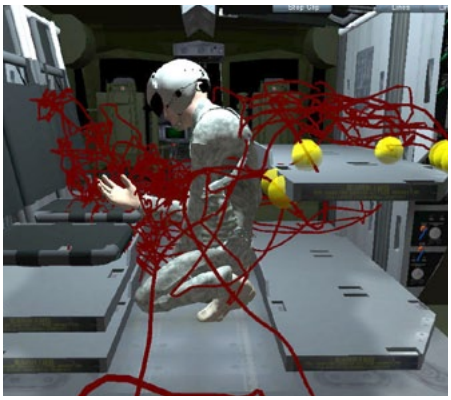
CONCLUSIONS

Currently, the AE2C2VS principal investigator and the USAARL team are evaluating test data to draw scientific conclusions to complete the final report. The AE2C2VS Data Analysis Report does not represent the findings of the principal investigator but the conclusions drawn from the data gathered during the study using the video documentation, motion tracking suits, and medical task performance measures.

The scenario with no litter system and no space constraints (50"+ vertical clearance and 360 degree access) had the best results regarding completion of medical tasks by all three TPs. This was expected and was completed to show that in the aircraft, these tasks could be accomplished given adequate amount of access and clearance related to the patient. Scenarios utilizing fixed litter systems (systems that did not allow for the litter to be moved) had lower task accomplishment rates. This was due to the vertical space available and not to horizontal space considerations. This applies to both the UH-60 and HH-60 litter systems. The IMMSS (rigid system) allows for 26 inches of space on the upper litter pan and 24 inches of space on the lower litter pan (floor). The HH60 (adjustable) litters were placed in positions allowing 24 inches and 40 inches of vertical clearance. The difference was the 24 inches was raised 12 inches from the floor to see if the height from the floor affected the medic's ability to treat the patient and perform the medical tasks to standard. The scenario with the litter system giving 24 inches of vertical clearance had the worst performance, and the lowest percentage of tasks completed to standard by all three TPs. 24 inches was accessed from the floor and also from 12 inches above the floor. More space was required by the medics to appropriately treat life threatening injuries and perform tasks such as: "Insert a chest tube", "Treat a gunshot wound with exit wound", or "Place pressure dressing on lower extremity"

The initial observation of the tests showed that medics operating in less than 26 inches of space had a higher failure rate than those working in 35 inches of space. When the litter system was placed in a position to allow for 35 inches of vertical clearance, the CCFP was able to accomplish all but two of the identified tasks. The two tasks that were systemically a problem for all three TPs were Perform Chest Compressions for Cardio Pulmonary Resuscitation and Utilize the Special Medical Equipment Evacuation Device.

As testing was completed, external agencies were contacted to assist with solving the issues pertaining to these two tasks. Possible solutions being reviewed to accomplish both of these tasks include automation for chest compressions that does not require the medic to lean over the patient, and an equipment securing device that can disperse equipment around the



litter and not require the equipment to be placed directly above the patient. Both of these thoughts will be reviewed by the appropriate materiel developers.

Follow on evaluations to AE2C2VS will be completed in August/September 2014 to establish the minimum amount of space required to accomplish the failed tasks. Based on the data gathered, the future platforms will acknowledge the amount of space needed to perform complete patient care. It will enable commanders to make informed decisions on how many patients can be loaded into the current platforms in different configurations and receive appropriate patient care.

It is recognized that the AE mission is to support the combat commander, and to ensure the injured Soldier is quickly entered into the medical care arena. If the need to conduct mass casualty evacuation outweighs the need to provide critical care to one patient, the commander will understand what the different configurations offer and/or do not offer in reference to individual treatment.

The information and data learned from this study will be used to update current AE platforms, but to also identify needs and requirements for future platforms.

SFC George W. Hildebrandt, USA, Ret. is a retired Army Combat Medic with 20 years experience. Mr. Hlidebrandt served as a medic with 1st Battalion (Mechanized) 5th Infantry Regiment in the Republic of Korea; 1st Battalion, 34th Armor Regiment, Fort Riley, KS; and at the Weed Army Community Hospital Emergency at Fort Irwin, CA. During the last 13 years of his career, he served as a Flight Medic where he served in U.S. Army Air Ambulance Detachment, 2916 Aviation Battalion, Ft. Irwin, CA; 50th Medical Company, Ft. Campbell, KY; Instructor/Non-commissioned Officer-in-Charge (NCOIC) Flight Medic Course, NCOIC Joint En Route Care Course, NCOIC Medical Evacuation Proponency Directorate (MEPD), and NCOIC Critical Care Flight Paramedic Course, Fort Rucker, AL. Mr. Hildebrandt has three deployments and has logged 750 hours of combat time in the UH-60. He currently works as a Subject Matter Expert and Senior Analyst to the MEPD.

Acronym Reference

AE - aeromedical evacuation
AE2C2VS - Aeromedical Evacuation En Route Critical Care Validation Study
CCFP - critical care flight paramedic
IMMSS - interim medical mission support system
MV - medical validator
TP - test participation
USAARL - United States Army Aeromedical Research laboratory

BY LTC Mark Robinson, USA, Ret.

Army Aviation is at a crossroads; one that will determine our future capabilities for the next fifty, sixty, or perhaps even seventy years. After every major conflict, our nation has historically made the distinct and conscious decision to draw down military forces in what is known as reaping in the Peace Dividends. Defense spending is curtailed, often significantly. Investment in our future military is affected, reduced, or redirected. At a time of huge government deficit spending, it is difficult to argue otherwise.

But, we are also at another crossroads; one of revolutionary technological evolution, particularly in the area of advanced vertical lift capabilities. Innovative new concepts can enable vertical lift capable aircraft to fly at twice the speed, at significantly further distances, and to carry much greater loads than conventional helicopters in use by our military today. This could completely revolutionize our ability to fight future conflicts, and indeed enable commanders with capabilities and options scarcely imaginable today.

The aeromedical evacuation (AE) mission, in particular, stands to benefit greatly from advances in speed, range, and carrying capacity. In 2009, Secretary of Defense Robert Gates mandated that all urgent and urgent surgical patients be evacuated to the first surgical intervention within one hour. Speed is essential. Survival rates have steadily increased to well above 90 percent for our wounded.

The Secretary of Defense one-hour mandate necessitates that current AE support relies on planning for coverage at set distances, limited by current helicopter technology. Planners today use a 40 nautical mile (NM) radius for AE coverage limits (15 minutes for launch, 20 minutes at 120 knots to get there, 5 minutes to load, and 20 minutes to return at 120 knots). This often necessitates split-based operations, further stressing maintenance, command and control, security, and logistical support.

> *"I will repeat.....the pledge I made to myself, to Congress and to countless moms, dads, husbands, and wives. Other than winning the wars we are in, my highest priority is providing the best possible care for those who are wounded in combat."*
> *- Robert M. Gates*

Emerging future vertical lift (FVL) technologies, however, promise to offer platforms that can fly at speeds much greater than the 120 knots of today. In fact, several prototype aircraft have already exceeded twice that speed, and yet can still hover on site. Concepts include compound and tilt-rotor designs that perform at magnitudes of greater speed, over longer distances, and able to carry more payload. These capabilities will enable AE one-hour coverage for distances of perhaps up to 100 NM or further while still being able to land at unimproved locations or conduct hoist extractions.

Increased ranges facilitate the further evacuation of patients to Role 3 Medical Treatment Facilities* or above, while significantly reducing the need for intermediate tail-to-tail transfers (and all the complex logistical and security support necessary for each stop). Commanders would have substantially greater option flexibility in deploying medical assets throughout the area of operations while still meeting the one-hour mandate.

In 2009, the FVL working group conducted a Capabilities Based Assessment to identify and analyze potential gaps in Joint force vertical lift capabilities. Gaps were identified in speed, range, and carrying capacity, rated as high risks across the Joint aviation force. The working group focused on initial capabilities required to mitigate or eliminate the gaps, resulting in an April 2013

* Role 3 Medical Treatment Facility offers theatre of operations capability encompassing primary and specialist surgery, advanced and specialist diagnostic capabilities including CT scanning and X-ray through to major medical nursing specialities.

Joint Requirements Oversight Council approved Initial Capabilities Document.

Industry has already taken the initiative by making massive investments in advanced FVL capabilities, targeting both commercial and military markets. Capital investment, by visionary industrial leaders, is now bearing tangible results. Industry formed a Vertical Lift Consortium to effectively share and develop vertical lift technologies.

In concert with the FVL effort, the Army is sponsoring a Joint Multi-Role (JMR) Technology Demonstrator Program to produce two flyable demonstrator aircraft by FY17, an effort only possible through venture partnering by industry. Bell, Sikorsky-Boeing, AVX, and Karem were selected to further develop JMR concepts that will substantially reduce technological risks in pursuing FVL acquisition.

The challenges are daunting. It takes time and money to develop such technologies into usable, viable, and available systems. To have advanced vertical lift aircraft in our fleets beginning by 2034, we would have to aggressively pursue such a strategy now. FVL technologies are complex and accordingly expensive. Industry would have to adjust and adapt to persistently build aircraft at a sustained rate. Four thousand aircraft cannot be built overnight.

The Crossroads – We are at a decision point. Investments in our future force can either be made or ignored. On one hand, we can continue to apply resources to our aging fleets of UH-60, AH-64, CH-47, and Joint aircraft; continue to repair and refurbish systems through costly Service Life Extension Programs on a recurring basis; and continue to have basically the same capabilities we have now and into the foreseeable future while our adversaries continue to evolve systems, increase capabilities, and refine lethal threats to put our soldiers at even further risk. Without FVL, we will be flying Apaches, Black Hawks, and Chinooks for 100 years.

Or, we can capitalize on emerging advanced technologies to build a formidable fleet for the future. New technologies, easily within reach, can revolutionize the way vertical lift aircraft support our missions and lead to effective and solid doctrine based on new capabilities. This will provide a strong and viable force well into the future. Within the AE mission scope in particular, many lives could be saved that might otherwise be lost.

LTC Mark Robinson, USA, Ret. Is currently assigned as the Futures Chief for the Medical Evacuation Proponency Directorate, Fort Rucker, AL. LTC Robinson received a direct commission from Chief Warrant Officer 3 in November 1982 while serving with the 7th Aviation Battalion, Fort Ord, California. Follow-on assignments included Platoon Leader and Operations Officer, D/1-14th Aviation Regiment, Fort Rucker, AL; Commander, C/1-82nd Combat Aviation Brigade and Assistant S-3 and S-2, 1-82nd Combat Aviation Brigade, Fort Bragg, NC; Aviation Resource Management Survey Team Leader and Aviation Staff Officer at Forces Command Headquarters, Fort McPherson, GA; Executive Officer, 1-10th Aviation Battalion and 1-110th Aviation Battalion, Fort Rucker, AL; and Accident Investigator and Director of Training, United States Army Combat Readiness/Safety Center, Fort Rucker, AL. Since retiring, LTC Robinson has worked in a variety of programs as both a contractor and government employee developing unmanned aircraft systems, air-ground missile systems, and multi-role aircraft. He has deployed for Operations Just Cause, Desert Shield, and Desert Storm. LTC Robinson has completed 30 years service. He is qualified in the AH-1G, AH-1S, AH-1S (Pilot Night Vision System), and AH-64A aircraft.

Acronym Reference

FVL - future vertical lift
JMR - joint multi-role
AE - aeromedical evacuation
NM - nautical miles

Medical Reasearch to Support the Future of Patient Evacuation

Historical Improvements in En Route Care Since 2001

By LtCol Jennifer Hatzfeld, PhD, RN
and Sylvain Cardin, PhD

The care we provide to combat casualties has revolutionized since the start of operations in Iraq and Afghanistan. There have been numerous changes, but the development of a coordinated Joint Trauma System, the use of tourniquets and specialized dressings to stop active bleeding, and recommendations on the use of balanced blood products and initial damage control surgery have had a tremendous impact. The most important outcome from these changes is the lowest fatality rate for combat casualties, compared to all prior conflicts. A second, but just as significant outcome has been a dramatic improvement in the way patients are transported throughout the medical system from the moment of injury.

Today, the Joint Trauma System gathers patient data from all combat casualties that are admitted to a Role 3 facility (combat support hospital), and provides feedback on the medical status and care that was provided throughout the medical system. An in-theater Patient Evacuation Coordination Cell was created to make sure that the right asset is sent to transport a casualty based on clinical needs—something called "intelligent tasking." The required training and expertise of the flight medics that provide lifesaving care to patients during the transport has increased to national certification as a paramedic, and dedicated critical care nurses are now assigned to specific aeromedical evacuation missions to provide intensive care unit level care to patients just released from surgery and often very unstable and still on a ventilator. Further back in the transport system, specialized burn teams and lung teams transport critically injured patients that require a dedicated team to keep them alive during the flight.

It is easy to focus on these successes and on maintaining the current improvements in the system. However, both the operational setting and technology continue to evolve, which means that further changes to the patient transport policies and procedures will need to be made. To support these decisions, medical research can play an important role to provide evidence on how en route care can be improved, and to further develop safe and effective equipment for use in the transport environment.

Providing casualty care to critically injured patients may be required for an extended period of time while patients await medical transport in future conflicts. Photo by U.S. Army Sgt. Harley Jelis, National Guard.

Anticipated Changes to Operational Settings

Anticipated changes in future military operations include the potential for engagement in the Pacific region, which make it difficult to pre-position medical assets or provide quick medical response. Operations in Africa, with limited medical and logistical infrastructure, are also a potential challenge to safely transport injured patients. Both of these geographic locations, while markedly different environments, have a similar challenge of distance—which translates to an anticipated delay in initial evacuation and longer transport times. The goal of getting a casualty to surgical care within an hour (sometimes referred to as the "The Golden Hour") will likely be impossible to achieve, at least in the initial phases of any conflict. Understanding the body's response to injury and the impact of delayed care can help medical planners and clinicians modify procedures and equipment to mitigate these problems. Without this research evidence, it isn't completely clear what

should be done to provide the best possible outcomes despite these known limitations. This knowledge can also be translated into training and clinical guidelines to provide essential procedures or treatments at the point of injury, even before the patient arrives at a dedicated medical facility. Additionally, technology and medical devices can be further developed and tested to provide critical lifesaving care prior to transport, while the patient waits to be transported. This knowledge and new products are an important contribution to a continuously evolving medical evacuation system, while maintaining the highest levels of care.

Research Needs to Support Policy/ Technology Changes

Just as the military operations continue to evolve, technology continues to change. Unmanned vehicles provide a compelling platform that could be used to transport patients at some point in the future when medical evacuation assets are unavailable or threat; degraded environment; chemical, biological, radiological, nuclear, explosive weapons; or weather prohibits medical evacuation assets from getting to the patient. The K-Max unmanned aircraft logistics platform used by the United States Marine Corps in Afghanistan is already in use to transport supplies to outlying locations. While current technology doesn't support the safe transport of medical patients in unmanned systems, it is important to fully understand the limitations of transport platforms, and identify the safety limits and develop clear guidelines for safe patient transport. Medical research, accomplished today, can provide evidence to support these decisions and guidelines in the next few years to ensure a safe and justifiable use of unmanned transport for casualty evacuation.

Similarly, closed-loop medical systems provide the ability to automatically monitor and adjust ventilation, fluid administration, and sedation for patients without input from the medic or nurse. This is particularly helpful in the transport environment, as it safely manages these important functions while the clinician focuses on other tasks or is unable to reach the equipment to adjust the settings. In the future, these closed-loop systems could also provide an additional capability to care for medical patients during unmanned transport. Some of these devices are already approved by the Food and Drug Administration, while others are going through more clinical research to make sure they work as intended and are safe for the patient. However, even more research is needed to evaluate the use of multiple systems on one patient (since each system could potentially influence the other) and to determine when it is appropriate to use these systems.

Transporting Intensive Care Unit (ICU) level care patients in medical evacuation. Photo by Senior Airman Sandra Walch, U.S. Air force.

Telemedicine is another emerging capability, which would not only include the ability to automatically document medical care provided during transport and transmit the patient's status to the receiving medical facility before arriving, but also a way for the flight medic or nurse to seamlessly reach out to a physician to ask a question or request input on how to best manage a difficult patient condition. At this time, there are many technological and policy challenges that will need to be addressed before this becomes operationally feasible, but research to understand the impact of telemedicine on patient outcomes is important information to support the need for changes to policy and the use of resources to continue advanced development efforts. Additionally, research findings can help determine the appropriate amount of clinical data that should be transmitted and who would best monitor the patient status at the receiving facility.

Research Facilitates Change

Traditionally, many of the decisions about how to modify and improve the medical evacuation system have been after identifying specific problems that have occurred in the past. The successes of current combat casualty care are a testament to the hard work and dedication of these individuals that have implemented these changes despite numerous challenges and barriers. Medical research can be an important partner to support the need for these changes before problems occur. And, by anticipating future capability gaps, research can also provide strong evidence for new policies, procedures, and clinical guidelines. Change is one of the few certainties of life, and making sure that we are prepared for future challenges is a critical need in medical evacuation.

Lt Col Jennifer Hatzfeld is a research scientist in the U.S. Air Force. She entered the Air Force Nurse Corps as a clinical nurse in 1995 and completed her PhD in Nursing in 2009. Since then, she served as the director of clinical research at the Travis Air Force Base Clinical Investigation Facility, and deployed twice to Afghanistan as a member of the Joint Combat Casualty Research Team. Lt Col Hatzfeld is currently the manager of the Joint En Route Care Research Portfolio within the Defense Medical Research and Development Program at Fort Detrick, Maryland.

Dr Sylvain Cardin is a physiologist currently managing the Forward Surgical and Intensive Critical Care portfolio for the Defense Medical Research and Development Program and the Field Medicine Portfolio for the Medical Research and Materiel Command at Fort Detrick, Maryland. Prior to his present appointment he managed the Human performance and Optimization Portfolio for The Telemedicine and Advanced Technology Research Center at Fort Detrick, Maryland.

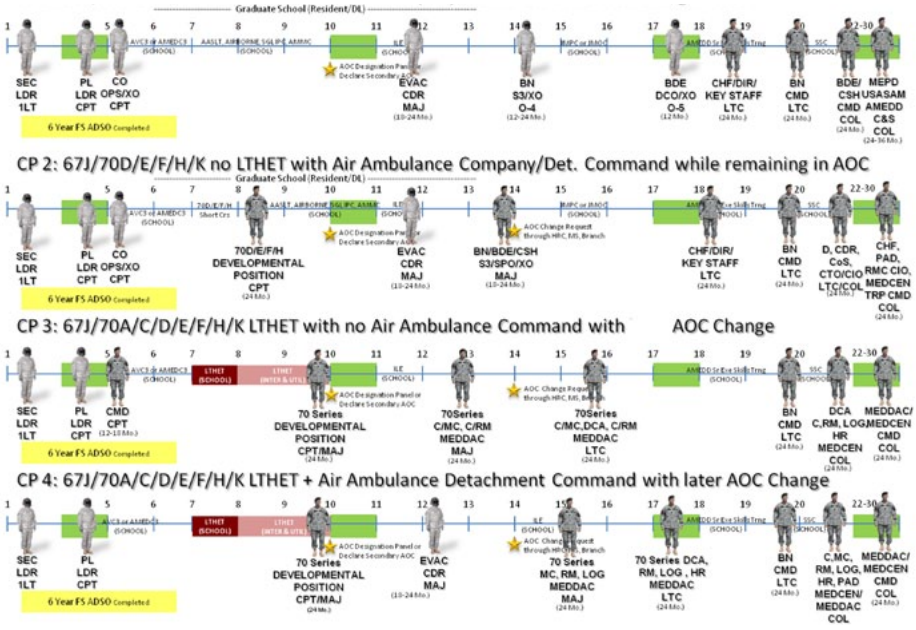
The Army MEDEVAC Officer

By MAJ (P) Nate C. Forrester

The 67J (Aeromedical Evacuation Officer) is one of the most diverse area of concentrations (AOC) within the Medical Service Corps (MSC). There are 23 separate AOCs within the MSC Branch; itself considered one of the most complex branches within the Army Medical Department (AMEDD) or even the Army. The reason for such diversity is that there is not one single definition of what a successful career model looks like for a 67J officer. What each officer, whether you are a 67J or a 15 series Aviation Branch Officer, needs to consider first in planning their career is what their definition of success looks like to them. For many, it may be battalion command. For others, it might be an aeromedical evacuation (AE) command, and for some, it could be just gaining a graduate degree in Health Care Management. Once the officer figures out what his goal is, there will be a career model that supports that path.

The center of gravity, and in many cases, the pinnacle job for 67J officers is the air ambulance command. Some might say that there is no greater duty or mission that emphasizes and focuses primarily on the evacuation of the critically injured or sick from the battlefield. In order to provide a basic guideline for the 67J, there are four basic career models that officers can use to plan and time their career. Air ambulance command is built into three of these career models. In conjunction with this basic career model, it is important for officers to develop a personalized 20 year career map. Forcing themselves to plot and write down when they will be eligible for promotions, professional military education or civilian education, commands, secondary and tertiary assignment options, and personal family highlights will better enable the officer to plan out, time, and communicate their goals to their career mentors. Department of the Army Pamphlet 600-4 is another useful guide that provides insight into each AMEDD Branch and AOC at each grade and can be used to assist officers in developing their own personal career map.

At the core of every AE pilot is an AMEDD Officer who is expected to have the understanding and expertise in Army health care and the systems that make Army health care successful. Over the past several decades and generations of military health care providers, we have seen an exponential growth and improvement in how patients are evacuated and treated. Coalition forces, and U.S. military alike are very much aware of the "15 minute launch" of aeromedical evacuation platforms and the generation of the "Golden-hour" standard. This has become the norm and knowledge of this and other Army medical systems, equipment, doctrine, and technology is what is expected from the 67J. To assist in making the AMEDD Officer successful, a series of graduate level studies and fellowships are provided each year, called Long Term Health Education and Training, to invest back into our officers. Over 183 school seats are available to 67J officers from Masters



Degrees in Healthcare Administration, Defense Comptroller, Medical Logistics, Emergency Management, Acquisition, Homeland Security, to PhD programs, internships, and fellowships to make the AMEDD Officer more successful at their job and career field. Once these officers complete their degree or internship program, they are then sent back out into the field and are now more diverse, highly trained, and are able to manage healthcare systems at the command level.

Aeromedical Evacuation Officers command as a major. There are multiple reasons why this job is designated for a more senior and "seasoned" officer, but it is primarily due to the complexity of the mission and the requirement to have a vast understanding of both Aviation and Army MEDEVAC doctrine. Because of this, an air ambulance command is considered to be the officer's key and developmental (KD) assignment as a major. In many instances, 67Js have demonstrated excellence and a high degree of aviation competency in the brigade's core mission essential task list and are further assigned into battalion or brigade KD positions as an executive officer or operations officer. Medical evacuation commanders are centrally boarded by senior MEDEVAC officers and only the best of those who are eligible are selected to command. Experience, pilot-in-command and total flight time, performance history, and other evaluation criteria are considered when boarding officers for command. This is important to note, because we realize that the aviation task force commander is the ultimate decision maker within that organization on slating their field grade officers. This board process has been successful because it is understood that the officers that are slated to command in the organization will have attended an AE Pre-Command Course, will have the doctrinal education and understanding, pilot in command experience, and be ready to command when they arrive.

The process for selecting MSC Officers to attend Initial Entry Rotary Wing (IERW) training is also a centralized board process that focuses on bringing in only the best officers within the Branch. Each year, about 25 MSC branched cadets or officers are selected in accordance with the minimum criteria outlined in Army Regulation 611-110 (Selection and Training of Army Aviation Officers). Because of the nature of the MEDEVAC mission and the complexity of the organizations in which they will operate, it is important that critical thinking, physically fit, and high performing cadets and officers are selected for training and subsequent assignment as a leader within an air ambulance company. Over the past several years while attending IERW, there has been a 98% completion rate of all MSC officers and in many instances, several have been the honor graduate and class leader.

The most successful 67J officers are not only the ones who are considered experts in their field or even those who have commanded an air ambulance company in combat, but those who have a successful record of their manner of performance in whatever job or position they find themselves in. This not only applies to the 67J, but also to every branch and functional area in the Army. Officers will be evaluated based on their performance, not how much flight time they have accrued over the past year. With the implementation of the new Officer Evaluation Report, not only will the MSC officer be evaluated on what he has achieved over the rating period, but his character and what he has left behind in his wake will also be evaluated. Developing a short or long term relationship with a senior officer or mentor is another important part of developing a career map and placing challenges or opportunities into perspective. If you are not being sought after or developed professionally, seek someone out and have a desire for mentorship and counseling.

MAJ (P) Nate C. Forrester is presently assigned as the Executive Officer to the Deputy Medical Command Commander for Operations. MAJ (P) Forrester's previous key assignments include 67J Aeromedical Evacuation Assignments Officer; Aeromedical Evacuation Company Commander, 2-227th General Support Aviation Battalion, 1st Air Cavalry Brigade (ACB), Fort Hood, TX; Operations Officer and Headquarters and Headquarters Company Commander, 7-101st Aviation Battalion, Fort Campbell, KY; Commander, 568th Ground Ambulance Company; and Operations Officer, 377th Medical Company in Camp Humphreys, Korea. He has three operational deployments with the 159th Combat Aviation Brigade and the 1st ACB to Operation Iraqi Freedom and Operation Enduring Freedom. MAJ (P) Forrester has 16 years' service and is qualified in the UH-1H and UH-60A/L.

Acronym Reference

67J - Aeromedical Evacuation Officer	**IERW** - Initial Entry Rotary Wing
AE - aeromedical evacuation	**KD** - key and developmental
AMEDD - Army Medical Department	**MSC** - Medical Service Corps
AOC - area of concern	**MEDEVAC** - medical evacuation

TO ARM ... ... ÖR NOT TO ARM?

An Examination of the U.S. Army's Aeromedical Evacuation Procedures Through a Professional Lens

By LTC J. Ross Yastrzemsky

"A Soldier in the distance shouts, 'I need a medic! Medic!' A few minutes later, another Soldier yells out [Specialist] Clark's status: 'We got a triple amputee, still conscious.' The Soldiers put Clark on a stretcher and carried him toward a flat piece of farmland for the rescue helicopters that they assumed would arrive within minutes. LTC Mike Katona, Clark's commanding officer, tells Yon he's confident that the young Soldier will survive. 'He's doing good; he's gonna make it,' Katona says. 'He's got three good tourniquets on.' For now, Clark is conscious and talking, despite his wounds. He lifts his head to complain about the pain. 'It hurts,' he says, his voice wavering. 'I need something, man. I need something.' As the wait drags on, Katona grows increasingly frustrated by the long delay. 'These fricking birds can't get here fast enough,' the commander tells his radioman. 'Hey, what time did you make that call?' 'It's been over 30 minutes, sir,' the Soldier replies. The helicopter finally landed, 47 minutes after the improvised explosive device blast. It took 12 minutes to pack Clark inside and fly him to the Kandahar Airfield, and then several more minutes to rush him to its hospital. There, he died on the operating table. Thousands of other troops have survived similar wounds, and Christina Clark says that her husband should have been one of them. 'It just eats me up,' she says" (Dreazen 2012).

The above story has sparked much controversy on Capitol Hill recently. The actual events occurred in the Fall of 2011 while Michael Yon, a former Green Beret turned writer and photographer, was embedded as a news reporter within the unit. His notoriety enabled him to highlight potential issues with the United States (U.S.) Army's aeromedical evacuation (AE) procedures. As a result, former U.S. Representative, Todd Akin (R-MO), became the chief sponsor of legislation demanding a report from the Defense Department to examine its services and our allies' medical evacuation procedures and capabilities in combat zones (Maze 2012).

In a letter addressed to President Obama and former Secretary of Defense Leon Panetta, Yon states, "The kernel of the matter is that under the Geneva Conventions, when our Army "Dustoff" MEDEVAC helicopters wear Red Crosses, they are forbidden to be armed. If they do not wear Red Crosses, they can be armed...In Afghanistan, a Red Cross means 'Shoot me; I'm defenseless'" (Yon 2012). Despite Yon's seemingly practical recommendations, he fails to interpret the rules of warfare correctly. Even worse, he fails to acknowledge the strategic impacts of the U.S. departure from these rules.

Background- The Tactical Problem

The wars in Iraq and Afghanistan have pitted us against an enemy that doesn't play fairly by the standard rules of warfare. The Red Cross markings on MEDEVAC aircraft have served more as targets rather than as shields of protection, making medics and pilots more vulnerable to attacks. The enemy has studied our tactics, techniques, and procedures and fully understands how we operate. Enemy tactics have revealed that he is less interested in conducting small-scale attacks, than in luring in an AE response from such attacks with the hopes of ambushing a "higher payoff" target of opportunity (i.e. the unarmed aircraft). Given the ruthless enemy nature, commanders on the battlefield have made it a standard operating procedure to restrict MEDEVAC aircraft from departing to the point of injury until an armed aircraft, such as an Apache, can escort the MEDEVAC aircraft. Yon argues that MEDEVAC aircraft often sit idle patiently waiting for their escort aircraft to link up with them from another location or mission. Meanwhile, precious time continues to tick away on the ground for wounded Soldiers whose lives are dependent on the arrival of the MEDEVAC aircraft (Yon 2012).

> "The kernel of the matter is that under the Geneva Conventions, when our Army 'Dustoff' MEDEVAC helicopters wear red crosses, they are forbidden to be armed."

The U.S. Army should *not* change its current AE procedures because it would be in violation of the laws of land warfare and contrary to the Army's Professional Military Ethic- a culture rooted firmly in American values. The rules of warfare that we have committed to live by guide us along a straight and narrow path that we are morally bound to follow. Breaking away from this path when it is convenient to do so for short-term wins will ultimately harm our nation in the long run. The trust and confidence that our nation, as well as the international community, has in the U.S. Army to uphold our values could be lost if we blatantly disregard the rules. As leaders of our military and leaders of the world, it is essential for the Army to continue to set the example for all others to follow, regardless of the nature of the current war.

The "Golden Hour," recently dubbed by the medical community as an operating principle and measure of performance, refers to the critical time a patient has after traumatic injury to receive medical care from qualified personnel. Combat lifesavers on the battlefield can only do so much to stabilize the wounded such as stopping the

Enemy tactics have revealed that he is less interested in conducting small-scale attacks, than in luring in a MEDEVAC response from such attacks with the hopes of ambushing a "higher payoff" target of opportunity (i.e. the unarmed aircraft).

bleeding or opening restricted airways. After that, patients rely upon transport to higher medical care elsewhere. Commanders have strategically placed medical treatment facilities across the battlefield based on the "Golden Hour" principle. Similarly, MEDEVAC aircraft are arrayed across the battlefield in staging areas to ensure that they can cover their designated area of responsibility within the standard hour. The goal is for aircraft to receive the MEDEVAC request via radio from the location of the injury, depart from their operating location, land at the point of injury to evacuate the wounded, and fly them to the nearest treatment facility on the battlefield all within an hour. Every second counts in the process. Thus, if MEDEVAC aircraft are left waiting for an armed escort, then a casualty's chances of survival may be reduced. This point prompts Michael Yon's question: Why don't we remove the Red Cross markings from MEDEVAC aircraft and arm them with weapons so they can protect themselves on missions? Yon points to the fact that other services such as the Air Force, as well as some of our allies such as the British, arm their evacuation aircraft and do not don the standard Red Cross insignia (Dreazen 2012). Yon argues that the U.S. Army should follow suit. By doing so, MEDEVAC aircraft will no longer be reliant upon escort aircraft and will ultimately get to and from the objective faster, thereby increasing the chances of survival for a casualty (Yon 2012).

The Army states that it is the only service specifically charged with the responsibility of carrying out the AE mission for the military. The Chairman of the Joint Chiefs of Staff, General Martin Dempsey, has confirmed that "the Army is the only service specifically tasked with MEDEVAC missions… Its choppers are required to carry specialized medical equipment and are staffed with the crew members who know how to use it" (Dreazen 2012). The Army concedes that other services have been forced to pick up the load and conduct casualty evacuation (CASEVAC) operations as a result of meeting the high demands for air evacuation over the past ten years as well as the Army's shortage of functional helicopters in theater (Dreazen 2012). However, such operations are conducted on an ad hoc basis by aircraft that are not specifically fitted with the appropriate medical equipment required to carry out the AE mission on a permanent basis. Yon highlights that the Air Force's HH-60 "Pedro" aircraft has been utilized to execute AE during the wars, is well armed, and does not carry the Red Cross markings on its doors (Yon 2012). Indeed, these aircraft sometimes perform casualty evacuation when necessary, but the aircraft's primary purpose is to conduct combat search and rescue . These missions require weapons for protection given the inherently risky nature of rescue operations. Furthermore, these aircraft do not have nearly as much carrying capacity for litter patients, nor do they come with the full suite of medical supplies on board like the U.S. Army's MEDEVAC Blackhawk helicopter. The Army's HH-60 Blackhawk MEDEVAC helicopter is the world's premier medical evacuation helicopter fully equipped with state-of-the-art medical equipment. No other service or ally can match the Army's capability for the tactical AE mission set. Aircraft are on standby, 24/7 to provide immediate support to wounded Soldiers on the ground at a moment's notice- no other mission set has dedicated assets to the cause. This dedicated capability provides peace of mind for a Soldier's psyche.

Yon's argument is fraught with misguided tactical and technical considerations that could easily be debunked with counter facts. The crux of Yon's argument lies within the tactical and operational levels of war, but where he fails in consideration -and is the focus of this article- is at the strategic level of war. Taking a step back from the emotional level of the fight on the ground by examining the problem through a strategic/professional lens, the answer to the issue becomes more clear and universal in nature from this particular context to the next.

The Social Domain- The Law, Military Culture and the Army Profession

This case is not the first time in history that whether or not to follow the rules has come into question. According to military theorist Carl von Clausewitz, war, by its very nature, is an uncontrollable contest between two sides designed to overthrow one another with no logical limits to the application of force, which can ultimately result in extreme measures (Clausewitz 1976). Military historian, Gunther Rothenberg, suggests that the rationale given for breaking the rules of warfare (i.e. using extreme measures) is most often either based on the notion of "military necessity" or "reciprocity." The "military necessity" argument rests on the idea that the exceptionality of war raises it above the law, thereby allowing for an acceptance of unlawful acts based on protecting one's own forces and interests. The notion of "reciprocity"- "an eye for an eye" mentality- contends that one side in a conflict should not have to adhere to the rules and customs of warfare if the other side does not (Rothenberg 1994). These arguments become more pervasive in irregular or state versus non-state conflict, and essentially serve as Michael Yon's rationale for arming MEDEVAC aircraft.

The Law

Critics of Yon's argument contend that removing the Red Cross insignia and arming MEDEVAC aircraft would create larger issues by placing the U.S., "outside its commitment to conducting MEDEVACs under the guidelines of the Geneva Conventions and moral norm for how Western nations identify their aircraft dedicated to medical evacuation" (Yon 2012). The Geneva Conventions provide chaplains and medical personnel protection status while performing their duties in a combat zone. Chapter IV, Article 25 of the Geneva Convention states that:

> "Members of the armed forces specially trained for employment, should the need arise, as hospital orderlies, nurses or auxiliary stretcher-bearers, in the search for or the collection, transport or treatment of the wounded and sick shall likewise be respected and protected if they are carrying out these duties at the time when they come into contact with the enemy or fall into his hands" (ICRC 1949).

The international community has adopted the Red Cross or Red Crescent as the symbol for marking medical personnel on the battlefield. These laws are in place, first, to protect the patient who is now a defenseless noncombatant and, second, to protect medical providers who are also noncombatants. Army officials say that "the helicopters function like flying ambulances—and are therefore subject to the rules of war that bar ambulances from carrying weapons and require them

to bear the Red Cross… Removing the Red Cross has legal ramifications in regards to Geneva Convention protections" (Dreazen 2012). Personnel on-board "properly marked" MEDEVAC helicopters are not supposed to be targeted by the enemy under the laws of warfare. Doing so is in direct violation of the jus in bello principle of discrimination--the moral principle stating that it is wrong to kill or target non-combatants or innocents in war (Orend 2008). Knowingly firing at a medic or aircraft displaying such insignia is considered a war crime. Our current enemy does not play by the same rules and medics are left to administer care while simultaneously dodging bullets. The question is: should we depart from the "moral operating environment" we swear to work in and disregard the laws of warfare to better protect our medics and AE pilots?

Personnel onboard "properly marked" MEDEVAC helicopters are not supposed to be targeted by the enemy under the laws of warfare.

From a utilitarian's perspective would not changes in U.S. procedures, such as removing the Red Cross and arming MEDEVAC aircraft, produce a greater amount of good for a greater amount of Soldiers on the battlefield? In a narrow sense, the answer might possibly be yes (again, this is debatable at the tactical/technical levels). Some may argue that these changes would be worth it even if they only saved one Soldier on the battlefield. Yet, taking a step back from the "knife fight" of the tactical problem to look at it from a wider and more strategic view, the answer becomes more obvious and more universal. In fact, changes to the way we conduct our "business" on the battlefield could have severe ramifications. As the world's leader, it is the U.S.'s responsibility to consider all possible consequences of its actions. What type of message will we signal by removing the Red Cross from our MEDEVAC aircraft and arming them? Some may construe this as the U.S. not playing fairly by the rules, and thus signaling to the international community that rules do not matter, regardless of whether or not our opponent plays by them. How would local Afghan villagers, who rely on our MEDEVAC services, perceive these changes? Would they fear an unmarked aircraft, which lacks the recognized symbol of protection and good will? How will this impact our counterinsurgency strategy to win the "hearts and minds" of the local population?

Let us not forget about the recent debate on the controversial interrogation techniques of water boarding, considered by many to be the unethical treatment of prisoners. Look what "not following the rules" did for our image (i.e. social capital) at home and abroad. Similarly, scandals such as Abu Ghraib and the Haditha Dam massacre certainly have not helped the military's image. The enemy has proven himself to be very savvy in the use of propaganda to distort our image in the eyes of the international community. It is possible that he could exploit our changes in procedures by utilizing propaganda to harbor even more resentment and hostility towards the U.S. and our allies. Thus, from a strategic standpoint, it is conceivable that adopting changes to the Army's AE procedures could lead to less good for the greater amount of people.

Military Culture

Although Clausewitz recognized the inherently brutal and unrestricted nature of warfare, he did not believe that war was uncontrollable and unaffected by other factors. Clausewitz emphasized the political nature of warfare as well in his oft-cited statement, "War is merely the continuation of politics by other means" (1976:87). He explained that war is a delicate balance of a triad of relationships between the military (war), the government (state), and the people (society). These interrelated groups can often help confine war within limits, avoiding an absolute totality. The interconnectedness of these relationships can be seen when an individual or team's action at the tactical or operational level of war (i.e. war) could have strategic-level (i.e. state and society) ramifications (e.g. the "strategic corporal"). Especially now, we must never take for granted the strategic and political ramifications of our actions in war.

Military organizations certainly have a unique culture, however, their culture oftentimes reflects society at large. One of the first social scientists to study organizational culture, Edgar Schein, provides us with a useful definition:

> "[Culture is] the total of the collective or shared learning of that unit…is the solution to…problems…that is therefore taught to new members as the correct way to perceive, think about, and feel in relation to those problems. Such solutions eventually come to be assumptions about the nature of reality…—they come to be taken for granted and, finally, drop out of awareness. *The power of culture is derived from the fact that it operates as a set of assumptions that are unconscious and taken for granted."* (emphasis added) (Schein 1985:19-20).

The way the military identifies itself both internally and externally with respect to society is through the concept of professionalism, which embodies the military institutional culture. Through professional symbols, attributes, and espoused values, new members learn what is important and how to act in certain situations. It is important to highlight that the U.S. military's culture is firmly rooted within a larger culture of American values and beliefs. Military professionalism, in which the U.S. military finds the source for its basic assumptions, is what unconsciously informs, motivates, and inspires Soldiers' actions.

The Professional Military Ethic

The leading scholar who popularized the concept of military professionalism was Samuel Huntington. In his book, *The Soldier and the State*, Huntington defined the military profession as a special type of vocation marked by the distinguishing characteristics of "expertise, responsibility, and corporateness" (1957). For Huntington, "expertise" was acquired only by prolonged experience and education, where education consisted of a broad, liberal, cultural background, as well as specialized training on technical skills and knowledge of the profession (1957). The central skill most all officers had that distinguished them from civilians was their expertise in "the management of violence" (1957). The "responsibility" of the professional soldier was to perform a service that was essential to the functioning of society. Huntington argued that the "skill of the officer is the management of violence" and that his responsibility was the "military security of his client, society" (1957). "Corporateness" was the idea of esprit de corps in that members of the profession had a common bond that kept them together based on

"Our values, our ethics, and our honor separate us from the insurgents and make them…

shared professional expertise and shared professional responsibility. Taken together, expertise, responsibility, and corporateness encompass the U.S. military culture- a culture that is predicated on a selfless "calling" for a greater good.

In 2010, the Secretary of the Army directed the U.S. Army Training and Doctrine Command to lead an Army-wide assessment of the state of the Army profession after more than a decade of persistent conflict. The study's purpose was to redefine who we ought to be and what we ought to do within the Army's organizational culture. Following an initial review of the profession, results show that the Army remains bounded by an overall "calling" or vocation of service to the nation. Not surprisingly, the elements of expertise, responsibility, and corporateness that Huntington originally defined are still resonant today. These concepts are reflected in the profession's essential characteristics: trust, trustworthiness, military expertise, honorable service, esprit de corps, and stewardship of the profession. Of special emphasis, the concept of trust provides an over-arching umbrella that covers all other characteristics of the profession. This trust is a mutual relationship between the military and the American people. It is a trust that the military has in civilian leaders to provide the necessary resources and clear strategic objectives to carry out its assigned missions. It is also a trust that society and civilian leadership have in the military to remain the most effective and efficient fighting force in the world while remaining grounded with a solid moral and ethical foundation that is firmly rooted in American values, laws, and regulations. As General Odierno states, "Trust is the bedrock of our honored Profession- trust between each other, trust between Soldiers and their Families and the Army, and trust with the American people" (The Army Profession 2011).

Simply stated in the U.S. Army's White Paper on "*Our Army Profession*"

> "Living the Army's Values, such as loyalty, commitment to the performance of duty, respect for others, willingness to serve selflessly, unquestionable honor and integrity, and the courage to act when action is required, and to exercise self-control when patient endurance is required, are all messages to the American people. By these means, Army Professionals are exemplary citizens by the character of their service, and by the values they live and have sworn to defend" (2012:16).

The Army professional framework provides its members a culture to act with a moral compass guiding a Soldier to be ethical and just in his or her application of the management of violence. Upholding these values is how we gain and maintain trust at home as well as abroad. As General Dempsey states, "On the foundation of trust we will overcome any challenge we confront in the future" (2012:5).

In the defense of Harry "Breaker" Morant, an Australian who fought alongside the British in the Boer War and was convicted by British court martial for murdering prisoners, defense counselor Major Thomas argued that the irregular nature of the Boer fighters as guerrillas made them (i.e. the Australian Special Forces) exempt from any rules of conventional warfare. He argued that, "when the rules and customs of war are departed from by one side, one must expect the same sort of behavior from the other" (Breaker Morant 1980). Undoubtedly, the irregular nature of the wars in Iraq and Afghanistan have challenged us against an opponent who has departed from the rules. Is it really ok for us to abandon the rules and codes we live by just because the enemy does not live by these same rules- should we take an "eye for an eye" mentality? Is "playing down" to our enemy's level what being part of a profession is truly all about? The answer today is the same as it was over a hundred years ago in another part of the world- a definitive no.

> **"While we are guarding the country, we must accept being the guardian of the finest ethics; the country needs it and we must do it"**

LTC Robert Haycock, an Infantry battalion commander during Operation Iraqi Freedom, put it simply: "Our values, our ethics, and our honor separate us from the insurgents and make us different from them…If you don't want to be treated like an insurgent, then don't act like one" (Dabeck 2012). Just because the insurgents do not adhere to the standard laws of warfare does not mean that it is acceptable for us to behave in the same manner. Some may consider this to be unfair or contrary to protecting our men and women in uniform. However, this is exactly the type of self-control and endurance we must have to uphold our outstanding reputation amidst the terrorist threats that test our will and our values daily. The Army Profession is grounded in a culture with a solid moral and legal foundation of American values and laws. This is the absolute baseline that drives all actions of Soldiers within our profession. Departing from the rules of warfare by removing the Red Cross and arming MEDEVAC aircraft would be departing from our commitment to the performance of duty and thereby leave our honor and integrity in question both at home and across the international community. The negative consequences of such actions would reduce the military's social capital and affect the overall trust of the people that we have rightfully earned over the past ten years of war. General George C. Marshall captured the critical importance of trust to the Army Profession long ago: "it is our greatest asset, the bedrock upon which we ground our relationship with the American people" (White Paper 2012:3). But Marshall also cautioned that this great asset is fragile and that it must not be taken for granted.

To those in Yon's corner who argue that other services and some of our allies do not have the standard markings on their aircraft, let us not forget that the AE mission is specifically designated for the U.S. Army to accomplish as the lead proponent. As a leader within the joint community for this mission set, and a leader on the world's stage, it is even more imperative for the Army to lead by example and do what is right according to the rules we have agreed upon. In fact, instead of departing from these rules, the Army should challenge our allies to comply with the standard markings associated with the Geneva Conventions so that everybody is in compliance and "in the right." Of course, for those aircraft like the Air Force's "Pedros" that are not specifically designated to carry out the AE mission, but sometimes do so in a CASEVAC role, there should be no need to don the Red Cross insignia during such ad hoc situations.

Conclusion

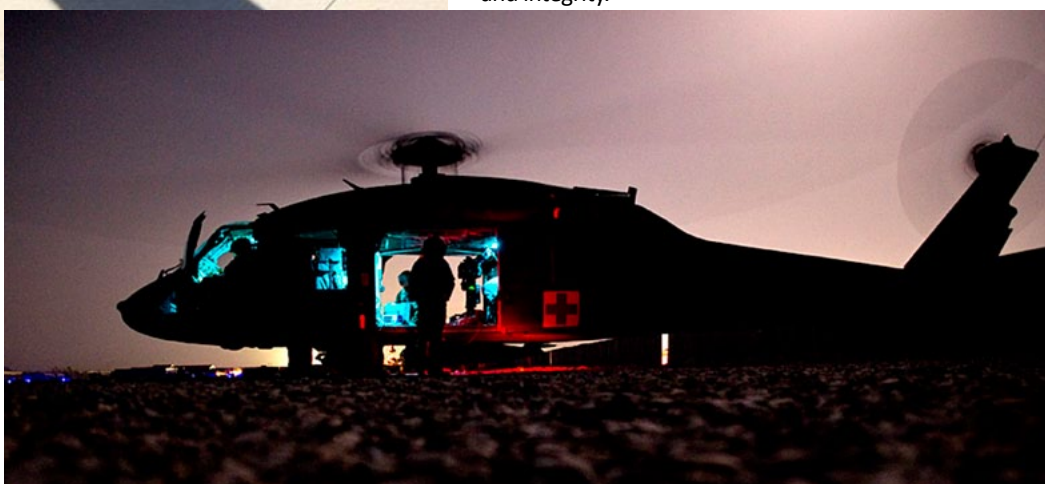
As the world's leader, sometimes sacrifices must be made to maintain the moral high ground. Unfortunately, these sacrifices may come at the costly expense of those wearing the uniform to uphold our ideals and values. At the tactical level, commanders must do everything they can to mitigate the risks as much as possible within the left and right limits of the rules in which we operate. Commanders have acknowledged the need for protecting AE assets within these rules by sending Apache helicopters to secure MEDEVAC aircraft during evacuation. These

aircraft not only provide superior firepower and optics, but also crews who can facilitate command and control from overhead and remain on station to protect ground forces once evacuation is complete- a huge advantage for ground commanders who are likely in need of regaining the initiative. Commanders have additionally placed supporting aircraft and field hospitals across the battlefield to respond within the "Golden Hour" standard. It is our duty to provide the dedicated assets ready to respond in case of an emergency - our nation expects this and our Soldiers' morale is boosted by this. That is what "DUSTOFF" (Dedicated Unhesitating Service To Our Fighting Forces) is all about. Former Secretary of Defense, Robert Gates stated: "Ensuring Service members receive the necessary medical care required in a timely manner is critical, not only for saving lives but in reinforcing our message of commitment to Service members, their Families, and our Nation" (2009). Medical personnel should not have to juggle the difficult task of saving lives while simultaneously engaging enemy personnel - doing so would surely result in the detriment of both. Suppressing the enemy should be left to expert security teams overhead.

the warfighting principle:

> "The preeminent military task, and what separates (the military profession) from all other occupations, is that Soldiers are routinely prepared to kill…in addition to killing and preparing to kill, the Soldier has two other principle duties…some Soldiers die and, when they are not dying, they must be preparing to die" (White Paper 2012:4).

Assuming these risks for the greater good of the mission, or for others in (and out of) uniform, is what selfless service in our profession is all about. Insurgents who do not play by the rules will continue to target MEDEVAC aircraft regardless of their insignia or offensive capabilities. Although difficult to acknowledge, the few delays sometimes associated with waiting for an Apache escort are inconsequential in the grand scheme of operations. Unfortunately, the "fog of war" cannot always be foreseen; mistakes will occur, friction will remain ubiquitous, and some Soldiers may suffer the consequences as a result. Yet we may suffer more dire consequences if we compromise our values and integrity.



The overwhelming success of AE operations is undeniable. Missions are scrutinized and tracked relentlessly to ensure that timeliness and effectiveness is paramount throughout. The success rate is at an astounding 92%; the highest it has ever been in combat with AE turn-around times averaging 39 minutes (Dreazen 2012). There simply is no legitimate basis on the grounds of "military necessity" to adjust the rules.

Our "business" is inherently dangerous, whether operating on the front lines as an Army Ranger, or flying to the front lines as an Army medic on board a MEDEVAC helicopter. James H. Toner put it best when describing Former Chief of Staff of the Army, General Creighton Abrams, put the duty of a soldier rather eloquently: "While we are guarding the country, we must accept being the guardian of the finest ethics; the country needs it and we must do it" (White Paper 2012:11). Changing the rules midway through the mission is not how we should operate. The Army's Professional Military Ethic provides us a disciplined approach to the management of violence. It is a guide of who we ought to be and what we ought to do based on a solid moral and legal foundation of values and laws. Making decisions as to which rules we abide by based on the current opponent could lead us down a slippery slope in future

conflicts. Even worse, the consequences of such changes could be far worse than the current state of affairs. Military culture takes time to set in and become instinctive for Soldiers. Actions that are incongruent with the military's espoused cultural values could increase confusion among the ranks and impact decisions that sometimes need to be made unconsciously based on basic assumptions. Attempting to change the rules from one conflict to another would not be feasible based on the amount of time and acceptance required to adopt such changes. If changes are desired after the fog has cleared, a convention of international state leaders should agree upon them collectively and adjust fire as required.

In the words of Augustine in a letter to Boniface, we must make a "move toward the hard, messy, and mournful work of sustaining relative good in the face of greater evils" (Dabeck 2012). Sometimes, this means assuming some risks from our opponent for the greater good of our values and reputation as a society. By doing so, we will maintain the moral high ground and our social capital, achieving strategic success despite the possibility of some tactical losses. "By the effective and ethical application of its expertise in land warfare, the Army Profession has well-earned the trust and respect of the American people. Our overarching task is to continually reinforce that trust and respect" (White Paper 2012:3). Trust will remain paramount throughout our profession so long as we remain grounded in our solid foundation of laws and values. Maintaining this trust throughout the international community is absolutely critical as long as we desire to maintain our status as world leaders.

Author's Note: This article was originally submitted for an Ethics Course at the Command and General Staff College, Fort Leavenworth, KS in the Spring of 2012.I am indebted to LTC (Ret) Mike Pouncey for his insightful thoughts and for providing the most recent information regarding MEDEVAC operations and policies.

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Acronym Reference

AE - aeromedical evacuation	**CSAR** - combat search and rescue
CASEVAC - casualty evacuation	**MEDEVAC** - medical evacuation

UNPARTNERED MEDEVAC OPERATIONS IN AFGHANISTAN

By CPT Kellan S. Travis and
CPT Benjamin J. Hooker

As the moon sets behind the horizon, An Afghan National Security Force (ANSF) unit performs a night patrol of the local village in the northern region of Kandahar, Afghanistan. Just as the team leader is preparing to return to base, a blast rings out from the back of the formation, an improvised explosive device that was unnoticed on the side of the road has been detonated. As the initial chaos calms, two ANSF soldiers lie wounded around the blast area. Too far from the nearest medical facility for ground evacuation, the ANSF leader calls in a nine-line medical evacuation to a partnered supporting International Security Assistance Force (ISAF) unit. As the ANSF tends to the wounded, they wait for the sound of Coalition helicopters in the distance.

An aerial reaction force (ARF) unit is inserted to secure the area to ensure the freedom on maneuver of the medical evacuation (MEDEVAC) aircraft so that they can extract the patients. The ARF unit facilitates the ground security to ensure the safety of the MEDEVAC aircraft and transfer of the wounded soldiers. Though it is pitch black, the sounds of several more helicopters can be heard as they provide aerial security of the helicopter landing zone (HLZ). As soon as the casualties are prepared by the medics and loaded on the aircraft, the MEDEVAC aircraft departs for the nearest medical treatment facility. With the aeromedical evacuation (AE) complete, the ARF calls for extraction, load the aircraft, and disappear into the darkness.

As the ISAF begins to leave Afghanistan, this type of complex coordinated mission set becomes even more prevalent between U.S. and Afghan Forces. As the job of securing the country slowly falls on the shoulders of ANSF, they still require the support of the ISAF, particularly aviation support. Aeromedical evacuation, especially for severe injuries sustained by ANSF personnel, is still carried out by the U.S.; however, these operations look much different now than they did for ISAF only forces no more than a year ago. With few ISAF on the ground, the mission has now become an "Unpartnered" AE operation. The key distinction of this mission is that there are no U.S. or other ISAF on the ground to provide security for MEDEVAC aircraft. This new unpartnered mission is becoming the standard operation for AE operations which U.S. Soldiers are trained to execute as fewer and fewer American ground forces are left in the country. An increase in the number of dedicated security assets, deliberate training between the aviation and ground forces, quick response with hasty planning, and trust between U.S. and Afghan forces are the keystones to the unpartnered AE mission as responsibility is transferred to ANSF.

The unpartnered AE mission relies on many more assets that were not previously required for IASF forces. These assets may include an Attack Weapons Team (AWT), MEDEVAC aircraft, assault aircraft, the ARF, and unmanned aerial system (UAS) assets.

To compensate for the lack of situational awareness on the ground, the U.S. relies heavily on the ARF whose primary mission is to secure the HLZ and reinforce ANSF ground unit personnel to provide

additional force protection. These ARF platoons are directly assigned with a UH-60 assault company in order to provide rapid reaction and freedom of maneuver across the operating environment.

Many challenges arise from this mission set as it is normal not to have information we consider essential when the nine-line is received on the extraction site such as the confirmed status and number of the patients, security of the area, environmental conditions, and other critical elements to allow us to reasonably plan and execute the mission. Aeromedical evacuation mission response times have been unavoidably increased to allow as much information as possible to be relayed to the aircrews and the ARF and to ensure that the air mission commander (AMC) is acting on the most current, accurate, and reliable information available. As much of the information on the patient, the HLZ, and other essential elements of the mission is filtered through language, social, and other barriers, planning is done as deliberately, carefully, and as quickly as possible with coordination conducted by the AMC between the command post, aircrews, and the ARF just before take-off. With time of the essence, further details are continually passed over the radios as the aircraft are loaded and prepared to depart. Typically, the aircrew and ARF platoon will have a relatively vague picture of the HLZ that they will be flying to, and it is not until the lead elements (generally the AWT or UAS) actually reach their destination that they are given more definitive information.

The most dynamic phase of the operation is during the arrival and infiltration of the ARF. With many of the designated HLZs being in isolated areas of the country, aircrews often encounter a degraded visual environment caused by the combination of dust and darkness and further aggravated by high altitude. Combined with the unknown "ground truth", this phase of the AE mission is the most dangerous for both the UH-60 crews and ARF element. The AWT or UAS will normally arrive on site first to verify security and landing site data and pass any pertinent information to the ARF and MEDEVAC aircraft prior to their arrival. The AMC maintains constant communications and positive control to ensure proper distance and spacing and to disseminate any changes to the previously briefed information of the designated landing site. Once the AMC is satisfied with mission parameters, he clears the ARF infiltration. Throughout the duration of the mission, the HLZ is continuously monitored by the AWT, UAS, and ARF in order to provide security and situational awareness to elements involved in the operation.

Photo by: Lance Cpl. James Clark

The greatest challenge to the unpartnered AE resides in the discrepancy between the initial report and the "truth on the ground." The ARF link-up with the ANSF element is vital for two reasons - confirmation of the number and types of injuries and establishing the initial coordination with the ANSF. Frequently, the original AE request, which includes the numbers and types of casualties and the medical treatment the wounded have already received, does not match the actual situation when the ARF medic arrives to verify initial mission information. Inaccuracies will result in additional coordination to adjust to revised mission conditions. Whether or not the patient's situation is more or less critical than articulated by the ground ANSF, the final assessments of the casualties are conducted by the ARF platoon medic and are performed before the casualties are moved from their original positions. It is at this point that the medic triages the casualties and either instructs they be moved to the casualty collection point or they are returned to their ANSF unit as their injuries did not warrant AE transfer to a medical treatment facility.

In order to prepare for this fast-paced mission, training rehearsals (battle drills) for ARF loading and unloading of the aircraft are conducted routinely throughout the deployment to ensure that infiltration and exfiltration of the HLZ is executed as smoothly as possible. Loading the aircraft is part science and art as the additional equipment, i.e. assault packs, litters, and aid bags are placed on the helicopter so that they may be quickly and efficiently removed, as required, once the ARF reaches the HLZ. Further, collective training of the entire mission set involving the AWT, ARF, assault, medics, and AE crews is essential. The ARF Leaders and medics must feel at ease communicating with the ANSF forces through an interpreter so that they can understand the situation and make the correct assessments on the ground to facilitate a successful operation. To further prepare, squad leaders and team leaders should conduct pre-combat inspections to ensure the ARF element is prepared for the operation and any potential contingencies.

The AMC and aircrew must be able to quickly plan and react on often sketchy information provided by the ANSF while a Soldier's life potentially hangs in the balance. Depending on the distance of the HLZ from the forward operating base, the flight must be intricately planned at a maximum range that will allow for appropriate aircraft loiter time and maintain sufficient fuel in order to return to base. Proper performance planning is critical as the aircraft will likely be operating in a degraded visual operating environment, operating at high gross weight with ARF personnel and gear, and performing the mission at night.

The commander must perform a critical risk assessment to ensure proper crew selections skilled in operating in these harsh conditions. To ensure aircrews are proficient in this environment, multiple iterations of degraded visual environment landings are conducted on a regular basis to keep their skills refined. Each landing is a test of crew coordination as all members of the crew provide critical input to the landing. Conducting multiple iterations of deliberate and focused training is the most effective way to overcome most of the challenges of such a dynamic mission with limited information.

With a new understanding of how this mission should operate, it is likely that these procedures will be used again in support of non-Coalition or NATO forces in future operations. As the Army moves toward a global readiness force mission, in which units operate in specific areas of the world, the unpartnered mission can be exercised as an effective technique with unfamiliar military forces of the host nation. As for now, the unpartnered MEDEVAC operation is a tool that provides the Afghan National Forces the capability to transport injured Soldiers as they assume the security role on the ground while affording a level of protection for U.S. personnel from the potential of Blue on Green attacks.

The unpartnered AE mission is a high risk and complex mission that Army Aviation continues to perform as we support the ANSF move toward independent operations. The keys to success of these missions are ARF battle drill rehearsals, aircrew training in degraded visual environment operations, proper crew selection, familiarity with the local ANSF, and continued education of ANSF on AE criteria and HLZ analysis.

Considering how new and unprecedented this operation is for Operation Enduring Freedom, there have been many lessons learned, as previously mentioned. Inaccurate reporting from ANSF on the status of casualties has diminished the trust between U.S. Coalition and ANSF. With so many assets dedicated to this mission, and the risk so high, it is imperative that the end justifies the means for casualty evacuation. On top of this, the risk of insurgent fighters infiltrating ANSF is still a very real possibility as we start putting American Soldiers and aircraft into unknown territory with unfamiliar ANSF. Trust is paramount to ensure that unpartnered AE missions can continue to operate as more and more responsibility is handed to the ANSF. At this point in time, American support has already started to disappear and with more troops returning to the U.S., aviation assets will continue to follow and so will the unpartnered AE support. The ANSF are merely a step away from independent operations in order to continue the fight against terrorism to support the continued effort of a unified and independent Afghanistan.

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Acronym Reference

AE - aeromedical evacuation
AMC - air mission commander
ANSF - Afghan National Security Force
ARF - aerial reaction force
AWT - Attack Weapons Team
HLZ - helicopter landing zone
ISAF - International Security Assistance Force
MEDEVAC - medical evacuation
NATO - North Atlantic Treaty Organization
UAS - unmanned aerial system

Aviation Digest
MAY, 1970

Out Of The Valley Of Death

Major Michael J. Scotti Jr.

There were more than 40 wounded soldiers that needed to be evacuated from the fog-shrouded valley. Major Brady knew this but was unable to find a hole through which he could descend. Finally he could wait no longer and began circling his medevac ship lower and lower—a few meters at a time—through the menacing fog . . .

THE HIEP Duc-Que Son Valley west of Tam Ky in the I Corps area of Vietnam was an unpleasant duty station during January 1968. The facilities were uncomfortable, the weather wet and surprisingly cold and the terrain difficult. To make matters worse, well manned and equipped elements of the North Vietnamese Army (NVA) were in the valley.

As surgeon for the 4th Battalion, 31st Infantry, 196th Infantry Brigade, I was becoming more and more concerned about the adverse effect the weather was having on air medical evacuation from the valley below Fire Support Base West where our headquarters was located.

Each morning the dense mist hung over the valley shrouding it from sight. Our command and control helicopter, as well as the resupply ships, were unable to get into the valley until late morning when visibility improved.

Shortly after dark on 5 January, an infantry company under the operational control of our battalion was engaged by a larger force of NVA. How large will probably never be exactly determined, but from the information of those surviving the fire power was estimated at battalion strength. Casualties from small arms and mortars began to mount and the besieged company's perimeter became smaller and smaller throughout the night. There was some relief when Alpha Company of the 4/31 performed a miraculous forced march in the wet darkness and shortly before midnight reinforced the beleaguered company.

By 0300 hours it was apparent that a major medical problem existed. My field medics reported they had treated over 40 wounded and counted several known dead with a score more missing or separated from the small enclave established near a dirt farm road. Medical supplies, including the life-saving albumen and dextran intravenous fluid, were almost exhausted and several medics had been wounded while aiding casualties.

Lieutenant Colonel Bill Augerson, our division surgeon, arrived before dawn with additional sup-

plies so that we could set up an enlarged emergency treatment center at the fire support base. We reasoned that because of the weather and enemy fire, the time allotted us for evaluation might well be minimal. In light of this we felt the 10-minute round trip from the valley up to our battalion aid station might enable us to evacuate more than we could if we flew directly to the clearing company—a 50-minute trip. And, at the battalion station we could select those wounded who would profit most by the earliest evacuation to other medical facilities.

By dawn, we were ready. Two medevac helicopters from Major Pat Brady's unit were at the fire support base and the necessary supplies were loaded. Our readiness was checked by the dense fog with tops 400 meters over the valley floor. Things were further complicated by the fact that the embattled troops couldn't see any landmarks to give MAJ Brady exact location, had no flares left to mark the area, limited smoke (two purple grenades, if I remember rightly) and the enemy attack continued although abated.

The troops in the valley had cleared an area large enough for a UH-1 to put down (if you were damned careful) and were waiting —uncomplaining and heroic—as only infantrymen can wait when they have wounded buddies to evacuate and a precarious minimum of ammunition. They understood that the lives of a medevac crew lost in a crash would not help anyone and it was obvious to all that flight conditions were impossible.

Several times that morning MAJ Brady had taken off but was unable to find a hole in the fog and thus was forced to return and wait again. But by 0930 he could wait no longer. He took off over the valley and began circling lower and lower, a few meters at a time until he could hazely see the tree tops a few feet below.

Then he searched for the narrow farm road, hesitating every few meters to turn his craft sideways to enable the rotors to clear a small area of visibility ahead of the heavily loaded aircraft.

Finally locating the road, he navigated along it in constant radio contact with the ground unit which would have to guide him to its exact location by the sound of his aircraft. From the rear of the craft, I could barely see the ground and the stunted trees seemed to appear from nowhere, sometimes barely an arm's length from the tips of our rotor blades. Sporadic rifle fire became more audible and Vietnamese "farmers" could be seen on the road below walking with hoe in hand away from the fray.

Suddenly we were advised that we had passed the ground unit's location so MAJ Brady had to turn around and travel back over the road. Finally to our left we made out a mist of purple in the gray fog. MAJ Brady and his crew had found their wounded.

After unloading supplies and loading wounded simultaneously, MAJ Brady lifted out the first load of six litter wounded. Some were near death and we worked to enable them to survive even the short trip to the fire support base. The flares MAJ Brady brought enabled his sister medevac ship and the command chopper to follow somewhat more easily than he, but still with great difficulty.

Each ship made several trips over the next half hour and some 51 wounded were evacuated, first up to the fire support base for emergency treatment and then to better equipped medical facilities.

Personally, I examined six men who were already in shock when we arrived and who would not have lived without intravenous fluids that morning. There may have been more whose bandages, applied in the dark and at great risk the night before, sealed the exact nature of their injuries from my eyes.

I learned later that MAJ Brady had a busy day that January 6th, and it was for that series of actions that he was awarded the Medal of Honor. These actions are typical of MAJ Brady and the Dustoff pilots and crews which I had the privilege to serve with and observe during my year with the infantry in Vietnam. Their days were busy and each mission, despite the dangers that remained vivid in the minds of other men who participated, were quickly forgotten by the medevac crews in the need to go elsewhere and for yet another task. Their heroism is seen and understood by few other than the fighting men with whom they serve. They are given only a fraction of the honor they deserve.

The readiness of MAJ Brady and the many others like him who do more than is expected to evacuate the sick and wounded is clearly evident, and perhaps is a morale value higher than any other factor enabling the Army to fulfill its mission in Vietnam.

feedback FORUM

Your Articles and Feedback Compel Thoughts and Actions

Aviation Digest's Feedback Forum is where readers can see the results of author contributions, USAACE collection efforts, and the professional discussions that followed. It is an essential part of our commitment to the continuous advancement of the Aviation Branch.

Expanding the AMSO Track -
By CAPT John Q. Bolton and MAJ Lee Robinson
Aviation Digest Volume 2/Issue 3
(Jul-Sep 2014, p. 36)

Expanding the AMSO Track, accentuates the current lack of doctrine concerning the Tactical Operations (TACOPS) Officer and the need for the track to adapt with the Army. The article emphasizes the need for scenario driven training and the requirement for someone to create those products. CPT Bolton speculates that the best place for the track to gain credibility is within the S-3 section, as the flight operations officer

Aviation Branch Response:

Proposed publications defining the unit aviation mission program states that the TACOPS Officer provides unique expert counsel to the commander and training to the force in the preservation of aviation combat power. This is accomplished through the three pillars of the profession: Plan, Protect, and Recover with Training serving as the foundation.

The TACOPS Officer's Course is updating course material and design to encompass Army Learning Model 2015 standards along with the 21st Century Soldier Competencies found in Training and Doctrine Command (TRADOC) Pamphlet 525-8-2. These changes are designed to mold TACOPS Officers into expert holistic trainers, not merely subject matter experts, in their field.

The additions include fundamentals of Instruction certification compiled with an in depth exercise utilizing critical thinking, collaboration, and problem solving based on the tactical and technical competence in aviation mission survivability learned throughout the course resulting in a culminating Aviation Combined Arms Tactical Trainer (AVCATT) scenario that can be taken back to home station. Graduating Officers will be able to utilize the TACOPS Course standard AVCATT scenario as a basis for developing their own scenarios to meet TC 3-04.11, Commander's Aircrew Training Program for Individual, Crew, and Collective Training requirements, adjusted to meet their commanders mission essential task lists.

As our Army transitions to a leaner and more agile force, tasked with being able to respond to a myriad of areas and threats, it is the responsibility of all professional warriors to become experts in the utilization of training aids, devices, simulators, and simulations to maximize training. The TACOPS Officer is tasked and trained to facilitate training and provide advice in the fields of aviation survivability and personnel recovery. Training tactics, techniques and procedures in the aircraft with the future guidelines provided by training publication currently in development, will be a primary part of the overall commander's Aviation Mission Survivability (AMS) program and the reason for the shift in focus to training and scenario.

The forthcoming publications will clearly define the tasks and responsibilities of the TACOPS officer for the commander.

Unmanned Aerial System (UAS) Gunnery Standardization - By CW3 (P) Frank Capri
Volume 2 / Issue 3 Aviation Digest
(Jul-Sep 2014, p. 19)

The article UAS Gunnery Standardization highlighted the growing training and qualification gap within the UAS community. There has been a great amount of feedback from the article and additional interest has occurred.

Aviation Branch Response:

The Tactics Review Board at Fort Rucker is currently considering a table of equipment and organization (TO&E) revision to add the UAS and utility and cargo Master Gunner Additional Skill Identifier. This would formalize the position, assign responsibility and accountability to a school trained 150U or 15W (yet to be decided) and direct those individuals to the Master Gunner Course for training. This issue is work in progress with more to follow.

Observations from Redeploying Units

1st Infantry Division Combat Aviation Brigade (CAB) redeployment after action review interviews.

After completion of the Aviation Restructuring Initiative, CAB will possess four airframes capable of recording and storing mission video footage. The AH-64D/E, RQ-7B, and MQ-1C utilize separate computer systems and software to download, process, and edit mission video footage. The CAB TO&E does not provide a standardized computer powerful enough to handle the download, processing, editing, and storage of the high-definition quality video that these platforms produce.

The Concepts Research Directorate (CRD) at the United States Army Aviation Center of Excellence and TRADOC Capability Manager-Mission Command are in the process of selecting a computer to provide a one-station solution to process mission video for mission planning and after action reviews. CRD will also select standard video editing software to ensure uniformity throughout the CABs.

TURNING PAGES

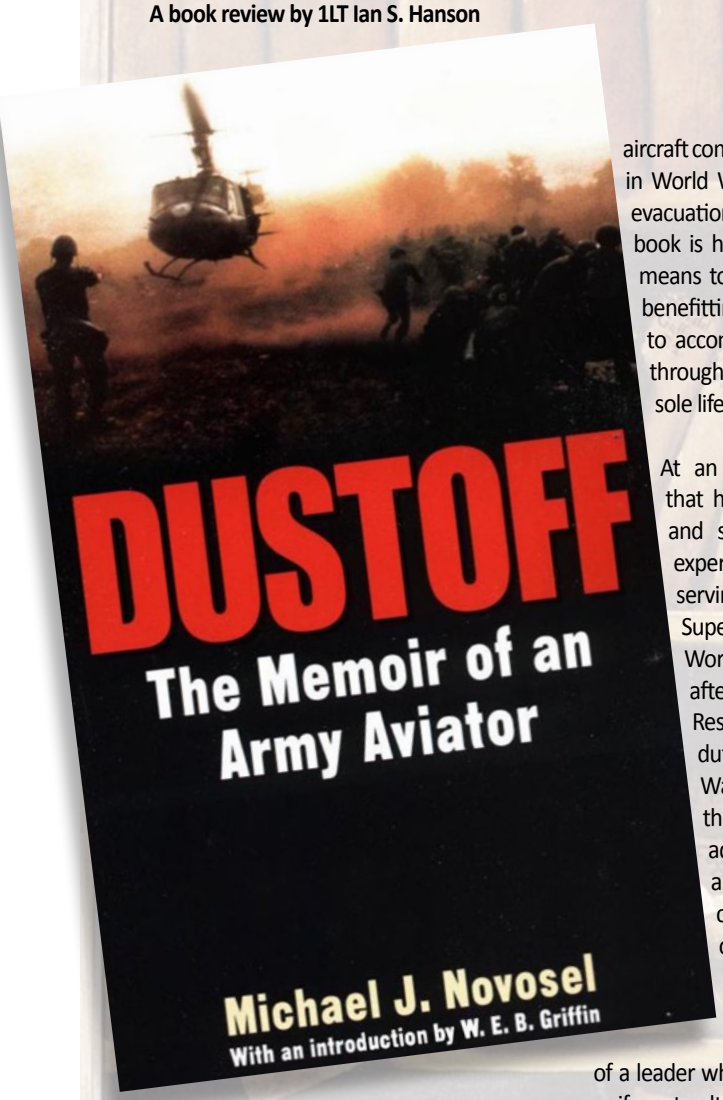
~ book reviews of interest to the aviation professional

Dustoff:

The Memoir of an Army Aviator

By Michael J. Novosel. Novato, CA: Presidio Press INC. 1999. 360 pp. Available in hardcopy and paperback at http://www.amazon.com/Dustoff-The-Memoir-Army-Aviator/dp/0891416986.

A book review by 1LT Ian S. Hanson



Those who have served in the U.S. military are familiar with words like challenge, dedication, duty, honor, and sacrifice that are synonymous of the profession. The life and service of Michael "Mike" Novosel as detailed in *Dustoff: The Memoir of an Army Aviator* embodies each of these traits in describing an incredible tale reminiscent of a fictional novel. The story is one of selfless service and a focus on mission accomplishment for no other reason than it was the right thing to do. *Dustoff: The Memoir of an Army Aviator* describes an illustrious 35 year career spanning three wars highlighted by aviation duties as diverse as aircraft commander of a B-29 "Superfortress" in World War II and UH-1 "Huey" medical evacuation helicopter pilot in Vietnam. This book is his story and the story of what it means to serve, without consideration of benefitting oneself; to have the willingness to accomplish any mission and seeing it through to the end knowing you are the sole life line to Soldiers on the ground.

At an early age Mike Novosel knew that he wanted to become an aviator and serve his country. His earliest experiences in aviation included serving as a captain flying the B-29 Superfortress against the Japanese in World War II. Following the war and after a short time in the Air Force Reserves, he was recalled to active duty to serve during the Korean War and later promoted in 1955 to the rank of Lieutenant Colonel. In addition to his service he embodied an unwavering desire to serve his country and to do so to the best of his ability. The desire to serve his country, but more importantly the soldiers around him made CW4 Noosel an excellent example of a leader who does not allow the rank on his uniform to alter his obligations, restrict his duty or supersede himself over subordinate soldiers.

CW4 Novosel was dedicated to his unit, the mission, and the Soldiers he served with. He set an example of excellence and professionalism and paved the way for others to that standard by mentoring those who lacked experience. During two tours in Vietnam he mentored pilots less experienced in fundamental areas of flying such as instrument capability, which was essential for survival in combat. CW4 Novosel enhanced their survivability and made them more capable of accomplishing the aeromedical evacuation mission and saving lives of Soldiers on the battlefield. For actions such as this, Mike Novosel gained the trust and respect of the men that he served with, more importantly he made those around him better aviators and the units he was assigned to more disciplined and proficient.

It is important for a person to understand their history, and of even greater importance for a soldier to know the history of the military in which they are a part of. Over the years, many men and women have dedicated their lives and some have made the ultimate sacrifice all of which have contributed to the development of our profession. That dedication cannot be taken lightly and this book is a testimony to those men and women with that level of pedigree. Mike Novosel was one of those people who had a wealth of knowledge and experience. He graciously shared his knowledge and skills with those he flew with and continues to share with anyone willing to pick up this book.

To all Army aviators, particularly those who fly MEDEVAC or in support of aeromedical evacuation, this book serves as a reminder that our mission is to support the ground forces in their engagement with the enemy. For the soldier who lives day in and day out not knowing when the enemy may strike, we as aviators provide the reassurance that they are not alone and will not be left behind. There have been many aviators before our generation who have dedicated their service and some like Mike Novosel, their entire lives, to support the development of Army Aviation. The lessons learned from combat and garrison operations that this book offers from World War II, the Korean War, and the infancy of MEDEVAC in Vietnam are invaluable resources for the aspiring aviator. This book takes the reader through an era where service to one's country came from a higher calling than service to oneself. It is an opportunity to learn from our Aviation heritage and the stories of those who got us to where we are today.

57TH MEDICAL DETATCHMENT

The 57th Medical Company (Air Ambulance) was originally constituted as the 57th Malaria Control Unit on 01 September 1943 and activated at the Army Service Forces Training Center, New Orleans, LA, on 19 September 1943.

The Unit was reorganized and redesignated as the 57th Malaria Control Detachment on 08 April 1945 and inactivated on 30 September 1945 in Brazil.

The unit was reactivated and allotted to the Regular Army on 23 March 1953 and designated the 57th Medical Detachment (RA)* and assigned to Brooke Army Medical Center, Fort Sam Houston, TX. The unit was the first Aeromedical Evacuation unit deployed to the Republic of Vietnam, arriving in country at Nha Trang on 26 April 1962. On 30 June 1963, the unit relocated to Tan Son Nhut Air Base, Saigon where it remained until deactivation on 14 March 1973. During the 57th Medical Detachment's service in Vietnam, the unit's dedicated unhesitating service to the fighting forces, combined with an excellent medical support system, contributed to the lowest mortality rate for the United States Armed Forces of any conflict in military history. The period of service in Vietnam also provided the 57th Medical Detachment (RA) with its motto, "THE ORIGINAL DUSTOFF", when all aeromedical evacuations became known by the 57th Medical Detachment's original radio callsign "DUSTOFF". When the 57th Medical Detachment (RA) was sent to Vietnam, it became the first unit to use the UH-1 helicopter for MEDEVAC in actual combat operations, evacuating more than 100,000 patients within the combat zone. On 29 March 1973, the Detachment returned to the United States and was assigned to Fort Bragg.

Legislation passed by Congress on 1 July 1974 allowed the 57th Medical Detachment (RA) to become one of the first participants in the Military Assistance to Safety and Traffic (MAST) program.

On 16 April 1982, the unit was re-designated the 57th Medical Detachment (RG) when it became the first air ambulance detachment in the Army to receive the UH-60 helicopter.

The 57th Medical Detachment (RG) deployed to combat on 26 October 1983 in support of Operation Urgent Fury in Grenada where it provided aeromedical evacuation support for the Caribbean Peace Keeping Force until 30 October 1984. The unit deployed for Operation Just Cause in Panama on 23 December 1989 and deployed to Saudi Arabia on 9 September 1990 to support Operations Desert Shield/Storm.

On 16 September 1992, the 57th Medical Detachment (RG) was the first unit to be reorganized as a 15 aircraft Air Ambulance Company and redesignated as the 57th Medical Company (Air Ambulance).

The 57th Medical Company (Air Ambulance) was inactivated at Fort Bragg, NC in January 2007.

*Medical unit sub-identifier code. (RA) designated an aeromedical unit with UH-1 aircraft and (RG) a unit with UH-60 aircraft.

Campaign Participation Credit

Vietnam

Vietnam Advisory Campaign
Vietnam Defense Campaign
Counteroffensive Phase I
Counteroffensive Phase II
Counteroffensive Phase III
Counteroffensive, Phase IV
Counteroffensive, Phase V
Counteroffensive, Phase VI
TET 69 Counteroffensive
Vietnam Summer-Fall 1969
Vietnam Winter-Spring 1970
Sanctuary Counteroffensive
Counteroffensive, Phase VII
Consolidation I
Consolidation II
Vietnam CEASE-FIRE

Grenada

Grenada Operation 1983.

Panama

Panama Campaign 1989-1990

Saudi Arabia

Defense of Saudi Arabia Campaign 1990-1991

Decorations

Presidential Unit Citation, Vietnam 1966
Meritorious Unit Commendation, Vietnam 1964-1965
Meritorious Unit Commendation, Vietnam 1968
Meritorious Unit Commendation, Vietnam 1969-1970
Meritorious Unit Commendation, Vietnam 1970-1971
Meritorious Unit Commendation, Vietnam 1972-1973
Valorous Unit Award, Iraq 2003-2004
Republic of Vietnam Cross of Gallantry with Palm, Vietnam 1964

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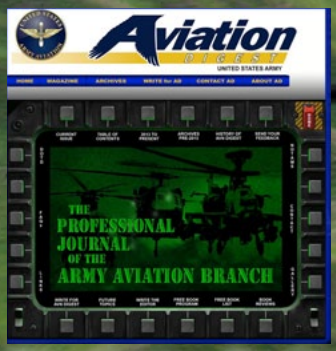
Look For The January - March, 2015 Issue:

Our Featured Focus Will Be on

A Transition in Training Philosophy ... and More

2015 Featured Topics -

January - March: *A Transition in Training Philosophy*
April - June: *Aviation Life Support Equipment*
July - September: *The Brigade Aviation Element & Aviation Liaison Officer*
October - December: *Airspace and Airfield Management*



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