

JOURNAL

U.S. ARMY MEDICAL DEPARTMENT

July – September 2006

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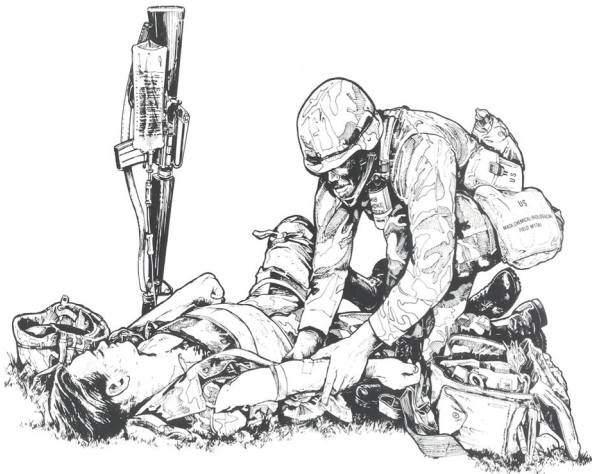
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Perspective

Major General Russell J. Czerw

It is my distinct pleasure to review my first issue of the *AMEDD Journal* as the new Commanding General, US Army Medical Department Center and School and Fort Sam Houston. I look forward to every subsequent issue with enthusiasm as we read, learn, and broaden the knowledge of our Warrior Medics. The *AMEDD Journal* exists for the specific purpose of reflecting general perspectives on the conduct of our core business. It serves to strengthen the concepts and application of clinical, research, operational, and administrative Army medicine. Furthermore, the *AMEDD Journal* provides us great benefits as a peer-reviewed publication. First, reviewing articles in your field (and in general) keeps you abreast of dynamic research and ideas. Secondly, the *AMEDD Journal* provides you an excellent venue to contribute ideas and information for those of us who look to the *AMEDD Journal* to strengthen our education, research, and service.

To our readers and contributors, all of us at the Center and School thank you in advance and sincerely appreciate your support and encouragement as you continue to conduct and report on your research, experiences, and lessons learned, while we do our very best to expand the knowledge base of our Warrior Medics.

I know you will find this edition of the *AMEDD Journal* particularly useful and informative. It contains some great research, observations, and ideas that cover a myriad of diverse topics, all very applicable to present-day *AMEDD* global operations.

This edition begins with an article titled “Medical Operations in the Stryker Brigade Combat Team” (SBCT) authored by a group of military medical professionals led by LTC Ed Michaud. They do a superb job highlighting the reality that the contemporary operational environment dictates the necessity for further refinements in the SBCT modified table of organization and equipment. There are some truly smart comparisons here regarding medical support in the legacy brigade combat team and the current transformed SBCT. The authors conclude that the Brigade Surgeon Section should be more robust and self-sufficient, thus eliminating the requirement for critical augmentation. The article



brings to light a host of other issues with some very supportive observations in this very easy read.

“Medical Processing of Patients from OEF and OIF: The Deployed Warrior Medical Management Center” (DWMMC) by MAJ Brent Johnson, USAF explores the operations of the DWMMC at Landstuhl Regional Medical Center. He articulates the DWMMC’s many challenges and successes in coping with the complexities of outpatient management across the spectrum of multiple operations. The DWMMC at Landstuhl is the model for our planners when they consider the high demand of outpatient care for future conflicts.

“Caring for Contractors in Our Midst: Lessons Learned from Operation Iraqi Freedom” by MAJ Andrew Doyle, takes a good look at the dilemma of providing the proper care for our US contractors in OIF. He notes that the presence of contractors with our forces is nothing new, however our Army field medical units are structured to provide combat casualty care to a mostly healthy, young, adult population. Our contractors are often older and may have medical conditions that are dramatically different

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than those of the average frontline Soldier. He concludes that our deploying medical units must take this into account and plan and expand their service accordingly. It is to the benefit of our deployed warriors that we keep our contractors healthy while they are serving with them.

“Thumb Opposition Restoration: A Case Study” by CPT David Admire intricately examines the successful outcome of a thumb injury sustained by an F-16 pilot. After two successful operations, combined successful occupational therapy and intensive rehab, the pilot was able to return to duty, saving enormous amounts of time and money while continuing to maintain operational readiness.

“Medical Support and Basketball-Related Sports Injury of US Soldiers in Afghanistan” by LTC James Frizzi et al dutifully reminds us that although our Soldiers truly enjoy and benefit from the improved athletic and sports facilities at far-forward areas, the presence of such facilities inevitably leads to an increased requirement for crutches, casts, and cold compresses. Our military should continue to provide such facilities. However, medical support providers must take into account the attendant impact on supplies and capabilities during the planning process.

“Improving Soldier Care Through Outcomes Research: The Accession Screening & Immunization Program” (ASIP) by CPT Remington Nevin et al provides a great look at the ASIP program as an application of medical outcomes research, improving Soldier care while providing evidenced-based forecasted cost savings. He contends that implementing serologic screening would most certainly change current Army accession immunization practices for the better; eliminating innumerable unnecessary injections, reducing needlestick injuries and saving big dollars. Perhaps we can all say goodbye to the days of mass immunization.

“Multidisciplinary Crisis Management Simulation-Based Training Program” by Dr Kevin Coonan et al is a great read. It reinforces that simulation training is of great value across the spectrum of health service. From the foxhole to the ICU, simulation is an invaluable tool for enhancing patient care team performance. The article also emphasizes that further studies and documentation are required to optimize that training. More to come in the dynamic field of simulation training.

“Elements of Leadership for the Successful Organization” by COL George Turiansky is an

absorbing essay on a subject, leadership, which can never be overemphasized. COL Turiansky thoughtfully shares the pillars of his leadership philosophy: vision, communication, courage, developing subordinates, knowing yourself, and passion. This article is an easy and important read because we all have room for improvement in our role as leaders.

“Mentors and Protégés: Simple Rules for Success” by COL Mark Melanson is a clear, structured presentation on an often overlooked tool that organizations have available to nurture and grow their people. COL Melanson delineates ten rules each for the mentor and the protégé in a mentoring relationship. This concise approach to the subject offers some great pearls of wisdom on how mentoring, when used correctly, can be of great benefit to our medical professionals, augmenting their skills and knowledge while optimizing the time and resources invested in the effort.

Finally, “A Validation Study of a Commonly Used Military Assessment of Personality Interactional Patterns” by Ms Susan Walley et al is a comprehensive study to evaluate if use of the Persogenics™ Personality Profile is an effective method of enhancing mission accomplishment. Originally developed for civilian use, it has been incorporated as a training support tool within the military. This study looks again at Myers-Briggs and other personality evaluation instruments, describes the methodologies, and presents the analysis of data. The authors conclude that, although certain similarities do exist between our civilian and military populations, further studies are needed to assess direct and tangible benefits to military personnel from use of the Persogenics tool.

Again, it is my pleasure to come aboard and I look forward to your continued support. All of you have my sincere thanks for what you do every day!

Medical Operations in the Stryker Brigade Combat Team

LTC Ed Michaud, MC, USA
MAJ Mike Helwig, MC, USA
LTC John Glorioso, MC, USA
LTC Keith Salzman, MC, USA

Army transformation involves a combination of structural changes and the incorporation of new technologies. The implications of information age technology have special importance for the military, not only in the ever-expanding capability to recognize, understand, and adapt to the enemy's resources and actions, but also in the basic understanding of the current condition and capabilities of our resources. As Sun Tzu wrote over 2,000 years ago, "If you know the enemy and know yourself, you need not fear the result of a hundred battles."¹ The transformation of Army medicine with new information technologies is a major component in a commander's ability to better know the current condition of that most important resource, the Soldier. Such expanded capability is becoming especially important in the new operating environment presented by the nonlinear battlefield.

The designation of combat health support under combat service support is a relic of the legacy Army. In the contemporary operating environment, medical companies are no longer clustered in the brigade or division support areas. They are dispersed to far forward operating bases supporting the maneuver units with minimal contact with the support battalion. As such, medical assets should no longer fall under logistics battalions, commanded and controlled by logisticians. The brigade surgeon section is tasked to provide the brigade commander, battalion commanders, and the brigade combat medics with the most robust medical support possible, including realistic medical training, medical information management implementation, current and accurate medical intelligence, careful health service support planning, responsible coordination for Class VIII support, and competent execution of medical operations. The Soldiers and medics of the maneuver platoons must be prepared to stabilize a trauma patient at his point of injury and evacuate him to a level III hospital as soon as possible. Further, preservation of a healthy force requires that Soldiers must be educated to keep themselves healthy, from the basics of hygiene to the food that they eat. This requires both a centralized unity of effort within the medical

community and a decentralized execution down to the medical platoons and the individual Soldier.

The roles of the brigade support medical company and medical support operations of the brigade support battalion have evolved under the new Stryker Brigade Combat Team (SBCT) structure. These cells do less medical planning, operations, treatment, and evacuations than in legacy force structures. The medical staff structure is already being modified by necessity, both in garrison and in deployments to Operation Iraqi Freedom, to reflect the new paradigm. The brigade surgeon section is robust. The maneuver battalion medical platoons and brigade support medical company are more independent, yet more interconnected by multiple information systems. Soldiers are given increased training in first aid and preventive medicine. The modified table of organization and equipment of the objective brigade combat team should be structured to reflect those lessons learned, similar to the modern division which has an independent medical company and a robust surgeon section.

BRIGADE SUPPORT MEDICAL COMPANY: A SEPARATE COMPANY

Historically, "Charlie Med" has been located in the brigade support area with all of the combat service support elements. Because of this traditional collocation, it made sense to task organize the medical company under the umbrella of the forward support battalion. It was a very appropriate organization for the legacy Army fighting on a linear battlefield, eg, to defend the Fulda Gap. The enemy has changed. The battlefield has changed. The Army has transformed. The medical company assets are dispersed on today's nonlinear battlefield. For example, during an Operation Iraqi Freedom deployment, the 296th Brigade Support Medical Company (BSMC) supported operations of the 3rd Brigade, 2nd Infantry Division SBCT from 6 forward operating bases both within and out of the brigade area of operations. Some of the BSMC medics patrolled with and gave direct

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medical support to infantry squads and companies in combat operations. Only a single team was left with the brigade support battalion (BSB) to provide level I care to the battalion.

The brigade surgeon section rarely involved the S4 when planning combat operations. The medical plans officer developed the medical plan in conjunction with the S3 planning section. When the plan was executed, coordination was done with the S3 operations section, the air operations officer, and the fires and effects cell for deconfliction. The medic on the line or the treatment team augmenting a battalion is a far forward combat multiplier. The medic is part of the team of an infantry squad assaulting an objective. The forward aid station is there when a battalion cordons a village. These are not logistic support functions. Medical support in combat is a combat support function. This is not to argue that there is not a logistics element to combat health support. Of course there is. However, medical logistics is to combat health support as moving Class I, III, and V supply is to an infantry operation. Under the current structure, the effectiveness of combat health support is far too dependent on command philosophies, preferences, and individual personalities, as illustrated in the deployment experiences of two different SBCTs.

During the deployment discussed earlier, the 296th BSMC supported the brigade magnificently — in spite of the task organization, not because of it. The BSB attempted to maintain control over all of its Soldiers dispersed over 28,000 square miles in support of the maneuver battalions. This attempt to maintain command and control rendered the dispersed medical assets less responsive to the rapidly changing needs of the maneuver battalions. Both the brigade environmental science and mental health officers performed superbly, but their efforts were sometimes hampered because they could not respond directly to requests from brigade headquarters, or the individual battalions to which they were attached. This occurred because all requests required approval by the BSB commander. Further, these health professionals were required to submit reports of their assessments of maneuver battalions to the BSB commander for approval before providing the information to the brigade surgeon to brief the brigade commander. Indeed, the routing of support requests and the flow of report information through the BSB was doctrinally correct, but the mission of the BSMC is that of a medical force and service provider to the brigade, not to the BSB.

During their deployment, the 1st Brigade, 25th

Infantry Division SBCT enjoyed an excellent relationship with the 25th Brigade Support Battalion. This was due to a combination of strong and extremely competent Captains at both the health support service officer and medical logistics officer positions in the BSMC, and a reverse migration of officers from the brigade surgeon section (BSS) to the BSMC where they brought a brigade level perspective to their brigade support role. The BSMC commander had been the BSS planner. While in Iraq, the 25th Brigade Support Battalion was able to collect medical situation reports and send them to the brigade surgeon via the NIPRNET,* and was also very responsive to requests from the BSS. Another positive factor during the deployment was that the SBCT was overstaffed with two Medical Service Corps officers in the brigade surgeon section, and the BSMC had an Executive Officer. However, this situation was unique for this deployment and cannot be relied upon for future operations.

The fact that the success of that deployment was not experienced in previous deployments by this SBCT, or during other SBCT deployments, demonstrates that the current organization can be made to work with experienced staffing greater than the allocation of the modified table of organization and equipment. Unfortunately, that is the exception rather than the rule. The usual situation under normal staffing levels almost always involves Lieutenants in Captains' billets and medical officers diverted into nonmedical roles, with a resulting net decrease in medical planning and operational effectiveness.

In light of the changes in the Army, the enemy, and the battlefield, combat health support should be removed from the logistics umbrella. The BSMC should be a separate company falling directly under the brigade. The BSMC's deployed operating environment is no different than that of the Military Police and Civil Affairs detachments, and the Signal, Military Intelligence, Antitank, and Air Defense Artillery companies, all of which have Soldiers dispersed across the forward operating bases in the brigade area of operations under the brigade troop battalion. A separate BSMC at the brigade level can be used by the brigade commander and staff to meet the needs of the entire brigade without the perceived threat to battalion operations and integrity.

CURRENT MEDICAL OPERATIONS

In the Army of Excellence legacy brigade combat team, the medical company was the hub of medical

*Nonclassified internet protocol router network

operations. Brigade medical planning was based primarily on input and force health protection estimates provided to the brigade S3 through the forward support battalion. All patients were evacuated from level I to level II. All medical logistics were coordinated through the brigade support battalion medical support operations, and all communications went through the medical company.

As discussed earlier, that paradigm has changed. Patients are now stabilized near their point of injury and most are evacuated directly to the closest military treatment facility (generally level III) for optimal medical care. The BSS performs brigade medical planning, coordinates with medical forces in those echelons above brigade level, and coordinates with host nation and nongovernmental organizations. Medical informatics and implementation of the tactical electronic medical record, both critical to transformation of medical support in the SBCT, are two of the new roles performed by the BSS. Brigade level medical evacuations are coordinated and managed by the brigade tactical operations center (TOC). The brigade surgeon section has assumed these new responsibilities out of necessity due to the command and control structure which directs and supports SBCT operations.

The SBCT brigade TOC is a remarkable powerhouse for both the planning and execution of the combat team's missions. The S3 battle captain and the brigade staff monitor operations around the clock. All forms of communications are monitored, even down to the individual vehicle. Unmanned aerial vehicle imagery and intelligence data can be presented on monitors in the TOC. Radar data on enemy mortar positions are fed to the Force Effects Command Center (FECC) where quick reaction forces are alerted to deal with the identified threat. The air space controller sits next to the Air Force Air Liaison Officer (ALO) who controls all rotary and fixed wing air movement in the brigade area of operations. Medical evacuation and nonstandard casualty evacuation flights are coordinated in the TOC among the intelligence (S2) section (safety of landing zones), the FECC (clearance of friendly and enemy fire), the ALO (assignment of flight corridors), and the BSS which ensures that patients are prepared for pickup at the designated landing zones. The BSS receives medical situation reports twice daily and sends patient status information, medical intelligence, and operational guidance to medical platoons using the TOC's tactical communications resources. Responsive, effective combat health support would be impossible in today's battlefield environment without close, active interface

between the BSS and the brigade's TOC.

On the other hand, the BSB's health service support officer and medical logistics officer are relatively isolated from the brigade's ongoing combat operations. They do not participate in brigade medical planning or operations at the TOC, but rather confine their responsibilities to BSB medical operations. Unfortunately, they are typically assigned to nonmedical combat service support functions, to the detriment of their force health protection responsibilities. The misuse of these healthcare professionals is especially egregious in view of the fact that the modified table of organization and equipment (M-TOE) assigns only 3 medical officers and 2 enlisted personnel to the brigade surgeon section to perform the section's extensive planning and operational functions. Fortunately, as lessons learned from actual combat operations have been considered in deployment planning, at least 2 SBCT commanders supported a more robust BSS. Those successes support the idea that combat health support of brigade combat operations would be better served by a permanent change to the structure, ie, change the M-TOE to move the health service support officer and the enlisted assistant to the brigade surgeon section.

PREVENTIVE MEDICINE

In 2000 a preventive medicine section, consisting of an environmental science officer and a preventive medicine specialist, was added to the brigade support medical company of the SBCT to affect collection and analysis of medical threat intelligence. The new section provides the SBCT additional resources during the intelligence preparation of the battlefield (IPB). They work closely with the brigade S2 to develop specific environmental and enemy medical threats. Such threats have become ever more important in current operational environments. Anticipating an enemy's decision process has always been vital to success in combat. For commanders of today's fast moving, extremely flexible, and rapidly reactive SBCT operations, such anticipation is of critical importance. During the IPB, the preventive medicine (PRVNTMED) section produces a PRVNTMED estimate which is submitted through the brigade support battalion for the brigade surgeon.^{2,3} The Environmental Science Officer will also directly participate in the preparation of the PRVNTMED or medical annex in all brigade operations orders.

The PRVNTMED section is responsible to the brigade commander for ensuring preventive medicine measures are implemented to protect Soldiers against

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food, water, insect borne diseases, and environmental injuries (eg, weather). The scope of this responsibility includes the brigade support area and units in forward areas. The section's activities are governed by the unit employment and force health protection plans and coordinated by the brigade surgeon section. The PRVNTMED section provides consultation and advice in the areas of environmental sanitation, epidemiology, and entomology. It conducts occupational and environmental health surveillance and provides limited sanitary engineering and pest management services. The section is charged with medical surveillance, ie, monitoring the medical treatment requirements of brigade Soldiers to identify injury and disease trends. Such information is critical for both the SBCT surgeon and commanders at all levels. It is vital to the combat effectiveness of the fighting force to identify any condition or activity that is detrimental to the health of the Soldiers as soon as possible, and institute corrective action. Medical surveillance has become much more efficient with the advent of the tactical electronic medical record,^{4,5} which allows the use of data mining tools to quickly identify trends and patterns in treatments. Data must be obtained and reviewed during visits to aid stations, sent to the brigade surgeon, analyzed for actionable information, then transmitted to units for their use.

The PRVNTMED section has the capability to train and supervise the brigade field sanitation teams and ensure those teams' effectiveness in their critical mission of ensuring safe drinking water and food, sanitary waste disposal, enforcement of hand washing requirements, disease vector control, and other measures to ensure the health and combat effectiveness of the brigade's Soldiers. Above all, the PRVNTMED section provides education and training to all SBCT Soldiers in preventive medicine measures, ie, how to stay healthy.

Unfortunately, the conceptual and doctrinal application and utilization of preventive medicine resources did not materialize with the first two SBCTs. The environmental science officer and preventive medicine specialist were assigned to the brigade support medical company in the BSB where they were employed in the inspection of field feeding teams, rodent control, and other BSB general responsibilities as assigned. As such the PRVNTMED section's skills and training were marginalized, both doctrinally and practically. The section should have trained and supervised brigade field sanitation teams to perform those functions, among others. The brigade surgeon is charged with the coordination of all PRVNTMED

functions and services within the brigade, just as the division surgeon does at the division level.⁶ The reality is that for geographic, political, or personal reasons the PRVNTMED section members were often tasked by the BSMC and the BSB with nonmedical responsibilities and assignments. Consequently, few of the brigade level preventive medicine functions were implemented. The 1st Brigade, 25th Infantry Division SBCT did not experience the same misuse of the PRVNTMED section during their deployment. The brigade support medical company commander (who had written the brigade preventive medicine policy while assigned to the brigade surgeon section) ensured that the PRVNTMED section performed its doctrinal functions and submitted regular reports to the brigade surgeon.

The above described problems have also been noted in legacy divisions. The division PRVNTMED section is doctrinally employed by the division surgeon. In many cases the section is assigned to the division support command, thereby eliminating their integration with division medical planning, operations, and training. This situation is being corrected as the PRVNTMED section is assigned to the division surgeon section in division reorganizations,⁷ thus ensuring doctrinal application of this resource. Similar action should be taken within the brigade structure to ensure that the brigade surgeon has the resources necessary to maintain the health of the force, assess and estimate the health and medical conditions of the enemy's forces, and assist the host nation with health issues among their population to the extent possible.

COMBAT STRESS CONTROL

A combat stress control (CSC) section, usually found only in divisions,⁸ is another new addition to the SBCT's medical resources. Similar to the preventive medicine section, the CSC section is responsible for preparing the CSC estimate³ for the brigade surgeon. The team also is charged with monitoring the mental health of brigade Soldiers and developing recommendations as to actions that may be taken to mitigate stress related injury and improve the overall mental health situation. The CSC officer must work closely with the brigade chaplain and the command sergeant major to maintain a sense of the attitudes and morale of the troops and identify detrimental trends or patterns. As discussed previously, the tactical electronic medical record allows use of data mining tools to research treatment records. The CSC section also visits aid stations and conducts interviews with individual Soldiers who typically have been referred from their command or health care providers. The

CSC officer, whether a psychologist or social worker, must train Soldiers and leaders at all levels in individual and collective tasks that are used to avoid stress injuries. They must train health care providers and supervisors in treatment methods which are most conducive to returning dysfunctional Soldiers to duty.

At the completion of deployment, the CSC section must be integral in planning redeployment screening and followup for Soldiers who have been traumatized by combat. They must work closely with the chaplain to develop and implement a suicide prevention program. They must coordinate with family advocacy programs at home to help strengthen families and provide crisis intervention. The CSC team must also coordinate closely with the Army Substance and Alcohol Program to identify and assist Soldiers who are abusing alcohol and drugs. The CSC section should manage the cases of all brigade Soldiers with mental health, substance abuse, or significant family problems and advise the commanders on their conditions and the assistance they require.

LEVEL II CARE IN THE STABILITY AND SUPPORT OPERATIONS

The doctrinal level II facility (brigade support medical company, legacy forward support medical company), was traditionally the evacuation destination after initial stabilization was performed at level I (point of injury, aid station). At the level II site, patients were further stabilized, then moved to a level III facility (hospital). The BSMC also provided medical reinforcement to maneuver units with augmentation treatment teams and evacuation assets. This treatment and evacuation model is seldom used in the nonlinear battlefield environment. Patients are now taken directly from either the point of injury or level I care to the level III treatment facility. This is the standard method of patient evacuation in the civilian sector and is only logical for the major trauma injuries sustained in combat. Depending on the location of the level III facility, evacuation is done either with organic medical evacuation vehicles or helicopter air ambulances.

Initially, forward surgical teams were envisioned to augment medical companies at level II. With augmentation of x-ray, laboratory, and patient hold capabilities on the modified table of organization and equipment, these teams could be fully functional, and collocated with any battalion aid station if located a great distance from a level III facility. In Iraq, the units have evacuated their own casualties to level III facilities as discussed previously. In that dangerous

and unstable environment, evacuation convoys are impractical because routes generally cannot be rehearsed, and ambulance exchange points are difficult to establish, coordinate, and secure.

A registered nurse instead of the licensed practical nurse is assigned to the SBCT. The intent is for these nurses to assist with training of medics and other brigade medical personnel. The brigade nurse has been an effective educator for BSMC medics. Unfortunately, similar training is not extended to brigade medics assigned to combat maneuver battalions. The brigade nurse has proven to be a valuable organizer and implementation manager for medical readiness, clinic organization, and patient care. The nurse should be considered a shared resource, as are the environmental science and mental health officers, to address planning and training requirements across the brigade.

BRIGADE MEDICAL TRAINING

Our physicians, nurses, physician assistants, and medics are better trained than ever before and are expected to maintain their proficiency. Ensuring that they maintain their skills and accreditations is a daunting challenge, even in units with sufficient resources. Medics have a real world mission of patient care, are expected to provide medical coverage for all unit training, maintain their equipment, and stay proficient in their nonmedical military skills. The medics must pass the EMT (emergency medical technician) class, obtain EMT certification, pass Trauma Aims and prehospital trauma life support courses in their MOS 91W transition. At Fort Lewis, SBCTs pooled training resources with Madigan Army Medical Center at the Joint Medical Training Center. Medics attached to the brigade surgeon section trained the unit medics in their requirements quarterly, resulting in over 90% conversion of 91W medics in the Medical Operational Data Systems. Medics must also take the semiannual skills validation training which was conducted at the medical platoon level. The Stryker brigades have given their medics and other providers additional trauma training to ensure they are prepared to care for our most severely wounded Soldiers on the battlefield. The training was centrally coordinated by the brigade surgeon section (BSS). The training was conducted by BSS staff augmented by external medical personnel, with invaluable support from Madigan to create realistic trauma training during a brigade level exercise. The training evolution was repeated just prior to deployment.

The 1st Brigade, 25th Infantry Division and the 3rd

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Brigade, 2nd Infantry Division SBCTs instituted an effort to train 100% of their Soldiers in combat lifesaving procedures and techniques because trauma can occur to anyone at anytime on the battlefield. Training everyone in combat lifesaving skills dramatically increases the probability that there will be someone available to initiate first aid and stabilization of injuries immediately. Much of this training is conducted at the battalion level, but some require a centralized effort for improved quality and efficiency of delivery. All of the individual training must be supervised and documented.

ADDITIONAL STRYKER MEDICAL EVACUATION VEHICLES

Stryker Medical Evacuation Vehicles (MEV) have proven to be efficient and quiet while effectively protecting the occupants. These MEVs allow a more aggressive medical posture on the battlefield. Each SBCT mobile treatment team should have a treatment and evacuation MEV variant. More MEVs would allow treatment teams to support maneuver companies at the fight, as well as make additional vehicles available to meet any increased requirements on the dynamic battlefield, or to replace lost vehicles. The Army Medical Department (AMEDD) submitted the request for such a change to the Army Review Team when the first SBCT was formed. The change was not supported due to cost limitations and airlift constraints. The need for the change is more acute now, and solidly justifiable from many months of combat experience. In addition, it is now clear that the front line ambulances should be replaced with 4 to 8 MEVs to augment evacuation capabilities throughout the brigade area of operations.

CONCLUSION

Army transformation continues apace as the 172nd SBCT completed its transition at Fort Wainwright and deployed to Iraq, and a fourth Stryker brigade formed at Fort Lewis. Medical transformation requires close work between Stryker units and their supporting military hospitals, along with continued assistance from the AMEDD. The changes to the SBCT modified table of organization and equipment (M-TOE) which distinguish it from legacy brigades are appreciated, but further refinements are necessary. The M-TOE should be modified to make the BSS more robust and self-sufficient, eliminating the need to augment it with personnel who are badly needed elsewhere. The BSS must be able to conduct current and future medical operations while being responsive to medical logistics demands around the clock. It must also be able to

implement medical informatics, analyze and prepare detailed medical intelligence, oversee medical readiness levels, organize a comprehensive training program for medical caregivers, and work closely with host nation and other nongovernment medical elements.

In 1795, a surgeon in Napoleon's army, Dominique Jean Larrey, perfected the use of the battlefield ambulance he had developed 3 years earlier. The "ambulance volant" was one of the innovations in military medical support developed and implemented during the Napoleonic wars. During these campaigns, Napoleon's military also developed the concepts of organized, sophisticated logistics support of an army in combat. Since their inception, the two support functions, medical operations and logistics, have been separate entities, both conceptually and practically, and should be so today. The SBCT brigade support medical company (BSMC) should be moved from the brigade support battalion (BSB) to the new brigade troops battalion. The BSMC would then apply their resources to brigade level medical support and avoid the provincial concerns of the BSB. Army medicine should be considered a combat support function rather than a combat service support operation. Lessons learned from SBCT combat deployments can be used to demonstrate the need and justification for such realignment.

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Medical Processing of Patients from Operations Enduring Freedom and Iraqi Freedom: The Deployed Warrior Medical Management Center

MAJ Brent A. Johnson, BSC, USAF

ABSTRACT

The Deployed Warrior Medical Management Center (DWMMC) at Landstuhl Regional Medical Center, Germany, has played a pivotal role in patient management from Operations Enduring Freedom and Iraqi Freedom. The DWMMC prepares for the arrival and management of these patients while they are treated at Landstuhl, and coordinates either their return to duty or evacuation to the United States. DWMMC operations and scope changed dramatically from the early days of Operation Enduring Freedom when an average of 2.5 new patients per day were received from 3 or 4 flights per week (maximum of 32 patients on any flight), to the peak of Operations Enduring Freedom and Iraqi Freedom, when an average 57 new patients arrived on daily flights averaging 30 to 40 patients per flight. Planners for the next major theater war should consider the high demand of outpatient care evidenced by Landstuhl Regional Medical Center's experience and incorporate plans for a DWMMC to manage patient flow.

INTRODUCTION

Operation Enduring Freedom (OEF) began 7 October 2001 against the Taliban regime in Afghanistan. Landstuhl Regional Medical Center (LRMC), the largest American military medical center in Europe, became the sole receiving fourth-echelon medical facility for patients from OEF combat operations. The Deployed Warrior Medical Management Center (DWMMC) at Landstuhl was established to manage the processing of patients before arrival and during their time at Landstuhl. The DWMMC handles tasks such as identification of incoming patient airlifts, billeting arrangements, patient movement (from DWMMC to geographically-separate billeting and to the aeromedical staging facilities at nearby Ramstein Air Base), accountability, and data input to the DWMMC database, the Defense Enrollment Eligibility Reporting System, the Composite Health Care System, and the Army's Patient Accounting and Reporting Real-Time Tracking System. These tasks prepare patients to either return to duty or be sent to their home station for additional care. Patient numbers dramatically increased in the months preceding the 20 March 2003 start of Operation Iraqi Freedom (OIF) and remained significant through 2004. This paper focuses on the medical section's role and how the DWMMC interfaced with the medical staff of LRMC

to prepare for, treat, and manage the disposition of patients arriving from both OEF and OIF operations.

ACTIVE COMBAT PHASE

According to COL (now BG) D. A. Rubenstein (written correspondence, March 2004), Chief of Staff, European Regional Medical Command, prior to OIF, DWMMC processed a daily average of 2 to 3 new patients from US Central Command (CENTCOM), arriving on 3 to 4 flights per week (maximum of 32 patients on any flight). Information about incoming patients was monitored through the US Transportation Command's Regulating and Command & Control Evacuation System website. The website provides a Patient Movement Request (PMR) for each patient manifested on a given mission. The PMR contains the patient's diagnosis, a brief clinical summary, medications, allergies, and administrative information. The PMRs were printed and distributed to the DWMMC medical section for coordination with the LRMC medical staff to determine inpatient versus outpatient status, treating service, and inpatient bed location if the patient was to be admitted. During the early period of DWMMC operation, often less than 5 patients would arrive on any given flight so the medical director could personally visit each clinic and deliver the PMRs to the on-call physicians. As the

number of arriving patients increased proportionally with the increasing numbers of in-theater personnel in the few months prior to OIF (during the period 20 Mar through 6 May 2003, LRMC received an average of 24 patients per day (ibid)), daily meetings to make such decisions and assignments became a requirement.

The daily meetings were normally convened at 1300, with additional meetings called to address any flights with more than ten patients that were scheduled to arrive before the following day's regular session. The regular meetings were attended by the division chiefs for surgery and medicine, a psychiatry/psychology representative, the bed manager, the Deputy Commander for Clinical Services (DCCS), the receiving DWMMC doctor, and the DWMMC chief. Each patient was reviewed and the division chiefs decided on ICU, inpatient or outpatient status, and accepting service. Details about flight arrival times were presented by the DWMMC doctor, and any additional relevant information was passed among divisions, DCCS, and the DWMMC chief.

The disposition of patients was determined based on the information available on the PMRs. For example, severe neurosurgery patients, some ocular injuries, and other severe acute patients that were deemed to require care outside of LRMC's capabilities were triaged to the nearby German university hospital at Homburg. Due to the often incomplete clinical picture presented by the PMRs, arriving patients were occasionally directed to the emergency room where the on-call physician for the accepting service provided an assessment and disposition. Patients evacuated to LRMC for mental health reasons were either triaged to inpatient status or to the emergency room, where they would be evaluated by the on-call psychiatrist or psychologist. If considered safe, those patients would be sent to outpatient status.

DWMMC physicians rotated the 24-hour "receiving" and "reporting" call. The receiving physician was responsible for obtaining PMRs and flight information for arriving patients, organizing and preparing for the daily meetings, and recording arrival information for each patient at the meeting (inpatient or outpatient status, receiving service, and bed location for inpatients). Patient information was recorded on a master spreadsheet that was emailed to DWMMC staff, the LRMC commander, and inpatient wards. The receiving physician oversaw patient arrival, ensured movement to assigned locations, and evaluated outpatients to ensure they could remain as outpatients

until the next duty day when they would be seen in the outpatient clinics.

Patients were transported to LRMC from Ramstein Air Base by ambulance or bus. When patients arrived at the DWMMC, the receiving physician was briefed on any in-flight changes by either the air evacuation crew or the contingency aeromedical staging facility personnel. Manpower pool members then transported inpatients to their wards. Outpatients were sent to their respective clinics if they arrived during duty hours. Outpatients arriving at night or on a weekend were taken to the Family Practice clinic where they were inprocessed by DWMMC enlisted staff and then



evaluated by the DWMMC doctor. When there were more than 10 outpatients, the reporting DWMMC doctor, the on-call family practice physician, and the on-call pediatrician were called-in incrementally to assist in the evaluations. If there were more than 30 outpatients, as frequently was the case, all four physicians could be involved. Evaluation of outpatients was performed to ensure their conditions matched the clinical information discussed at the daily DWMMC meeting. Occasionally a patient was more acute than previously indicated or on intravenous antibiotics or analgesics. In such situations the DWMMC doctor coordinated with the bed manager and division chief for the patient to be admitted. Following evaluation, the outpatients would be processed for billeting. Some were transported to geographically-separate billeting while more acute patients were kept in on-post billeting or, initially, as "in-hospital boarders." Such patients had to be mobile enough to get to the dining facility without assistance and require no nursing care. Patients assigned to this type of billeting were those who could not ambulate great distances or up stairs, who had minor eye injuries

that impaired their vision, and renal stone patients.

The reporting physician prepared a daily report on LRMC's CENTCOM patients. During the early phases of OEF, the DWMMC medical director recorded information about the 4 or 5 OEF patients that were in the LRMC system at any one time for in-theater commanders who desired information about their evacuated Soldiers. As the operational tempo of the two major operations increased, distribution of the report also increased to multiple recipients throughout Europe and Central Asia, including unit commanders; the headquarters of the European Regional Medical Command, the US European Command (EUCOM), CENTCOM, the US Army Medical Command, and the Army Surgeon General. During the period April to July 2003, with approximately 250-350 outpatients and inpatients at any one time, the report had expanded into a hand-generated document of 30 pages or more. Each day one of the DWMMC doctors was responsible for the manual recording of all new arrivals. The manifests for all air evacuation missions leaving for the continental United States (CONUS), inpatient bed reports, and several other reports were carefully reviewed so departing patients could be manually deleted from the LRMC report. The reporting doctor also conducted rounds on the inpatients and collected updates on each individual. Those comments were entered into the Daily Update.

LOW-INTENSITY COMBAT PHASE

After the end of active ground combat on 1 May 2003, the patient load arriving at LRMC steadily increased through the summer and early fall. Some of this increase was due to the closure and redeployment of Naval Fleet Hospital, Rota, Spain. As an evacuation hospital, this facility had managed approximately 20% of troops evacuated from CENTCOM. The closure occurred at a time of increasing patient loads and continuing low-intensity combat. Therefore, LRMC absorbed the additional patient load. It is also probable that a portion of the increase was due to the fact that some troops ignored their sub-acute injuries or complaints during the buildup and active combat phase of OIF. Once the combat mission was declared complete and the environmental conditions in the Gulf began to take a physical and emotional toll, these courageous warriors began to present themselves for care and eventually arrived at LRMC.

For the period of 7 May through 30 June 2004, an average of 33 patients per day arrived at DWMMC. The rate climbed to an average 42 new patients per day during period 1 July through 15 September 2004.¹ At

the peak of patient flow (an average of 57 new patients each day) during this 75-day period, up to 5 air evacuation flights arrived each day with approximately 30 to 40 patients per aircraft. During one 2-week period in particular, daily arrivals of less than 100 patients occurred only 3 times. According to LRMC's statistics provided by COL Rubenstein (written correspondence, March 2004), the largest number of new patients received in a 24-hour period was 168.

Several key factors allowed DWMMC and LRMC to meet the increased mission demands of this period. DWMMC had a database for accountability and patient tracking. Over time, increased emphasis was placed on its use, eventually resulting in the production of an automated daily report in lieu of the manually generated document that previously consumed an entire day of a physician's time for preparation. The DWMMC database was used to develop what arguably became the most important report, the "Aging Report." This document listed the patients by name in descending order by length of stay with the longest stay at the top. The report allowed early identification and scrutiny of patients reaching the 14-day limit. As is always the case, there were some patients who purposely delayed the medical disposition, case manager appointment, orders generation, and air evacuation process and stayed in Germany longer than necessary. The Aging Report allowed rapid identification and disposition of these individuals. Development of the DWMMC database to adapt to the needs of the real-world operational tempo resulted in an excellent tool that allows DWMMC staff to select a name and view arrival information, medications, appointment dates, billeting location, and disposition. All information is carefully password-protected and meets HIPPA standards to ensure patient privacy and coded so that each section only sees information appropriate for their use. Electronic air evacuation forms can also be generated from this system. Soon, it will be possible to process patients electronically from doctor completion through air evacuation nurse/flight surgeon approval to inclusion on the flight manifest.

Outpatients represented a significant percentage of arrivals during all phases of OIF. As outpatient numbers climbed to 40 or 50 or more per flight, three or four physicians required increasing lengths of time to personally evaluate each patient who arrived after duty hours. To mitigate this situation, the DWMMC implemented a self-evaluation questionnaire, illustrated on page 14, that each patient completed after an initial briefing. The questionnaire was later redesigned so that appropriate "yes" and "no" answers

mandating an immediate visit were in the same column for ease of identification. The large number of outpatients who were arriving for chronic musculoskeletal complaints and minor injuries were stable and could safely remain as outpatients. Arriving patients who indicated a need for pain medicine refills (the most common reason to see a provider immediately), had intravenous medication requirements, or could not get themselves around in an outpatient setting were identified and their problems



addressed. Patients who had sudden onset of chest pain or other serious new-onset conditions were sent to the emergency room for work-up. This expedited system saved many significant hours and reduced medical staff requirements with no compromise to patient safety.

As the summer of 2003 passed, the mobilized or TDY physicians assigned to the DWMMC neared the end of their rotations at LRMC. It soon became clear that replacement physicians would not be available for DWMMC assignment and a significant gap in staffing would occur. At one point this staffing shortfall resulted in two physicians alternating 24-hour call for receiving missions. In late June and early July 2003 the task of preparing and receiving air evacuation missions was transitioned to a staff of nurses and medical technicians, thus allowing a larger staff of more available career fields to handle this vital component of the process. It also allowed subsequent physicians, physician assistants, and nurse practitioners delegated to the DWMMC to be more appropriately used in the Post-Deployment Clinic at LRMC. These providers rotated call to assist with after-hours evaluation of arriving outpatients. They also

evaluated secondary complaints and made specialty consults when appropriate. This combination of shifting nursing into the "receiving" mission, putting credentialed providers back into the Post-Deployment Clinic to clear arriving outpatients, and using the questionnaire to reduce the total number of outpatients needing immediate attention resulted in a safe, stable system that had been in place for approximately 14 months at the end of my tour (June 2004). The need for on-call family practice physicians and pediatricians to assist the DWMMC mission was, for the most part, eliminated. The importance and success of the nurses' assumption of the receiving mission cannot be overstated. Consummate professionals, they enthusiastically adapted to an extremely demanding and complex mission, making the whole system work.

DISCUSSION

The EUCOM in-theater policy allowed 14 days before patients either had to return to duty or proceed to their duty station. CENTCOM's in-theater policy was 5 to 7 days. Neither period was enough for patients to recover from chronic or acute injuries like meniscal tears, shoulder instability, foot and ankle problems, back pain, etc. Although statistics are currently unavailable, the LRMC staff anecdotally noted that a significant percentage of chronic injuries presented by patients existed prior to deployment. Some patients with chronic injuries or diseases with initiated medical board actions were deployed and underwent significant exacerbation while in theater, and subsequently required evacuation. These occurrences reflect the difficult decisions commanders are forced to make prior to deployments. Our experience showed that it was not uncommon for commanders to take a Soldier with an injury and use that individual for the short term, only to have the Soldier's condition worsen to the extent that he or she becomes non-mission-ready in the long term.

The European Regional Medical Command mandated that all personnel entering the DWMMC system from CENTCOM combat operations who would not return to duty would go through a postdeployment health evaluation. This evaluation included blood draw, HIV labs, TB test, and evaluation for malaria prophylaxis and exposure to depleted uranium. By doctrine this mission is the responsibility of the home unit when troops return. It was confirmed that MTFs in CONUS were actively conducting postdeployment programs

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Patient's Name (Last, First) _____		
SSN _____	Rank _____	
What medical problem are you here for? _____		
	<u>Please circle</u>	
Do you have a medical problem that needs to be seen right now instead of at your doctor appointment next duty day?	YES	NO
During the flight or now do you have chest pain?	YES	NO
During the flight or now do you have trouble breathing?	YES	NO
During the flight or now do you have a fever?	YES	NO
During the flight or now are you bleeding?	YES	NO
Do you have diabetes?	YES	NO
Do you have an IV or needle in you?	YES	NO
Are you currently having thoughts of injury to self or others?	YES	NO
If you have pain, does your pain medicine relieve it?	YES	NO
If you have pain, do you have enough pain medicine to last until your clinic appointment next duty day?	YES	NO
Can you walk 100 yards on foot or with crutches if you currently have them?	YES	NO
Are you able to eat and drink?	YES	NO
Do you feel safe to be an outpatient and seen next duty day?	YES	NO
Are you stationed in Germany?	YES	NO
Do not write below the line. This section is for provider's use only.		
This form has been reviewed, and this patient:		
Is stable to be an outpatient	Needs to be seen by a provider	

Self-evaluation questionnaire for evacuated outpatients arriving at the Landstuhl Regional Medical Center from Operation Enduring Freedom and Operation Iraqi Freedom.

and troops were reporting that the MTFs were repeating blood draws and other interviews already done at LRMC. This duplicate effort at Landstuhl involved significant administrative and personnel support, and undoubtedly consumed resources that could have been better used elsewhere.

The Theater Patient Movement Requirements Center, Europe (TPMRC-E) was the validating and approving center for all air evacuations entering and leaving EUCOM. An Air Force activity located at Ramstein AB, the TPMRC-E was responsible for dissemination of air evacuation policy and regulations, approving requests for individual patient evacuation, arranging additional flights in response to increased patient numbers or unusual patient care needs, such as special missions to the Burn Center at Brooke Army Medical Center, Critical Care Air Transport Team missions for ICU patients, etc. The DWMMC staff consulted often with the TPMRC-E for air evacuation issues or to expedite individual patient movement. The DWMMC coordinated with them on the movement (in standby contingency status) to CONUS of several special-

interest Iraqi civilians who were accepted by US civilian hospitals for care. The DWMMC also was the coordinating activity for wounded allied nation troops who were brought to Ramstein for transfer to another aircraft for transport to their home country. The DWMMC was prepared to accept those patients if a flight delay occurred during such "tail swap" missions.

The aeromedical staging facility was a vital component in both the transportation of patients to LRMC on arrival and the preparation of patients for their flight to CONUS. A contingency aeromedical staging facility (CASF) was activated and sent to Ramstein prior to the beginning of OIF. The CASF established operations in the Southside Gym at Ramstein Air Base and augmented the Ramstein holding capacity with 100 beds. Midway through the active combat phase the CASF commander initiated a weekly process-improvement meeting that included LRMC, the CASF, TPMRC-E, and various other units that were involved in the patient movement process. These meetings continued during the period discussed in this article and proved absolutely invaluable for

streamlining this complex multidepartment mission. Numerous problems were solved on the spot, and the professional relationships that were established allowed simple phone calls to quickly resolve many other problems, all of which aided the mission tremendously. It is strongly recommended that similar interagency structures and procedures be established at the outset of any future major military conflicts.

As mentioned previously, the EUCOM in-theater policy for patient care was 14 days. However, some consideration was given for patients with a high return-to-duty potential. During the fall and winter of 2003, CENTCOM commanders began expressing concern at the low return-to-duty rate — during the first 6 months of OIF it was well under 5%. In response, the DWMCMC staff worked with the LRMC medical staff to place emphasis on the return of patients to duty. This resulted in some patients being kept longer than 14 days. General Surgery developed a protocol for herniorrhaphy and cholecystectomy patients that involved a last follow-up at 2.5 to 3 weeks post-op and return to duty on a light-duty profile for recovery. Patients evacuated for biopsy-related issues (skin lesions, Pap smears, etc) were routinely held over the 14-day limit to allow finalization of biopsy results. LRMC's return to duty rate rose to approximately 30% by the early spring of 2004.

However, returning a patient to theater on a profile for an ongoing medical problem is a complicated issue. With mature medical assets in place in Iraq, clinical situations arose which allowed subspecialty evaluation at Landstuhl (for example, a chronic hand injury), after which patients were given a plan, instructed on brace wear and rehabilitation, and returned to duty on profile limitations. Follow-up was then performed in theater. Although not able to function at the squad level, a profiled Soldier could perform some function at the battalion level or higher (monitoring radios, administrative tasks, etc), replacing a Soldier to return the squad level, thus conserving unit strength. Unfortunately, we discovered that it was very difficult to coordinate with commanders high enough in the chain to formalize such a program. The command level that could usually be contacted was limited to the platoon leader/company commander who, when given the option, would reject the prospect of the return of any Soldier that could not perform the squad-level mission. The in-theater battalion and division surgeons must become

very proactive and aggressively communicate and coordinate with higher level commanders to determine what limitations can be supported, present the options and available sources of information, and ensure all command levels understand the benefits of such a return-to-duty program.

The end to major combat operations was declared on 1 May 2003. Fourteen days were added to the timeframe of the study¹ to ensure all casualties of the active combat phase had reached LRMC and were included. Of the 1,236 identified and tracked patients that arrived from OIF during this period, 20.7% were battle casualties, 41.3% sustained non-battle injuries, and 38% were disease patients. This patient population accounted for 620 inpatient admissions and 616 personnel treated as outpatients. Of the 620 inpatients,



77 were discharged to outpatient status prior to air evacuation. Therefore, 56% of these patients were outpatients at some point in their stay. As noted in discussions with EUCOM medical planners following completion of the active combat phase, outpatients accounted for a significant portion of our care responsibilities. Previously, medical planning was discussed in terms of inpatient beds, but as medical care in the US civilian and peacetime military world has shifted to an outpatient paradigm, so too has military wartime care.

CONCLUSION

Managing outpatients is fundamentally more difficult than managing inpatients, both in terms of medical

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care and administrative tracking and processing. Future medical planners must anticipate a large outpatient mission and plan scalable departments similar to the Deployed Warrior Medical Management Center to manage outpatients and assist in the pre-arrival planning, receiving, processing, and evacuation of inpatients and outpatients. Landstuhl Regional Medical Center was the first hospital to develop a DWMMC. It should serve as the model for other evacuation-chain MTFs in future combat operations.

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This article is dedicated with my profound thanks and best wishes to the staff of the Landstuhl Regional Medical Center and the Deployed Warrior Medical Management Center. Your incredibly hard work not only exceeded mission requirements but gave great comfort and aid to the approximately 15,000 patients from Operations Enduring Freedom and Iraqi Freedom who passed through our doors during my tenure as medical director. It was my pleasure and honor to work with all of you.

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LANDSTUHL REGIONAL MEDICAL CENTER

Caring for Contractors in Our Midst: Lessons Learned from Operation Iraqi Freedom

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INTRODUCTION

In recent contingency operations, US Army medical units have increasingly absorbed expanded responsibilities beyond those of their doctrinal combat health support mission. These new responsibilities include the need to perform widespread humanitarian assistance to local populations, the provision of health care to US Army detainees, and supplying the health support for Department of the Army civilians and contracted personnel on the battlefield. In that these missions extend beyond their doctrinal construction, medical units are at a disadvantage in terms of supplies, personnel, and practical experience when attempting to meet these new requirements.¹ This situation, in turn, may result in inadequate care to these special populations.

One specific, increasing demand being placed on Army medical units deployed in Operation Iraqi Freedom (OIF) is the growing presence of US contractors on the battlefield. This can be an especially difficult task for a unit to tackle. Army field medical units are primarily structured to provide combat casualty care and, to a limited extent, ongoing primary health support to a mostly healthy, young, adult population. In contrast, deployed contractors do not easily fit into these categories. Contractors are often older and may have medical conditions vastly different than those of the average frontline soldier. To add to the difficulties in supporting the deployed contractor, there are a myriad of rules regulating which government supplied health support deployed contractors are, and often are not, eligible to receive. On the other hand, units are hard pressed not to provide health support to contractors in their midst when they present for care.

To overcome these conflicts, medical units have had to adapt their normal ways of doing business to meet these needs. Unfortunately, these adaptations usually occur ad hoc, after a unit has deployed to theater, and without the benefit of learning from the experiences of others. This article attempts to outline some of the

lessons learned by previous units deployed to OIF as they have struggled to provide health support to deployed contractors. To do so, it is necessary to present a brief background of contractor support to the US Army, both its history and its regulatory processes. Following this overview, there is a discussion of lessons learned by medical units previously deployed to OIF. It should be noted that this article only addresses US contractors, not third-country nationals hired to support US armed forces.

HISTORICAL BACKGROUND

The US Army has relied upon contracted civilian support since the Revolutionary war. Civilians have been hired to provide transportation of troops and supplies, build major engineering projects, and to support communications equipment. In recent decades, as active component forces have decreased in size, the military has become increasingly dependant upon civilian contractors for support.² From the Revolutionary War through Operation Desert Storm, there was one civilian on the battlefield supporting anywhere from 50 to 70 military personnel. By the time of the Bosnian conflict this ratio was 1:10.³

While the current number of contractors involved in OIF is unknown, it is likely that the number of contractors on the battlefield is greater than ever. With the increasingly technological nature of US armed forces, contractors are involved in almost every aspect of supporting deployed troops and can be found imbedded with US armed forces at every level of the battlefield. This increased presence is evidenced by several measures. Current reports and after action reviews are filled with anecdotes concerning the increasing demands civilian contractors are placing upon deployed medical units. Furthermore, at the Fort Bliss CONUS (continental United States) Replacement Center, civilians now account for over 60% of the personnel processed for deployment to OIF.⁴

REGULATORY ISSUES

Caring for Contractors in our Midst

The first issue a medical unit must tackle is that of eligibility. Is the contractor eligible for care in their facility? As mentioned previously, the regulatory controls governing deployed US civilian contractors are vast, and at times contradicting. Contractors are employees of their civilian employer, not the government, and thus are generally not eligible for government provided, nonemergency health care. Traditionally, this policy has applied to contractors deployed with the force. Current Department of Defense policy holds that civilian employers are responsible for providing all of the health support required by their employees, including that required while deployed with US armed forces. The employer has the option of either providing that support directly, contracting with non-US facilities, or through a negotiated contract with the US government for military supplied health care for which the employer reimburses the government.^{5,6}

That being said, other regulations and policies may specify that the civilian contractor is eligible for government supplied health care. While US policy declares employers are responsible for providing for the health care of their employees, it also states that civilian contractors deployed with US forces will receive the same level of care available to military personnel. In contingency operations, often the only health care that meets this standard is that provided by the local military medical unit. In this case Army policy implies that civilian contractors may have military supplied health care made available to them. Additionally, certain contractors are eligible for care based on the type of service they perform. For example, civilian flight instructors and food service employees are eligible for physical examinations. Finally, many civilian contractors are either retired US military personnel or veterans. While they are not eligible for government provided health care as contractors, they are eligible for care due to their previous military status.⁷

Additional regulations apply to emergency and evacuation care for deployed contractors, beyond the setting of routine health support. Emergency care is always available and rendered, considered to be a reimbursable service. It should be noted, though, that forward deployed medical units are neither equipped nor organized to process billing. Thus, emergency services in these settings are not captured.⁸ The same standards apply to emergency evacuation, at least to the Level IV medical facility (eg, Landstuhl Regional Medical Center) and until the contractor is medically stable. However, if the contractor patient then must be

returned to the continental United States for ongoing care, transport is dependant upon the contract between the government and the employer.

To further complicate the issue for medical personnel, the presence of contractors with US forces is subject to international law. In countries that have Status of Forces Agreements with the United States, contractors accompanying the military are also subject to those agreements. In contingency operations, contractors are civilian noncombatants and may fall under the auspices of the Geneva Conventions and other Law of War regulations.

The time to determine eligibility of care is not when the contractor presents to the aid station. As medical units deploying to OIF can expect to care for civilian contractors, procedures for this care should be in place prior to deployment. However, the interpretation of the legal obligations and requirements is not the responsibility of the medical unit. The medical unit's higher headquarters should sort through this legal morass and develop policies and procedures for the caregivers. If this does not occur prior to deployment, the unit should request guidance as soon as possible.

The contractors' eligibility for care should be established prior to their arrival in theater. This will include arrangements for care, both routine and emergency, and will be stipulated in the contract. This status will be annotated on the individual contractor's identification documents. All deployed contractors are issued a Uniformed Services Identification and Privilege Card (DD1173). This card should clearly declare those services, including medical, to which the contractor is entitled. In addition, the contractor will receive a Letter of Authorization (LOA) from the contracting officer. The LOA should also indicate those services to which the contractor is entitled, and how reimbursement, if indicated, is handled.⁹ In lieu of this or other guidance, the medical providers are left to their best judgment.

LESSONS LEARNED

Ideally, contractors deploying to OIF will undergo pre-deployment processing with the unit in which they will be imbedded. However, contractors often deploy as individuals and join their respective units in the field. In these cases, contractors deploying to OIF will usually process through a CONUS Replacement Center (CRC) prior to deployment. At the CRC, they will undergo the same medical and dental screening as active duty soldiers prior to deployment. These

screenings will be performed by military physicians and dentists. The screening process should include a review of the contractor's medical record, identification of any disqualifying medical and dental conditions, and the administration of any required immunizations. Furthermore, the contractors should deploy with at least a 90 day supply of any medications, and additional pairs of eyeglasses, as needed.

While this is the process, and deployed medical providers can reasonably expect contractors have gone through this process, nevertheless, there are several areas that the medical unit must consider in preparations to provide routine care for eligible contractors.

Medical Records. Once a unit is identified as the supporting medical unit for an eligible civilian contractor, certain administrative records should be kept by the unit. Primarily, the unit should be provided a complete medical summary for the contractor. The summary should include

- a description of all underlying medical conditions and relevant past medical history,
- current immunization status,
- all existing prescriptions, to include eyeglasses, and
- documentation of DNA sample testing and dental panoramic radiograph, for future identification purposes.

In addition, copies of the contractor's LOA, emergency contact information, employer and insurance contact information, and the name and contact information of the contractor's private physician should also be kept on file by the medical unit.

Pharmacy. The care of contractors is an expanded mission responsibility resulting in a greater population of care. Consequently, medical units may not have the Class VIII supplies to meet this need. The most significant deficiency is likely to be in the unit's pharmacy. In terms of overall patient workload, contractors represent an additional drain on a unit's already limited pharmacy. Furthermore, the contractor may require chronic medications that the unit does not possess and may not be able to obtain. As soon as a contractor is associated with a medical unit for care, the unit should identify any chronic condition medications the contractor requires, especially if this

includes medications not carried in the unit's pharmacy. Arrangements must then be made to either acquire these medications, or change the medications to ones the unit possesses. Also, the unit must begin to arrange for the acquisition of refill medications, long before they are needed, due to the substantial amount of time it may take for them to arrive in theater.

Medical Evacuation. The contractor may require medical evacuation in the case of severe injury or illness. The usual evacuation route is to the combat support hospital and then to Landstuhl Regional Medical Center (LRMC). Once at LRMC, the contractor may be transported to CONUS for further care as necessary. Whether they continue to be cared for in military treatment facilities beyond this point is dependent upon the contractor's eligibility for military benefits.

Once the need for evacuation is recognized, initiate a log to track all events and movement of the contractor. Maintain a list of all contact information, including medical units and facilities and the contractor's family. To facilitate further evacuation from LRMC to CONUS, a copy of the LOA must accompany the patient. Ensure that a copy of the LOA is sent with the contractor's medical records during evacuation.

Notification. Notification of severe injury, health issues, or death follows two main paths; the first for command and control, the second to facilitate care and evacuation. Initially, notification must be made to the supported unit's command and also the regional command. These elements will provide official notification to the employer and next-of-kin, if necessary. The medical unit should have a pre-set plan for notification of the unit's chain-of-command. Beyond notifying the chain-of-command, the contractor's family must also be notified. While this will not be done by the medical unit directly, the unit's medical staff should be prepared to give detailed information to the chain-of-command for communication with the family.

CONCLUSION

Medical units deploying to OIF face many expanded responsibilities beyond those of their traditional combat health support mission. Chief among these expanded responsibilities has been the provision of care to civilian contractors deployed alongside US armed forces. However, the health care support needs of deployed contractors can be vastly different than

Caring for Contractors in our Midst

those which the unit is doctrinally prepared to provide. Also, the increasing numbers of civilian contractors can easily exhaust the capabilities of a standard combat-equipped medical unit.

It is obvious that contractors will continue to be an ever increasing presence on the modern battlefield. Consequently, US Army medical units must be prepared to care for them. Ideally, this preparation occurs prior to a unit's deployment, and involves adjustment in the unit's operating procedures, anticipated workload, and needed supplies. This preparation should also include, at a minimum, a cursory knowledge of the rules regulating government supplied health support to deployed contractors.

To accomplish these goals, deploying units should learn the lessons from experiences of previously deployed units. These lessons include the need to maintain complete and relevant records, expand Class VII and pharmacy supplies, and establish procedures for medical evacuation of deployed contractor patients. Previous experiences show that these simple steps, if taken, will dramatically improve a unit's ability to care for contractor personnel deployed alongside US forces, and result in a more successful mission overall.

Pre-deployment Preparation

- **Plan for need to care for contractors**
- **Establish procedures to determine contractors' eligibility for care**
- **Be prepared to increase Class VIII to meet needs of contractors**

Routine Care During Deployment

- **Gather necessary medical and administrative information for all contractors cared for by the unit**
- **Proactively plan for re-supply of chronic medications**

In Case Of Medical Evacuation

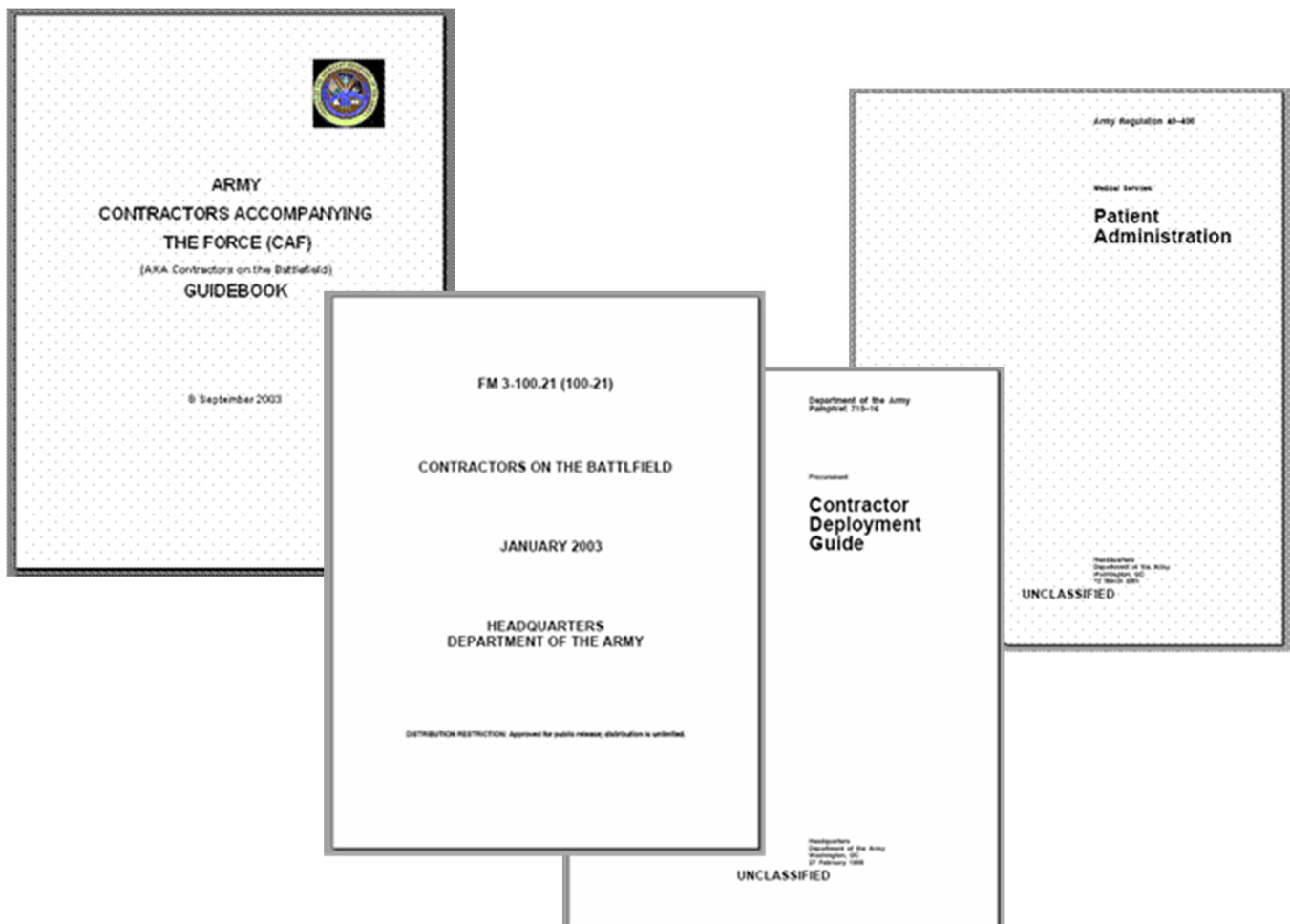
- **Immediately inform chain of command**
- **Initiate a log of all actions performed**
- **Maintain a database of contact information**
- **Send a copy of Letter of Authorization with the contractor's medical records**
- **Be prepared to provide detailed information to command and the contractor's family**

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Thumb Opposition Restoration: A Case Study

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ABSTRACT

A case of thumb opposition restoration by extensor indicis proprius (EIP) opponensplasty and rehabilitation is presented. The patient was a male US Air Force (USAF) F-16 pilot in South Korea who sustained an injury to his left palm severing multiple tendons and nerves. Successful surgical repair of the flexor tendons was accomplished at a civilian Korean hospital without repair of the recurrent motor branch of the median nerve. After a successful course of occupational therapy to restore finger function, a second procedure was performed at Walter Reed Army Medical Center involving the transfer of the EIP tendon to the extensor pollicis longus and abductor pollicis brevis in the thumb. Intensive rehabilitation at the 121st US Army General Hospital in Seoul Korea resulted in early full restoration of function. Upon discharge from occupational therapy, evaluation from USAF aeromedical personnel and return to the United States, the pilot returned to flight status.

INTRODUCTION

Burkhalter et al¹ stated that the loss of opposition of the thumb to the fingers is the most significant active motion loss associated with an injury to the median nerve. It is difficult to overstate the value of thumb opposition in everyday activities. This is especially true to the pilot of an F-16. The pilot is tasked to perform many intricate operations with the left hand, using a variety of controls that require precise, strong, and true opposition.

The definition of opposition varies depending on author and physician. In 1938 Bunnell stated in his much referenced article² that, in opposition, the thumb nail is parallel to the palm and the pulp of the thumb faces the pulp of the fingers. Cooney, Linscheid, and An introduce the ideas of abduction, flexion, and rotation of the thumb carpometacarpal joint (CMCJ) and metacarpal joint (MCPJ).³ This notion of the thumb moving away from the fingers, supinating over and coming face to face with the fingers (true opposition) instead of just flexing at the interphalangeal joint (IPJ) and MCPJ is requisite for flying today's jet fighter aircraft and countless other routine daily tasks.

This article reports on a case of low median nerve injury sustained by an F-16 pilot and his rapid and complete return to the cockpit. Surgical repair, rehabilitation course, and requirements to perform his job with emphasis on left thumb opposition are highlighted.

CASE REPORT

The Patient

In late March of 2001, a 28 year-old active duty male USAF F-16 pilot fell while descending a wet, poorly lit, shallow staircase. He attempted to break his backwards fall with his dominant left hand while holding a glass container. The container shattered upon impact. The pilot sustained severe lacerations to Zone III of his left palm. After examination at the local military medical facility the patient was transported to a nearby civilian Korean hospital where he underwent microsurgery to repair severed tendons and nerves. Surgical repair was performed on:

1. left thumb flexor pollicis longus (FPL) – 100% lacerated;
2. left index finger flexor digitorum profundus and superficialis (FDP and FDS) – both 100% lacerated;
3. left middle finger FDP - 50% lacerated and FDS – 100% lacerated;
4. left adductor pollicis (AP) – 60% lacerated;
5. left flexor pollicis brevis (FPB) – 100% lacerated;
6. left opponens pollicis (OP) – 50% lacerated;
7. left abductor pollicis brevis (APB) – 50% lacerated;
8. common distal nerve branches from the median nerve to the thumb, index, and middle fingers were also found to be severed.

During the procedure the recurrent motor branch of the median nerve to the thenar muscles could not be located. This 4-hour procedure was performed without

complication and the patient had an unremarkable postoperative recovery.

Two weeks later the patient reported to the Occupational Therapy (OT) clinic at the 121st US Army General Hospital at Yongsan Garrison in Seoul, Korea to begin a period of rehabilitation. The patient was placed in a custom dynamic flexion splint and a modified Kleinert protocol was begun as Stewart describes in Stanley and Tribuzi.⁴ The splint used for this treatment protocol utilizes rubber band traction on the fingernails to provide passive flexion to the fingers while allowing active extension and is designed to achieve passive glide of the injured tendons to prevent scar adhesions and joint contractures.⁴ During this course of therapy the patient traveled to the United States for a period of convalescent leave. Upon arrival he reported to Walter Reed Army Medical Center (WRAMC) in Washington, DC to continue his rehabilitation. Recovery of function at WRAMC was rapid and without complication, except for the persistent inability to oppose his left thumb. Repeat electrodiagnostic motor nerve studies revealed no definite response in the APB suggesting a severe if not complete median nerve neuropathy at the wrist.

The Surgical Repair

In late June of 2001 the patient was taken into the OR (operating room) at WRAMC for exploration of the median nerve and possible tendon transfer to restore opposition. While dissecting the left median nerve proximally the motor branch was not visualized and explored no further. The attending surgeon then decided to transfer the extensor indicis proprius (EIP) tendon to the thumb to restore thumb opposition motion. Several tendinous options are available for transfer to restore motion. The mechanical and anatomical benefits of each are well documented as in Roach, Short, Werner and Fortino.⁵ Literature also exists documenting the objective results from comparisons of different types of opposition restoring tendon transfers.^{6,7} The choice of donor tendon/muscle is controversial and not every tendon transfer procedure will produce the same result. Factors to be considered include the patient's functional requirements, any associated deficits, tendon/muscle donor availability, surgeon preference, and as, in this case, previous injury and surgical history.⁸ Also as Davis and Barton state in Green⁹ and as Burkhalter¹ outlines, EIP tendon transfers are many times favored because there is no subsequent weakened grasp and no resulting functional disability as sometimes happens with opponensplastys using donated flexor tendons. This patient had recently undergone repair to the flexor tendons, necessitating using an alternative donor

tendon to restore opposition to the thumb.

In the OR, with the tendon transfer decision made, the EIP tendon was located through an incision made dorsally over the metacarpalphalangeal joint (MCPJ) of the left index finger. The identified tendon to be transferred was cut free and another incision was made over the dorsoulnar aspect of the left wrist. Through this wound the EIP was again identified and carried back to the muscle belly. Next, a tunnel was made between the more dorsal incision and an incision made over the pisiform bone, and the EIP was delivered into this. An additional incision was made over the dorsoradial aspect of the left thumb and the tendon was then brought into this opening. Through this last incision, the EIP was passed through the center of the APB tendon, underneath the dorsoradial digital nerve and through the middle of the EPL tendon. The patient's wrist was then placed in 20 degrees of flexion, with the thumb in maximum palmar abduction and a horizontal mattress suture was used to secure the transferred EIP to the EPL. The EIP was then passed down and another stitch was used through this donated tendon and the APB. Finally, the EIP was again transferred underneath the digital nerve, through the APB, and sutured again. After irrigation, all the wounds were closed and a splint applied with the wrist in 20 degrees of flexion and the thumb in maximum palmar abduction. The patient was transferred to recovery in satisfactory condition.

Postoperative Rehabilitation

Postoperative rehabilitation after this opponensplasty was modeled after the three-phase approach as Stanley outlines in Hunter⁸: Phase I is a period of immobilization, during Phase II the patient begins active motion, and Phase III is strength and coordination training. The timing of internal healing dictates the order and timing of these phases.⁸

Of course, complete immobilization is initially required to allow the tendon juncture to develop collagen sufficient to withstand future stress with motion. The patient was maintained in the position with the actual splint that was utilized in the OR until followup with OT in Korea at approximately 3 weeks postoperative care. Upon arrival at the OT clinic at the 121st General Hospital in Korea, the existing splint was removed and a custom molded hand based thermoplastic splint was applied approximating the same position as was used in the postoperative splint. The patient's hand was evaluated and the patient was instructed in active range of motion for all uninvolved joints as well as gentle scar massage. Although this patient was extremely motivated and wished to begin active motion to the thumb early, immobilization was

Thumb Opposition Restoration: A Case Study

emphasized as it is extremely important to the overall success of the repair. Jacobs and Thompson¹⁰ identified lack of sufficient postoperative immobilization as a major cause of failure after opponensplasty procedures and recommend a full 6 weeks before attempting active opposition of the injured thumb and today. Most protocols recommend 3 to 4 weeks of complete immobilization.^{1,8,9}

After another week of continuous immobilization of the thumb in the removable splint (up to week 5 after surgery), the patient began gentle supervised active motion of the thumb interphalangeal joint (IPJ), MCPJ and carpometacarpal joint (CMCJ) with splint wear at night and between therapy sessions. Active movement was emphasized that would both retrain true opposition using the new donated EIP tendon and also to minimize scar adhesions that might potentially limit final motion, without over-stressing the tendon repair site. Goal directed activities such as whole hand grasping and true oppositional pinch with the thumb and small finger using putty and small flat objects were used instead of rote exercise to hold the patient's attention and intrinsically motivate him to reach his goals of returning to flying.

At this time more aggressive scar management techniques were begun. Deep scar massage was incorporated into the daily treatment regimen at the OT clinic and also at home as part of the patient's home treatment program. Lanolin and vitamin E were used to both moisturize the surface skin and combined with deep pressure to soften subcutaneous scar.¹¹ Research is limited on the effects of massage on scar tissue but is thought to alter collagen through a combination of mechanical and thermal effects.^{8,11} Mechanically, collagen organization is assisted by the physical movement between the scar and surrounding tissues and a local thermal effect is created resulting in increased tissue extensibility.⁸ Ultrasound and paraffin baths were also used in this case to effectively increase the temperature of soft tissues prior to movement to increase the extensibility of the tissues and increase the potential for active range of motion (AROM).

Massage and tissue mobilization may also aid by compressing the interstitial fluid content thereby increasing extensibility.⁸ Massage was performed daily in the clinic and reported by the patient to be repeated 3-4 times daily outside of OT. Elastomer polymer inserts were custom molded, and worn underneath the splint at night and also with compression wraps and Coban tape throughout the day. These inserts provided another means of compression and tissue extensibility

maximization. Although these techniques are not strongly supported in the literature, anecdotal clinical reports suggest their efficacy and usefulness in managing scar formation and maximizing postoperative AROM and function.

Gentle passive range of motion (PROM) was also initiated to gently stress the soft tissues surrounding the thumb. Specifically, efforts were focused on thumb IPJ and MCPJ extension and flexion, thumb CMCJ abduction and extension, and wrist extension and flexion. The emphasis on PROM was gentle, pain-free stretches after heat application, usually accomplished with paraffin bath immersion. The patient was instructed to only perform active motion exercises at home and rely on OT clinical staff to supervise any PROM to prevent possible attenuation or stretching of the repair.

By week 7 following surgery, the patient had discontinued daytime use of the splint in favor of active use of his hand. The patient was continually cautioned against overuse and overstretching the newly transferred tendon to prevent rupture. He showed rapid progress with return of active motion of the thumb and very little scar adhesion formation. Initially, when attempting opposition the thumb flexors would overpower and pull the thumb on a plane parallel with the palm towards the small finger. This would place the pulp of the thumb perpendicular with the pulp of the small finger without the rotational, abduction, or pronation components of true opposition.

At this point the emphasis shifted from quantity to quality of movement, focusing on supination and abduction of the thumb in an effort to train true opposition. The patient was encouraged to perform opposition activities with both hands to match thumb movements. He also performed countless repetitions of gross grasping activities, and fine motor tasks that required true opposition to be successful. The patient continued daily therapy sessions, showing exceptional motivation by traveling from an outlying Army camp north of Seoul to the 121st General Hospital which has the only US military OT clinic in Korea.

Over the next 5 weeks, once true opposition was established, resistance was slowly introduced and gradually more aggressive stretches with continued aggressive scar management was performed. Therapy sessions were cut down to 3 and then to 2 sessions per week, with more emphasis placed on home self-treatment. Various commercially available hand strengthening devices were issued with a continuing

focus on quality of motion.

At less than 14 weeks after surgery, the patient was able to demonstrate full, true opposition with thumb pad to small finger pad contact, including all previously discussed components of thumb rotation and abduction. He also demonstrated the ability to maintain thumb pad contact to the base of the small finger and, with effort and stretch, to the distal palmar crease. In the clinic the patient produced a grip strength averaging 65 pounds for the affected hand. It was at this point that the patient was discharged from OT with periodic follow-ups to monitor his condition.

Within 2 weeks of discharge from OT, the patient was evaluated in a flight simulator and was recommended for consideration for return to flight status by observing officials. After subsequent, numerous physical evaluations and a permanent change of station back to the US, he was given approval to begin requalification training in preparation for return to the cockpit.

Job Requirements

In order to be successful in the cockpit of the F-16, the pilot must perform many operations with the left hand resting on the throttle and manipulate switches with the hand on a panel as well. On the throttle and panel are switches and buttons that require twisting and turning motions utilizing the left thumb in a lateral pinch with the thumb pad pressed against the radial side of the index finger. Also, on the throttle itself are buttons controlling numerous radar functions that require the thumb to rise up off the side of the control (abduction) and selectively slide or push a button with the pulp of the thumb in a plane perpendicular with the palm. These operations would be impossible without the rotational and abduction components of true opposition of the thumb. Simple flexion of the thumb MCPJ would not provide the necessary range of motion that is required to fly and operate effectively the controls of the F-16 aircraft. It is safe to say that without this opposition restoring procedure and an excellent outcome, this pilot would be unable to return to the cockpit and fly the F-16.

DISCUSSION

The majority of documented cases of opponensplastys report good to excellent results. Unfortunately, classification of results from opponensplasty procedures is not consistent in the literature. Factors such as strength, position of the thumb IPJ and mobility are given differing priorities in various

studies. The patient in this study would rate excellent in any system of classification. Using Jacobs and Thompson's¹⁰ criteria, he achieved at least 75% of normal function and had <20 degrees difference between the planes of the opposed thumbnail and the palm with good power. Using criteria set by Sundararaj and Mani,¹² this patient achieved an excellent result with the ability to oppose the thumb to small finger with the thumb IP extended.

What is lacking in a review of the literature is the factor of time of functional return. Anderson and Sundararaj¹³ monitored results with EIP opponensplasty patients out to one year. Burkhalter's study¹ has no mention of rate or timing of return of function. Future studies of opponensplasty procedures would do well to begin measuring the speed of functional return as well as the overall ability of the transferred tendon to oppose the thumb over time.

With a well executed opponensplasty procedure, intensive postoperative occupational therapy, a detailed and closely monitored self-care program, and a motivated, hard working patient, this case was brought to a successful closure in less than 14 weeks with excellent results. The less than optimal result of the pilot being unable to return to the cockpit was averted, saving the enormous amount of money already invested in this individual in his extensive and time consuming flight training.

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18TH MEDICAL



**121ST GENERAL
HOSPITAL**

Medical Support and Basketball-Related Sports Injury of US Soldiers in Afghanistan

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INTRODUCTION

In the Global War on Terrorism, the United States has deployed thousands of athletic Soldiers, Sailors, Airmen and Marines to third-world nations. Part of sustaining military operations in these areas requires constant improvement in the area of operations. Medical assets have been reconfigured into smaller subunits to support these missions, often in forward operating areas. Deployed Soldiers strive to maintain their strength, flexibility, and peace of mind initially by doing routine physical training or using make-shift weights and gym equipment. Eventually, organized sports such as soccer and basketball appear on base. Participation in organized competitive sports in theatre, just as in garrison at home bases, carries an increased risk of injury. There are few risk assessment guidelines to help a commander with the decision as to whether to allow such activities.

Forward Operating Base (FOB) Salerno is a US military installation in southeastern Afghanistan, near the Pakistan border. The FOB is medically supported by a forward surgical team augmented with 14 additional personnel to allow additional medical holding capacity for injured Soldiers. The austere location of FOB Salerno challenges current medical logistic support systems. The majority of supplies must be brought to FOB Salerno by air. Supplies and personnel shortages occur with changes in the weather and/or enemy activity. One way to improve morale in such an austere environment is to continually increase the recreational outlets for Soldiers. In May 2004, the command of FOB Salerno welcomed the opening of a concrete basketball court to improve both physical fitness and the mental well-being of the Soldiers on the FOB.

Based on statistical evidence,¹ the physicians on the FOB postulated that a new basketball court may lead to an overall increase in knee and ankle injury due to the nature of the sport. Previous studies done in the civilian sector have documented an injury rate of 18.3

per 1,000 participants, with the most common injury being the ankle joint.² This paper documents the medical impact of opening a basketball court on a forward operating base and provides commanders and medical planners data with which to perform risk assessment and logistical planning if such projects are pursued in areas supported by Echelon II/III (-) Medical Treatment Facilities.³

DATA ANALYSIS

A retrospective review of emergency room consultations for the period 24 March through 26 June 2004 was conducted for all diagnoses of knee and/or ankle injury occurring on Forward Operating Base (FOB) Salerno. The patient data was further divided into two groups – those injuries occurring prior to 10 May 2004 (the date the basketball court opened for use), and those injuries occurring on or after 10 May 2004. Each subgroup thus sampled 47 days of emergency room admission data. Only US Soldiers stationed on the FOB were included in this study. Fifty-two patients sustained knee and/or ankle injuries on the FOB from 24 March through 26 June (Table 1).

The number of knee injuries increased following introduction of the court, although only to a minor degree (n=11 vs n=13). The number of ankle injuries went up to a much greater degree (n=9 vs n=19). As shown graphically in the chart, the proportion of knee and ankle nonbattle injury (NBI) increased as well (25% vs 44%). Thus, during the second time period, 2 out of every 5 NBI Soldiers were being seen for either ankle or knee injury. This rapid increase was the impetus for this paper. The subgroup analysis by month is presented in Table 2.

During the review period, the overall Soldier population on FOB Salerno remained constant; the tempo of military operations underwent no significant changes. Aside from the basketball court, there were no other new sports facilities constructed (soccer

Table 1. Nonbattle Knee and Ankle Injuries as a Percentage of All Nonbattle Injuries Incurred at FOB Salerno in Periods Immediately Before and After Opening of the Basketball Court on 10 May 2004

Timeframe	Total Injuries	Knee & Ankle Injuries	Percent of Total
47 day period prior to 05/10/04	77	20	26%
47 day period starting 05/10/04	72	32	44%

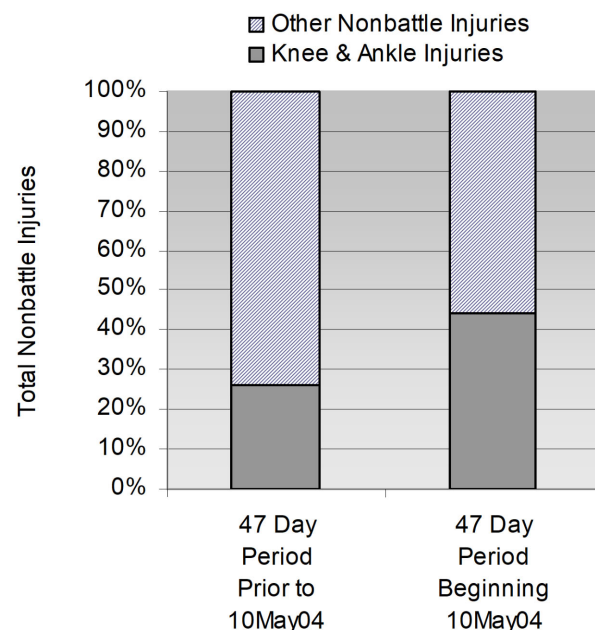
Table 2. Monthly Tabulation of Knee and Ankle Injuries Over 94 Day Reporting Period

	March	April	May	June
Knee injuries	1	9	4	10
Ankle injuries	1	7	9	11
Percent of total knee & ankle injuries for the 94 day period (n = 52)	4%	31%	25%	40%
Days in period (percent of total reporting period)	7 (7%)	30 (32%)	31 (31%)	26 (28%)

fields, gymnasiums, etc) on FOB Salerno during the period 24 March- 26 June 2004.

DISCUSSION

Knee and ankle injuries are a given in the active and athletic population typically assigned to a FOB. Given that football and basketball contribute to the highest rates of injuries in male Soldiers,⁴ we propose, and the data support, that the incidence of these injuries increased when basketball was introduced on this forward operating base. Establishing the degree to which these injuries affected operational capability is beyond the scope of this paper. However, a previous study of the Armed Forces database which reviewed 13,861 hospital admissions over a 6 year period for



Comparison of knee and ankle injuries as percentages of total nonbattle injuries for the 47 day periods immediately preceding and following the opening of the concrete basketball court at Forward Operating Base Salerno, Afghanistan.

injuries related to sports or Army physical training did conclude that these injuries account for a significant number of lost duty days and have an impact on military readiness.⁴

There is no intent by the authors to second guess the decision to build the concrete basketball court on FOB Salerno. It was an operational decision that took multiple factors into consideration and concluded that the presence of the court supported the overall FOB mission. Our intent is to provide input that will assist commanders with the risk-benefit analysis that is part of making that decision. In this case, the incidence of ankle injury doubled after the basketball court was constructed. The need for medical supplies (Class VIII supplies), namely crutches, ankle orthoses, and knee immobilizers increased commensurately. Perhaps this scenario had greater meaning to the medical providers as the facility's supply of crutches and ankle boots was depleted until new supply arrived. FOB Salerno was ultimately able to continue the wartime mission uninterrupted but adjustments in supply and personnel assignments were absolutely necessary.

CONCLUSION

While improvements in the athletic and sports facilities at far- forward areas of the US Global War on Terrorism are lauded by Soldiers and commanders alike, the medical impact of these facilities must be addressed prior to construction. While a basketball court may invoke memories of home to a Soldier, to the deployed physician the presence of the court means a need for crutches, casts, and cold compresses. If the base commanders do not assign priority to medical supplies needed to address sports injuries, they may find their medical caregivers lacking those same supplies when faced with battle injuries to the lower extremities. We hope that our experience with the introduction of a basketball court on a FOB will influence other commands to take the impact on medical support into account during the decision-making process. We recommend that the US military continue to construct sports facilities for its deployed troops and augment the medical facilities and supplies at bases where such facilities exist. In this fashion, the US Soldier may remain physically fit, mentally sharp, and afforded the finest care America has to offer.

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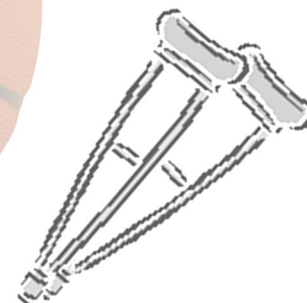
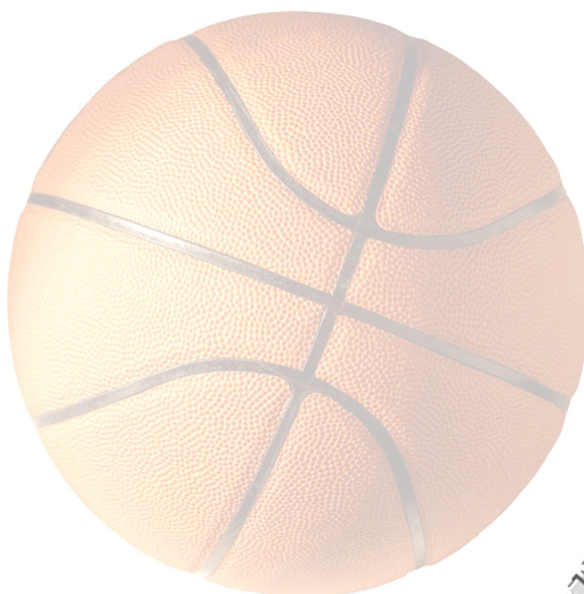
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Improving Soldier Care Through Outcomes Research: The Accession Screening & Immunization Program

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ABSTRACT

The US Army Accession Screening and Immunization Program (ASIP) is an application of the emerging field of medical outcomes research to the improvement of Soldier care and the optimization of business practices in the US Army Medical Command (MEDCOM). Informed by the results of mathematical decision analysis, the ASIP business plan provides an evidence-based forecast of the cost-savings expected to be derived through reductions in unnecessary vaccine administration by using serologic screening to assess preexisting immunity. Beginning in FY2006, the ASIP will implement rapid serologic screening for preexisting immunity among Army accessions, funded via the \$4.7 million in projected initial cost savings from averted vaccine administration. Over the first 6 years of the program, the ASIP will avert the unnecessary administration of approximately \$40 million in vaccine product to accessions with serologically demonstrable immunity, eliminate over one million unnecessary injections, and prevent approximately 100 occupational needlestick injuries among clinic staff. The evidence-based information provided to Army decision makers through the methods used in the ASIP business plan argues for expansion of the role of outcomes research across the MEDCOM.

CURRENT ARMY ACCESSION IMMUNIZATION PRACTICES

The transformation from civilian to Soldier in today's all-volunteer Army is a complex one. The primary responsibility for processing and managing new Soldier accessions falls to the US Army Accessions Command (USAAC). The USAAC processes over 130,000 enlisted accessions annually for assignments in the Active Army, Army Reserve, and National Guard. Army accessions are processed through a decentralized network of 5 Adjutant General Corps Reception Battalions (AG BN):

- 30th AG BN – Fort Benning, GA
- 43rd AG BN – Fort Leonard Wood, MO
- 46th AG BN – Fort Knox, KY
- 95th AG BN – Fort Sill, OK
- 120th AG BN – Fort Jackson, SC

These sites each process from 10,000 to over 40,000 accessions annually. The 120th AG BN, the largest Army site, processes a volume of accessions similar to

that of the entire US Navy or Air Force (USAF), which each process their enlisted accession cohort at a single location. A Soldier's transformation takes place over 3 to 4 days, during which time necessary administrative and medical processing are performed in preparation for the start of intensive Basic Combat Training or One-Station Unit Training.

Immunization of new Soldiers against common vaccine-preventable infections is an important part of accession medical processing. The US Army Medical Command (MEDCOM) supports the mission of USAAC by providing necessary vaccines. MEDCOM personnel, under the control of the installation military treatment facility (MTF), administer these vaccines in designated clinics for the AG BNs.

Soldiers processing through AG BN clinics are immunized against up to 10 separate diseases. The corresponding vaccines include measles-mumps-rubella (MMR), hepatitis B, inactivated poliovirus, quadrivalent meningococcal A/C/Y/W-135, tetanus-diphtheria (Td), influenza, and varicella vaccines. Influenza vaccine is administered seasonally, and varicella vaccine is administered to a small number of

recruits on the basis of medical history. At some AG BNs, hepatitis A vaccine is administered; often in combination with hepatitis B vaccine as the bivalent hepatitis A–hepatitis B vaccine, currently Twinrix® (GlaxoSmithKline, Philadelphia, PA, 888 825 5249).

Soldiers return one month later during their training for an additional medical encounter to receive needed vaccine booster doses. The third dose of hepatitis B vaccine is generally administered at the next duty station, 6 months after the initial injection.

REDUCING UNNECESSARY IMMUNIZATION THROUGH SEROLOGIC SCREENING

The practice of giving simultaneous immunizations at first entry into military training is referred to as mass immunization.¹ The practice of mass immunization dates back at least to World War II, when the technique was developed to quickly facilitate the administration of vaccine to large groups to prevent outbreaks of disease.²

Although essential to preserving the health of Soldiers, standard mass immunization practices may fail to account for previously administered immunizations. Serologic confirmation of immunity is one option that can be used in mass immunization to reliably assess a Soldier's personal need for a given immunization. Indeed, in an April, 2004 memorandum, the Armed Forces Epidemiological Board concluded that serologic screening was preferred over immunization record review for this purpose and specifically recommended serologic screening for preexisting immunity prior to immunization.

Based on the current availability of common serologic tests, the administration of 4 vaccines could be selectively reduced through serologic screening prior to immunization. These vaccines are hepatitis A, hepatitis B, MMR, and varicella.

Under a pilot program, the General Leonard Wood Army Community Hospital at Fort Leonard Wood began conducting universal serologic screening for preexisting immunity to hepatitis B in May of 2005.³ All 5 AG BNs also perform targeted varicella screening based on the results of a medical history questionnaire administered to new Soldiers. Those who endorse a negative or unknown history of chickenpox receive serologic screening for varicella, and those found susceptible by titer are immunized.

The USAF, which conducts consolidated accession processing at Lackland AFB, TX, successfully implemented a universal serologic screening program to reduce the administration of 3 vaccines: MMR, varicella, and hepatitis B. The USAF benefits from

economies of scale and limited fixed costs by performing all of its enlisted processing at a single facility.

INVESTIGATING THE POTENTIAL FOR ARMY ACCESSION SCREENING

Although the USAF had demonstrated that universal serologic screening of accessions was cost-effective at a single mass immunization site, little was known about the feasibility of implementing such a policy across the Army's decentralized accession processing system. The conventional wisdom held that implementing such a policy would be impractical and cost-prohibitive across processing centers whose processing volumes varied significantly, and where the traditionally high costs of serologic testing were thought not to benefit from the economies of scale achieved through centralized testing. Additionally, the necessary fixed costs and staffing expenses to implement screening were thought to exceed the potential savings in vaccine that would result from such a screening program.

At the direction of the Proponency Office for Preventive Medicine, a detailed research project to examine those issues was commissioned. Between October and November 2004, site visits were conducted at the 5 Army training installations that receive enlisted accessions to gather data on actual costs, outcomes, practices, procedures, and capabilities. With the assistance of a health economist at Johns Hopkins Bloomberg School of Public Health, a rigorous cost-effectiveness analysis for implementing serologic screening at these 5 sites was also performed.

To best comply with the Armed Forces Epidemiological Board's recommendations to maximize reductions in unnecessary immunizations, models were constructed of the potential cost savings that would be obtained through screening for preexisting immunity to as many diseases as possible for which common screening tests were readily available, including hepatitis A, hepatitis B, measles, rubella, and varicella.⁴ Although implementation of screening would incur both fixed and variable costs, only the marginal costs associated with the screening of an individual accession were examined. For the purposes of this analysis, those costs include the cost of vaccine product and of all the serology reagents used to test for immunity.

Cost-effectiveness analysis was facilitated through the creation of a mathematical model, implemented using the industry leading decision-analytic software tool TreeAge™ Pro Healthcare (TreeAge Software, Inc.,

The Accession Screening and Immunization Program

Williamstown, MA, 413-458-0104). Through the use of Monte Carlo stochastic simulation, the model thus created permitted calculation of multiple economic and non-economic outcomes of interest, to include total vaccine cost savings and vaccine cost savings per installation. The model also calculated noneconomic outcomes of interest, to include reductions in injections, probability of missed immunization due to false-positive screening tests, and probability of complete seroconversion from each vaccine product. The model automatically factored in the effects of Soldier attrition, and of the age-specific dosing strategies necessary for the use of the bivalent vaccine Twinrix[®], which is not licensed for use in 17-year olds. In addition, through the use of first- and second-order sensitivity analysis, the robustness of the outcomes to changes in initial assumptions could be modeled.

The model took as its input the rates of preexisting immunity to each of these diseases obtained from review of existing surveillance and research studies, including a recent study of hepatitis B immunity among military recruits.⁵ There was limited availability of reliable seroprevalence information for preexisting immunity to hepatitis A. To confirm the mathematical analysis, a detailed seroprevalence study of hepatitis A antibodies among approximately 2,800 recruits was performed in January, 2005 using banked frozen serum obtained on accessions during calendar year 2004.⁶

Costs of vaccine product were obtained from an exhaustive review of actual pharmacy purchasing records at the MTFs supporting Army AG BNs.

Rates of seroconversion for each vaccine, as well as the sensitivity and specificity of screening and serologic tests, were obtained from literature review. Rates of attrition were obtained through a review of USAAC data.

THE ECONOMIC BENEFITS OF SEROLOGIC SCREENING

Due to high rates of preexisting immunity to measles, rubella, varicella, hepatitis A and hepatitis B among Army accessions, our model determined that, on average, \$43 of unnecessary vaccines were administered to each new accession in FY2004. These vaccines were “unnecessary” in that they were administered to Soldiers with serologically demonstrable immunity to one or more screened diseases.

Although this amount may seem small per accession, due to the large size of the annual accession cohort, this represents a significant cumulative sum: over \$5.3 million worth of unnecessary vaccines were administered to Army accessions during FY2004. This annual amount is equivalent to over \$100,000 worth of unnecessary vaccines weekly, the costs of which could otherwise be used to fund improvements in medical processing and immunization delivery.

As rates of preexisting immunity rise, due to the Army enlisting recruits who are increasingly likely to have received hepatitis B vaccine before accession, these potential cost savings increase, to over \$6 million annually beginning in FY2006, and \$7 million annually beginning in FY2009.

THE US ARMY ACCESSION SCREENING AND IMMUNIZATION PROGRAM

The end result of the site visits and the cost-effectiveness modeling was the formulation of the US Army Accession Screening and Immunization Program (ASIP) business plan.⁷ Following a lengthy staffing process where the projected vaccine cost savings were independently confirmed and the input of the 5 servicing MTFs was obtained, the Army Surgeon General approved the ASIP proposal and issued implementation instructions in a memorandum dated November 18, 2005.

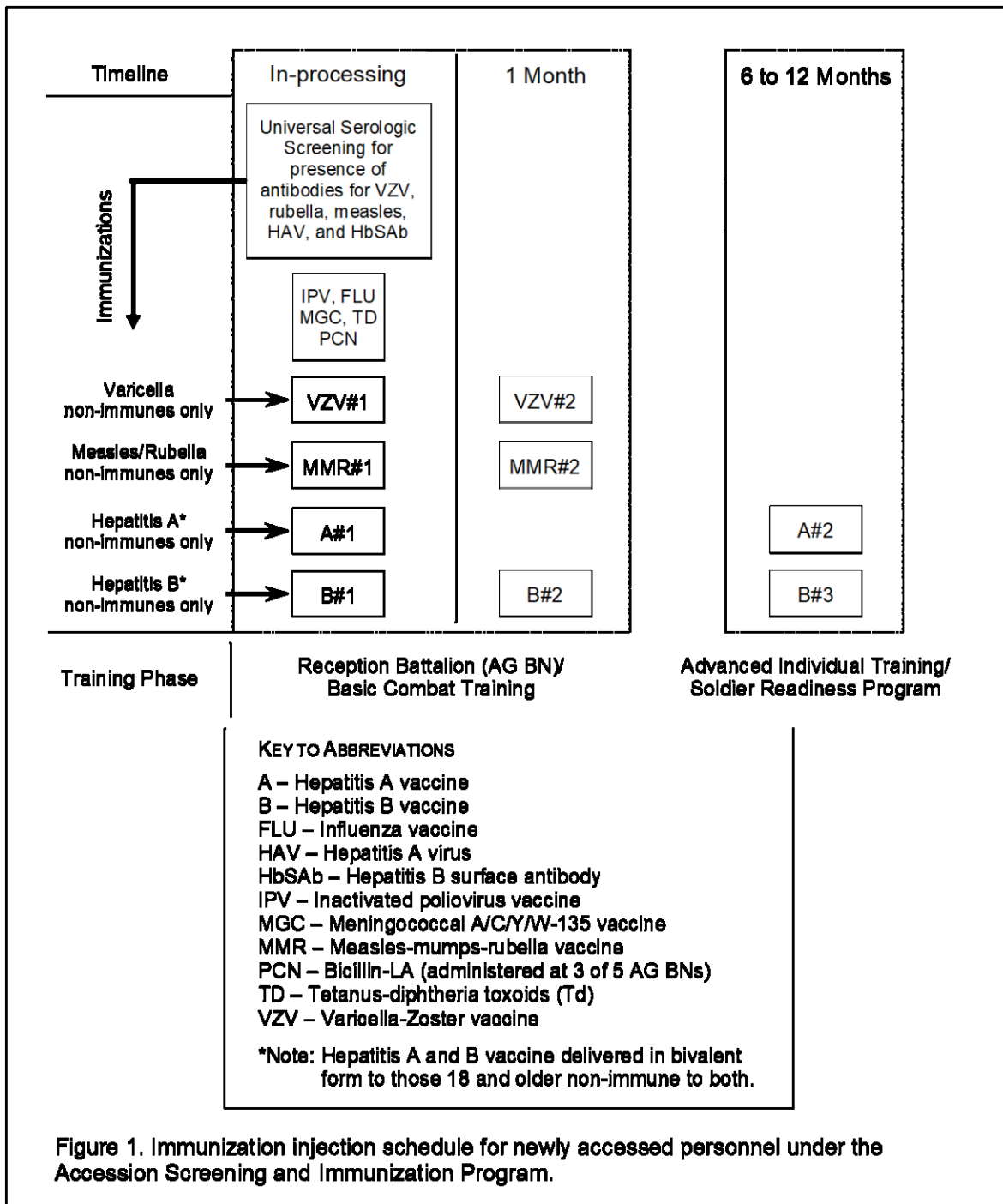
Funded entirely through projected vaccine cost savings, the ASIP has developed into a comprehensive strategy for improving the quality of accession medical processing and immunization delivery. The ASIP implements the recommendations of the Armed Forces Epidemiological Board to institute serologic screening for preexisting immunity among Army enlisted accessions, and provides numerous economic and non-economic benefits.

Beginning with implementation across all 5 Army AG BNs in FY2006, the ASIP will implement rapid serologic screening for preexisting immunity among Army accessions to hepatitis A, hepatitis B, measles, rubella, and varicella, funded via the \$4.7 million in projected initial cost savings from averted unnecessary vaccine administration (Figure 1). The ASIP will also institute other needed improvements in enlisted accession medical processing. Over the first 6 years of the program, the ASIP will avert the unnecessary administration of approximately \$40 million in vaccine product to accessions with serologically demonstrable immunity (Figure 2), eliminate over one million

unnecessary needle injections, and, based on current estimates of injury rates, prevent approximately 100 occupational needlestick injuries among clinic staff.⁸

The ASIP will enable the funding of high-quality medical processing and immunization clinics under the direct control of the commander of the installation

MTF at each of the 5 AG BNs. Beginning in FY2006, with the hiring of 29.5 full-time equivalents (FTEs) and continuing with the hiring of an additional 30 FTEs through FY2010, the ASIP will free existing military personnel by funding full civilian (civil service) staffing of ASIP clinics with trained nurses, phlebotomists, and clerical staff, under the supervision



The Accession Screening and Immunization Program

of on-scene, credentialed medical directors. The ASIP will provide for dedicated serologic screening equipment within existing laboratories at these 5 installation MTFs, staffed with dedicated technicians, providing the reliable and rapid turnaround of results needed for successful program implementation.

The ASIP will provide funds for training, capital improvements and equipment to assure compliance with regulatory standards and to improve the efficiency, reliability, and quality of medical processing of the Army's newest Soldiers.

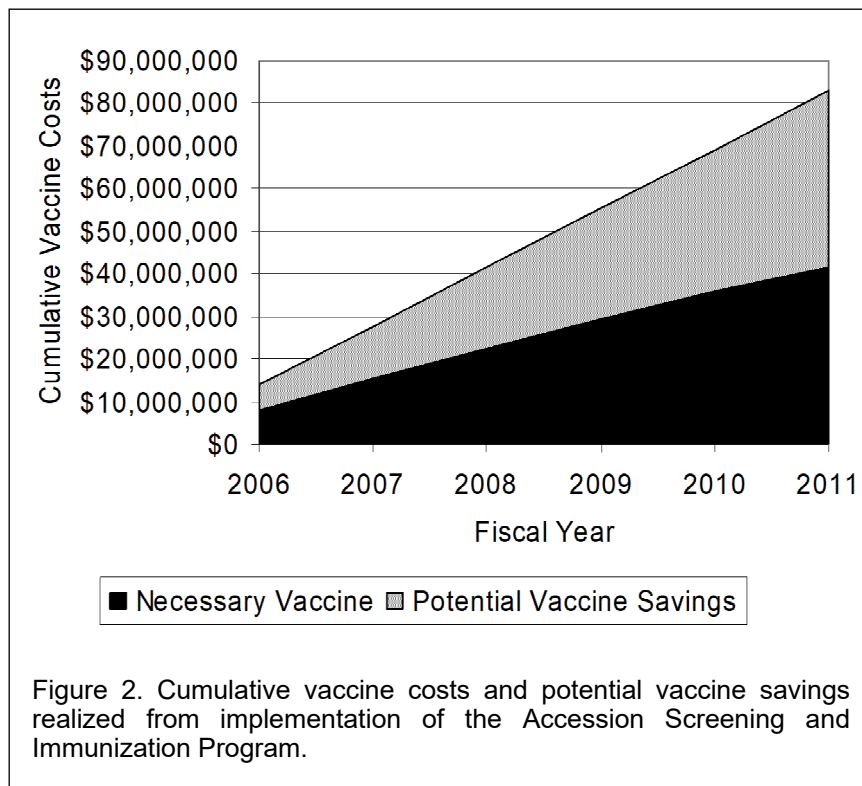
The ASIP will also fully fund universal glucose-6-phosphate dehydrogenase (G6PD) deficiency testing at accession. Under the proposal, AG BNs will ship whole blood specimens to the Brooke Army Medical Center central reference laboratory, where centralized testing and permanent electronic documentation of results will occur, precluding the need for later costly and repeat testing. Universal screening for G6PD at accession is warranted given the high rate of deployment of US Army personnel to areas of malaria endemicity for which terminal malaria prophylaxis may be required.

The ASIP will provide centralized oversight and management of the accession medical processing and immunization program through the establishment of a

Program Management Office (PMO) located at the Military Vaccine Agency, responsible for overall coordination and direction of the program (Figure 3). The ASIP PMO will coordinate and synchronize policy guidance from the US Army Training and Doctrine Command, the Office of the Surgeon General, and the MEDCOM for accession medical processing and immunization issues, and will direct targeted analytic efforts toward further improving mass screening and immunization programs and expanding the range of diseases for which screening is feasible

The first 6 years of the ASIP program will result in a total cumulative cost savings to the MEDCOM of over \$10.4 million. The ASIP provides these significant cost savings while improving the quality, reliability, and efficiency of enlisted accession medical processing, and increasing the confidence and trust of new Soldiers in Army immunization policies.

As shown in the Table, the ASIP budget assumes multiple conservative cost estimates, including a per accession serologic screening cost of \$14 in FY06, decreasing to \$12 in subsequent years; and conservative cost-savings figures, including total vaccine cost savings per accession of \$49 in FY2006, increasing to \$63 per accession by FY2011.



In recognition of the high cost of perishable vaccine product kept on hand at ASIP clinics, the ASIP budget contains funds to purchase redundant vaccine refrigeration and freezer equipment, properly equipped with remote alarms that will alert clinic staff of equipment malfunction or power failures. ASIP clinic budget figures also include funds to provide for the provision and installation of emergency power generation equipment that would ensure the continued operation of vaccine storage equipment in the event of an emergency that would threaten vaccine potency. Experience has demonstrated that plans to move large vaccine stockpiles to MTF storage facilities in the event of equipment malfunction or power failure are impractical; necessitating the provision of both redundant equipment and emergency power supplies.

FUTURE DIRECTIONS FOR OUTCOMES RESEARCH

The ASIP represents the application of the fields of outcomes research and decision-analytic modeling¹⁰ to improve Soldier care and to optimize business practices across the MEDCOM. The practice of outcomes research requires access to large amounts of

linked medical data. Much of this data is already available in the Defense Medical Surveillance System (DMSS), operated by the Army Medical Surveillance Activity.¹¹ DMSS already contains relevant medical outcomes and healthcare utilization data on members of the armed forces. The addition of linked pharmacy, laboratory, and radiology data would provide

The savings per new Soldier realized with each immunization series and at completion of training under the Accession Screening and Immunization Program when compared to the status quo.

	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
Vaccine Cost per Immunization Series (\$)						
In-processing						
Status quo	58	58	58	58	58	58
ASIP	28	27	26	25	24	23
Difference	(28)	(29)	(30)	(31)	(32)	(33)
1 Month						
Status quo	28	28	28	28	28	28
ASIP	18	18	15	14	13	12
Difference	(10)	(12)	(13)	(14)	(15)	(16)
6 to 12 Months						
Status quo	28	28	28	28	28	28
ASIP	17	18	17	16	15	14
Difference	(11)	(10)	(11)	(12)	(13)	(14)
Total Vaccine Cost (\$)						
Status quo	112	112	112	112	112	112
ASIP	63	61	58	55	52	49
Difference	(49)	(51)	(54)	(57)	(60)	(63)
Serology Cost (\$)						
Status quo	1	1	1	1	1	1
ASIP	14	12	12	12	12	12
Difference	13	11	11	11	11	11
Total Cost (\$)						
Status quo	113	113	113	113	113	113
ASIP	77	73	70	67	64	61
Difference	(36)	(40)	(43)	(46)	(49)	(52)

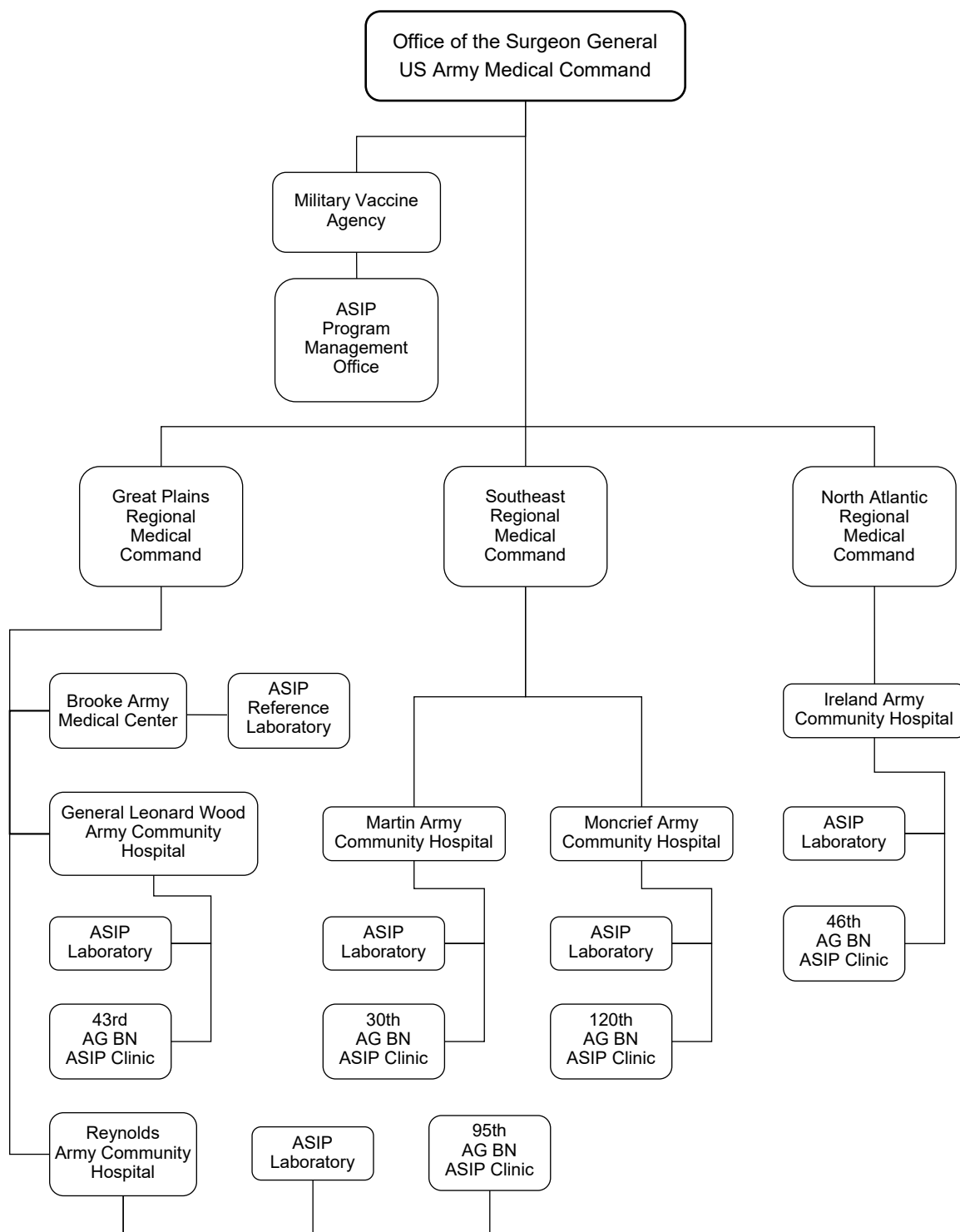


Figure 3. The US Army Accession Screening and Immunization Program established a standardized structure and methodology across the 5 reception installations under the centralized direction of the Office of the Surgeon General and the Army Medical Command.

additional outcomes research capability to the already robust medical surveillance functions of DMSS, improving the MEDCOM's ability to plan for and evaluate other large-scale public health interventions. The Accession Screening and Immunization Program has demonstrated that moderate investments in outcomes research provide significant returns on investment. Therefore, it is recommended that outcomes research capabilities be incorporated as part of the consolidation of military public health and medical surveillance functions at the planned Armed Forces Health Surveillance Center.

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The Accession Screening and Immunization Program

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US ARMY CENTER FOR
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US Army Medical Research
and Materiel Command

Multidisciplinary Crisis Management Simulation-Based Training Program

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ABSTRACT

This report describes our experiences with a simulation-based crisis management program used to train existing teams comprised of physicians, nurses (LPN and RN), respiratory technicians and/or medics (EMT-B and EMT-P). The 579 participants were trained using scenarios reflecting their clinical environment, including battlefield/prehospital, ambulatory clinic, emergency department, field hospital, medical-surgical nursing, and intensive care settings. Scenarios included iatrogenic decompensation, risk management issues, weapons of mass destruction, and initial presentation of critical illness. The participants overwhelmingly found the training valuable. Simulation can be adapted to, and is useful for, training a range of healthcare providers working together in vastly differing settings.

INTRODUCTION

Simulation has proven useful in a wide range of applications where errors in human judgment or performance can result in catastrophic consequences. It is ubiquitous in aviation, nuclear power plant operations, and modern military battlefield training. Over the last decade the anesthesiology community has adapted the principles of crisis management into a standard curriculum, with global adoption.^{1,2} Several centers are developing programs that follow a similar pattern, including a recently well described adaptation for emergency medicine.²⁻⁵ Most of these programs focus on 1 or 2 physician or nurse anesthetists without the involvement of the rest of their usual health care team. However, in most health care environments care is delivered by disparate teams, with outcomes and performance largely affected by the interactions of the team members, rather than the isolated responses of a single practitioner.^{1,2} We report on the participant response to the multidisciplinary team-based education program at a military medical center. This program has been adapted for a wide range of office, hospital and prehospital providers, including combat field conditions, weapons of mass destruction, and acute patient decompensation due to iatrogenic complications using the SimMan patient simulator (Laerdal Medical Corporation, Wappingers Falls, NY, 877-523-7325).

METHODS

The simulator consists of a semiautomated manikin that has visible respirations, variable airway conditions, modifiable auscultation findings, palpable pulses, and the ability to represent manual blood pressures. A simulated monitor, used to display pulse oximetry wave forms, oxygen saturation, and heart rate when the finger probe is attached, is used with all groups. Cardiac rhythm, heart rate, exhaled capnography, arterial wave form with blood pressure (BP), central venous waveform, respiratory rate, cyclic noninvasive BP, core temperature and cardiac output are variably displayed depending on the monitoring capability and preferences of the individual teams. In addition, the simulator can be attached to a standard cardioverter/defibrillator via limb leads or the chest electrodes used for electrical therapy delivery. The simulator and the monitor are controlled by software that is programmed to model disease processes and respond to interventions or complications with alterations in the vital signs, physical examination, or audio cues (such as patient vomiting).

Participants were given a summary of the capabilities of the simulator as well as some basic information on facets of crisis management prior to participation. The groups were then given a chance to familiarize themselves with the available equipment and obtain hands-on experience with the simulator to establish baseline function and physical examination findings. The participants were given a patient history tailored to their work environment, and often supporting

Multidisciplinary Crisis Management Simulation-Based Training Program

information, such as electrocardiograms, radiographs, prehospital reports, laboratory values, prior nursing and physician notes, nursing flow sheets, and anesthesia records. Equipment and medications were provided in a manner to replicate their practice, eg, a standard hospital crash cart. Prehospital teams are encouraged to use their own equipment and supplies.

The teams were composed of a range of health care workers including interns, residents, staff physicians, practical nurses, medical-surgical registered nurses, critical care and emergency nurses, respiratory therapists, paramedics, and emergency medical technicians-basic, who often were functioning in a role of medical or nursing assistant. The teams were drawn from existing patient care units and clinics. Table 1 lists several of the teams and the types of scenarios used.

Following the simulation, we conducted a debriefing

session with the goal of having team participants relay the events as they perceived them. Each scenario was designed to have 7 critical actions that must be taken, and 4 specific “pitfalls” which are detrimental or ill advised. Participants were given a listing of the educational goals and brief summaries of the problems encountered and expected management, with current references. We encouraged investigation of the differing interpretations of findings and treatments used in the simulation. The debriefings focused on both medical care and team dynamics. We adapted a previously validated team performance tool to serve as a template, presented in the Appendix to this article, for our review and future studies.⁹

RESULTS

Over a 12 month period, we provided 1,616 person-hours of team-based simulation to 579 health care providers. A variety of teams participated, with mixed

Table 1. Settings, Team Compositions, and Training Scenarios used in Simulation Training Exercises

Setting	Team Composition	Scenarios
Medical oncology ward Med-surgical ward Step-down unit	Internal medicine residents Nurses (RN and LPNs) Aides Respiratory therapists	Anaphylaxis to IV antibiotics Narcotic induced respiratory depression Ventricular tachycardia due to acute MI Hyperkalemia Hemolytic reaction to blood
Emergency department	Emergency physicians EMT-P Nurses EMT-B	Exsanguinating extremity hemorrhage Prehospital esophageal intubation Heatstroke Nerve agent intoxication Neck injury Acute MI with RV extension Multiple trauma Hypothermia
Austere field environment (battalion aid station)	Physicians Physician assistants Medics (EMT-B and some EMT-P)	Combined gunshot wound and nerve agent intoxication Airway burns Tension pneumothorax
Critical care unit	Physicians Nurses Respiratory therapists	Septic shock, anaphylaxis in patient with pneumonia ARDS with acute respiratory failure Tension pneumothorax Massive pulmonary embolus
Primary care clinic	Physician Nurse (RN) Medical assistant or LPN	Anaphylaxis Acute MI Asthma

groups of providers from various disciplines and training as graphically depicted in the Figure. We polled a convenience sample of 100 of the 579 users, 94 of which elected to complete a survey (3 surveys were discarded as they circled the value 10 for every aspect of the simulation) on their assessment. The resulting data is presented in Table 2.

DISCUSSION

Crisis management is different from routine care.⁶ We assume that performance in a crisis can affect the outcome, possibly preventing adverse effects or minimizing patient injury. However, this requires optimal provider performance, decision making skills, and overall integration and communication within the team. Specific aspects of the crisis management process have been quantified and described as shown in Table 3. These elements can be taught.¹⁻⁴

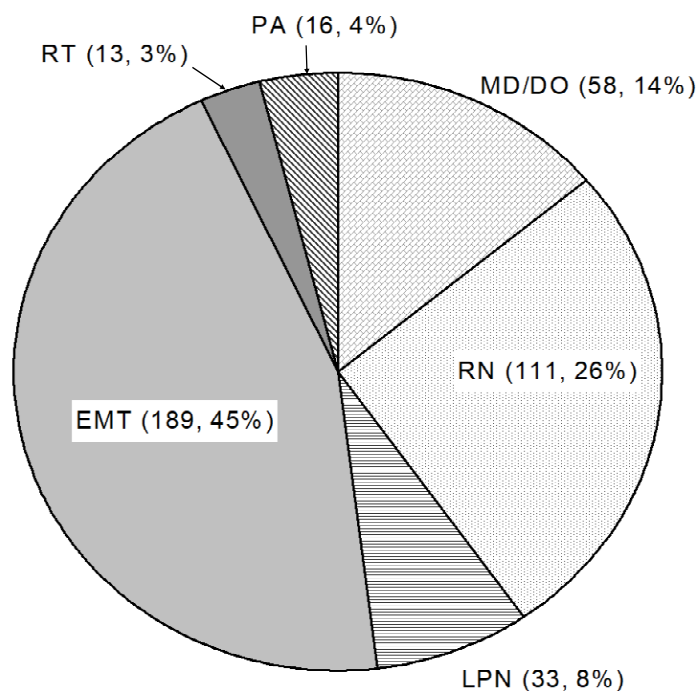
The simulation program provided training, often concurrently, on multiple levels. It allowed the rehearsal and integration of algorithmic care, which improves retention.^{7,8} A wide variety of procedures were employed:

- endotracheal intubation
- surgical or needle cricothyrotomy
- chest compression
- mask ventilation
- chest-tube thoracostomy
- intravenous access
- IV drip titration
- cardioversion/defibrillation/pacing

Training in those procedures developed not only the technical skills, but also the integration of those skills with an overall picture of patient management.^{9,10}

Patient care teams may be faced with critically ill or decompensating patients without the benefit of extensive experience. Thoroughly considered and well rehearsed plans for specific clinical emergencies are crucial to success. Many critical events may occur so infrequently that members of the team have no personal experience or recall of current management options. Although typically considered a problem faced by the military health care system during conflict,

Team Composition by Type of Training



civilian practitioners in all disciplines are facing the growing likelihood of providing care for victims of weapons of mass destruction. Courses emphasizing experience-based learning, such as the Advanced

Table 2. User Assessment of Multidisciplinary Crisis Management Simulations

Question	*Mean	†SD
The simulation was realistic	8.5	1.7
The scenario was clinically applicable to my field	8.8	1.3
There was sufficient time to perform critical actions	8.8	1.3
Responses to interventions were appropriate	8.5	1.6
The simulation will help me in future critical situations	9.0	1.2
The simulation will help me prevent errors	8.8	1.4
The simulation reviewed/taught something useful	9.1	1.1

*Response scale:

1=disagree strongly, 10=agree strongly

†Standard deviation

Table 3. Aspects of the Crisis Management Process

BE PREPARED. Anticipate and plan for medical crisis. Know your environment. Conduct situational planning. Have shared plans, policies and procedures for emergencies.
COMMUNICATION. Be clear and precise. Ensure reception of the intended data. Keep everyone in the loop. Be polite. Let everyone know which plan is in use. Use low voices.
LEADERSHIP. Establish role clarity. Delegate. Make sure tasks are complete. Single person calls the shots and gives orders. Address professional concerns directly.
RESOURCE AWARENESS and options for implementation. Everyone offers suggestions.
CALL FOR HELP early. Distribute workload and mobilize additional resources. Declare an emergency/call a code. Entire team shared in decision making.
RE-EVALUATION of situation is an ongoing process. Focus on "big picture." consider alternative approaches.
TEAM AWARENESS and utilization of all available information. Avoid fixation errors. Call out critical information during events. Cross monitor others actions and behaviors. Notify team of slips, lapses, and mistakes.
TRIAGE AND PRIORITIZATION. Focus on key goals — which may change. Triage is an ongoing assessment of the dynamic needs of patients against resources available.
EFFICIENT MANAGEMENT of multiple patients. The sickest patient may still be in the waiting room. Use appropriate providers for specific problems.
COPE WITH DISRUPTIONS AND DISTRACTIONS. React to new information but focus on the critical.
BE PREPARED. Anticipate and plan for medical crisis. Know your environment. Conduct situational planning. Have shared plans, policies and procedures for emergencies.
COMMUNICATION. Be clear and precise. Ensure reception of the intended data. Keep everyone in the loop. Be polite. Let everyone know which plan is in use. Use low voices.

Cardiac, Advanced Trauma, and Prehospital Trauma Life-Support (ACLS, ATLS, and PTLIS), offer some support. They provide a common framework and an approach that is likely to benefit most patients in a given situation. Experience from the courses and hands-on patient care solidify learning, unlike reading instructions from a course manual.

Experience in evaluating and training aircraft pilots, combat vehicle crew members, anesthesia personnel, and nuclear power plant operators has led to a shared model for dealing with critical incidents or crisis. Some key behaviors have emerged from analysis of airline crashes, battlefield disasters, and medical malpractice cases. These skills have been identified and can be taught and improved.^{2,11}

Our approach has been to provide a shared experience, via a simulated patient, to members of a health care team. These are brief, but intense, critical events (eg, acute respiratory distress) which require active intervention by multiple providers. Errors are allowed to occur, and the software component models the patient's response to the errors. For example, administration of parenteral verapamil to a patient who had already received parenteral beta-blockers results in profound bradycardia and hypotension, which may respond to appropriate therapy with atropine, calcium, and glucagon.

The key goal of using a patient simulator is a safe, flexible environment for learning at a variety of levels. The adult learner's basic didactic knowledge is enhanced by case-based learning. In addition, procedural skills can be taught in a safe, controlled environment, without risk to patients from incorrect performance. It allows the application of learning to new clinical situations. In addition, the hands-on nature of the simulator enhances the education of the team—as a team. It is not only critical that individuals know their specific skills and can perform their roles, but also for individuals to recognize that these roles are only performed in conjunction with others of differing training and levels of expertise. All team members perform critical actions that are both essential to and dependent upon the actions of the other members. It is this time spent together working towards shared goals that allows individuals to realize what is truly meant by performing as a team.

CONCLUSION

Simulation appears to be a very useful tool for improving patient care team performance in a wide

variety of settings, ranging from the mud floors of a military aid station to the intensive care unit of a fixed facility hospital. This modality should be available for active duty and reserve military health care teams, other agencies providing homeland defense, and community hospitals and clinics.

Studies validating the impact of simulation based training on outcome are urgently needed.¹² Widespread adoption is likely to occur prior to definitive proof. Careful documentation and consideration of the optimization of training and the impact on outcomes will require ongoing efforts.

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Multidisciplinary Crisis Management Simulation-Based Training Program

APPENDIX. Team Evaluation Form

Team Evaluation Tool			
Scenario		Time and date	Total score (of 80 possible)
Team composition (<i>circle leader, indicate level of training/specialty</i>)			
Score: 0=standard of care not met, 1=marginal, 2=optimal			
Leadership		Repeat vital signs	
No delegation or instructions, multiple conflicting instructions, several disjointed efforts, chaotic	0	None	0
Leader loses track or control of events but overall directs care	1	One set, or incomplete (i.e. no temperature) omitted, or deteriorating patient without repeat BP, HR measurements	1
Clearly defined leader maintained control of situation, delegates and instructs throughout, organized	2	More than one complete set following initial vital signs, ongoing with frequency as determined by patient stability	2
Exam findings and vital signs communicated to team		Use of information from other sources	
No discussion of pertinent findings	0	Ignored	0
Some findings announced	1	Not sought	1
Clear announcement of significant findings with acknowledgment by leader	2	Reviewed	2
Interventions clearly announced		Abdominal examination	
No announcement of completion of procedures or other interventions	0	Not done	0
Some interventions announced	1	Done but incomplete	1
All interventions (IV started, bleeding controlled, etc.) announced clearly	2	Done, including flanks	2
Communication		Repeat chest examination	
Yelling to be heard, arguments, or critical information not communicated	0	Not done	0
Team leader misses any comments or doesn't use check-back system	1	Done but incomplete	1
Calm, quiet, professional with 2 way discussion of significant events and findings	2	Done, including CXR	2
Workload distribution		Neck examined	
Members not used, or bogged down by serial tasks	0	Not done	0
	1	Incomplete	1
All members involved, tasks coordinated, handled distractions and redistributed personnel as needed	2	Inspection for JVD, tracheal deviation, c-spine tenderness, bruits, hematomas, pulses	2
Team work		Documentation	
Members waiting on others for completion to initiate critical tasks, unaware of what was needed	0	Not completed or not sent with patients	0
	1	Incomplete, illegible	1
Members anticipated others needs and actions, worked in parallel towards common goals	2	Complete and legible	2

APPENDIX. Team Evaluation Form (continued)

Assess risk to team		Choice of transfer chosen	
Failed to recognize hazard existed to team, failure to use universal precautions, leaving sharps out	0	Dangerous	0
	1	Wasteful or suboptimal	1
Recognized and managed hazards	2	Correct	2
Triage and prioritization of injuries		Patient stabilized prior to movement	
Failure to address life threats, futile resuscitations, premature termination of efforts	0	Unstable or likely to lose airway en route, incorrect level of provider accompanying	0
Address A-B-Cs serially and in order	1	Stable but with minimal additional intervention could be made more stable	1
Simultaneous management of life threats, rapid initiation of critical interventions	2	Stable and safe for transport, appropriate provider in attendance	2
Assess airway patency		Administration of analgesia	
No assessment	0	None, or excessive	0
Noted patient is breathing or can talk	1	Inadequate dosing or use of IM/SQ/PO routes for severe pain	1
Look-listen-feel, talk to patient, assess for stridor and pooling secretions	2	Titrated to effect	2
Oxygen applied		Scenario Specific Critical action #1	
>60 s before initiation	0	Not done or protracted, detrimental delay	0
30-60 s	1	Done with some delay or incomplete but adequate, technique lacking but goal accomplished	1
<30s to initiation	2	Done promptly, efficiently and correctly	2
Auscultation		Scenario Specific Critical action #2	
>60s	0	Not done or protracted, detrimental delay	0
30-60s or not sufficient, missed findings	1	Done with some delay or incomplete but adequate, technique lacking but goal accomplished	1
30s, bilateral, two locations each side	2	Done promptly, efficiently and correctly	2
Neurologic evaluation		Scenario Specific Critical action #3	
None	0	Not done or protracted, detrimental delay	0
Pupils, GCS, movement x 4	1	Done with some delay or incomplete but adequate, technique lacking but goal accomplished	1
ROS and complete screening exam	2	Done promptly, efficiently and correctly	2
Assessed central pulses		Scenario Specific Critical action #4	
Not done	0	Not done or protracted, detrimental delay	0
	1	Done with some delay or incomplete but adequate, technique lacking but goal accomplished	1
Done	2	Done promptly, efficiently and correctly	2
Assessed peripheral pulses		Scenario Specific Critical action #5	
Not done	0	Not done or protracted, detrimental delay	0
Delayed or unilateral	1	Done with some delay or incomplete but adequate, technique lacking but goal accomplished	1
Bilateral and determined in conjunction with central pulses	2	Done promptly, efficiently and correctly	2

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APPENDIX. Team Evaluation Form (continued)

Determined cardiac rhythm		Scenario Specific Critical action #6	
Not done	0	Not done or protracted, detrimental delay	0
Delay >60s in applying monitor or interpretation	1	Done with some delay or incomplete but adequate, technique lacking but goal accomplished	1
Cardiac monitor applied and rhythm determined in <60	2	Done promptly, efficiently and correctly	2
Initial HR and BP		Scenario Specific Critical action #7	
Not done or >1 minute delay	0	Not done or protracted, detrimental delay	0
30-60s	1	Done with some delay or incomplete but adequate, technique lacking but goal accomplished	1
<30s	2	Done promptly, efficiently and correctly	2
Full set of vitals obtained		Scenario Specific Pitfall #1	
Not obtained (including temperature)	0	Encountered or triggered and not managed	0
>5 minutes	1	Encountered or triggered but managed	1
<5 minutes	2	Not done	2
ECG obtained		Scenario Specific Pitfall #2	
Not obtained	0	Encountered or triggered and not managed	0
>5 minutes	1	Encountered or triggered but managed	1
<5 minutes	2	Not done	2
ECG interpretation		Scenario Specific Pitfall #3	
Not interpreted or missed significant diagnosis or erroneous diagnosis with initiation of dangerous therapy	0	Encountered or triggered and not managed	0
Incomplete interpretation	1	Encountered or triggered but managed	1
Complete, full interpretation with recognition of pathologic findings and initiation of therapy	2	Not done	2
Obtained AMPLE history		Scenario Specific Pitfall #4	
Not attempted or incomplete (e.g. forgetting to ask about drug allergies)	0	Encountered or triggered and not managed	0
Unable to obtain and other sources not sought	1	Encountered or triggered but managed	1
Complete as possible	2	Not done	2



MADIGAN ARMY MEDICAL

Elements of Leadership for the Successful Organization

COL George W. Turiansky, MC, USA

Army Field Manual 22-100 defines leadership as "... influencing people — by providing purpose, direction, and motivation — while operating to accomplish the mission and improving the organization."¹ My leadership philosophy emphasizes six areas that are critical to achieving success in any organization: vision, communication, courage, developing subordinates, knowing yourself, and passion. Leaders who successfully tap these factors in their personal and professional life are role models for their organizations.

Vision is key to leadership. "Without vision, the people perish."^{2(p94)} Vision is the leader's roadmap of the organization's future. It provides the organization with direction and a sense of purpose. An organization needs to know the plan for its future and the milestones that will be used to attain successful results. People who work in an organization without a vision have no sense of belonging and feel there is no higher reason for their existence. Work is not meaningful without a vision. Vision is thus the key ingredient that stokes the fire of creativity and transforms an organization. An intellectual image of the future is a prerequisite for change and must precede any physical change. Organizational change is undirected, unfocused, and unproductive without a unifying vision.

Communication is paramount to leadership. A well-formed vision for an organization is not enough. Goals are useless if members of an organization do not understand what they are. A leader's vision must be communicated to the organization in a clear and succinct manner so that it is easily grasped by organization members. Communicating the vision involves persuading people to "buy into" it. To achieve success, subordinates at every level of the organization must be able to translate and apply the leader's vision to their daily jobs. Leaders must widely articulate their vision in frequent interactions with organization members. Communication can be verbal or written and within formal or informal settings. Newsletters, email communications, and small and large group forums are effective and practical ways of disseminating the vision. Every contact with a member of the organization is an opportunity to reach out and

spread the vision.

Communicating the vision is only one of many messages that must be conveyed throughout an organization. Stressing the need for constant improvement keeps the organization focused on attaining future goals. Dissemination of results-based learning about what is working and what needs improvement within an organization is critical. Giving praise, credit, and positive reinforcement for a job well done is essential. By the same token, counseling and constructive criticism is also important in the pursuit of the vision.

A leader is a facilitator and moderator who influences the behavior of individuals and teams within the organization. Effective communication fosters group problem solving and decision-making. It encourages a climate of openness and truthfulness for free interactions about commonly shared problems, errors, and lessons. An open door policy and a willingness to listen are integral components of effective communication. Listening is just as critical as speaking. Openness to new ideas capitalizes on an organization's creativity. Being accessible sends a message that the leader cares and is approachable.

Nonverbal communication through behavior and gestures sends a powerful message to organization members. Leaders should not underestimate the extent to which their followers observe them. A simple gesture of integrity or compassion can be worth a thousand words and can encourage role-modeling behavior within the organization. Conversely, a leader who sends inconsistent and contradictory messages by not living up to the expectations that he sets for his organization breeds mistrust and disrespect.

Courage is a third element of leadership. It is one of the seven Army values forming the acronym LDRSHIP that all Soldiers are expected to possess. Courage can be summarized by the phrase, "When in charge, be in charge."^{2(p39)} A leader must have courage to follow his vision, take action, and initiate change. He must translate his vision into reality. This involves a willingness to take a public stand on his beliefs and sometimes to challenge the status quo. A leader who takes action does what he says and then more. He

Elements of Leadership for the Successful Organization

speaks the truth and displays integrity, another of the seven Army values. A courageous leader takes risks and searches for solutions. He is tough enough to ensure that the organization executes the actions necessary to transform vision into reality and to achieve the desired end result. He delegates responsibility to empower his subordinates. He also stands up for subordinates when necessary. Courage also means taking responsibility for decisions and acknowledging mistakes. Through personal reflection, a leader uses mistakes as a learning tool in the lifelong process of self-improvement. A leader with courage embodies the values he cultivates in his organization and lives by them. A leader consistently conducts his personal and professional life in a manner that will bring credit not only to himself, but also to his organization. This encourages subordinates to follow the path to success by emulating the leader's behavior.

Developing and mentoring subordinates is essential to effective leadership. "Leadership conceived as the lone warrior is really heroic suicide."³ A leader cannot command in a vacuum disregarding his staff's input. A leader needs subordinates to advise and challenge him and to help him identify his weak and blind spots. A leader recognizes that developing and mentoring his subordinates enhances his own effectiveness. "Building leadership into the genetic code of an organization is the ultimate competitive advantage."⁴ According to Charan and Tichy, General Electric attributes its abundance of chief executive officer talent to its focus on "nurturing" and "growing" leaders from within the organization.⁴ This means making time for people issues such as encouraging, mentoring, coaching, and advising. An effective leader gives both positive and negative feedback to his subordinates. A leader rewards, recognizes, and celebrates the accomplishments and successes of their subordinates. A leader provides guidance and suggests pathways for problem solving. A leader also encourages reflection as a tool for self-improvement and emphasizes that people learn from mistakes.

An integral part of subordinate development is the creation of a work environment in which people can succeed. This is done by earmarking resources for learning in areas such as training and education, pilot projects, and developmental assignments and ensuring the availability of basic resources such as financial support, tools, materials, and facilities so subordinates can excel. An environment for success encourages teamwork and collaboration at each level of the organization. A leader develops subordinates by establishing and maintaining an ethical climate, which

emphasizes that racism, sexism, and prejudice are unacceptable. Subordinate development also means caring deeply about your people, both personally and professionally. Respect and recognition are essential. Providing resources to remedy social issues such as marital discord and alcohol abuse is important for harmonious and effective work performance. A fair and caring command climate fosters role model emulation and subordinate development.

Effective leadership means knowing yourself by recognizing your limits, abilities, shortcomings, and values. This also involves searching deeply within yourself to understand your own assumptions, biases, prejudices, and beliefs, as well as those of others. An effective leader explores how he differs in these areas from others and realizes the implications of these differences on his behavior and interactions with organization members. It is imperative that a leader look inward and explore feelings toward race, gender, rank, and sexual and religious orientation. The implications of not recognizing differences between your feelings and those of your organization members can be immense. In addition, a leader must recognize that others have varying decision-making, learning, and interpersonal styles and that these styles may be just as effective as any of his own. "Before you can lead others, before you can help others, you have to discover yourself... And nothing is more powerful than someone who knows who they are... if you know who you are, then people trust you."⁵ A leader who knows himself ultimately contributes to a command climate of fairness and trust which can only spur role model behavior in subordinates.

Effective leadership is passion. Passion is the inner fire to inspire and motivate people. "Passion is born of empathy, the ability to connect with people... With passionate leadership, the pulse of an institution and its people beats faster, it breathes harder, it runs stronger."⁶ Passionate leadership involves instilling optimism, high morale, enthusiasm, and an esprit de corps in the work environment. According to the Blair House Papers, one way to maximize people talent is to "...raise the spirit of the workforce... Empowering and energizing the front lines..."⁷ A leader must create a work climate in which people feel good about their jobs and their contributions to the organization. A leader can instill enthusiasm for his vision by his mere frequent presence and personal interactions with organization members. This shows people that you care enough to see how things are going, to make sure that political red tape does not bog people down in their jobs, and to make people feel that they really do

make a difference. An effective leader inspires people to focus their energy on specific goals directed toward the vision. However, a leader must be wise enough to balance appropriate optimism with the realities that face the organization members on a daily basis. Inspiring subordinates to attain their goals generates feelings of fulfillment, self-esteem, and job satisfaction. By virtue of the role model status, a passionate leader breeds enthusiasm in subordinates.

To achieve the end result an effective leader must create a climate that stimulates positive change within his organization. He must have a vision that is clear, succinct, and understood by his subordinates. He must have excellent communication skills as a speaker, listener, facilitator, and moderator. He must have courage to be a true leader. A smart leader nurtures future leaders for his organization and becomes a people's leader by mentoring and developing his subordinates and dealing with people issues. A leader can be fair only when he knows deep inside who he really is, how this compares with others, and how the actions of his subordinates affect his own behavior. Passionate leadership ignites the organization in pursuit of the vision. All six of these elements are critical to effective leadership and make a leader all that he can be in today's Army of One.

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Mentors and Protégés: Simple Rules for Success

COL Mark A. Melanson, MS, USA

Mentoring is a partnering relationship where a senior, more experienced officer provides guidance and advice to a junior officer in order to foster professional growth in the subordinate. Speaking from personal experience, mentoring has been and remains the single most important factor in my development and growth as an officer and a leader. The following are some “kernels of wisdom” for the mentoring relationship that I have discovered during my nearly quarter century of experience as both mentor and protégé. I have distilled this experience into two sets of 10 common sense, yet remarkably often overlooked rules—one set each for the mentor and the protégé respectively.

Ten Simple Rules for Mentors

When initiating any discussion on mentoring, a natural question to ask is where to begin? Do you start with the mentor or the one being mentored (protégé)? While the contributions of both participants are important, mentoring successes or failures most often depend upon the skills of the mentor. If the mentor is not prepared to do his or her job, then the entire mentoring process may be ineffective and, consequently, discourage the protégé from any future mentoring opportunities. It is hoped that by considering these 10 simple rules, mentors, present and future, will be better prepared to assume this very important role.

MENTOR RULE #1

It's Not About You!

Being chosen to be someone's mentor is a powerful, potentially intoxicating experience. Not surprising, it is easy to let it go to your head. However, if you simply engage in mentoring to satisfy your own ego, you will ultimately fail. At best, your protégé will recognize that you are just doing this for yourself and not for him or her. At worst, you will model a self-centered behavior that your protégé may emulate and then perpetuate when he or she becomes a mentor. While mentoring does offer benefits to the mentor, such as self-validation and establishing a legacy, the primary focus of mentoring is on the individual being mentored, the protégé. Since not all attempts at a mentoring relationship will be successful and not all of your advice will necessarily be followed, you should be humble while mentoring and check your ego at the door. It is also essential that you do not use the mentoring relationship as a vehicle to exploit the protégé for your own personal gain. For example, avoid giving “busy work” that you do not want to do to a protégé under the guise of it “being good for him or her”. Chances are your protégé will see right through this veiled attempt at exploitation and understandably grow to resent it.

MENTOR RULE #2

Always Maintain Confidences

Trust is critical in a healthy mentoring relationship. Hence, matters discussed between a mentor and a protégé must remain confidential (as long as the issue does not involve violations of Army regulations or the Uniform Code of Military Justice). It is in this “safe” environment that a protégé can openly share mistakes or any lack of self-confidence. It also allows the junior mentoring partner to take risks without fearing negative consequences. Given that, the mentor should not share the protégé’s mistakes and setbacks with others. Of course, maintaining confidences goes both ways. This trusting environment allows the senior mentoring partner to share lessons learned from personal mistakes and failures without the fear of these “blunders” becoming common knowledge. Always remember, trust takes a long time to become fully established, yet it can be destroyed in a matter of moments.

MENTOR RULE #3

Set and Enforce Boundaries

This rule deals with avoiding one of the darker aspects of a mentoring partnership—the development of an inappropriate relationship. Throughout the course of mentoring a junior officer, it is easy to develop a liking or affinity for your mentoring partner. But, it is imperative that the mentor keep the relationship professional. As a mentor, you must always insist on maintaining military courtesy with no exceptions. As a personal example, I called my mentor of more than 20 years, “Sir” until the day he retired as a colonel. If you are a supervisor to your protégé, you must never let your role as a mentor compromise your duties and responsibilities as a rater. You must avoid letting any hint of cronyism or favoritism to creep into your decision making. Of course, a romantic relationship with your protégé is strictly forbidden and will probably adversely affect both of your careers. A final note: you should never allow your mentoring relationship to circumvent the chain of command.

MENTOR RULE #4

Know Your Limitations

Once you have gained the trust and confidence of your protégé, you may find yourself asked for guidance in areas about which you know very little, or, perhaps, nothing at all. That is why it is so important that you acknowledge any such limitations when providing advice. There may be the temptation to provide guidance, any guidance, just so that you don’t lose face. Admitting a lack of knowledge on a subject may seem like a weakness and threaten to undermine your standing with the protégé. But, in actuality, acknowledging your own lack of expertise or experience will further strengthen your mentoring relationship. Those being mentored do not expect their mentors to know everything, but, rather to share their experiences and point them in the right direction. So, if you are asked to provide advice on a subject about which your knowledge is limited, you should guide the protégé in the proper direction and, if possible, to the best person who can give them the necessary guidance.

MENTOR RULE #5

Keep Your Promises

Mentoring takes time, your most valuable resource. Before entering into a mentoring partnership, it is crucial that you determine whether or not you can make the time to dedicate to such an endeavor (I strongly believe that if you truly think that mentoring is important, you will make the time for it!). If you cannot dedicate the time, then I suggest that you do not even attempt it. Once you have decided to commit to a mentoring relationship, you must follow through with your promises. For example, if you agree to weekly meetings with your protégé, you must keep these appointments. If you promise to review a junior officer's OER Support Form, then do it and provide your feedback in a timely manner. A pattern of broken appointments and unfilled promises will send a clear message to your mentoring partner that you are not really devoted to his or her development. So, do what you say you are going to do, when you say you are going to do it.

MENTOR RULE #6

Listen and Ask Questions

A common misconception about mentoring is that the protégé simply brings problems to the mentor and the mentor tells the protégé what to do. Although this may be tempting for both mentoring partners, it should be done sparingly. First, do not assume that you automatically know what your mentoring partner needs from you. You need to truly listen to the questions that the protégé is asking. Practice effective listening to be sure you are giving the actual help or advice that is required. Interestingly enough, a highly effective way to impart wisdom is by asking questions that lead the protégé to discover the right answer for him or herself. I know firsthand that this can be very frustrating to the protégé who usually simply wants a quick answer. However, in the long run it teaches the one being mentored how to think through problems and independently develop sound solutions.

MENTOR RULE #7

Reach Out to Junior Officers

It is essential that, as a senior officer and potential mentor, one must remain approachable. In the Army, rank can be very intimidating. Remember how you were intimidated by senior officers when you first joined the Army. Given that fact, we as senior leaders need to break the ice. A practice that I learned from another of my mentors is to initiate conversations with junior officers whom I do not know. I introduce myself and ask where they are from and try to learn a little about them. This simple gesture pays big dividends in the long run. It greatly increases the probability that these officers will seek me out for guidance in the future.

MENTOR RULE #8
Don't Sugarcoat Feedback

Honest feedback is very important in an effective mentoring partnership. However, there may be a temptation to soften constructive feedback so as not to offend the protégé or ruin the mentoring relationship. Typically, when handled correctly, such corrective feedback is usually some of the most important mentoring that you can give a young officer. Now, I am not condoning degrading or belittling the individual. Negative feedback needs to be specific, given judiciously and unemotionally. Of course, it helps if such feedback is “sandwiched” between positive comments. As with all counseling, it should be done immediately and in private to have the greatest impact. The feedback should also provide recommendations on how to address shortcomings or areas that need improvement. It is important to always separate the individual from the undesirable behavior. Finally, once the matter is discussed, it should not be brought up again unless the behavior or mistake is repeated.

MENTOR RULE #9
Be Yourself

Since mentoring is a relationship between two unique individuals there is no single guaranteed recipe for mentoring. The relationship will naturally reflect the distinct personalities of the pair of individuals involved. So, it is important that, as a mentor, you are authentic. Your deeds should match your actions or “your walk should match your talk.” If you are an introvert by nature, trying to come across as an extrovert will seem phony. One thing that may help you in developing your own style is to do some self-reflection. This can help you identify the key elements of your leadership style and how you can use these traits to become a more effective mentor. The good thing about mentoring is the more that you do it, the better you will become. So take pride in being a mentor and do it your own way, with both passion and conviction.

MENTOR RULE #10
Commit to Continuous Learning

Whatever your military specialty, you should be dedicated to maintaining your technical competency and staying abreast of advancements in your field. This is also true for the leadership and mentoring skills required to be an effective officer. A way to do this is to set aside some quiet time for reading professional journals, those relating to your military specialty and those related to officership. While you are probably aware of professional references for your technical discipline, you may not be aware of journals for leader development. Army journals that may be of help are *Military Review*, published by the US Army Combined Arms Center at Fort Leavenworth, KS, and *Parameters*, from the US Army War College at Carlisle Barracks, PA. Both institutions support websites from where their articles may be downloaded:

Military Review – <http://usacac.leavenworth.army.mil/CAC/milreview/index.asp>

Parameters – <http://carlisle-www.army.mil/usawc/Parameters/>

This publication, the *AMEDD Journal*, is another venue for staying current in developments with the Army Medical Department. Finally, if you are serious about growing as a mentor, you should avidly read all that you can on the subject of mentoring. For a list of suggested reading material, I have included a bibliography of books and articles that I have found helpful in my personal growth as a mentor.

SUMMARY

The key points of the above rules include remembering that mentoring is about the protégé, not the mentor. Confidences must always be maintained to ensure trust. The mentor needs to set and enforce boundaries in the relationship to ensure professionalism. A mentor must know his or her limitations when giving guidance or advice. Promises made by the mentor need to be kept if the relationship is to last. During the mentoring, the senior officer must use effective listening and should refrain from simply telling the protégé what to do in order to develop problem-solving skills in the protégé. Potential mentors must be approachable if junior officers are to feel comfortable in seeking them out as mentors. Feedback needs to be specific and, when necessary, include constructive criticism. Mentors must understand themselves and develop a mentoring style that is authentic and consistent with who they really are. Finally, mentors need to dedicate themselves to continuous learning, technically, tactically, and as mentors.

It is my sincere hope that, by considering these key points, mentors will be better prepared to focus on the individualized needs of their respective protégés, the real goal of any successful mentoring relationship.

Ten Simple Rules for Protégés

While the skills of the mentor are critical to mentoring, the protégé also shares responsibility for ensuring that the relationship is successful. Unfortunately, some new protégés may not be aware of their responsibilities as a mentoring partner. Hence, the following 10 rules for protégés are presented to help them realize the greatest benefit from their mentoring relationships.

PROTÉGÉ RULE #1

Cherish your Mentor's Time

It is important that as a protégé you truly value your mentor's time. Your mentor is setting aside time exclusively for your development and growth. Consequently, you owe it to your mentoring partner to always be on time and fully prepared for meetings with him or her. If he or she assigns you "homework" to do, such as reading assignments, then you must be sure to complete your tasks before they are due. To not do so may be viewed by your mentor as a cavalier attitude and will likely hurt the relationship. Your mentor may reasonably conclude that, if you do not take your professional development seriously, why should he or she?

PROTÉGÉ RULE #2

Always Maintain Confidences

One of the cornerstones of a successful mentoring relationship is trust. It is within a safe relationship that the protégé is able to freely ask questions, express concerns, and take risks without the fear of negative consequences. One of the most effective ways for mentors to impart wisdom is by sharing personal challenges and setbacks and what lessons the mentor has learned from them. Since it is unlikely that anyone would want their mistakes widely advertised to others, the same is probably true for those who mentor. Therefore, when your mentor tells you things in confidence, you must honor that special trust and not share the information outside of the mentoring relationship. Simply put, genuine trust only develops over time and can be destroyed in an instant. Consequently, it is imperative that you always maintain confidences.

PROTÉGÉ RULE #3

Learn from Your Mistakes

Good mentors do not expect perfection in those they mentor and fully expect their protégés to make mistakes. Interestingly enough, it is usually from our mistakes and failures that we learn our greatest lessons. So, be willing to take risks and try new things; it is essential for your growth as an officer and a leader. Also, accept that you will, from time to time, make mistakes. If and when you do fall short, reflect upon those setbacks and glean whatever lesson that lies at the heart of your failure. Now, while a mentor should be tolerant of mistakes, an effective mentor will not tolerate a protégé repeating the same mistake. Such behavior does not show personal growth and maturity. Be sure to learn from your mistakes and not repeat them.

PROTÉGÉ RULE #4

Be Receptive to Feedback

One of the most effective tools in successful mentoring is the use of feedback. Often feedback is positive and encouraging. It can be just what a protégé needs during trying or difficult times. But, sometimes the feedback is more critical. The key to being a good protégé is to accept the good with the bad. If you expect your mentor to only shower you with praise, you will be missing the full breath and depth of mentoring. So, keep your ego in check and listen objectively to any constructive feedback from your mentor. While it might not seem so at the time, such wisdom and insight can often be some of the most important mentoring that you will receive.

PROTÉGÉ RULE #5

Keep Your Promises

Mentoring requires your most valuable resource, namely your time. Before entering into a mentoring partnership, be sure that you can dedicate time to such an endeavor. If you cannot set aside the time, then I suggest that you do not enter into a mentoring partnership. That being said, if you do commit to a mentoring relationship, you must follow through with your promises. For example, if you agree to weekly meetings with your mentor, you must keep these appointments. If you promise to provide your OER Support Form to your mentor, then do it promptly. Broken appointments and unfilled promises will clearly demonstrate that you are not serious about being mentored. To avoid this common pitfall, keep your promises to your mentor. By doing this, you will also be keeping an important promise to yourself, namely to make the most of being mentored.

PROTÉGÉ RULE #6

Genuinely Consider Advice Given

One of the most valuable benefits of mentoring is the opportunity to freely ask for advice. Guidance can range from the technical aspects of getting the job done, to suggestions about choosing an assignment, or whether or not to continue pursuing a military career. As a courtesy to your mentor, you should thoughtfully consider any advice that is given. Now, this does not mean that you simply do whatever the mentor suggests. Rather, it is best to listen to the suggestions given and then carefully decide whether or not to follow the advice. A self-confident mentor does not expect the protégé to follow every bit of advice. However, if you are constantly seeking advice from your mentor, but never follow his or her guidance, then chances are that your mentor will stop giving you any advice. (This happened to me with one junior officer I was mentoring. This recurring behavior ultimately ended the mentoring relationship.) So, genuinely consider any guidance that is given and, if you choose not to follow it, explain to your mentor why you elected not to follow the advice. This kind of open dialogue will help to ensure that your mentor does not feel that he or she is wasting his or her time.

PROTÉGÉ RULE #7

Clarify Your Expectations

Since the focus of the mentoring is on the needs of the protégé, it is important that you clarify your expectations to your mentor. For example, if you are only looking for someone to be a role model or a sounding board, you should make that clear. If you are looking for a more in-depth relationship, you should also spell this out. What you require from the mentoring relationship will determine the degree of your mentor's involvement. Therefore, open and honest communication is critical to ensure that your actual needs are being met. Clarifying your expectations will make it easier for you to gauge your progress and determine whether or not your mentoring goals are being fulfilled.

PROTÉGÉ RULE #8

Respect the Chain of Command

It is important to remember that mentoring is not a way to bypass or interfere with the chain of command. For example, you should never use your mentor to "go over your boss's head" in order to reverse a decision with which you disagree. Also, refrain from asking your mentor to intervene in matters between you and your rater. Now, that is not to say that you cannot ask your mentor for advice on how to talk with your rater or resolve any disagreements. However, your mentor should not be inserting him or herself between you and your rater. Any such interference would be highly inappropriate. So, always remember to respect your chain of command and do not use your mentoring relationship as a short cut around it.

PROTÉGÉ RULE #9

Bring More Than Just Your Problems

Over the years, I have had protégés come to me with problems and they wanted me to simply tell them what to do (Much to their chagrin, rarely did I just give them the answer!). Since the ultimate goal of mentoring is the development of a self-reliant officer that can independently make timely and effective decisions, it is important for protégés to develop their own skills in problem-solving. To help achieve this goal, it is desirable that, along with the given problem that needs solving, you come armed with potential solutions. While this may seem like more work for you and your proposed courses of action may ultimately prove to be inappropriate, this sort of exercise will help you in the long run by improving your ability to solve your own problems.

PROTÉGÉ RULE #10

Commit to Continuous Learning

Whatever your military specialty, you should be dedicated to maintaining your technical competency and staying abreast of advancements in your field. This is also true for the leadership and mentoring skills required to be an effective officer. A way to do this is to set aside some quiet time for reading professional journals, those relating to your military specialty and those related to officership. While you are probably aware of professional references for your technical discipline, you may not be aware of journals for leader development. Army journals that may be of help are *Military Review*, published by the US Army Combined Arms Center at Fort Leavenworth, KS, and *Parameters*, from the US Army War College at Carlisle Barracks, PA. Both institutions support websites from where their articles may be downloaded:

Military Review – <http://usacac.leavenworth.army.mil/CAC/milreview/index.asp>

Parameters – <http://carlisle-www.army.mil/usawc/Parameters/>

This publication, the *AMEDD Journal*, is another venue for staying current in developments with the Army Medical Department. Finally, if you are serious about growing as a protégé, you should avidly read all that you can on the subject of mentoring. For a list of suggested reading material, I have included a bibliography of books and articles that I have found helpful in my personal growth as a mentor.

SUMMARY

The key points of the protégé's rules include remembering that the protégé must cherish the mentor's time and make the most of it. Mutual trust is dependent upon maintaining confidences. A protégé must learn from his or her mistakes if he or she is to grow as an Army leader. Being receptive to feedback, both positive and negative, is essential to maximize the mentoring experience. Promises made by the protégé must be kept if the relationship is to last. While not all advice must be followed, the protégé should genuinely consider the guidance that is received and, if the advice is rejected, explain to the mentor why it was not followed. Clarifying expectations will ensure that the type of help wanted is provided and that the mentoring goals are achieved. Protégés must never use their mentors to bypass the chain of command or ask the mentor to intervene in issues between the protégé and his or her rating chain. When bringing problems to their mentors, protégés should also have possible solutions in mind to foster the development of their own problem-solving skills. Finally, those being mentored must dedicate themselves to continuous learning, technically, tactically, and as protégés.

I offer these key points in the hope that they will assist junior officers to better prepare for their roles as successful mentoring partners in order to reap all of the lasting rewards of being mentored.

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A Validation Study of a Commonly Used Military Assessment of Personality Interactional Patterns

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ABSTRACT

Military leaders and trainers often use assessments developed within the civilian business sector in order to determine interactional patterns and personality traits that may affect the operational effectiveness of their unit. Unfortunately, validity and reliability studies with these instruments are rarely conducted to determine if they are appropriate for use by the military. This study seeks to determine if the Persogenics™ Personality Profile, an assessment which is currently being used by many military commanders, is an effective method of enhancing mission accomplishment. Recommendations for future studies are made.

INTRODUCTION

Individual behavioral patterns affect every military interaction and relationship. These patterns have been examined empirically to predict success among military leaders.¹ Some researchers have asserted that an understanding of one's own interactional patterns as well as those of others can be a significant asset to the US military in the training of command personnel.² Consequently, several mental health and organizational behavior measures have been used in military training to assess personal traits and interactional patterns.³⁻⁶ One such measure that is currently being used by each branch of the Department of Defense is the Persogenics™ Personality Profile.⁷

Like many of the other measures mentioned above, the Persogenics profile was an instrument originally developed for use within civilian business administration training which has subsequently been incorporated as a training tool within the military. In examining the use of personality and/or interactional profiling systems in training military personnel, the researchers of this study identified several instances where the Persogenics profile is used. For instance, according to Jim Batman, Senior Corporate Trainer for the Persogenics Corporation who conducts workshops within the Department of the Air Force, the "Persogenics Personality Profile" is a valuable tool that has been well received and utilized. Training sessions have been held in various sections including personnel, engineering, services, hospitals and clinics,

base command staff, and across all ranks. He believes the program helps improve team relationships, workplace skills, people skills in general, and conflict resolution through an increased understanding of individual strengths and weaknesses.

In conducting this research, the authors were able to quickly identify two representative samples of military clients who have utilized the Persogenics in their training activities: COL David Bird, Randolph Air Force Base, and COL Richard Mihalika, Wright Patterson Air Force Base.

When interviewed, COL Bird stated that he has been aware of the Persogenics system for 9 years and that he has actively used the system for the past 5 years in his capacities as squadron, group, and now wing commander. He reports the Personal Profile and the Persogenics system has taken him and his command teams to a higher level of teamwork. He acknowledges the past use of the Myers-Briggs Type Indicator as a tool to identify how his personnel screened, processed, and filtered information, but he reports the Persogenics system is superior as it teaches "how" to communicate and get a picture of the "output kind of behavior" each individual demonstrates. He views the identification of individual strengths and weaknesses as a "godsend," especially when dealing with pressure, stress and tension (PST). PST is a particular insight taught in the training sessions and identified as "behavioral shifting" or "backup behaviors."⁷

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COL Mihalika stated in an interview that he utilizes the Personal Profile and the “Nutshell Summary,” (a brief printout that compares the interactional patterns between two individuals) at each entry interview with incoming officers and civilians who report directly to him. He makes the profile available to them in order to have it filter throughout the command. Although he views the instrument as no better or worse than others, he too views the Persogenics Personality Profile as a step beyond the Myers-Briggs in that it allows better articulation of interactional patterns. He views the profile and implementation system as extremely useful tools in establishing a more effective work environment, as it permits increased understanding of communication styles. He reports that the Persogenics system has become a part of the daily lexicon of his staff, increasing acceptance among differing personality styles and enabling communication without the level of offense previously seen in daily interactions. For COL Mihalika, the Persogenics Profile impacts mission accomplishment in two specific areas. First, it establishes and reinforces communication as a priority in management planning. Second, it assists subordinates to adapt to the differing communication styles of their commanders, an especially valuable benefit in the hierarchical system of leadership in the military where most personnel are in direct supervision. COL Mihalika finds the personality profile to be highly functional in these areas of communication.

It is clear, therefore, that because of the strong anecdotal support for their use, civilian nonclinical personality assessments are being used by military leaders in an effort to increase their administrative effectiveness. Further, there is an assumption on the part of these military leaders that the tools developed for use within the civilian sector provide equally valid results when used within the military. Unfortunately, this is an assumption that has never been tested with many of these personality profiling tools, despite their common use. Since military leaders are using personality assessments developed outside the military setting, the authors of this study sought to examine the appropriateness of the use of these assessments. In particular, the authors sought to study the validity of the Persogenics Personality Profile, an assessment that was identified as currently in vogue among many military leaders. Specifically, this study examined the Persogenics profile within the context of 4 fundamental questions that arise when using such assessments for this population:

1. Is the test appropriate or suitable for the military population?

2. What does the assessment measure or what purpose will it serve?
3. Is it quickly administered and immediately scored?
4. Are the results easily interpreted and of benefit to both the administrator and the subject?

In order to address the appropriateness of the profile for the military population, the prevalence of 4 interpersonal behavioral patterns among military and civilian personnel was compared with the profile patterns among the general population and the differences noted. An overview of the Persogenics Personal Profile is given to assist the reader understand the dimensions measured by the assessment and stated purposes of the Profile. Fundamental questions unanswered by the Persogenics Corporation regarding the Personal Profile are also discussed. An overview of 4 nonpathological assessment instruments previously used in military studies are also being examined for comparative purposes.

LITERATURE REVIEW

In order to place the use of the Persogenics Personal Profile within the military into context, a brief review of relevant literature addressing various instruments that have historically been used in military leadership development is presented.

Myers-Briggs Type Indicator

According to CPP, Inc. (formerly Consulting Psychologists Press), the most widely used personality type assessment model in a nonclinical population is the Myers-Briggs Type Indicator (MBTI).⁸ This 93 question instrument consists of 4 perception scales, each represented by 2 opposite preferences. The Extraversion/Introversion scale measures a person's preference for where attention is paid, either to the inner world or the outer world. The Sensing/Intuition scale describes the way a person acquires or perceives information. The Thinking/Feeling scale defines the way a person uses information to make judgments or decisions. The Judgment/Perception scale indicates the kind of method through which a person processes information about his or her environment, with judgmental (thinking or feeling) or perceptive (sensing or intuition).⁹

The Myers-Briggs instrument is “primarily concerned with the valuable differences in people that result from where they like to focus their attention, the way they like to take in information, the way they like to decide, and the kind of lifestyle they adopt”^{9(p4)} and is based

on the work of Carl Jung and his theory of psychological types.¹⁰

Campbell studied personalities, vocational interests, values, and raw intelligence scores of senior military leaders in a search to describe their underlying personality traits.³ He compared Army brigadier generals, high-level corporate executives, and a control group sample of managers and technical workers from government, education, and public service organizations. His findings, based on Myers-Briggs and other assessments, led to the promotion of what he called a “notable personality syndrome — the aggressive-adventurer.”^{3(p167)} This characterization of military leaders discounted them as potential warmongers unless an intervening emphasis on education and democracy were available to mediate the tendencies. Two findings of interest from this study include the fact that none of the sample populations were distributed evenly across the 16 preferences, and 2 types, Introversion/Sensing/Thinking/Judging and Extraversion/Sensing/Thinking/Judging, represented more than 56% of the brigadier general sample. Additionally, in Campbell’s opinion, “This lack of individual differentiation is one of the features that is absent from the MBTI.”^{3(p157)} In other words, the characterization of top military leaders as serious, orderly, matter-of-fact, logical and take-charge realists who are steady in the face of protest or distraction “tells something about the psychological feel of the military environment.”^{3(p159)}

Barber utilized the Myers-Briggs in his study of 270 students entering the US Army War College in order to provide additional insights into the psychological characteristics of senior military leaders.² The military population consisted primarily of Army lieutenant colonels and colonels, although some students were from other military services and foreign countries or civilian government agencies. The study included a control group from the general population. Based on the results obtained using the Myers-Briggs, 53.5% of senior military officers were distributed in just 2 of the 4 psychological types, Judging and Thinking. A significant difference between the civilian and military populations was found; leading Barber to interpret the findings, as did Campbell,³ to indicate that senior military leaders are comparatively more Thinking and Judging types than the general population.

Murray and Johnson, using the Myers-Briggs, studied female Naval Academy midshipmen in an attempt to determine if the instrument was a useful predictor of subsequent student success.¹ Although their study

found the Myers-Briggs “not especially useful as a tool for predicting success among women at the Naval Academy,”^{1(p893)} other findings of the study helped to identify which Myers-Briggs types were more likely to submit voluntary resignations from the Naval Academy. The study also revealed that women at the Naval Academy have only slightly higher rates of extroversion than women at other colleges. The use of a different personality inventory was recommended for future research.

Fundamental Interpersonal Relations Orientation-Behavior

The 54 item Fundamental Interpersonal Relations Orientation-Behavior (FIRO-B) instrument assesses how personal needs affect a person’s behavior towards others. Based on the interpersonal behavior theory of William Schultz,¹¹ this three-dimensional instrument measures 3 basic needs: Inclusion, the degree to which a person seeks contact from others; Control, the extent of power or dominion that a person seeks and desires from others; and Affection, the amount of closeness sought or desired. The 3 basic needs are defined in 2 dimensions, expressed behavior and wanted behavior.¹²

Shortridge used the FIRO-B in his study of 134 disabled Vietnam veterans attending postsecondary education programs in order to determine differences in the needs for inclusion, control, and affection among combat and noncombat disabled veterans.⁶ In this study, disabled noncombat veterans were found to be better equipped to demonstrate inclusive behaviors than disabled combat veterans and to express and want affection from others more than those disabled in combat. Although expressed or wanted control behaviors did not differ between the two groups, it became clear that soldiers who were disabled while experiencing the horrors of combat retreated from interpersonal involvement in society in greater numbers than their noncombat comrades. The findings of this study helped to identify interpersonal adjustment difficulties experienced by combat veterans.

Millon Index of Personality Styles

The Millon Index of Personality Styles (MIPS), Revised instrument, originally developed by Theodore Millon in 1994 and revised in 2003, is described as “a brief, well-rounded personality measure for adults presenting as normal”¹³ which consists of 180 true/false questions. It addresses 3 key dimensions of normal personalities: Motivating Styles, which assess

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a person's emotional style in dealing with the environment, Thinking Styles, which examines a person's mode of cognitive processing, and Behaving Styles, which assesses how a person interrelates with others.

Beckman et al used the MIPS to evaluate personality characteristics of 72 US Navy divers, both enlisted personnel (65) and officers (7).⁵ The top 5 personality styles found in the divers were Enhancing, Modifying, Individuating, Thinking, and Controlling. The study authors found these traits very adaptive to the demands of diving duty where the following qualities are often present: independent decision making, easy adaptation to changing operational needs, the ability to survive in dangerous situations, and the tendency to put personal safety first in order to fulfill mission requirements. The findings appear to support a relationship between personality style and occupational types. This finding led the authors to propose "consideration of psychometrically sound psychological tests in screening personnel for specific types of military service."^{5(p35)}

Eysenck Personality Questionnaire-Revised

The Eysenck Personality Questionnaire-Revised (EPQ-R) measures 3 dimensions of personality and is the most recent in the series of measures originally developed by Hans Eysenck, who initially described 2 main dimensions of temperament: neuroticism-stability and extraversion-introversion.¹⁴ Eysenck added a third dimension, psychoticism/socialization, after he determined a need for a third category of temperament. The primary advance in the revision is to include the name modification of Tough-Mindedness in the third major dimension. This revised scale deals with normal behaviors which become pathological only in extreme cases. The traits measured are P (Psychoticism or Tough-Mindedness), E (Extraversion), N (Neuroticism or Emotionality), and L (Lie). The questionnaire contains 57 items.

The EPQ-R was used in a study conducted by Leach to determine if any specific personality traits predispose military personnel to be captured and imprisoned during war.⁴ The questionnaire and other assessments were administered to 75 Air Force crewmen prior to an escape and evasion exercise. This procedure was performed in order to assess whether personality factors correlated with capture and consequent internment as a prisoner of war. Although the variables of age or length in military service showed no correlation, significantly high levels in the EPQ L scale were found in the captured crewmen. As was the

case in the proposal of a new personality syndrome by Campbell³ above, Leach identified a possible core personality profile that exists prior to capture and noted that this predisposition may be "masked by a modified post experience profile."^{4(p80)}

Persogenics™ Personal Profile

The Persogenics Personal Profile was originally developed through collaboration by Dr Gordon Allport and Dr Ford Cheney. It contains 24 questions and can be completed in a short time period, usually less than 20 minutes. The profile for each individual participant is scored in less than 5 minutes by a computer program prior to training, in order to provide results for each participant to use throughout the training sessions. Allport, an early personality researcher, created the "Most/Least" facets of the personality assessment model through his original work classifying a wide variety of personality traits.¹⁵ Allport's technique listed multiple trait descriptive adjectives and then had participants rate each adjective on the degree to which the words applied "most" or "least" to them. Dr Ford Cheney and 11 colleagues then formed Keystone Research Labs in 1968 and began to study personality profiling, building on Allport's pioneering personality research. The group also determined that the validity of the Allport technique could be increased by including predictions of behavior on 2 scales. The first of these, the Assertiveness Scale, measures the degree to which an individual is willing to express his or her needs, wants, and opinions. The second, the Responsiveness Scale measures the degree to which an individual is willing to share feelings or personal information.¹⁶

The basis of the Persogenics system is 4 different personality styles as illustrated in the figure. The first style, "Dominants" exhibit high-assertive and low-responsive behaviors. This means they possess a primarily outspoken nature, but seek to maintain control over the personal feelings and information that they communicate to others. "Expressives" naturally exhibit high-assertive and high responsive behaviors. This means they communicate assertively, and are more open in their gestures and expressions than the other styles. "Analyticals" are by nature less assertive and less responsive in their behaviors than the other styles. This means they are reserved in the way they express themselves and that they are controlled in their outward gestures and actions. "Amiables" are naturally low-assertive and high-responsive in their behaviors. This means that they are not forceful in their communication, but they do outwardly show concern and understanding for others. Amiables are people-

oriented and team-oriented. They are concerned with the happiness and satisfaction of all.¹⁷

Every person is a unique combination of the four styles. The system measures for each person which one of the styles is strongest; this is called their “primary” style. The second strongest personality style is called then “secondary” style. The 2 lowest scoring styles are relevant to the scoring, but typically not reported. Since every person has at least some component of each style, the lowest scoring two remain a valuable part of the assessment. The 2 highest scoring styles make up a personality name, such as Dominant-Expressive. The Persogenics Corporation also claims that the 4 styles are consistently distributed in the general population, regardless of nationality, education, gender, or age: approximately 12% Dominant, 19% Expressive, 37% Amiable, and 32% Analytical.^{18(p8)}

As mentioned previously, the Persogenics Profile is currently being used with military populations. It is useful to reexamine the aforementioned fundamental questions regarding the utility of the Persogenics Personal Profile. Namely, has it been shown to be as relevant for the military population as the Persogenics Corporation purports? To answer this question, differences between the core users of the instrument, the business community, and military populations should be explored, as the Persogenics Corporation promotes itself as impartial and “neutral with respect to gender, race, culture, religious orientation, etc.”⁷ Will an assessment that measures interactional patterns based on the dimensions of assertiveness and responsiveness serve a useful function for military leaders, mental health professionals, and personnel completing the instrument? Further, will the time invested in administering and scoring the instrument provide benefits to the individual Soldier, administrator, and overall mission of the military? To begin the search for answers to these 2 final questions, the self-reported accuracy rates of military and nonmilitary populations were compared and differences between the accuracy rates purported by the Persogenics Corporation were examined.

METHODOLOGY

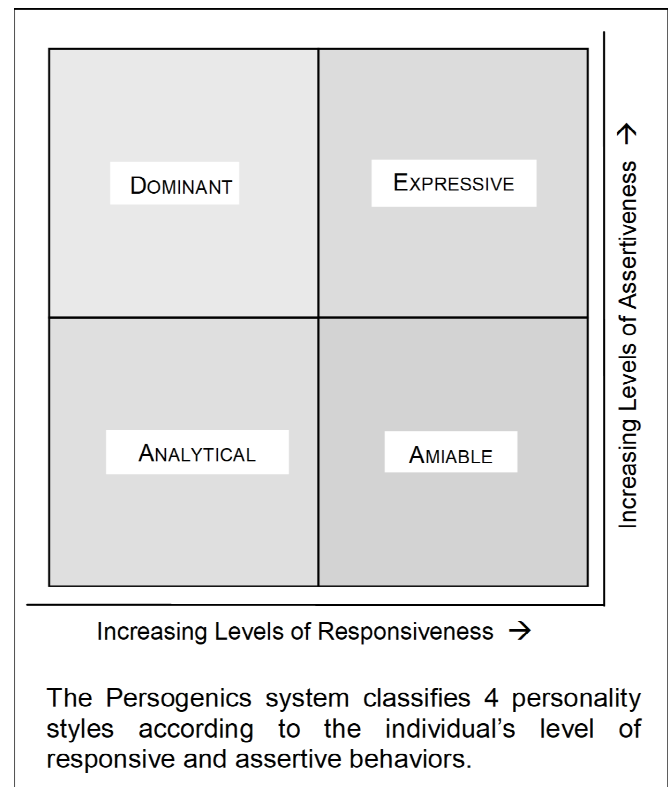
The design of this study was a secondary analysis of a database set that contains demographic information and completed Personal Profiles for 114 military and 277 civilian subjects.

The median ages of subjects ranged from 36 to 45 and included 167 males and 224 females. Race categories

included Caucasian, African American, Hispanic Latino, Native American, Pacific Islander, and Other. The subject populations included 114 military personnel and 147 civilians from Randolph Air Force Base, Texas, 69 school district employees from Marysville, Washington, and 61 personnel from the police department in Albany, Oregon.

DATA ANALYSIS

The Statistical Package for Social Sciences (SPSS 13.0) was used to analyze the data provided in the database. The purpose of the analysis was to determine the validity and reliability of standardized interpretations of personality styles by examining if there was a significant difference in the rate of personality styles that occur in both military and civilian participants within this study, with the reported baseline rates within normative data provided by Persogenics Corporation.⁷ Additional comparisons were made to determine the stability of baseline rates of reported personality styles of participants and the normative data according to gender, race, and age. Finally, a comparison was made between the reported accuracy of the personality style findings by participants in this study with the reported accuracy of



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personality styles given within the normative data.

RESULTS

The Persogenics Corporation website⁷ claims that the occurrence of each of the 4 personality styles is equally proportional (Dominant = 12%; Expressive = 19%; Amiable = 37%; Analytical = 32%) across the general population regardless of demographic factors. In order to determine if the military population also reflects this distribution, a cross tabulation of general style was performed using the Pearson Chi-Square Goodness of Fit test.¹⁹ Tabulated data used in this calculation are shown in Table 1. It was found that there are statistically significant differences ($\chi^2 = 1.913$; $p < 0.05$) between the business population that make up the Persogenics normative distributions and the military/civilian subjects in our database. Therefore, our sample appears to have a unique distribution.

Military Sample Results

Persogenics Corporation reported no difference between the distributions of personality styles between the genders in their normative distribution.⁷ A comparison of the genders within our military sample,

using the Chi-Square Test of Independence test, is shown in Table 2. No statistical difference ($\chi^2 = 3.980$, $p = .264$) was found between the expected Persogenics distribution and our military sample based upon gender.

Persogenics Corporation also reported no difference in the normative distributions of styles due to race.⁷ Unfortunately, our military sample (Table 3) was too small to make such a comparison based upon specific racial differences. However, it was of sufficient size to allow comparisons to be made between Caucasians and non-Caucasians, in which we found a significant difference within the military sample using the Chi-Square Test of Independence.

The final comparison within the military sample relates to the Persogenics report that there are no differences between age and personality style in their normative population.⁷ A comparison of proportion of styles reported by the Persogenics Corporation and age within our military sample is shown in Table 4. No statistical difference ($\chi^2(12, N=112) = 15.341$, $p = .223$) was found between the expected Persogenics distribution and our military sample based upon age.

Civilian Sample Results

Table 1. Tabulated data used in the Pearson Chi-Square Goodness of Fit test¹⁸ to determine if the military population reflects the normal distribution of personality styles⁷

Style		Civilian	% Total Count	Military	% Total Count	Total	% Total Count
Dominant	Count	44	11.3	17	4.4	61	15.6
	Expected Count	43		18		61	
Expressive	Count	98	25.1	40	10.3	138	35.4
	Expected Count	97.3		40.7		138	
Amiable	Count	76	19.5	39	10.0	115	29.5
	Expected Count	81.1		33.9		115	
Analytical	Count	57	14.6	19	22.4	76	19.5
	Expected Count	53.6		22.4		76	
Total	Count	275	70.5	115	29.5	390	100
	Expected Count	275		115		390	

Chi-square (χ^2) = 1.913 $p < 0.05$

A comparison of the genders within our civilian sample, using the Chi-Square Test of Independence test, is shown in Table 5. Unlike the findings in our military sample, a statistical difference ($X^2 = 14.793$, $p < 0.05$) was found between the expected Persogenics distribution and our civilian sample based upon gender, a finding that suggests that civilian population in the study differs from the normative Persogenics business population and our military population.

Table 2. Distribution of personality styles by gender within the military sample

General Style	Female	Male	Total
Dominant	9	7	16
Expressive	24	16	40
Amiable	15	24	39
Analytical	9	10	19
Total	57	57	114
Chi-square (χ^2) (3, N = 114) = 3.980 $p < 0.264$			

Table 3. Distribution of personality styles by race within the military sample

General Style	Caucasian	Other	Total
Dominant	0	3	3
Expressive	2	5	7
Amiable	7	4	11
Analytical	4	0	4
Total	13	12	25
Chi-square (χ^2) (3, N = 25) = 9.078 $p < 0.05$			

Table 4. Distribution of personality styles by age group within the military sample

General Style	Age Range					Total
	18-24	25-35	36-45	46-55	56-65	
Dominant	4	4	4	2	0	14
Expressive	8	20	12	0	0	40
Amiable	5	15	11	7	1	39
Analytical	4	5	9	1	0	19
Total	21	44	36	10	1	112
Chi-square (χ^2) (12, N = 112) = 15.341078 $p < 0.223$						

A comparison between subjects based on race was conducted on the civilian sample using the Chi-Square Test of Independence and is reported in Table 6. No statistical difference ($X^2 = 12.716$, $p = .624$) was found between the expected Persogenics distribution and our civilian sample based upon race. In addition, a comparison between civilian subjects and all race categories found no significant differences.

A comparison between subjects based on age was conducted on the civilian sample using the Chi-Square Test of Independence within our civilian sample and is shown in Table 7. No statistical difference ($X^2 = 12.353$, $p = .418$) was found between the expected Persogenics distribution and our civilian sample based upon age.

Accuracy Results

Client accuracy results are reported by the Persogenics Corporation to fall between 87% and 93%.⁷ A Single Sample *t* Test compared the mean accuracy of the sample to the Persogenics average, 90%. A significant difference was found ($t_{(375)} = -6.342$, $p < 0.05$). The sample mean of 86.8% was significantly smaller than the Persogenics reported mean of 90%.

DISCUSSION

The study's positive correlated findings regarding the gender and ages in the military subjects and the normative business population suggest that many similarities do exist between the two populations and that the profile would be relevant for use within military populations.

The statistical difference ($X^2 = 1.336$, $p < 0.05$) noted in the collapsed race category and the Persogenics distribution suggest that the instrument may not be completely neutral regarding race. However, it should be noted that in both civilian categories (collapsed and with all race variables), no significant differences between the civilian sample and the expected Persogenics distribution was found. This finding therefore suggests that the instrument may not be valid within the more racially mixed military setting. Unfortunately, there is currently insufficient data upon which to make this determination.

Therefore, further research is needed before commanding officers can accept Persogenics profiles as accurate, particularly among their troops belonging to a racial minority. Research

Table 5. Distribution of personality styles by gender within the civilian sample

General Style	Female	Male	Total
Dominant	16	28	44
Expressive	61	35	96
Amiable	54	22	76
Analytical	32	24	56
Total	163	109	272

Chi-square (χ^2) (3, N=272) = 14.793 $p < 0.05$

sample to determine if the significant finding in the race category is substantiated.

Additionally, the finding of a significant difference between gender in the civilian population and the Persogenics distribution raises additional concerns regarding the neutrality of the test.

Further studies comparing interactional patterns between officer and enlisted ranks should be considered and the potential to consider screening personnel based on interactional patterns for compatibility with specific military jobs may also be a future consideration.

Table 6. Distribution of personality styles by race within the civilian sample

General Style	Race Classification						Total
	White	African American	Hispanic or Latino	Native American	Pacific Islander	Other	
Dominant	35	1	2	2	0	0	40
Expressive	64	5	7	3	1	1	81
Amiable	46	3	4	0	0	3	56
Analytical	32	1	5	0	0	2	40
Total	177	10	18	5	1	6	217

Chi-square (χ^2) (15, N = 217) = 12.716 $p < 0.624$

Studies to assess direct and tangible benefits to military personnel will be necessary in the future to assess the impact of the Personal Profile and the Persogenics system in the areas of interactional dynamics, productivity, communication, and mission accomplishment.

Based on the views of military leaders

Table 7. Distribution of personality styles by age group within the civilian sample

General Style	Age Range					Total
	18-24	25-35	36-45	46-55	56-65	
Dominant	4	10	13	19	0	46
Expressive	9	26	29	21	2	87
Amiable	5	18	22	29	4	78
Analytical	4	10	24	21	1	60
Total	22	64	88	90	7	271

Chi-square (χ^2) (12, N=271) = 12.353 $p < 0.418$

already using the Persogenics system and recommendations from cited studies, nonclinical personality assessment is a desired tool that fulfills a command need. Therefore, careful research must be conducted to ensure that the military leaders who use personality profiling receive accurate and reliable information that is appropriate for use in the military.

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should continue focusing on the validity and reliability of this instrument and then on the replication and extension of the findings in this study with larger samples of military and civilian populations. Based on the ambiguous results of the small military sample, further studies should be conducted with a larger

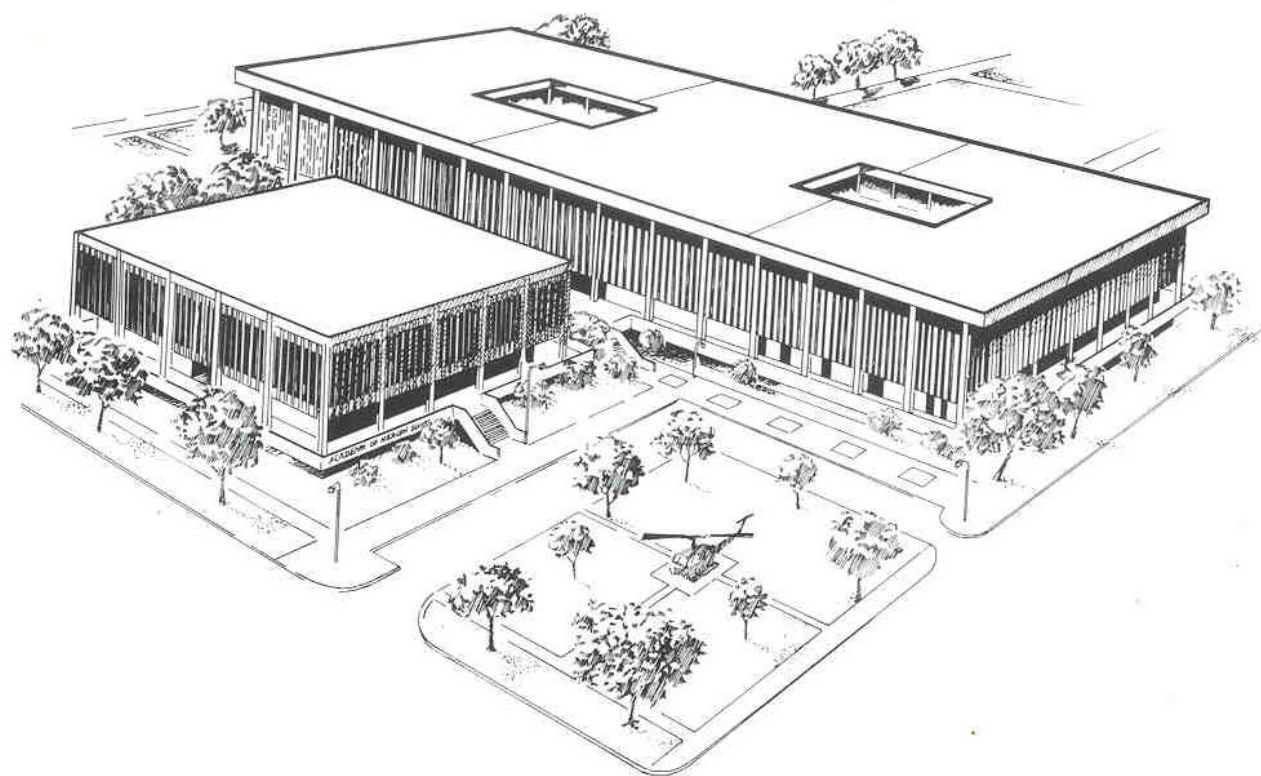
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