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MATURATION OF THE COMBAT HEALTHCARE SUPPORT SYSTEM IN IRAQ

October - December 2008

THE UNITED STATES ARMY MEDICAL DEPARTMENT

JOURNAL

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Perspective

Major General Russell J. Czerw

A few months ago, the staff of the *Army Medical Department Journal* and I were contacted by the 62nd Medical Brigade, then deployed to Iraq as Task Force 62 Medical Brigade (TF62 MED), who presented a proposal of significant relevance and value, not only for current combat operations, but also for training and planning in the long term. TF62 MED offered a collection of manuscripts dealing with the various aspects of their experiences, initiatives, and lessons learned in Iraq, all written while the authors were in theater. Therefore, the information is of immediate relevance, reflecting the situation as it exists in Iraq right now, rather than discussions of experiences of a totally different environment. We are very pleased to present those articles in this edition of the *AMEDD Journal*, and strongly recommend that the information they contain be studied by all commands and organizations involved in military medicine, at all levels. There are implications for planning, training, and management, as well as areas that should be addressed doctrinally, because, in all likelihood, Iraq and Afghanistan represent the operational combat environments of the foreseeable future.

Upon arrival in theater, the leadership of TF62 MED quickly recognized that the environment within which they would be required to provide healthcare support had dramatically changed from that encountered by previous medical support units. Obviously, during high intensity combat operations, the medical support resources are focused on providing those services most necessary in the tactical environment to save the lives of wounded and injured Warriors. However, TF62 MED found itself in a totally different situation, a mature theater of operations within which casualties from direct combat have been significantly reduced. However, even more complex challenges were developing as the US military operates in a counterinsurgency environment, while assisting the Iraqis to develop the capability to assume their own security responsibilities. The role of healthcare support had to be reevaluated and tailored to become a valuable factor in the overall mission of Coalition forces as it exists today.

COL Patrick Sargent, the Commander of TF62 MED, was the driving force behind the development and implementation of a plan to provide the highest level of medical support to the multinational force throughout Iraq, including Coalition and Iraqi security forces, while assisting the Iraqi government in the creation of a public healthcare structure. His opening article describes the philosophy and approach that established the overall structure for this ambitious, extensive, and complex adjustment of the existing medical capabilities. Subsequent articles detail various aspects of the resulting healthcare support system, providing a clear perspective on the extent of the effort involved, the details and considerations that were addressed, and the simple, dedicated hard work that the professionals across the units of TF62 MED performed in transforming COL Sargent's vision into reality.

COL David Budinger follows with a detailed, carefully developed description of the many, often disparate elements that must be considered for the provision of healthcare support as a combat theater matures. In simple terms, that maturity is the evolution from widespread, noncontiguous hostilities into an environment involving fixed bases, functioning infrastructure, and obligations to the host nation as it struggles to recover into a functioning nation-state. COL Budinger's article consolidates the major elements involved in evolving healthcare support in concert with the changing conditions and situational factors as some measure of stability and order are established in increasingly large areas of the combat theater. It is an eye-opening, thought-provoking article which should be of great interest to doctrine developers and strategic planners.

MAJ Alan Ueoka presents the formal planning process for TF62 MED's combat healthcare support system

(CHSS) in his carefully crafted article. He leads the reader through the systematic approach that the planners used to identify the parameters of the effort, the categorization of those parameters, the organization of the approach to address the parameters, and the considerations of resources and philosophical underpinnings that will support implementation of the plans. The result is an omnibus map depicting the elements of the CHSS, the interdependencies of those elements, and the flow of effort to successfully reach the overall objectives. MAJ Ueoka describes how TF62 MED successful converted theory and ideas into action over a wide area, in a very short period of time.

Vital to a successful counterinsurgency strategy are civil-military operations (CMO), as the support (or lack of opposition) by the local national population denies the enemy concealment, support, and freedom of movement. LTC Jeff Bryan and his coauthors have contributed an article which clearly and succinctly describes the key role that military medicine plays in a successful CMO strategy. In addition to shelter, food, water, and a measure of security, medical care is extremely important to the local population, most of whom may have had little in the way of medical care prior to hostilities. TF62 MED established a proactive, vibrant program of medical CMO, integrated with medical assets of other Coalition forces and the Iraqi government. This article is must reading for those planning and organizing the CHSS for all future deployments into Iraq.

Detainees are an unavoidable byproduct of combat or security operations. Also unavoidable is the fact that healthcare for those detainees in Iraq is, and has been, the responsibility of the US military medical support assets. As the responsibilities for security are assumed by the Iraqis, the question of how to transition the healthcare responsibility to the host nation remains a complex issue. LTC Vincent Holman proposes an approach by which the detainee healthcare system currently in place should be transitioned into a system appropriate for a national correctional custody structure. His well conceived article proposes drawing upon the expertise of the US Department of Prisons, and the National Commission on Correctional Healthcare for development of such a model. Further, he recommends the incorporation of more training into detainee healthcare in the curriculum of the AMEDD Center & School.

COL Scott Avery and LTC Vince Holman describe the real-world complexities and details, as well as both the obvious and subtle considerations that TF62 MED had to factor into the development and execution of their plan to establish a standardized structure for force healthcare across the Iraq theater of operations. Their article provides insight into the scope of planning that was required when TF62 MED's leaders decided to change the medical support landscape in keeping with the evolving realities of the military, political, and infrastructure environments. The analysis of the situation, definition of the requirements, identification of resources, development of the plan, and successful implementation are testimony to the professionalism, skills, dedication, and leadership of the medical professionals who ensure that they are there, wherever and whenever our Warriors need them.

Effective management of resources is a constant concern for every healthcare delivery organization. It is especially acute for those that are required to function thousands of miles from the sources of manpower, supply, and assistance. LTC Michael Richardson was the TF62 MED Medical Regulating Officer (MRO) who, as he states in his excellent article, "…gets the right patient to the right place, at the right time, by the right means." Indeed, emergency dispatchers in US metropolitan areas have performed a similar function for years, routing critical care patients to available facilities based on proximity, capability, and space availability. The MRO in Iraq has to perform that function for an entire country, while making additional judgments as to the patient's status—does the patient meet the criteria for treatment by US/Coalition military resources according to the medical rules of eligibility, or must an adequate Iraqi medical facility be located? LTC Richardson's article provides insight to the complexity of the medical regulatory function, which, interestingly, has become more complicated as the theater of operations matures.

One of TF62 MED's top goals was the establishment of theater-wide, standards-based healthcare delivery. Crucial to achieving that goal was the implementation of a system to measure and ensure the quality of healthcare services, assess the shortfalls, and define the actions necessary to meet the standards. COL Susz Clark and MSG(P) Richard Brewer have provided a carefully organized and detailed description of the TF62 MED program to create such a quality management system throughout the Iraq theater. Their

article explains the considerations involved across each aspect of clinical care, the metrics required, and the steps necessary to support the control system. The results ensured that a Warrior in Iraq receives the same quality of care, no matter when or where in-theater it is needed.

COL Clark also collaborated with MAJ Jon Van Steenvort in an article proposing the development and implementation of a modular medical organizational structure. This concept, centered around what they term the medical capability team (MCT), is in line with the combat unit structure to which the Army has moved in adapting to the realities of modern, external threats to the United States. The goal is the availability of teams of medical professionals with specifically focused capabilities, allowing medical support to be more easily task-organized in keeping with the force structure that requires their services. The article is a well-developed, thoroughly researched presentation of the advantages and effectiveness of the MCT concept. Their proposal will add additional insight to the current, ongoing discussions among those charged with planning the future doctrine and force structure of Army medicine.

The beginning of Operations Iraqi Freedom and Enduring Freedom in 2003 brought with it the first attempt to fully deploy electronic medical record (EMR) capability into a large scale, extended operational environment. Much time and money had been spent on developing an electronic capability since 1991. Indeed, over the years the *AMEDD Journal* has published a number of articles discussing various aspects of EMR development and implementation, as well as the pros and cons of the systems that AMEDD professionals have used in delivering healthcare services. MAJ Leslie Smith adds an article reflecting the very recent experience of healthcare providers in the Iraq theater. His article provides an informative overview of the evolution of health information systems, and gives an excellent look at the numerous problems and obstacles that developers face in attempting to create a single, all-encompassing master system that solves the myriad of disparate requirements for medical information gathering, storage, movement, and retrieval. MAJ Smith clearly demonstrates how this seemingly straightforward requirement is in fact one of the most complex data management puzzles faced by system developers. The need is profound, but a satisfactory solution still eludes

us. Fortunately, the extensively documented experiences from real-world operational theaters—rather than theoretical suppositions and canned field exercise reports—are now on the record for use by system planners and designers. Hopefully, combat deployments in the near future will have an integrated, simplified, reliable system of medical documentation to support their operations.

Another aspect of the effective management of resources so critical to ensuring healthcare delivery throughout any theater of operations is the availability of functioning equipment with all the supplies necessary for its use. As described in the article by LTC Bruce Syvinski and CPT Jason Hughes, upon arrival in Iraq, TF62 MED immediately initiated a task force medical equipment validation and standardization review board which imposed standardized equipment criteria across all task force units. Equipment requirements were validated, and, most importantly, the task force logistics managers had complete knowledge of what equipment was where, and the maintenance and supply requirements of each. This article is a textbook on the criteria, protocols, and procedures which create a cost-effective, responsive, and supportable system to ensure that functional medical equipment is available where and when needed.

Early in the deployment period, the leadership of TF62 MED recognized the seemingly increasing occurrences of a problem that, unfortunately, has always been present within military organizations, no matter the era or the nation. Personal misconduct in violation of the ethics and values that the US military strives to instill in our personnel is always a challenge, which, regrettably, can occur without regard to age, experience, or rank. In response to alarming statistics, the Task Force Commander directed the creation of a training package to unambiguously address the problem areas, reemphasizing the Army's expectations as well as the consequences of failure. MAJ Frederick Jackson has written an excellent article describing the process by which TF62 MED's Applied Ethical Framework training package was developed. Especially revealing is his discussion of the research that was done in an effort to discover the underlying reasons for the various types of misconduct. Armed with that information, they created a training module for each category of misconduct, addressing the factors that contributed to the problem, but also explicitly restating the regulatory framework within which our

conduct as professional Warriors must be structured. The scope of the resulting training package is indeed impressive. However, the effectiveness of this effort was undoubtedly enhanced by the real-world context in which it was created and delivered. This is another example of perfectly targeted, situational training, rather than garrison classroom lectures, lists, theory, and tests. MAJ Jackson's clear, detailed, well organized article should be on every leaders' reading list, especially those tasked with leading our Soldiers through extended deployments in distant theaters.

Perhaps nothing is more indicative of the maturation of the military situation in a theater of operations than the improvement in the medical facilities that support our Soldiers. Every combat campaign begins with expeditionary medical support; quickly established, mobile, focused on trauma patient stabilization and evacuation. As the situation stabilizes, mobility requirements diminish, and the scope of necessary medical services increase. Correspondingly, the need for upgraded facilities arises to accommodate the evolving medical support requirements. MAJ Donald Chapman and LTC Kristen Palaschak have contributed an article detailing the process by which such upgrades are being accomplished in the Iraq theater of operations. Their article highlights the starting point, the creation of the clinical concept of operations, the defining document upon which the plans for the new or upgraded facility are based. As such, the concept of operations must capture information from many areas, some of which have little to do with actual healthcare delivery. The article uses a case study about replacement of the medical facility at Contingency Operations Base Speicher to illustrate the process. This is an interesting presentation of a process that is both logical and unique, because the Iraq theater of operations is itself an environment that has little precedent in modern US military experience.

The ready availability of dental care for deployed Warriors during combat operations has long been recognized as a significant force multiplier. Understandably, as combat operations begin and expand throughout a theater, specialty and complex dental care are not usually available in close proximity, mandating evacuation to a facility in another geographic area. However, in an exact parallel to the changes in medical care and facilities that are necessary in a maturing theater of operations, so too will theater dental care evolve into a primarily fixed facility model, with increased scope of care capability. Such an evolution requires detailed planning and implementation management, employing most of the considerations and steps addressed throughout other articles in this issue with regard to the overall combat healthcare support system. LTC(P) Frank Christopher and his coauthors have written a comprehensive, detailed article that describes the work done by the Task Force 261 Multifunctional Medical Battalion in establishing a theater-wide dental care delivery structure in the current environment of Iraq. They examined the geographic dispersion of the requirements, evaluated the variability in the provider specialties that occur in the rotations of dental support units, and projected the facilities, both existing and required, that would be necessary to provide the level of dental care which should be available to our deployed Warriors. The result is a flexible, integrated dental care support system that maximizes resources, including provider, equipment, and facility, to contend with the changes in both patient requirements and dental personnel. The article by LTC(P) Christopher et al also discusses the dental care afforded detainees, a complex problem because in most cases the detainee must be brought to the clinic to receive that care. Also, our dental professionals are heavily involved with dental civil-military operations, including programs in the communities and a close working relationship with Iraqi dental resources and government agencies. TF261 established a series of continuing dental education events for Iraqi dental professionals to assist with development of their knowledge and skills as they continue to develop a self-supporting capability to provide dental care to their population. This article is another case study of how our medical and dental professionals call upon their education, training, initiative, and leadership to recognize, attack, and solve the complex problems they face in providing excellent quality healthcare to our Warriors, no matter the locations or conditions in which they must serve.

Task Force 62 Medical Brigade Combat Healthcare Support System in the Mature Iraq Theater of Operations

COL Patrick D. Sargent, MS, USA

ABSTRACT

Leading a deployed combat healthcare system is a very complex task and requires a command and control structure that is a unique blend of technical and tactical expertise to efficaciously deliver world-class medical care to America's sons and daughters. The medical task force in Iraq has successfully managed the transformation of the medical footprint from a tactically arrayed set of disparate medical units to a nascent integrated healthcare system with many features similar to the best healthcare systems in the United States. The American public demands, and Soldiers, Marines, Sailors, Airmen, and Coast Guardsmen deserve US quality medical care, whether they are being treated at a military medical center in the US, or a US medical facility in Iraq. This article presents an overview of the 62nd Medical Brigade's development of the combat healthcare support system during its tenure leading the US medical task force in Iraq.

EVOLUTION OF THE COMBAT HEALTHCARE SUPPORT SYSTEM

Porter writes, "Positions built on systems of activities are far more sustainable than those built on individual activities."[1] Historically, the medical task force has focused almost exclusively on delivering robust and accessible medical care and force health protection support since operations began in Iraq 5 years ago. Immediately upon assuming the mission, I noted the medical task force was charged to deliver 3 essential medical tasks:

1. Combat health support, which we call world-class Warrior healthcare, to US and coalition forces.

2. Protect the health of US and coalition forces.

3. Enhance government of Iraq credibility by supporting self-reliant Iraqi public health systems.

To accomplish these tasks my staff and I fused traditional military campaign planning with a business-oriented strategic planning process. The result was a hybrid method focused on operating a health system providing medical support to a multinational corps decisively engaged in a counterinsurgency operation.

We developed and published a medical campaign plan that provided our medical force with an in-depth understanding of how I visualized the operational environment, describing how we would provide medical support to the corps Warriors. The medical task force had the responsibility for providing medical care to 170,000 US and coalition forces, 150,000 contractors, Iraq Army and Iraqi Security Forces (ISF), local nationals, and 28,000 detainees. Our beneficiary population exceeded 300,000 people ranging in age from infants to the elderly. Our patients' medical conditions required care ranging from trauma care for children with burn and blast injuries to hospice care for elderly detainees with terminal illnesses. We quickly realized that in order to effectively command and control our medical resources caring for the vast number of Soldiers and civilians across a diversity of medical conditions, we had to break away from the traditional echeloned tactical paradigm of medical care delivery. We needed to build a combat health support system (CHSS) that possessed tactical agility capable of meeting the complexity of the counterinsurgency, while establishing the best features of a well-managed, US quality healthcare system.

For this reason we designed a CHSS comprised of 3 subsystems: a Warrior healthcare system, force health protection system, and medical civil-military operations system. These systems complement and synergize each other in accomplishing the collective mission as well as their specified tasks. Our CHSS model, illustrated in Figure 1, has the look and feel of

Task Force 62 Medical Brigade Combat Healthcare Support System
in the Mature Iraq Theater of Operations

Provide World-Class Warrior Healthcare to US & Coalition Forces | **Protect the Health of US & Coalition Forces** | **Enhance GOI Credibility by Supporting Self-reliant Iraqi Public Health Systems**

Customer and Stakeholder Perspective

ENDS | Optimize Return to Duty & Conserve Combat Power | Maximize Well Present for Duty & Reduce DNBI | Improved Health Status, Public Confidence, Increased Capability and Capacity | **Outcomes**

Internal Processes and Systems

WAYS

Warrior Healthcare System	Force Health Protection Systems	Medical Civil-Military Operations
Hospitalization, Surgery, Diagnostic & Specialty Care	Preventive Medicine Systems	Detainee Healthcare System
Primary & Dental Care Systems	Veterinary Care Systems	Pro-MEET, Cooperative Medical Engagements
Trauma & Chronic Care CPGs	Mental Health Care and Building Resiliency	Facilitate Improved Access to Iraqi Health Services
Medical Regulation and Clinical Integration		Facilitate Timely Iraqi Patient Transfers/ Discharges from US to Iraqi Facilities

Delivery Systems

Learning and Growth

MEANS

Electronic Clinical Documentation	Develop Adaptive Leaders	Clinical Quality Management	Continuing Education & Training
Comprehensive Risk Management	Logistics & Maintenance Management	Organizational Assessment	Health Facilities Planning & Management
Moral Compass, Ethical System Framework	Agile Joint/Multinational C2 Structure & Methods	Efficiency, Effectiveness, Outcome Measurement & Accountability Systems	

Applications, Enablers, & Programs

Resources

Force & Human Resource Management	Fiscal Stewardship	Medical IM/IT MHS Acquisition, Research/Development, Infrastructure

Family   Leadership   Ambassadorship   Growth

Figure 1. The Task Force 62 Medical Brigade model for development and execution of the Combat Healthcare Support System. The model was conceived and designed to optimize healthcare support in the mature combat theater while operating in a counterinsurgency environment.

a balanced scorecard,[2] however, it is not a balanced scorecard in the purist sense. Although we have designated traditional ends/outcomes, ways/delivery systems, and means/applications and enablers and programs, the only objectives we cite are in the ends portion of the model. The primary purpose of the CHSS model is to provide an operational framework for the delivery and management of quality healthcare throughout our healthcare system. The CHSS model allowed me to clearly communicate the strategic, operational, and tactical efforts of our medical task force with task force members, customers, and stakeholders. Ultimately, the CHSS model focused our organizational energy and engineered well-disciplined systems to execute our medical campaign plan.

The Warrior healthcare system, force health protection, and medical civil-military operations

subsystems are each directly in support of our 3 core missions: providing world-class Warrior healthcare to US and coalition forces; protect the health of US & coalition forces; and enhance the credibility of the government of Iraq by supporting self-reliant Iraqi public health systems. Each system has component delivery systems, or ways, with their own defined objectives and measures of effectiveness (MOE) that allow us to define success and objectively measure our progress. The development and use of MOEs are critical to help discipline our principal management focus and energy on those elements of our organizational performance most important to our patients and stakeholders. As you can imagine, as a medical brigade, all of our MOEs either directly or indirectly supported the care or protection of the coalition forces and detainees or supported the Government of Iraq's care for their citizens' health.

Visually and practically, the foundation of the brigade's CHSS model is our value system. Our moral compass and ethical framework incorporate the Army values and Warrior ethos. Task Force 62 Medical Brigade's values are the embodiment of the Constitution and the American flag, which is why I coined the acronym: F.L.A.G. for Family, Leadership, Ambassadorship, and Growth.

These simple tenets, presented in Figure 2, have sustained us through some tough times and allowed us to successfully serve as ambassadors for the Army Medical Department and our great Nation.

WARRIOR HEALTHCARE SYSTEM

Physicians are the clinical leaders of care in the healthcare organization.[3] As the medical task force commander, I fundamentally value the physician's role in the medical task force. Over the course of this deployment, it became increasingly clear to me that delivering quality medical care required a multidisciplinary team approach and weaving together the talents of the various healthcare professionals. Reflecting on the increasingly mature operational environment we instituted interdisciplinary patient safety, risk management, and clinical quality management programs across the medical task force in Iraq to enhance the communication and teamwork between our various professionals and support staff to

improve patient safety. After instituting these programs we witnessed quantitative and qualitative improvements in our patient safety and clinical quality management programs inside the medical treatment facilities.

We widely implemented and provided recurring input to the joint theater trauma system's trauma clinical practice guidelines (CPGs), and we implemented several chronic care CPGs. These guidelines were a starting point in standardizing the delivery of medical care, but they did not unnecessarily restrict our physicians from practicing medicine using their clinical judgment. They retained the professional autonomy to not use the CPG if their clinical judgment led them to a better plan of care. The joint theater trauma registry and deployed combat casualty care research team played an integral role in the success of the task force's medical mission. Their efforts were instrumental in our ability to contribute to the military healthcare system's efforts to use our trauma-rich environment to advance evidenced-based medicine.

The brigade instituted a Quality-Healthcare Assessment Visit (Q-HAV) Program modeled in the spirit of the Joint Commission's* patient tracer methodology. This allowed our combat support hospitals to receive an objective assessment of their hospital and enabled the Q-HAV Team to observe and disseminate the best practices of each organization throughout the medical task force. This was a paradigm shift away from the traditional, checklist-based organizational assessment programs focused on reviewing policies and standard operating procedures.

Over the past 15 months, we have sustained a 98% survivability rate for trauma patients who arrive at our 7 hospitals. Throughout our deployment, during and after "the surge," we have seen a precipitous decline in casualties and trauma and have used this time of improved security to improve the integration of the electronic medical record, radiology and lab services, primary and specialty care, and clinical integration. Focusing on improving the Iraq theater's radiology infrastructure by working with Defense Health Information Management System, we upgraded the Medweb® (667 Folsom St, San Francisco, CA) capacity allowing radiographs taken at level II clinics to be read by a radiologist at a level III hospital.

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*Joint Commission on Accreditation of Healthcare Organizations, One Renaissance Blvd, Oakbrook Terrace, Illinois.

Given the US, Coalition, and ISF successes over the past 15 months which significantly improved the security situation, we have seen a precipitous decline in the number of casualties, prompting us to reevaluate the distribution and content of our medical footprint. As the combat force in Iraq shrinks, combat unit commanders are challenged to maximize their well-present for duty strength as the mission has not subsided. In support of their needs, my objective is to reduce the number of Soldiers requiring evacuation out of theater for specialty care, and reduce turnaround time to get Soldiers back to their units. We are presently developing a specialty care referral clinic, first focusing on gastroenterology, and planning to expand to screen and treat patients within the specialties that have the highest rate of evacuation out of theater. Lastly, we are leveraging the decline in trauma patients to refine our outpatient business practices to improve timely access to care and optimizing the utilization of our providers.

Figure 2. Reproduction of the in-theater poster displaying the tenets of the F.L.A.G. institutional philosophy developed by the TF62 Medical Brigade as the foundation for the combat healthcare support system.

FORCE HEALTH PROTECTION

The medical task force has achieved the lowest disease-nonbattle injury rate in the history of land warfare. This is largely a result of the preventive medicine and veterinary medicine teams that are dispersed across the battlefield, conducting applicable inspections in their respective areas and coaching Soldiers and leaders about keeping the force healthy. I have been extremely impressed with the level of professionalism displayed by these teams, which generally consist of junior enlisted Soldiers and junior officers. These Soldiers epitomize the concept of the "strategic corporal" and are great ambassadors for the Army Medical Department.

The veterinarians have played a crucial role in reducing the feral animal population around our forward operating bases and contingency operating bases. The Corps Commander established a force protection dog program that allows units to acquire a dog for the express purpose of security. Therefore, when registered, these dogs are eligible for the same care provided to our military working dogs. The veterinarian medicine teams have sustained a very impressive survivability rate for military working dogs under their care.

We have made tremendous progress in the accessibility and quality of behavioral health (BH) services in Iraq as well. The task force has achieved a 99.3% return-to-duty rate for all Soldiers treated by our BH personnel. These dedicated professionals conduct prevention, consultation, and restoration care inside the division and brigade areas of operations, largely by moving in and around the operational areas with the supported units. The primary cause of operational stressors is the Soldier's inability to cope with issues on the "home front." Our BH personnel focus their preventive and restoration services on the skills required to sufficiently cope with stressors from home: anger management, relationship building, and communication. Generally, after a 3-day visit to our restoration centers, Soldiers return to duty more capable of dealing with their stressors.
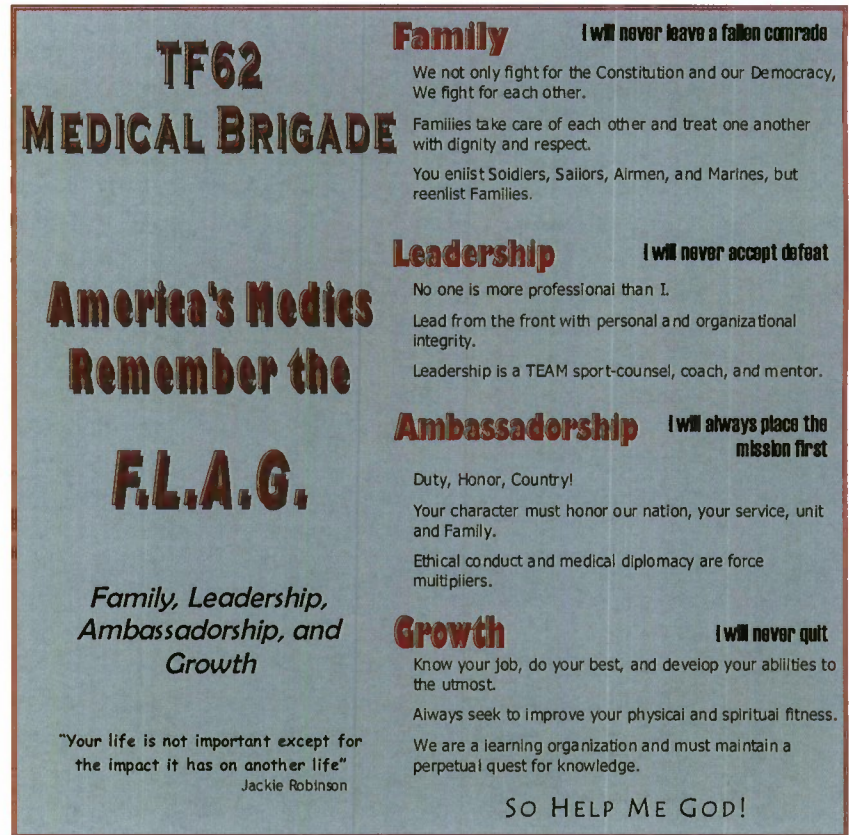
As a result of the Mental Health Advisory Team's recommendation that the brigade become more involved in the suicide prevention aspects of mental healthcare, we developed suicide risk management teams in several of the brigades. These teams consist of the commander, chaplain, and a behavioral healthcare advocate. This innovative approach to providing behavioral healthcare demonstrated the commands' concern for their Soldiers who have behavioral healthcare needs. We conducted an informal survey that revealed Soldiers wanted their command involved more in their care; thus, this program provides us the opportunity to connect the Soldier and command while respecting the Soldiers' desire for privacy. Our combat stress control units treat over 6,400 patients monthly, and each encounter is captured electronically using the combat and operational stress control workload and activity reporting system (COSC-WARS). Electronic documentation of the COSC-WARS has proven beneficial and affords primary care doctors the ability to evaluate our Soldiers in a holistic manner. The behavioral healthcare personnel provide "stealth mental health" circulating with Soldiers, and are truly combat multipliers.

MEDICAL CIVIL-MILITARY OPERATIONS

Detainee healthcare is the medical task force's most strategically important mission. The task force has the responsibility for providing care to over 28,000 detainees. The quality of medical care the detainees receive is identical to that provided to US and coalition forces. The delivery of medical care to detainees is uniquely challenging due to the physical layout of the detention facilities and the security requirements. The majority of medical care provided to detainees is done at the wire fence of the compounds, hence the term "wire medicine." The medic is the primary person conducting triage at the wire using an algorithm directed model of care. For medical conditions beyond the scope of the medic, detainees are moved to the compound treatment area where they are seen by a primary care provider. Each compound is covered by a nurse case manager to ensure the detailed plan of care is implemented for the detainee patients.

A major challenge in the detainee population is the documentation of care; however, we have recently implemented the Battlefield Medical Information System-Tactical (BMIST) as the primary means of documenting the medical screening within the detainee population at the wire. This ensures there is not a break in the communication and delivery of care. For security reasons, the detainees are routinely moved between compounds, creating a significant challenge to manage their medical care requirements. Thus the electronic medical record assists in ensuring continuity of care as well.

Detainee nurse case management ensures quality and standardization across the detainee healthcare continuum. Nurse case managers have also effectively assisted in the management of chronic conditions. Diabetic detainees have more favorable management of their conditions, as measured by hemoglobin A1C, than other diabetics in similar disease management programs.

Professional meetings, engagement, education, and training, and cooperative medical engagements have afforded the medical task force the ability to directly influence the strategic lines of operations within the Multi-National Force and Corps. As the security situation began to improve, our medical, dental, and veterinary teams were highly sought after by combat unit commanders to provide cooperative medical engagements (CMEs) with their Iraqi counterparts. Throughout our deployment, we have supported CMEs in support of provincial reconstruction teams, Iraqi military training teams, and coalition brigade combat teams. Our task force's involvement enabled these organizations to build rapport with local Provincial leaders and citizens. Through the cooperative medical engagement we have leveraged our assets to employ medical diplomacy across the battlefield. Our veterinary officers have provided the Iraq veterinarians with training on artificial insemination, rabies surveillance, and food procurement guidelines. As the security improves, so does the Iraqi economy. Our veterinarians have assisted Iraqis with inspecting soda bottling and canning plants prior to being awarded contracts to sell soda to coalition forces.

At the request of the Iraqi Minister of Health and the Multinational Force-Iraq Surgeon, the task force recently developed health professions training courses focused on physicians, nurses, and healthcare administrators. The program will enable our healthcare professionals to train Iraqi healthcare personnel managing a hospital in the context of a larger healthcare system. The program spans the range of

lectures, one/two-day seminars to providing didactic and practical training with multidisciplinary teams of healthcare professionals in the US military treatment facilities.

Local nationals filled a disproportionately large share of the US hospital beds in the medical task force at the beginning of our tour. Therefore, we addressed this program with the following goals in mind: reduce the Iraqis' dependency on our medical treatment facilities and increase their confidence in the Iraqi healthcare system. A secondary reason for the number of Iraqis entering our medical treatment facilities was the US and coalition forces misunderstanding of the medical rules of eligibility (MROE). Adherence to the MROE is a significant challenge, but vitally important to ensure our limited medical resources are readily available for the care of US and coalition forces. Improvement in these areas have led to a significant reduction in the proportion and overall number of US hospital beds occupied by Iraqi patients.

The Medical Task Force has the responsibility for over 180 case management liaison officers, bicultural bilingual advisors and Iraqi advisor task force personnel. These are Iraqi-Americans or highly skilled former military personnel that are expressly focused on providing the Corps with medical information, or atmospherics, describing the status of medical care and facilities throughout Iraq. Their reporting has shaped the Corps' focus and guided the force's efforts to assist in building the quality and capacity of Iraq's medical systems.

CONCLUSION

The medical infrastructure within the Iraq theater of operations has matured over the course of the past 15 months. The CHSS model has sufficiently allowed me to develop and maintain a precise understanding of my medical warfighting functions. The CHSS translated data into useable information that allowed me to make informed decisions on the effectiveness of our internal processes and systems. Moreover, the CHSS provided a structured way of defining and measuring medical quality in a tactical environment, specifically, our 3 core missions of providing world-class Warrior healthcare to US and Coalition Forces; protecting the health of the US and Coalition Forces, and enhancing the Government of Iraq's credibility by supporting self-reliant public health systems.

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At the time this article was written, COL Sargent was the Commander, 62nd Medical Brigade, deployed to the Iraq theater as Task Force 62 Medical Brigade.

Crest of the 62nd Medical Brigade

Healthcare System Planning Along the Combat Theater Maturity Continuum: Transitioning an Expeditionary Medical Force to an Integrated Healthcare System

COL David P. Budinger, MS, USA

The subject of a piece of mosaic art cannot be seen when viewing it from too close of a vantage point. Likewise in history and life, we often miss the significance of what is happening when we are in the middle of major changes. It is only by stepping back and gaining perspective that we are able to discern where we have been and gain wisdom about how to proceed. The war in Iraq has been a crucible for countless advances in science, technology, counterinsurgency tactics, and medical practice. Many of the advances were designed prior to application, while others were created through practical improvisation, and still other advances resulted from facing life-or-death crises. Some of the changes were immediate and revolutionary while others were incremental and evolutionary. These advances are interwoven with the passage of time, and together result in combat theater maturation. Though space constraints necessitate some oversimplification, this article introduces both conditions which should prompt analysis and decision-making, and several dimensions of a healthcare system which develop as a combat theater matures.

The maturation of the Iraq theater of operations is celebrated by Soldiers returning to Iraq for their second or third deployments because of the tangible improvements in security and creature comforts. Theater maturity affects command and control, communications, logistics physical plant facilities, utilities, security, force protection technology, national and provincial government, and healthcare. Medical practice advances in the US military health system in Iraq are very obvious in the historic low rates of both death due to wounds and loss of manpower due to disease and nonbattle injury.

Germany and Korea today provide excellent examples of the end state of US military health systems in a mature theater of operations. The US military treatment facilities in both of these theaters are part of sophisticated, integrated healthcare systems well adapted to their environments. Combat healthcare organizations must be effective, whatever the cost. Healthcare organizations in mature theaters must be effective and efficient in managing the care of their supported populations. At some point in history the deployable hospitals operating out of tents in Germany and Korea were replaced by temporary buildings. These hospitals eventually moved into permanently constructed facilities. Likewise, the medical services provided within these facilities were adjusted over time, shifting from a battle injury and trauma focus during combat operations to a disease and nonbattle injury focus which today places first emphasis on primary care, a specialty care network, and community hospitals. It is impossible to separate technological advances from chronologic maturation in historic or modern theaters of operations as technology improvement and time are interwoven. Historians can comb the records to find the environmental and technological conditions and the operational factors which resulted in the establishment of the first permanent facilities in Germany and Korea. These changes in conditions and factors were, in effect, decision points.

Until very recently, mainstream campaign planning in the US Army largely neglected detailed planning for stability or counterinsurgency operations in the theater after major offensive or defensive operations have ended. The operational campaign planning curriculum in our professional military education institutions historically involved planning and wargaming the major muscle movements of reception, staging, onward movement and integration, combat operations in detail through the actions on the objective, and then the instructors would declare the end of the exercise

(ENDEX). Each of these elements involved preparation of very detailed plans which included major decision branches, sequels, and decision points for the combatant commander and sustainment force leaders. Planning for healthcare support followed this paradigm as well. Healthcare planning exercises traditionally declared ENDEX after the combat objectives were achieved without regard to the enduring requirements and changes 6 months, 12 months, or 36 months after major combat operations ended. The US military's more than 5-year engagement in Iraq has prompted the development of revolutionary doctrine changes for operations in general, and counterinsurgency operations in particular.

Learning from the practical experiences of the maturing Iraq theater of operations, we are in the optimal position to step back and gain the necessary perspective to assess our progress and then guide our strategic decisions about the future design and establishment of health services and facilities in a maturing theater of operations. This article is an initial attempt to create a construct for developing a military health system throughout the lifecycle of a theater of operations. The following paragraphs describe several decision points and dimensions of the healthcare systems which should be considered in planning across the strategic timeline which I call the "theater maturity continuum." Figure 1 is an oversimplified depiction of select maturation milestones for the US military health system in Iraq along a rough timeline to help illustrate this concept.

DECISION POINTS FOR MILITARY HEALTHCARE SYSTEM MATURATION

Establishing firm decision points for adding, removing, or changing the medical support resources in a theater of operations can be more difficult than establishing decision points for combat operations. There are rarely distinct times, locations, or events to prompt actions or decision-making. There are, however, environmental, organizational, political, and physical factors for the healthcare leader to consider which may prompt his decisions to deliberately advance, reduce, or change clinical processes, organizational and support structures, or physical plants. Many of these are common factors which healthcare leaders in noncombat theater settings consider as well. They may be either externally or internally generated. Below are listed several potential decision points or variables:

- Changes in the operational security, threat level or enemy composition and activities

- Geographic or operational changes in supported units or populations

- Higher command orders to establish, discontinue, or modify a particular level of support or clinical service

- Requests or demand from supported customers or units

- Monthly analysis of injury patterns, disease prevalence, and evacuations out of theater for specialty consultation, to higher levels of care, or for rehabilitative services

- Analysis of diagnoses or causes for lost duty time

- Healthcare professional observations and recommendations

- Acquisition or loss of essential equipment or other technology

- Acquisition or loss of physicians or support staff manpower with a particular skill set

- Rates of shipment of lab specimens or transmission of radiographic images out of theater

- Advances in medical practice and medical technology

- Increases or decreases in funding, changes in funding methodologies, or invalidation of assumptions or projections in business cases, or economic breakeven points

- Findings and recommendations from consultants, audits, external agencies, or investigations

- Changes in supply content, vendors, or distribution systems

- Changes in routine personnel transportation circuits, strategic or tactical MEDEVAC asset density or flight patterns

- Public sentiment (both US and local national) about longevity of the mission

- Changes in public, media, or political sensitivity about specific diseases, conditions, or technology

- Requirements to support host-nation stability directly or indirectly through cooperative medical engagements, educational programs, medical diplomacy, or humanitarian assistance

DIMENSIONS OF HEALTHCARE SYSTEMS WHICH VARY WITH THEATER MATURATION

According to Army *Field Manual 3-0*:

Campaign capability is the ability to sustain operations as long as necessary to conclude operations successfully…It is an ability to conduct sustained operations for as long as necessary, adapting to unpredictable and often profound changes in the operational environment as the campaign unfolds. Army forces are organized, trained and equipped for endurance.[1]

Relatively few dimensions of the US military healthcare system remain static as a theater of operations matures. History reveals countless examples of military hospitals and medical companies moving with or shadowing the advance of combat forces during expeditionary campaigns. As the campaign extends in duration and mission variables change, medical system leaders must consider several physical, manning, and operational elements in order to adapt the health system to the new environment. Many of these dimensions are briefly described below:

Hospital and Clinic Physical Plants: The most visible dimension of military health system maturation is in the physical plants of hospitals and clinics. In an expeditionary phase of a campaign the tents and expandable trailers (ISO shelters) of the deployable medical system (DEPMEDS) are an appropriate hospital physical plant, given that they are relatively mobile and can be modularly customized to fit mission requirements and environmental constraints. These systems are not, however, optimal for use in extended campaigns when the hospital will be employed in a static location for several years. The Army's Health Facility Planning Agency provides the medical leader with expert consultants to assist in analyzing the requirements, designing, contracting, and building hardened facilities for long duration campaigns. It is not uncommon to design medical facilities for use between one and 10 years integrating a combination of existing permanent buildings, plywood structures, DEPMEDS ISO shelters, or multisection trailers on the new hospital site. Security threats may necessitate the addition of concrete t-walls and mortar-protective overhead shelters or entirely hardened structures in order to meet force protection requirements. The facilities intended for use longer than 5 to 10 years are much more expensive and incorporate more elaborate utilities, medical gas, communication, and life-safety systems.

Command and Control/Governance: During the expeditionary phase, the medical brigades or medical commands are focused on a more volatile and dynamic supported combat force. Their priority efforts are primarily wrapping the medical force's capabilities around the operational force's requirements. As the theater matures, the hospitals and clinics establish many of the functional committee structures that are found in medical facilities in the United States to assist with the management of the hospital. The medical command and control (C2) or governance structure in the medical brigade must be significantly expanded in order to conduct health system management functions as the theater matures. The theater medical C2 headquarters has a traditional battle staff, but requires augmentation personnel to man the clinical operations section, including theater surgical, behavioral health, and preventive medicine consultants. Recognizing the need to transform the tactically postured medical force into a health system, the medical task force in Iraq added a healthcare administrator to help incorporate strategic management systems and further integrate the health system using modern business tools and methods. In the most mature theaters, the medical C2 structure functionally transforms into a regional medical command-type configuration as seen in the United States and Europe.

Healthcare Continuum: The expeditionary medical system uses the traditional echelons of combat healthcare, which generally include primary and acute care supported by very limited medical technology and manning from the maneuver battalion's level 1 battalion aid stations. The area support medical companies of the brigade combat teams and multifunctional medical battalions operate level II facilities which possess slightly expanded diagnostic and patient holding capabilities. In settings where tactical risk increases and evacuation distances or weather conditions will likely impede the use of rotary wing medical evacuation (MEDEVAC), it is common to add a forward surgical team to these level II

Healthcare System Planning Along the Combat Theater Maturity Continuum: How an Expeditionary Medical Force Transitions to an Integrated Healthcare System

COMBAT THEATER HEALTH SYSTEM MATURITY → (LOW LEVEL → FULLY MATURE)

Category				
Tactical focus	Move and shift with supported force		Enduring bases with outposts	Fixed bases and communities
Clinical focus	Trauma and primary care, very limited specialty care	Early integration of hub-and-spoke system: primary care, robust emergency/trauma care and limited specialty care centers and circuit-riders	Integrated health system with focus on primary and trauma care, population and demand-based specialty care, some appointed care	Primary, definitive specialty, trauma care with community hospitals; population health focus; appointed care
Evacuation policy	Requiring 7 days or longer, accommodating more time for recovery and rehabilitation; also Theater Temporary Holding Detachments		Overseas Army community hospital standards	
Facilities	Deployable medical shelters and hybrids, semipermanent and use of seized permanent structures		Semipermanent construction	Permanent construction to US standards
Equipment	Modified TO&E* equipment replaced with durable US equipment with augmentation		Theater-provided US standard equipment	US standard
Medical documentation	Paper and limited electronic medical records		Standardized use of electronic medical record	
Supply system	Modified TO&E* standard w/enhancements. Regional hubs augmented by commercial suppliers			Prime vendor
Utilities	Organic power and water base prime or city power and water/sewage system			Base/city utilities
Funding	Requirements-based		Possibly budgeted	Workload-adjusted budget
Quality, patient safety, and performance improvement	Unit-based quality and patient safety efforts	Command-wide quality management standards, striving towards US/JC standards where practical; use external visits and patient/system tracer methodology		Joint Commission accredited
On base EMS	Tactical medical evacuation. Base emergency services. 911 System		Integrated 911 System with security, fire, and ambulance	
Unit manning	Organic modified TO&E* manning, augmented modified TO&E* manning document		Augmented MTOE and/or Manning Document/TDA† with civilians and contractors	TDA† with military, civilians and contractors; joint manning
C2‡/governance	TO&E* Medical Brigade or Medical Command/Medical Support Command			Regional medical command
Campaign phase	Expeditionary 2003-2006	Enduring Campaign with Improving Security 2007-2009	2009-Unknown	Stable environment / Fully mature

Figure 1: Selected US military health system advances across the continuum of combat theater maturity in Iraq.

*Table of Organization and Equipment: Defines the structure and equipment for a military organization or unit
†Table of Distribution and Allowances: Prescribes the organizational structure, personnel and equipment authorizations, and requirements of a military unit to perform a specific mission for which there is no appropriate table of organization and equipment.
‡Command and control

facilities to provide trauma and resuscitative surgery. As the combat theater matures, the levels I and II facilities function as troop medical clinics which also provide emergency medical treatment capability on an area support basis. In the more mature theater the combat support hospital (CSH) adds more sophisticated diagnostic, surgical, and specialty care capabilities. Today it is normal for the mature combat support hospital to have fluoroscopy, a 16-slice CT (computerized tomography) scanner, and a greater variety of laboratory capabilities. The clinical workload in the CSH in the mature theater shifts from being dominated by trauma to an outpatient care focus. Over time, the supported combatant commanders place increased emphasis on preserving their well-present for duty strength and desire to have their Soldiers returned to duty more quickly. This is often attributable to reductions in combat troop strength and difficulty obtaining replacement Soldiers. In response to these expectations, the medical leader should consider adding women's health, gastroenterology, cardiology, and neurology services. It is also prudent to consider pediatric services too, if the organization is expected to perform humanitarian assistance support or care for the local national population in the theater. When planning health services in the mature theater, it is important to consider the high density of US contractors who use the health system. The health screening process for contractors is much less rigorous than for Soldiers, thus these patients are generally older and have more chronic health conditions. In the more mature theater, it is appropriate for the medical leader to encourage the establishment of contractor operated healthcare facilities on the major bases if the deployed healthcare system desires to reduce contractor dependency on the US military hospitals.

Clinical Integration and Medical Regulation and Evacuation Resources: In order to get patients in the expeditionary theater to the right level of care in a timely fashion, unit provided casualty evacuation vehicles or ground ambulances and MEDEVAC helicopters evacuate patients, in accordance with doctrine, to the closest facility with the appropriate level of care. As the theater matures and the relative proportion of routine outpatient care or "rule-out" consultations and referrals increase, the health system leader must establish a specialty consultant system to enable telephonic or email consultations, and, if appropriate, patient referrals. It is also appropriate to work with the MEDEVAC system leaders to establish routine MEDEVAC ring routes to fly on regular days of the week. The high density of specialists and subspecialists in the medical corps relative to the need for professional filler system* general medical officers (GMOs) in level I and II facilities results in a several specialists and subspecialists filling GMO roles in the mature theater. Though this is not an optimal way to meet the deployed force's primary care needs, this substitution practice does yield the secondary benefit of having a rich array of specialists available in theater for consultation. The medical leader in the mature theater should closely monitor the assignment of these specialists, and place some of them in clinic locations near transportation hubs in order to capitalize on their ability to serve in dual roles, using their specialty skills when they are not performing their GMO functions. In the mature theater it is appropriate to regularly monitor evacuations and diagnoses by medical specialty to guide decisions on establishing dedicated specialty care clinics either at the hospitals or on the major transportation cross-roads at airport-based health clinics.

On-base Emergency Medical Service or 911 Phone System: Once the expeditionary force is positioned on longer term bases, it is appropriate for the medical leader to establish an on-base emergency medical service or 911 phone system in order to speed ambulance responsiveness and access to prehospital care. Four years after the establishment of a major base in Bosnia, a Soldier suffered cardiac arrest at the gym one mile away from the combat support hospital. The Soldier's buddies and the gym staff did not have access to a 911 phone system, so they called for help using their unit's MEDEVAC request procedures. It

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*The professional filler system (PROFIS) predesignates qualified Active Duty health professionals serving in Table of Distribution and Allowance† units to fill Active Duty and early deploying and forward deployed units of Forces Command, Western Command, and the medical commands outside of the continental United States upon mobilization or upon the execution of a contingency operation.[2]

†Prescribes the organizational structure, personnel and equipment authorizations, and requirements of a military unit to perform a specific mission for which there is no appropriate table of organization and equipment (the document which defines the structure and equipment for a military organization or unit).

took almost 20 minutes for the ambulance to arrive at the gym. The Soldier died and the medical leaders quickly established a 911 telephone number for the base in just 2 weeks.

Quality Management and Performance Improvement: Medical units in the less mature theaters traditionally establish their own quality standards and operate within the scope of privileges of the assigned healthcare providers. In these theaters, there are not consistent efforts to assess or document competencies or scopes of practice for the nursing staff or medics. Basic combat skills call for Soldiers to constantly improve their foxhole. The medical force should be no different in constantly improving the quality and reliability of the health system. As the theater matures, it is important for the medical leader to progressively adopt US healthcare quality standards to the degree to which it is practicable in the more austere environment. It is not until much later in the maturation continuum that the healthcare facilities would even consider Joint Commission* accreditation. Leaders should, however, instill quality management standards, patient safety, and performance improvement systems that embrace US quality standards as that is what Soldiers, commanders, and the Soldiers' loved ones expect and deserve. Over time, more media, elected officials, coalition nation leaders, claims attorneys and external agencies take interest, not just in survival rates and casualty figures in the deployed healthcare organization, but they also demand information to document the quality of care delivered, particularly in high visibility cases or after untoward outcomes. Adoption of as many Joint Commission standards and principles as practical safeguards both the patients and the medical force's interests. Though it happens, in the mature theater it is never proper for members of the healthcare team to say "this is combat; we don't do that quality improvement BS here." The medical task force headquarters in the mature theater establishes an inspection program which should include regular assessments of the hospitals and medical companies adherence to standards ranging from the provision of care, to documentation and communication, to the environment of care. The high rate of turnover in the mature theater necessitates a high frequency of quality

*Joint Commission on Accreditation of Healthcare Organizations, One Renaissance Blvd, Oakbrook Terrace, Illinois 60181

and safety-oriented staff assistance visits. Leaders and quality management staff members in the mature medical treatment facilities and medical task force headquarters use the same patient and system tracer methodology commonly used in US healthcare facilities in order to assess and improve clinical and support system quality.

Manning: As the theater of operations matures, the medical force adds the appropriate staff commensurate with increased care specialization, technology of equipment, and sophistication of the physical plant. Medical leaders should consider employing full time contract facility maintenance, utilities, and housekeeping staff once the hospital or clinic is in a permanent location. Several lower density or frequently deployed specialties become over-used or depleted during longer term operations in the mature theater. It is wise to consider permitting US government civilian employees or contractors to perform select functions in the more permanent healthcare facilities. It is important to work all of the details of both civilian personnel management, including management-employee relations, and contracting officer and contracting officer representative roles and requirements well in advance of bringing civilians or contractors into the healthcare facilities. Additionally, as the business accountability and finance requirements in the medical treatment facilities and the medical C2 headquarters increase, leaders should consider which of these functions must be done in theater and which could be performed remotely by a contractor or other agency in the continental United States (CONUS) in direct support of the deployed medical task force.

Equipment and Standardization: Standard medical equipment sets for the CSHs and the medical companies are rarely adequate for the expeditionary medical force because they tend to lack several items of diagnostic and surgical equipment which providers rely upon in their practice. Most expeditionary medical units deploy with augmentation equipment they have specially procured in order to meet their providers' basic requirements. The longer the medical force stays in the theater, and the more broadly the healthcare facilities' scope of care expands in order to accommodate specialty care providers' needs, the greater the demand for traditional medical equipment found in community hospitals and medical centers in

CONUS. As hospitals move into more permanent facilities, they replace their deployable hospital beds with commercial beds. They also add more sophisticated refrigerators with alarm systems, c-arms, various scopes, monitors, and commercial sterilizers in order to meet the clinical quality and durability requirements of the staff. Rather than permit unchecked acquisition of a wide variety of equipment from a plethora of manufacturers for the various facilities across a theater, the medical task force in the mature theater establishes a medical equipment standardization board to consider and procure the commonly accepted advanced equipment which can be shared between facilities, and maintained with a common set of repair and calibration equipment. These multidisciplinary equipment standardization boards function similarly to a capital equipment program and budget advisory council in CONUS military treatment facilities (MTFs). Reducing the variety of models within a common type of medical equipment allows the clinical engineering staff to maintain a common set of repair skills, manuals, parts, and spare medical devices to provide to facilities when their equipment is out for repair. Given that the intermediate maturity health systems do not have a dedicated capital equipment budget, the MTFs' equipment is funded on a requirements basis using a letter of justification and an operational needs statement which passes through service component command channels for approval at the military service secretary's office. The Army's Office of The Surgeon General and the US Central Command recently established a Joint Medical Technology Assessment Review Team to serve as an objective office to guide and validate the acquisition of high cost and advanced technology medical equipment requirements for the maturing theaters of Iraq and Afghanistan.

Communication and Documentation of Care: Although documentation of healthcare is beneficial in managing the health of a patient, and for communication between members of the healthcare team, it is not commonly among the highest of priorities in the expeditionary medical force. As the theater matures and the healthcare organizations assume a more predictable pattern of operations, the medical record becomes more important to the healthcare team. The more mature healthcare systems establish standards requiring providers to document their care using the electronic medical record (EMR). The hardened facilities and more reliable utilities provide a more stable environment improving the reliability of information systems and the electronic medical record. The EMR follows the patient as he is evacuated through the healthcare system out of theater to military or Veterans Affairs healthcare facilities in CONUS, and provides a longitudinal record for reference throughout his life. The MTFs in the more mature theater also use the electronic medical record to perform medical record reviews to assist with quality management functions. They also typically have a robust set of secure and nonsecure telephones and dedicated bandwidth on the mature bases' networks, and they use enhanced VSAT (very small aperture terminal) satellite systems. As is the case in CONUS, healthcare providers are generally dissatisfied with the slow speed of the EMR system, but in many cases the mature healthcare facilities acquire voice recognition software to mitigate their frustration by assisting with the dictation of clinical notes.

Business and Accounting Functions: Theater medical rules of eligibility often require the US healthcare facilities in the theater of operations to provide care to all categories of patients who present at their facilities in order to preserve life, limb, or eyesight. Deployed MTFs do not have any organic capability to perform any medical record coding, third party insurance billing or collecting, or accounting for contractor or noncoalition force healthcare. Additionally, the deployed medical facilities and headquarters, even in the semimature theaters such as Iraq in 2008, 5 years after the invasion, lack the resource management staffs, manpower, and workload accounting staffs to perform basic workload accounting and analysis functions. At some point farther along the theater maturity continuum, these business and accounting functions should be added. As stated earlier, many of these functions may be performed remotely from CONUS in support of the deployed MTFs. The funding of deployed MTFs is normally requirements-based and thus not subject to the typical constraints of a fixed or workload-adjusted budgeting system. As the theater matures even further and budgeting systems evolve, the deployed medical task force should consider establishing resource management or business offices.

CONCLUSION

The maturation of the Iraq theater of operations over the first 5 years demonstrates that leaders deliberately

and successfully improved quality, integration, and accessibility of the healthcare system. As the adage goes, Soldiers do well those things their commander checks. This has proven true in assessing the remarkable improvements in the content of care as well as the medical support systems. When planning and executing future campaigns it is imperative that we deliberately design and implement mechanisms to catalyze the maturation and ensure quality performance of the important healthcare and support functions based on the conditions in the operational environment. As the medical force enjoys the benefit of more time, leaders must establish and monitor decision points, analyze the environment, develop plans, and then professionally manage this maturation in order to strategically improve healthcare. It is too easy to stand still, analyzing and observing, waiting for the rate of change to slow before acting. Leaders must not view the deployed US healthcare system as a series of one-year deployments, but instead purposefully guide development, striving to achieve US quality standards, constantly improving health system integration, and developing facilities with technologically appropriate equipment, all while leading a well-trained, adaptive, and competent staff.

In conclusion, when considering the length of time it takes for a theater to mature, it is helpful to look at one Army hospital in Seoul, Korea, which passed a major milestone 58 years after it supported expeditionary operations in the Korean War. It has benefitted from many generations of improvements, but it has continuously wrapped its services around the operational needs of the supported units and met the needs of its individual patients. The former 121st Evacuation Hospital made one of its final advances along the maturity continuum as it was given the permanent name as the Brian Allgood Army Community Hospital in June 2008, in honor of this outstanding officer who sacrificed his life while leading the maturation of the healthcare systems in Iraq on January 20, 2007.

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At the time this article was written, COL Budinger was the Deputy Commanding Officer, Task Force 62 Medical Brigade, Baghdad, Iraq.

COL SCOTT JOINS THE *AMEDD JOURNAL* EDITORIAL REVIEW BOARD

The *AMEDD Journal* welcomes COL Dana P. Scott, VC, USA as a member of the Editorial Review Board. COL Scott is the Deputy Chief, US Army Veterinary Corps, AMEDD Center & School, Fort Sam Houston, Texas.

COL Scott joins the board replacing COL Marc E. Mattix, VC, USA. COL Mattix has been a member of the Board since October 2007. We thank COL Mattix for his dedication to the high standards and professional quality of this publication, and his support to our mission. We wish him well in his return to the big skies and wide prairies of Montana.

The Editors

A Systematic Approach to Combat Healthcare Improvement: Task Force 62 Medical Brigade Combat Healthcare Support System Model

MAJ Alan Ueoka, MS, USA

Positions built on systems of activities are far more sustainable than those built on individual activities.

Michael Porter[1]

INTRODUCTION

The medical task force's system of organizational strategy and change management lies within the combat healthcare support system (CHSS). The CHSS is a customized offshoot from traditional balanced scorecards[2] in that the task force does not state the operational objectives on the strategy map, but simply shows the strategic macro-objectives. There are subsystems and select initiatives which support the accomplishment of these objectives. The CHSS modified strategy map shows the interdependencies and synergy of various subsystems in support of Task Force 62 Medical Brigade's strategic objectives (listed on page 20).

The medical task force for Operation Iraqi Freedom completed 5 years of support to Multi-National Forces-Iraq combat operations in early 2008. The task force headquarters has engaged in every aspect of command and control (C2) for each of the medical functions in Iraq with distinct requirements from predeployment planning, planning for future requirements to reception, staging, onward-movement and integration to mission execution, sustainment, and redeployment.

The medical task force in Iraq has C2 responsibility for 46 medical units. These units consist of 4 hospitals, 4 headquarters elements, and 38 companies and detachments that provide healthcare to US and Coalition forces, select contractors, and detainee populations throughout the Iraqi area of responsibility.

Although there have been numerous rotations and a fresh look at the delivery of healthcare each year, there were very few signs of health systems integration beyond trauma management. The commander and senior leaders of the Task Force 62 Medical Brigade (TF62 MED) identified a requirement for integration and standardization of processes and systems, and an increased emphasis on task force-wide performance improvement. The vehicle to implement a strategy was modeled after the balanced scorecard.[2] This method enables the commander and senior leaders to illustrate a customized strategy map demonstrating task force strategies and the ability to communicate them across the organization, as well as to identify key internal processes that drive strategic health service support successes. Ultimately, the medical task force commander is responsible for implementing Department of Defense (DoD) healthcare policy. Examples of this are the documentation of care in the electronic medical record, treatment of mild traumatic brain injury and post traumatic stress disorder, and the implementation of recommendations after the Mental Health Assessment Team (MHAT) V* study.[3]

The TF62 MED CHSS strategy map, presented as Figure 1 on page 6, provides a graphical depiction of functions and relationships between all medical units, as well as different medical warfighting functions. All the medical warfighting functions are synthesized into an integrated healthcare delivery system in order to

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*MHAT V is the fifth of a series of mental health advisory teams sent by the Army Surgeon General to the theaters of operations (Iraq and Afghanistan) to assess the mental and behavioral health of deployed Soldiers; the quality of mental and behavioral healthcare; access to this care; and to make recommendations for changes to improve the mental health and mental health services to our men and women who are deployed into combat environments.

provide effective battlefield healthcare. The model is only a blueprint for how we build—it is not the building.

The combat healthcare delivery system uses a strategy map, adopted from Kaplan and Norton's ongoing studies on strategic management.[4] The medical task force further divided our mission into 3 achievable ends:

1. Provide World-Class Warrior Healthcare to US and Coalition Forces. The intent is to optimize Warrior return-to-duty and conserve combat power. This focuses on medical treatment of both battle injury and disease and nonbattle injury (DNBI), and care for the injured and ill. The dedication to human life has led to an almost 98% return-to-duty rate for every service member arriving at our treatment facilities.

2. Protect the Health of US and Coalition Forces. The intent is to maximize present-for-duty and reduce DNBI. This focuses on proactive, systematic surveillance and prevention of threats to service member health. Currently, there is a DNBI rate of only 2.5%, which is the lowest in the history of warfare.

3. Enhance Government of Iraq Credibility by Supporting Self-Reliant Iraqi Public Health Systems. The intent is the promotion of medical diplomacy and the enhancement of the Government of Iraq's (GoI) credibility. Focuses on efforts and systems to support the GoI's ability to effectively defend itself, and ensure basic services for the Iraqi people.

These ends drive the task force's efforts toward achieving unilateral improvement in focused areas through weekly review and management of measurable tasks. These ends are listed at the top of the strategy map. As an integrated healthcare delivery system, the medical brigade task force headquarters has been absolutely critical to the establishment of documented process and improved healthcare systems and subsystems. In rapidly changing and fluid environments like counterinsurgency operations, units find their sustainable solutions through injecting their units with the culture of process improvement and

continual learning and growth. The vehicle to implement a strategy was modeled after the balanced scorecard[2] and strategy map. This method enabled the task force commander and senior leaders to show the task force how to create a customized strategy map that allows the task force to:

> Clarify task force strategics and communicate them across the organization.

> Identify the key internal processes that drive strategic health service support success in the Iraq theater of operations.

> Align the DoD's investment in people, technology, and organizational capital for the greatest impact in combat casualty care.

> Expose gaps in the military health system strategies and take early corrective action.

IMPLEMENTING THE COMBAT HEALTHCARE SUPPORT SYSTEM STRATEGY MAP

TF62 MED systematically implemented and rigorously executed a strategy map known as the TF62 MED CHSS throughout the task force to the lowest unit levels. The task force began the implementation of the strategy map through a chain-teaching* program, directed through a fragmentary order and requiring all units to comply with the top-down driven vision of the system. Performance improvement and patient safety are the task force's main effort ensuring that desired outcomes are realized and systematic fixes are established. Leaders ensure every member of their section or unit are able to describe how they fit into the CHSS model and support the 3 major purposes of the medical task force. All members of the task force are also charged to describe a specific systematic performance improvement initiative on which they are working.

DESCRIPTION OF THE STRATEGY MAP

The TF62 MED combat healthcare support system or modified strategy map portrays the key elements that make up the organization and how they fit together in the overall strategy. The modified strategy map considers perspectives of the stakeholders (military

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*Chain-teach is a method of unit training in which designated unit members first receive the training, after which it is their responsibility to train another level of personnel, who in turn will continue training others. The training continues in a pyramid fashion until all personnel requiring such training have received it.

health system) and customers (patients and casualties). The depth of the model is based upon objectives and resources.

Objectives

All CHSS objectives and measures of effectiveness are developed under the acronym SMARTER—specific, measurable, accountable, results, time bound, encompassing, and reviewed. SMARTER objectives are defined as:

Specific: States specific end points desired.

Measurable: Measures results usually by a number or percentage.

Accountable: Identifies and holds individual, team, department, section or unit accountable for action and outcomes.

Results: Identifies the outcomes desired, not the process to get results.

Time-bound: Specifies when results are to be achieved.

Encompassing: Aligns with and supports all other objectives (ie, inclusive and linked or nested with higher headquarters).

Reviewed: Evaluated to check relevance and progress towards results.

These principles helped the brigade staff shape the measurable objectives for their individual staff sections. These objectives must fit into the task force commander's vision, framed by Ends, Ways, and Means.

Ends

As discussed on previous pages, the task force used 3 achievable Ends to focus the collective efforts and define left and right limits. There are 3 major ends to the TF62 MED strategy map:

1. Optimize Return-to-Duty and Conserve Combat Power. The intent is to optimize Warrior return-to-duty and conserve combat power. This focuses on medical treatment of both battle injury and DNBI, and care for the injured and ill.

2. Maximize Well Present-For-Duty and Reduce DNBI. The intent is to maximize present-for-duty and reduce DNBI. This focuses on proactive,

systematic surveillance and prevention of threats to service member health.

3. Improved Health Status, Public Confidence, Increased Capability and Capacity. The intent is the promotion of medical diplomacy and the enhancement of the GoI's credibility. Focuses on efforts and systems to support the GoI's ability to effectively defend itself, and ensure basic services for the Iraqi people.

Ways

The Ways deliver the "how" to the organizational goals at the top of the strategy map. Our internal process and systems provide those Ways in which we conduct our daily operations. The internal process and systems are subdivided into the following 3 components:

Warrior Healthcare Systems—consist of hospitalization, surgery, diagnostic and specialty care; the primary and dental care system; trauma and chronic care clinical practice guidelines; medical regulation; and clinical integration. The warrior healthcare system focuses on providing emergency, acute, and chronic care, hospitalization, and surgery to US and coalition forces and other beneficiaries. It also ensures that, when applicable, providers use clinical practice guidelines to capitalize on best practices and the management care of patients relying on the integrated health system medical units.

Force Health Protection Systems—consist of preventive medicine systems, veterinary care systems, mental health care, and building resiliency. The focus of this component is to proactively identify environmental and health risks to the force, develop systems to monitor and mitigate risks, maximizing (well) present-for-duty strength. Additionally, the resources of these specialty areas systematically develop and implement interventions to enhance the future health and resilience of the service member.

Medical Civil-Military Operations Systems—consist of professional meetings, engagements, public education, and medical training (Pro-MEET). Cooperative medical engagements facilitate improved access to Iraq health services, timely Iraqi patient transfers/ discharges from US to Iraqi facilities, including the detainee healthcare system. The medical task force can capitalize on an increased level of security to develop the host nation's medical competency, prestige, salary,

and employment conditions. The training the task force provides Iraqi physicians and medical staff are events that can be leveraged for positive local media efforts to both promote Iraqi public confidence and legitimize the Ministry of Health in particular, and the GoI in general, by synchronizing information, public affairs, and psychological operations enablers.

The first element of medical civil-military operations is health sector legitimacy and efficiency. Legitimacy and efficiency of local healthcare services support efforts which build the Iraqi people's confidence in their health services, and encourage wise use of resources. The second element is professional medical engagement, education and training (Pro-MEET) which provides professional training, education, and counsel to improve the effectiveness of the GoI patient care and health system management. The third element is US/Iraqi focused and strategic partnership which selectively joins resources of Coalition and Iraqi government and private sector entities to enhance Iraqi self-sufficiency.

Means

Learning and growth encompass the Means by which we conduct our daily operations. The following are applications, enablers, and programs that provide the Means by which the TF62 MED executes the previously delineated 3 components of the internal processes and systems which define the Ways:

- Clinical Quality Management: Ensure healthcare delivered within accepted standards.

- Comprehensive Risk Management: Retrospective review sampling normal cases (morbidity and mortality, sentinel events, etc).

- Electronic Clinical Documentation: Integrated information systems to document care and communication within and across the continuum of care.

- Logistics and Maintenance Management: Proactive and responsive systems to provide and maintain the supplies and equipment.

- Health Facilities Planning and Management: Establish and maintain physical plants and environment of care.

- Continuing Education and Training: Providing, improving, and refreshing individual and collective skills.

- Agile Joint/Multination Command and Control Structure and Methods: Agile organization and leadership based on forces, function, and geography.

- Organizational Assessment: Physical and virtual assessments and reviews.

- Efficiency, Effectiveness, Outcome, Measurement and Accountability Systems: Means to ensure we are achieving desired outcomes effectively and wisely.

- Moral Compass, Ethical System Framework: Do the right thing respecting others.

- Develop Adaptive Leaders: Leaders who are values-grounded and who lead in accordance with the standards of *Army Command Policy.*[5]

Resources

The resources block is integral to the foundation of the model, upon which sit the Ends, Ways, and Means. People, fiscal management, and information system structures must be present and follow a solid process to provide an inimitable and invaluable product. The following resources support the overall strategy of the TF62 MED CHSS:

Force and Human Resources Management: Competent, cared-for personnel with the intent skills at the right sites.

Fiscal Stewardship: Adequate operating funds managed with taxpayers' interests in mind.

Medical Information Management/Information Technology, Military Health System Acquisition, Research/Development, and Infrastructure: Robust information technology, acquisition, and research systems and infrastructure.

FOUNDATION OF THE TF62 MEDICAL BRIGADE CHSS

All successful strategies must have a foundation. The TF62 MED strategic foundation is nested in the acronym F.L.A.G.—family, leadership, ambassadorship, and growth. The tenets of the philosophy of F.L.A.G. are presented on the facing page.

Implementation Strategy

Without quantifying, a strategic objective is simply a passive statement of intent.[4(p365)]
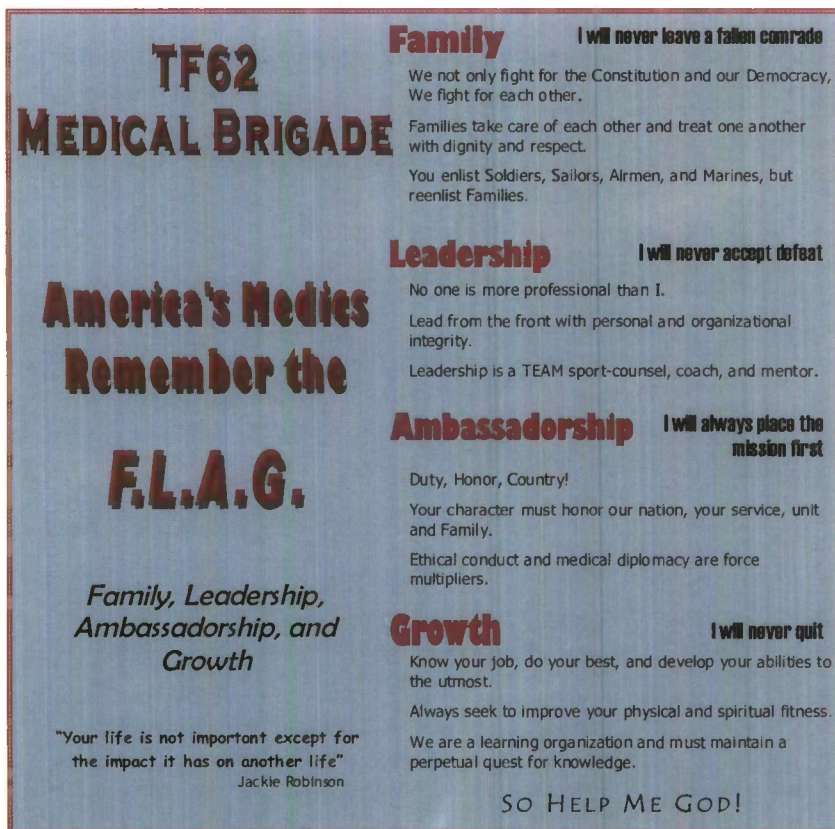
Reproduction of the in-theater poster displaying the tenets of the F.L.A.G. institutional philosophy developed by the TF62 Medical Brigade as the foundation for the combat he 'thcare support system.

The medical task force developed metrics in concert with the commander's vision of providing US healthcare through a systematic process improvement culture. Each section developed these metrics based on their respective contribution to the framework of the system, or on each of their "buttons" on the strategy map. In order to build consistently developed measurements, the staff used the following 3-point framework for each objective:

1. Objective: Defines the purpose of the metric in quantified and achievable terms.

2. Benchmark: Defines comparable standards; first in Army standards, then Joint Commission* standards, and finally brigade standards. Each succeeding standard is used only if the higher level one is nonexistent.

3. Assessment: Defines how the brigade is meeting the objective in temporal objectives and task accomplishment.

It must be stated here that not all objectives are quantifiable. Where this was the situation, the task force used a qualitative demonstration of how we targeted the problem or issue. The staff section used either a storyboard or project map to show the progress of an action or project to update the commander.

The staff had to incorporate an understanding of the quantification process into the task force organizational strategy and vision. The staff considered 3 ingredients of the dynamics of strategy and added them to our strategy map processes. These ingredients also kept the staff focused on achievable and feasible tasks and objectives that were all related to the ends and centered on our stakeholders.

➢ Quantify: Establish targets and validate the cause-and-effect relationships in the strategy map.

➢ Define the Timeline: Determine how strategic themes will create value in short-, medium-, and long-term horizons to create balanced and sustained value creation.

➢ Select Initiatives: Choose the strategic investments and action programs that will enable the organization to achieve its targeted performance in the stated time frames.

The task force implemented the combat healthcare support system model with the publication of Fragmentary Order #291 to TF62 MED Operations Order 07-09,[†] a directive which provided a top-down communication of strategy and implementation. This ensured common understanding of the task force mission, vision, and values, and enabled communication of organizational goals and objectives through an implementation briefing. This strategy was implemented by subordinate staff sections and commands within 30 days of its creation. This was accomplished by using a chain-teaching presentation provided in the published directive. The direct

reporting units were tasked to notify the TF62 MED deputy commanding officer once all officers and senior noncommissioned officers have been briefed on the modified strategy map.

The headquarters staff was responsible for further development of the strategy and metrics to measure performance and progress by asking 2 simple questions:

> Are we aligned with the strategy?

> Are we making progress?

The clinical operations section gained ownership of the warrior healthcare system and force health protection systems. The Civil-Military Operations Officer gained ownership of the medical civil-military operations system. The rest of the staff sections gained ownership of the elements within the ways and means.

Additionally, the TF62 MED commander is provided a monthly strategy assessment using an interactive model of the strategy map, in which each button is linked to the objectives and measurements in a PowerPoint® "dashboard." This operates just like a webpage, which eventually is one of the end-products of this project. The commander and staffs are also provided with a binder (updated monthly) with documentation of metrics in a snapshot.

SUMMARY

An organization's mission, vision, and values are just words—intangible concepts, unactionable directives, and inconsequential thoughts. Without the emphasis, energy, and a defined process and framework, the words have little meaning to the organization. Task Force 62 created this organizational vision and communications strategy through a tested model based on Kaplan and Norton's[4] continuing studies on organizational strategy. The task force accomplished its strategy only by overcoming the most difficult hurdle in changing organizational culture—accepting change. Over time, the staff evolved from compliance to commitment to the culture of process improvement

and organizational introspection. We could do this because the climate during our weekly reviews was not punitive or defensive, but collaborative and challenging. We also saw the value added to our unit and task force growth and development and, in the process, learning and development as individuals. Future medical task forces will have the ability to gain ground and develop this model for conclusion. As the Army Medical Department (AMEDD) continues to develop and refine lessons learned, the CHSS model presented here can be the foundation for the AMEDD and DoD's vision in the creation and modification of schoolhouse programs of instructions and doctrine to be relevant to the maturing combat theater of operations.

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Medical Civil-Military Operations: The Deployed Medical Brigade's Role in Counterinsurgency Operations

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ABSTRACT

Medical civil-military operations are a critical combat multiplier directly supporting the counterinsurgency fight. Army Medical Department Soldiers support medical civil affairs activities at all levels from platoon to the United States Mission-Iraq (Department of State) initiatives enhancing the legitimacy of medical services in the Iraq Ministry of Health, Ministry of Defense, Ministry of the Interior, and Ministry of Justice.

The civil-military operations mission of the deployed Task Force 62 Medical Brigade has also evolved into a broad mission encompassing over 120 contractors including Iraqi-American, Bilingual Bicultural Advisors–Subject Matter Experts serving as case management liaison officers and medical trainers, as well as Iraqi Advisor Task Force members providing medical atmospherics, assessments, training, and the overall management of Iraqi linguists supporting all level III medical facilities.

The people were neither friendly, nor unfriendly, they were seeking only survival.

Robert Wilensky[1]

COIN [counterinsurgency operations] *can be characterized as armed social work. This makes CMO* [civil-military operations] *a central COIN activity, not an afterthought. CMO is one of the means of restructuring the environment to displace the enemy from it.*[2]

What are medical civil-military operations (CMO)? As the deployed Task Force 62 Medical Brigade (TF62 MED) Civil-Military Operations Section (S9) working in the Iraq theater of operations over the past 14 months, we have encountered numerous challenges while expanding, contracting, deconflicting, and integrating the role of civil affairs into the medical mission. There is no doubt that health services can have a significant positive impact in counterinsurgency operations and stability operations when it is properly planned and executed.

The only current doctrine that specifically addresses medical CMO is *Joint Publication 4.02; Health Service Support,*[3] which defines medical civil-military operations as health-related activities in support of a joint forces command that establish, enhance, maintain, or influence relations between the joint or coalition force and host nation, multinational governmental, and nongovernmental civilian organizations and authorities, and the civilian populace, in order to facilitate military operations, achieve US operational objectives, and positively impact the health sector.[3(pIV-7)]

There are a significant number of entities or stakeholders involved in medical civil-military activities, including host nation government agencies such as the ministry of health (MoH) and ministry of defense (MoD), international organizations, nongovernmental organizations, interagency departments, the US Department of State, and Coalition forces, each with unique capabilities and objectives. This article focuses on how the Medical Brigade and its direct reporting units are spanning the health care spectrum working with civilian and military host nation medical and veterinary organizations to enhance the host nation's credibility by supporting self-reliant Iraqi public health systems.

When determining the medical CMO mission, it is imperative to understand that medical CMO, although important, is secondary to the medical brigade's primary mission of providing world-class Warrior healthcare to US and Coalition forces. The organic medical brigade has numerous strengths and is uniquely qualified to provide training to personnel at

all levels in the healthcare industry, and direct healthcare to eligible Iraqis. It also has numerous constraints and limitations that other medical support Coalition force units do not have. We have worked to mitigate those limitations. For example, the brigade is not equipped, staffed, nor trained to conduct tactical missions outside of a secure area without support from maneuver elements or specialized contractors. TF62 MED does not own battle space, limiting engagements to specific MoH and MoD representatives that have access to Coalition force facilities. Understanding the strengths, limitations, constraints, and mitigating factors of the deployed medical brigade is critical when planning medical civil-military activities (MCMA). While refining MCMA, the S9 section should be planned from the focus of the 5 factors from Army *Field Manual 8-42*,[4] which lays out specific planning considerations for foreign internal defense missions that apply equally to current COIN operations. All brigade MCMA initiatives must address these 5 factors from *Field Manual 8-42* prior to approval of mission execution:

- Plan is developed with the host nation's assistance.

- Plan enhances rather than replaces the host nation's existing programs.

- Host nation has the resources to continue the programs if the US military effort is sharply curtailed or discontinued.

- Host nation receives the credit for the program rather than the US military. This is accomplished by ensuring that all combat health service operations include representatives of the host nation or its military.

- Health Service Support goals and objectives are considered for each region or province.

As a result of mission analysis, the mission of medical civil-military operations has evolved and been refined to improve the health status, public confidence, and increasing capability and capacity. To successfully accomplish this mission, the CMO section is further divided to address 3 distinct objectives:

- Professional meetings, engagements, education, and training (Pro-MEET) and cooperative medical engagements

- Facilitate improved access to host nation health services

- Facilitate timely host nation patient transfers/ discharges from US to host nation facilities

PROFESSIONAL MEETINGS, EDUCATION, ENGAGEMENTS AND TRAINING, COOPERATIVE MEDICAL ENGAGEMENTS

The Medical Brigade conducts a significant amount of professional medical training. When planning medical training programs in the COIN environment, we have found that the guidance in Army *Field Manual 3-24* is critical: "Keep programs small. This makes them cheap, sustainable, low-key, and (importantly) recoverable if they fail."[2(pA-8)] The Medical Brigade supports 2 long-term training programs: a 10-week MoD sponsored trauma training course in the international zone, and the 8-week Iraqi correctional medic courses on Camps Cropper and Bucca. The remaining courses that the Medical Brigade has established across the theater are smaller scale, short-term, noncertificate-producing "train the trainer courses" designed to increase the professionalism and build the civil capacity of the Iraqi health care system. Over a 12-month period, the Medical Brigade conducted 82 events providing full spectrum health services training to 824 students. The Medical Brigade held courses in dentistry, veterinarian services, medical logistics, oxygen generation, basic to advanced lifesaving, burn care, trauma, and ground ambulance training, to name a few.

The Medical Brigade planned and conducted 15 cooperative medical engagements (CMEs) and assisted with numerous others throughout Iraq. The CMEs are designed to gain Iraqi support and facilitate the establishment and restoration of basic health services (see Figure 1). Our contracted Iraqi-American doctors, along with local physicians, dentists, and healthcare workers provide the patient care, ensuring the engagements have an Iraqi face. We also precoordinate with local leadership and MoH facilities for possible referrals. During these 15 engagements, we have had 6,447 patient encounters. The use of local Iraqi doctors and locally procured medication ensures the patients see their government providing essential services. Just over the past few months, these CMEs have evolved from primarily providing medical care and referrals to the teaching of preventive measures. The focus of this training is to teach the women and children ways they can improve the quality of their health, while keeping it simple enough to allow them to share the knowledge with their family members. Educating the Iraqis and building awareness is just one of the ways that CMEs are helping to enforce the legitimacy of the Iraqi medical system.

FACILITATE IMPROVED ACCESS TO IRAQI HEALTH SERVICES

The Iraqi Advisor Task Force (IQATF) team, detailed in Figure 2, has visited and assessed 255 new medical and health care facilities and updated over 500 previously assessed facilities. This improved visibility on Iraqi facility's capacity and capabilities expands our ability to refer Iraqi patients to the correct facilities for treatment. The S9 section produces an average of 50 reports per month, including executive summaries and Iraqi-specific requests for medical information across the Iraq theater of operations, which are used to generate numerous intelligence summaries. We have also placed an IQATF liaison officer into various positions, including the Multi-National Force-Iraq surgeon cell, to provide a strategic link between them and the Ministry of Health.

FACILITATE TIMELY IRAQI PATIENT TRANSFERS/ DISCHARGES FROM US TO IRAQI FACILITIES

The Medical Brigade's 17 case management liaison officers (CMLOs) are responsible for managing the

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Iraqi Advisor Task Force (IQATF)

The IQATF is a contract force multiplier which provides the means to gather "atmospherics" on local national medical facilities and capabilities. It also provides advisory and assistance services to assist military commanders and staff to understand atmospheric information in the areas of social, religious, economic, political, public perceptions, and tribal issues through trend and event analysis.

IQATF Positions

Special Advisor. A physician who is the link to highest levels of the Ministry of Health.

Military Analyst. Special Forces/Special Operations, preferably a medic, to provide continuity for operations.

Iraqi Advisor. Native Iraqi able to recruit and direct local nation advisor teams.

Local National Advisors. Live and work in local communities; gather local medical atmospherics.

Figure 2. The Iraqi Advisor Task Force as organized in the Iraq theater of operations in the current counterinsurgency environment.

Cooperative Medical Engagements

The 3 characteristics aimed to increase the capacity and legitimacy of the provincial and national governments of Iraq:

➤ Medical treatment and engagements must be provided by Iraq personnel with Coalition forces in the advisory and support role. KEY: Show the Ministry of Health and Ministry of Defense to be in the lead.

➤ Capabilities provided at the cooperative medical engagement (CME) *must* be sustainable given the current capabilities of the Ministry of Health.

➤ CMEs will afford the same treatment to the populace regardless of religious or political affiliation.

CMEs are not free clinics. This is not sustainable and undermines the legitimacy of the Government of Iraq

CMEs must complement the strategic goals and objecttives of the Ministry of Health to shift from a centrally controlled curative care model of health service to a more decentralized primary care model with emphasis on prevention measures and maternal and child health.

Figure 1. Characteristics of cooperative medical engagements as applied in the Iraq theater of operations in the current counterinsurgency environment.

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transition of Iraqi patients back into the Iraqi healthcare system for further care after they are stabilized at one of our facilities. The other task is to assist them in their return home once treatment is complete. In the last 10 months, the CMLOs have assisted 5,746 Iraqi patients, including 966 direct transfers to host nation facilities.

The Medical Brigade is committed to planning and conducting initiatives that support the Iraqi Security Forces and build civil capacity. As described in *Field Manual 3-24*:

5-3. COIN operations combine offensive, defensive, and stability operations to achieve the stable and secure environment needed for effective governance, essential services, and economic development. The focus of COIN operations generally progresses through 3 indistinct stages that can be envisioned using a medical analogy:

➤ Stop the bleeding.

➤ Inpatient care—recovery.

➤ Outpatient care—movement to self-sufficiency.

Understanding this evolution and recognizing the relative maturity of the operational environment are important to the conduct (planning, preparation,

execution, and assessment) of COIN operations. This knowledge allows commanders to ensure that their activities are appropriate to the current situation.[2(p5-2)]

As the security situation allows and we begin to transition from inpatient care to outpatient care, the Medical Brigade will continue to expand its medical civil-military operations role in engaging all entities involved in health care to foster host nation legitimacy. The Medical Brigade should concentrate on programs that have proven effectiveness similar to the local nonresident continuing education programs currently being conducted by forward surgical teams. Training should be especially focused on the needs of that particular hospital or region, and based on the logistical capabilities of that hospital. This will reinforce existing Iraqi medical education facilities for medical professionals and expand national programs, including educational opportunities in prehospital care to achieve the ultimate goal of legitimacy and self-reliance.

Currently, there is an initiative for US combat support hospitals to provide a platform for Iraqis to learn effective healthcare team training by watching and interacting with US healthcare professionals. The health professional training course concept includes mentorship on interdisciplinary care, team-oriented patient safety culture, environment of open communication, and environment of care management and infection control. Although the program is centrally designed and managed, courses will be executed locally in accordance with the facility's ability to host. All of the programs are designed to be kept at 4 weeks or less in residence, and to minimize dependency on coalition force medical facilities.

SUMMARY

Medical civil-military operations are a critical combat multiplier directly supporting the COIN fight. AMEDD Soldiers support medical civil affairs activities at all levels, from platoon to United States Mission-Iraq initiatives enhancing the legitimacy of medical services in the Ministry of Health, Ministry of Defense, Ministry of the Interior, and Ministry of Justice.

The CMO mission of the deployed medical brigade has also evolved into a broad mission employing numerous contractors including Iraqi American, Bi-Lingual Bi-Cultural Advisors –Subject Matter Experts serving as case management liaison officers, and medical trainers, Iraqi Advisor Task Force members providing medical atmospherics, assessments and training and the overall management of Iraqi linguists supporting all level III medical facilities.

This unique mission demonstrates the need for a deployed medical brigade S9 staff of at least 3 Civil Affairs trained personnel—preferably 2 officers in the grade of lieutenant colonel through captain, and a senior noncommissioned officer in the grade of sergeant first class or master sergeant—in order to lead, plan, and execute these elaborate CMO functions.

In view of the evolved mission, it is recommended that the deployed medical brigade's modified table of organization and equipment be expanded to reflect the requirement, and medical service officers and noncommissioned officers be identified to fill these slots and attend the resident civil affairs course.

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Transition of the Detainee Healthcare System to a Correctional Model: An Interagency Approach

LTC Vincent Holman, MS, USA

ABSTRACT

The Army Medical Department (AMEDD) will play a key role in the transition of detainee healthcare operations from US control to a designated authority, whether it is Iraq or a third party. Although the AMEDD has garnered significant experience in the provision of detainee healthcare over the past 5 years, it would be prudent to implement an interagency approach to transitioning detainee healthcare. That transition must start with leveraging of the subject matter expertise of the US Bureau of Prisons and National Commission on Correctional Healthcare. Curriculum development of detainee healthcare in the program of instruction at the AMEDD Center and School is critical.

It is said that no one truly knows a nation until one has been inside the jails. A nation should not be judged by how it treats its highest citizens, but its lowest ones.
Nelson Mandela[1]

INTRODUCTION

Coalition forces in the Iraq theater of operations will progressively transfer theater detention operations to the Government of Iraq (GoI) in the near future. This will occur by training Iraqi personnel and transferring facilities to the GoI in accordance with international standards, completing the transition in phases, promoting Iraqi sovereignty while protecting the public and the rights of the detainees. Healthcare is an integral part of this transition. To ensure an appropriate transition of the detainee healthcare, the US must facilitate identification and participation of nongovernmental and other government agency subject matter expertise to assist in the interagency planning, developing and executing detainee healthcare transition from a military-centric to a civilian-centric correctional model. The purpose of this article is to highlight the framework of the US correctional model and identify a plausible strategy for transitioning detainee healthcare to the GoI and provide a recommended way ahead for the military health system's understanding and development of a correctional healthcare model for combat operations.

BACKGROUND

United Nations Security Council Resolution (UNSCR) 1511 [2] authorizes coalition forces to detain any person they deem an "imperative security threat." Detainee operations within the Iraq theater of operations are instrumental to sustained peace. What happens to the programs, and the detainees, will depend on what the government of Iraq makes of them when it takes the reins after the expiration of UNSCR 1511. American control over detention expires after December 2008, though a bilateral agreement between the US and Iraq is in development to extend that deadline. Meanwhile, the Multi-National Force-Iraq (MNF-I) command responsible for detention operations, Task Force 134 is training more Iraqi correctional officers to ensure an appropriate level of host nation capability and capacity.

Detainees are not technically prisoners or enemy prisoners of war. The Department of Defense (DoD) defines a detainee as any person captured, detained, held, or otherwise under the control of DoD personnel (military, civilian, or contractor employees). It does not include persons being held primarily for law enforcement purposes, except where the United States is the occupying power. Similarly, different words are used for various groups of people who are detained. Those awaiting trial may be known as pre-trial, under-trial, or remand, and are often referred to as detainees. In this article, the word *prison* is used for all places of detention and the word *prisoner* is used to describe all who are held in such places.

ESTABLISHING A CORRECTIONAL/PRISON FRAMEWORK

Detainee operations, like correctional or prison management, is a very complex undertaking requiring a wide range of skills from those whose task it is to

direct prisons. There is a common set of factors which, when taken together, constitute a model for good prison management which can serve as a model for the Government of Iraq.

In any democratic society, work in prison is a public service. Prisons are places, like schools and hospitals, which should be run by the civil power with the objective of contributing to the public good. Prison authorities should have some accountability to an elected parliament, and the public should be regularly informed about the state and aspirations of the prisons. Government ministers and senior administrators should make it clear that they hold prison staff in high regard for the work they do, and the public should be frequently reminded that prison work is an important public service.

Virtually all prisoners will one day return to life in civil society. If they are to live within the law it will be important that they have somewhere to live, that they have the opportunity of employment, and that they have a proper social support structure. It is very important, therefore, that the prison administration have close links with other public service agencies, such as the social welfare and health authorities. This is more likely to happen if the prison administration itself is a civil organization, not a military one.

When people think of prisons they tend to consider the physical aspects: walls, fences, a building with locked doors and windows with bars. In reality the most important aspect of a prison is the human dimension, since prisons are primarily concerned with people. The 2 most important groups of people in a prison are the prisoners and the staff who look after them. The key to a well managed prison is the nature of the relationship between these two groups. The role of the prison staff is:

➢ to treat prisoners in a manner which is decent, humane and just;

➢ to ensure that all prisoners are safe;

➢ to make sure that dangerous prisoners do not escape;

➢ to make sure that there is good order and control in prisons; and

➢ to provide prisoners with the opportunity to use their time in prison positively so that they will be able to resettle into society when they are released.[3]

BUREAU OF PRISONS

According to the US Federal Bureau of Prisons website:

> The Federal Bureau of Prisons (BOP) was established in 1930 to provide more progressive and humane care for federal inmates, to professionalize the prison service, and to ensure consistent and centralized administration of the 11 federal prisons in operation at the time....The Bureau protects public safety by ensuring federal offenders serve their sentence of imprisonment in institutions that are safe, humane, cost-efficient, and appropriately secure.[4]

The BOP is heavily involved in the effort to reduce future criminal activity by providing inmates with a range of programs that have been proven to help them adopt a crime-free lifestyle upon their return to the community.

The Bureau's most important resource is its staff. The more than 35,000 employees of the Bureau of Prisons ensure the security of Federal Prisons; provide inmates with needed programs and services, and serve as models for mainstream values. The Bureau's employees are the means by which the agency meets its obligation to protect public safety and provide security and safety to the staff and inmates in its facilities.

The philosophy of the Bureau is that release preparation begins on the first day of imprisonment. Accordingly, the Bureau provides many self-improvement programs, including work in prison industries and other institution jobs, vocational training, education, substance abuse treatment, parenting, anger management, counseling, religious observance opportunities, and other programs that teach essential skills. Research shows that industrial work programs, vocational training, education, and drug treatment in prison play a major role in improving public safety. These programs reduce recidivism and misconduct in prison. Drug treatment programs also decrease offender's relapse to drug use after release. Many correctional systems, including the Bureau, have documented the success of these programs.

Inmate program involvement is ultimately geared toward helping inmates prepare for their eventual release. The Bureau complements its array of programs with a specific Release Preparation Program, Residential Re-Entry Centers (halfway houses) and an Inmate Transition Branch which provides post-release employment assistance to inmates.

The Health Services Division of the Bureau is responsible for the mental health (psychiatric) services provided to federal inmates in Bureau facilities, including delivery, infectious disease management, and medical designations. The Division also coordinates a safety program (occupational safety, environmental health, and life safety and fire safety) that ensures a safe, healthy environment for staff and inmates.

The BOP has over 3,000 health care positions, including approximately 750 Public Health Commissioned Officers detailed from the Department of Health and Human Services. These providers have been supporting the medical mission of the BOP since 1930.

TRANSITION—THE PROPOSED SOLUTION

The National Commission on Correctional Health Care (NCCHC) is a private organization committed to improving the quality of care in our nation's jails, prisons, and juvenile detention and confinement facilities.[5] The NCCHC is supported by national organizations representing the fields of health, law, and correctional custody.

The NCCHC has unparalleled expertise in the creation, implementation, and monitoring of national correctional healthcare standards that are based on widely accepted principles of care. It has proposed a 3-phase, multiyear project to assist MNF-I and Department of Justice (DoJ) in transitioning coalition control of the correctional healthcare of its security detainees to the GoI. Additionally, this effort is designed to achieve an efficient and effective transfer of military standards into an internationally recognized civilian model of correctional healthcare services which is accepted by Iraqis and their government.

The first and second phases of the project are designed to prepare and assist the MNF-I and the GoI in the establishment of culturally relevant healthcare standards for use in the Iraq criminal justice system.

The third phase involves the planning, application, and monitoring of the Iraqi correctional health standards.

The NCCHC recognizes the unique challenges to the goal of transitioning the current healthcare operations from military control to provision of services under a civilian model, as well as the challenges to the Iraqi people in establishing a respected criminal justice correctional health system. An important objective is for the international community to respect and have confidence in an Iraqi criminal justice system. Consequently, there must be adherence to internationally recognized standards. To achieve this goal and objective, the NCCHC proposes:

- An introductory meeting of key representatives from various military and Iraqi organizations, and training of 50 MNF-I and Iraqi personnel to improve their skills in setting and monitoring standards.

- Development of culturally relevant healthcare standards for the Iraqi criminal justice system.

- Assistance to the MNF-I and Iraqi government in the development of an implementation plan to ensure the efficient and effective application of standards, policies, and procedures in the Iraqi criminal justice system.

- Assistance in the application of correctional healthcare standards to Iraqi correctional facilities.

- Assistance in the development and implementation of a monitoring system to assure the international community that the correctional healthcare for Iraqi prisoners is humane and meets recognized standards.

In phase one, the NCCHC proposes 2 meetings:

The first is a one-day introductory meeting in the United States with key official representatives of the DoD, MNF-I, Department of Justice, Iraqi Ministry of Justice/Ministry of Health, the NCCHC, and others deemed necessary in achieving the goals and objectives of this proposal. The purpose of this meeting is to discuss the common issues and expectations for the project; determine the participants for training (phase one), standards development (phase two), and system implementation and monitoring (phase three); and the creation of a commitment for the long-term effort with key Iraqi decision-makers. As a result of this meeting, individuals will be identified

and selected to participate in the specified phases of this plan.

The second meeting, a 5-day training session, will be held to orient MNF-I staff and selected Iraqi personnel in the development and maintenance of a correctional healthcare system. A suggested criteria for selection of participants will be those who are necessary to advise on an appropriate correctional healthcare system for Iraq, and who can reasonably be expected to be among those eventually overseeing or actually implementing the standards. The objectives for this meeting are to provide a foundation for MNF-I staff and Iraqi participants to understand what is involved in a standard setting process, to gain an overall understanding of the NCCHC standards and approach, and to raise issues integral to the eventual advise/consent process for Iraqi correctional healthcare standards. The individuals involved in the introductory meeting will be select executives and government officials who can create an environment for the overall success of the transition.

In phase two, the NCCHC proposes to assist in the development of Iraqi correctional healthcare standards. Phase two builds on the activities of phase one, but could be taken as a standalone project. Outcomes for phase two include a manual of Iraqi standards for correctional healthcare services and an evaluation report of the activities provided to MNF-I.

In phase three, the NCCHC proposes to assist the MNF-I in developing a detailed plan to implement and monitor the Iraqi correctional healthcare standards within the Iraqi criminal justice system. This includes the establishment of detailed plans to implement Iraqi standards, creation of a quality assurance monitoring system, and a "train-the-trainer" program. The implementation of Iraqi correctional healthcare standards will begin with a pilot project. What is learned from that project will result in applications developed and implemented throughout the system.

Good health is important to everyone. It affects how people behave and their ability to function as members of the community. It has a particular significance in the closed community of a prison. By its nature, the condition of imprisonment can have a damaging effect on both the physical and mental well-being of prisoners. Prison administrations have a responsibility, therefore, not simply to provide medical care, but also to establish conditions which promote the well-being of both prisoners and prison staff. Prisoners should not leave prison in a worse condition than when they entered. This applies to all aspects of prison life, but especially to healthcare.

A prisoner often arrives in prison with preexisting health problems which may have been caused by neglect, abuse, or by the prisoner's previous lifestyle. Prisoners often come from the poorest sections of society and their health problems reflect this. They will bring with them untreated conditions, addictions, and mental health problems. These prisoners will need particular support, as will those many others whose mental health may be significantly and adversely affected by the reality of imprisonment.

ETHICAL FRAMEWORK

It is also important that the Iraqi public and media are aware of the values within which Iraqi prisons would operate. If the role of the prison in a civil society is properly understood, it is more likely that the public will appreciate efforts made by the prison authorities to implement good practice. To that end, the basics of the necessary ethical framework for the medical healthcare provided within an Iraqi prison system is clearly defined in the "Oath of Athens"[6] (below), an ethical code adopted by the International Council of Prison Medical Services in 1979.

Oath of Athens

In keeping with the spirit of the Oath of Hippocrates, that we shall endeavor to provide the best possible health care for those who are incarcerated in prisons for whatever reasons, without prejudice and within our respective professional ethics. We recognize the right of the incarcerated individuals to receive the best possible healthcare. We undertake

1. To abstain from authorizing or approving any physical punishment.

2. To abstain from participating in any form of torture.

3. Not to engage in any form of human experimentation amongst incarcerated individuals without their informed consent.

4. To respect the confidentiality of any information obtained in the course of our professional relationships with incarcerated persons.

5. That our medical judgments be based on the needs of our patients and take priority over any nonmedical matters.

RECOMMENDED ENDSTATE

The detainee healthcare operations will be successfully transferred to the GoI correctional healthcare operations when the following conditions are met:

- GoI correctional healthcare standards are codified incorporating regional, internationally accepted standards and the Oath of Athens.

- Correctional medical facilities are operational (staffed, trained, equipped).

- Essential medial services are available and provided:
  - Emergency medical services
  - Sick call
  - Acute care
  - Dental care
  - Diagnostic services

WAY AHEAD

The AMEDD will play a linchpin role in the transition of detainee healthcare operations from US control to a designated authority, whether it is the host nation or a third party. Although the AMEDD has garnered significant experience in the provision of detainee healthcare over the past 5 years, it would be prudent to implement an interagency approach to the transition of detainee healthcare. This approach must start with leveraging the subject matter expertise of the Bureau of Prisons and National Commission on Correctional Healthcare. Detainee healthcare curriculum development in the program of instruction at the AMEDD Center and School (AMEDDC&S) is critical.

A representative from the Bureau of Prisons Health Service Division, operated by the Public Health Service, would be an appropriate addition to the AMEDDC&S faculty. Such expertise would assist the development of a comprehensive approach to the education of the DoD medical community in detainee and correctional healthcare, with the creation of a Detainee Healthcare Center of Excellence as the AMEDDC&S transitions into the Medical Education and Training Campus (METC).

The Army Training With Industry (TWI) program[7] is an excellent front seat approach to providing AMEDD personnel with the knowledge and experience of the best business practice of a civilian organization or agency. To ensure the best business practices of correctional healthcare are gathered and codified into the Army and military health system doctrine, DoD military personnel should be provided an opportunity to experience a one-year TWI with the Bureau of Prison's Health Services Division, followed immediately by a one-year utilization tour at the METC to codify doctrine, policy, and tactics, techniques and procedures. This TWI opportunity should include a simultaneous fellowship of Medical Corps, Army Nurse Corps, Dental Corps, Army Medical Specialist Corps, Medical Service Corps, and AMEDD enlisted participants.

Identification of AMEDD personnel who have served in positions directly involved in delivery or administration of healthcare to detainees should be captured by an additional skill identifier (ASI) entitled "Detainee/Correctional Healthcare Staff," to readily identify personnel and leverage their capabilities at both the future METC and the Joint Force Medical Readiness Training Center as consultants. To ensure continuous growth in capacity of the knowledge base, support should be gained from the NCCHC and institute their Certified Correctional Health Professional (CCHP) certification and continuing education program. This would be another path towards achieving the detainee healthcare ASI. Medical personnel working in detainee settings face unique challenges: working within strict security regulations, dealing with crowded facilities, understanding the complex legal and public health considerations of providing care to incarcerated populations, and more. Establishing a cadre of certified correctional health professionals is the surest way for the Army and the military health system to sustain personnel, a knowledge base, and tools to meet these challenges. The CCHP designation identifies an individual as one who has demonstrated mastery of national standards and the knowledge expected of leaders working in the field of correctional health care.

The NCCHC offers a complete selection of applicable publications* which could be institutionalized by the AMEDD and DoD as the authorized "Medical Equipment Book Set–Detainee Healthcare Operations." Along with the appropriate DoD regulations and manuals, this would greatly increase the knowledge base of the medical staff tasked to provide healthcare in a detainee setting.

*http://www.ncchc.org/pubs/catalog.html

By bringing to bear the full technical expertise of our nation, we will ensure our sustained excellence in detainee healthcare operations for the years, generations, and conflicts to come.

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A US Army combat support hospital in Iraq during the early phases of Operation Iraqi Freedom

Employment of a Joint Medical Task Force in a Counterinsurgency Operational Environment

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ABSTRACT

To understand the complexity of the medical task force mission in support of Operation Iraqi Freedom, we must first understand the operational environment and its impact on the military healthcare system and the medical task force charged with its execution in theater.

Historically the medical task force has focused almost exclusively on delivering a robust and accessible set of level II and III care and force health protection support since operations began in Iraq. Consequently, after 5 years of stable positioning, security, and infrastructure within our bases there were no discernable standardization of healthcare support, clinical quality, or medical equipment beyond what the units had chosen to adopt.

Task Force 62 Medical Brigade has taken advantage of this unique time in history to place a concerted focus on institutionalizing our combat healthcare system and meeting the challenges of the counterinsurgency operational environment. Whereas our predecessors rightly focused on delivering combat health support during their tenure, we focused on the future, laying the foundation for the eventual transition to an environment similar to that in the Republic of Korea as the security situation improves. The foundation laid during Operation Iraqi Freedom 07-09 can be the foundation for the Army and the military healthcare system's vision in creating and modifying the delivery of US standard healthcare in a combat theater.

This is a game of wits and will. You've got to be learning and adapting constantly to survive.

General Peter J. Schoomaker, USA[1]

BACKGROUND

In early 2003, US forces crossed the border of Kuwait into Iraq in what has become known as the road to Baghdad. A complete medical task force under the 30th Medical Brigade were a part of those forces. All the medical functional areas were represented in the Task Force 30th Medical Brigade. The 212th Mobile Army Surgical Hospital deployed far forward to provide resuscitative surgery for our wounded Soldiers to stabilize them for swift evacuation to Kuwait, further to Germany, and on to hospitals in the continental United States (CONUS). Combat support hospitals (CSH) were established along the axis of advance at major logistics bases, such as the 28th CSH at Tallil. Medical evacuation helicopters filled the airfields in Kuwait, Tallil, Baghdad, and ultimately were postured to provide wounded Soldiers dedicated support—always less than 90 minutes after emergency surgical intervention. The US military quickly declared victory over the Iraqi forces and settled in for what has become an occupation of Iraq that has lasted 5 years, and continues. The competency and efficiency of US medical professionals, coupled with the tremendous strategic evacuation capabilities of the US military have provided our wounded Warriors with a lifeline that has literally saved thousands of lives since the beginning of Operation Iraqi Freedom.

In late 2003, the complexity of the security situation in Iraq began to change. For example, convoys were being ambushed and snipers were indiscriminately targeting not only the US forces, but also the local population. The US was engaged in a counterinsurgency fight in Iraq. What was once thought to be an open-arms welcome as liberators of Iraq from the harsh dictator Saddam Hussein was now a fight for survival on the streets of Baghdad, Fallujah, and Mosul. Violence had erupted throughout Iraq as the Shia, Sunni, and Kurdish militants all vied for power in post-Saddam Iraq. US forces were targeted and casualties grew. Improvised explosive devices in all forms emerged as the greatest indiscriminate threat

on the battlefields. Casualties, both US and Iraqi civilian, mounted and support for the war in Iraq began its quick decline.

The medical force that had supported the road to Baghdad and the initial occupation of Iraq was greatly tested. Over the next 5 years the US casualty toll in Iraq would surpass 4,000 dead and 30,000 wounded. The medical task forces would rotate through Balad, the International Zone in Baghdad, and ultimately settle at Camp Victory, near Baghdad. The 30th Medical Brigade (MED BDE) would be replaced by the 2nd MED BDE, and then the 44th Medical Command (MEDCOM), the 30th MED BDE again, the 3rd MEDCOM, and now the 62nd MED BDE, which will be replaced by the 44th MEDCOM in the fall of 2008. Each command would establish its procedures to provide world-class healthcare to our supported forces. Each would reshape the medical environment, and each would maintain a 97% to 98% survival rate for anyone that arrived at a level III hospital alive. The phenomenal success of our medical forces in supporting US, Coalition, Iraqi Security Forces (ISF), as well as in the provision of life-saving medical care to civilians within the medical rules of eligibility, is altogether the result of superior medical leadership and the adaptability of our medical forces in supporting the counterinsurgency (COIN) fight in Iraq.

THE ENVIRONMENT

To understand the complexity of the medical task force mission in support of Operation Iraqi Freedom COIN operations, we must first understand the operational environment and its impact on the military health system and the medical task force charged with its execution in theater. COIN operations combine offensive, defensive, and stability operations to achieve the stable and secure environment needed for effective governance, essential services, and economic development. Successful conduct of COIN operations depends on thoroughly understanding the society and culture within which they are being conducted. Forces must understand:

- Organization of key groups in the society

- Relationships and tensions among groups

- Ideologies and narratives that resonate with groups

- Values of groups (including tribes), interests, and motivations

- Means by which groups (including tribes) communicate

- The society's leadership system.

STRATEGIC GOALS

The first principle of force health protection is conformity. As such, the medical task force has adopted 3 strategic goals to nest with the Multi-National Coalition-Iraq and Multi-National Force-Iraq commanders' goals. These goals are completely consistent with the US national goals as well as those of the military commanders on the ground.

- Provide world-class Warrior healthcare to US and coalition forces

- Protect the health of US and coalition forces

- Enhance the Government of Iraq (GoI) credibility by supporting a self-reliant Iraqi public health system

These goals ultimately aim toward limiting the loss of life in Iraq, preserving the health of the force on the ground, and supporting the GoI in their development of a self-reliant healthcare system.

MULTI-NATIONAL FORCE-IRAQ COMMANDER'S COUNTERINSURGENCY GUIDANCE

The Coalition performed a wide range of missions to provide security and improved quality of life for population of Iraq. On missions ranging from full spectrum combat operations against terrorist and criminal elements, to convoy escort, to explosive ordnance disposal, civil military affairs, reconstruction, medical support, and military and police training, members of Multi-National Force-Iraq have acquitted themselves with skill and professionalism.

General David Petraeus, Commanding General
Multi-National Forces–Iraq[2]

On June 21, 2008, General Petraeus published a "Commanding General's Message"* highlighting his 25 points of guidance concerning the COIN fight for the Iraq theater of operations. The following paragraphs describe the 62nd MED BDE (Task Force 62) imperatives which were developed and adopted to support operations in the COIN environment in concert with the applicable points of GEN Petraeus'

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*Internal military document not readily accessible by the general public

Commanding General's Message (indicated in parentheses as COIN guidance):

Follow the battle. In a COIN environment, the next mass casualty event is only one improvised explosive device detonation away. Battle tracking is imperative in order for the medical task force to monitor the battlefield situation to provide responsive support, as well as to anticipate combat healthcare support requirements. Accessibility to forward surgical intervention is a key component of a solid plan to increase kinetic or lethal operations. (COIN guidance #12: Fight for intelligence.)

Ensure the gap is covered. Coalition maneuver units implement COIN guidance and move off of the forward operating base to walk among the population they secure and serve. It allows for the extension of operational reach via command outposts/joint security station/patrol base expansion. However, this activity impacts the health service support footprint as the level I/II capability is displaced from the forward operating base, creating a gap of coverage for the remaining population at risk. The medical task force, in coordination with the theater surgeon and maneuver unit command surgeons, forecast these gaps to ensure continuity of care of the population at risk which remains without level I/II services. As security gains are realized from the ongoing surge operations and the surge brigade combat teams are not backfilled, the gap is widened. Additionally, the introduction of nonstandard maneuver brigades deployed without organic or habitual level I/II creates another gap in level I/II medical capacity. Medical forces during Operations Desert Shield/Desert Storm (1991) were 14% of total forces, 3% in Operation Enduring Freedom (Afghanistan theater), and 4% in Operation Iraqi Freedom during 2004. The small medical footprint demands that we not only provide efficacious and efficient health service support, but also that we synchronize our medical forces in a collaborative effort to resolve issues. Through the collective efforts of the military health system—forward and use of state-of-the-art technology, conditions are set for a continual increase in hostile survivability, as seen in the improvement from 78.3% in 1991 to 90% in 2007. (COIN guidance #2: Live among the people. COIN Guidance #3: Hold areas that have been secured.)

Nest combat healthcare support operations. The objectives of the US Departments of State and Defense are nested when employing the instruments of national power. In the Iraq theater of operations, the instruments available to the theater commander must be nested and employed to meet the tactical, operational, strategic, and national objectives. The medical task force provides a strategic bridge to accomplishing these objectives through the execution of medical diplomacy and medical civil-military operations. (COIN guidance #6: Generate unity of effort. COIN guidance #15: Build relationships.)

Perfect combat healthcare one patient at a time. The medical team treats one patient at a time ensuring US standard of quality care. The medical task force's covenant with the patient is to ensure that appropriate care is provided by the appropriate medical team, at the appropriate location, with the appropriate supplies and equipment. (COIN guidance #21: Empower subordinates. Resource to enable decentralized action.)

Honor the host nation's legitimacy. The medical rules of eligibility have great significance when it comes to healthcare on the battlefield. Legitimacy is the perception that a government is fair and is working in the interests of a nation as a whole. The government does not have to be efficient but must be effective. Governments may be legitimate (or not), but it is civil society that confers legitimacy (or not). Governments can rule in a way that seems effective, but it is civil society's reaction to that rule that actually determines whether or not it is effective. (COIN guidance #9: Foster Iraqi legitimacy.)

Tell the medical task force story. Independent local, national, and international media coverage of our military operations and our enemies' activities is critical to our success in the global information environment. This is particularly true in today's 24-hour news environment. Unfortunately, our enemies in Iraq have won a significant victory by forcing most Western media to report only from secure compounds, to use embeds with coalition forces, or to retell second-hand information gained from local Iraqi stringers, some of whom have questionable agendas and loyalties. To address this situation, we must develop solutions for improving media access to the battlefield and our activities without compromising the media's independence or our operational security. This could include relatively simple actions such as making it easier for journalists to get accredited and

transported to the combat zone, and offering increased logistical support to help defray escalating costs. It is important, too, despite what we may sometimes perceive as unfair treatment from the media, that we understand and support the crucial role they play in reporting the realities of our combat operations to the world. (COIN guidance #19: Be first with the truth. COIN guidance #20: Fight the information war relentlessly.)

THE WARFIGHTING MEDICAL TASK FORCE

Combat Healthcare Support

Combat healthcare support falls under 2 separate yet mutually supporting warfighting functions, sustainment and force protection. The sustainment warfighting function is the related tasks and systems that provide support and services to ensure freedom of action, extend operational reach, and prolong endurance. The endurance of Army forces is primarily a function of their sustainment. Sustainment determines the depth and duration of Army operations, it is essential to retaining and exploiting the initiative. Sustainment is the provision of the logistics, personnel services, and combat healthcare support necessary to maintain operations until mission accomplishment. Internment, resettlement, and detainee operations fall under the sustainment warfighting function and include elements of all 3 major subfunctions.

Combat healthcare support consists of all support and services performed, provided, and arranged by the Army health system. It promotes, improves, conserves, or restores the mental and physical well-being of Soldiers and, as directed, other personnel. This includes casualty care, which involves all Army and military health system functions and detainee healthcare. The protection warfighting function includes force health protection. Force health protection includes all measures to promote, improve, or conserve the mental and physical well-being of Soldiers. These measures enable a healthy and fit force, prevent injury and illness, and protect the force from health hazards. The measures include the prevention aspects of a number of Army health system functions.

Security Environment

Managing the threats of the environment will greatly impact the ability of the medical force to influence the outcome during COIN operations. In a permissive security environment, medical forces have the freedom of maneuver to operate throughout the countryside and partner with governmental healthcare professionals to provide the populace with the appropriate health support. In Iraq, however, the security situation does not lend itself to a variety of decentralized medical operations to assist the local population. Competing interests between Shia, Sunni, Kurdish, and Christian populations limit the availability and capability of both US and indigenous healthcare workers.

REVOLUTIONIZING COMBAT HEALTHCARE SUPPORT: SYSTEMATIC APPROACH TO COUNTERINSURGENCY

Historically, since operations began in Iraq 5 years ago, the medical task force has focused almost exclusively on the delivery of a robust and accessible set of level II and III care and force health protection support capabilities. Immediately upon assuming the mission, the 62nd MED BDE noted that the task force is charged to deliver 3 essential dimensions of combat health support:

➤ Provide world-class Warrior healthcare to US and coalition forces,

➤ Protect the health of the US and coalition forces, and

➤ Support self-reliant Iraqi Security Forces and government of Iraq healthcare and public health systems.

Although there have been numerous rotations and a fresh look at the delivery of healthcare each year, there were very few signs of health system integration beyond trauma management. The high rate of turnover of units led to gaps or seams in our services. Each newly arrived unit essentially reinvented their approach to executing the mission that their predecessors had refined during their tours. This resulted in an unacceptably high degree of variance in the quality and accessibility of services across the battle space. An integration and standardization of systems in use and increased emphasis on task force-wide performance improvement was identified as required by the commander and senior leaders of the task force. The vehicle to implement a strategy was modeled after the balanced scorecard.[3] A graphical representation of the Task Force 62 Combat Healthcare Support System is presented as Figure 1 on

page 6. It provides the overall structure—the map—for implementation of the system.

This method would enable the task force commander and senior leaders to show the task force how to create a customized strategy map that allows the task force to:

- Clarify task force strategies and communicate them across the organization.

- Identify the key internal processes that drive strategic health service support success in the Iraq theater of operations.

- Align the DoD's investment in people, technology, and organizational capital for the greatest impact in combat casualty care.

- Expose gaps in the Military Health System strategies and take early corrective action.

This model is the way in which to communicate the medical task force strategy and monitor and measure the progress of our advancements in the 3 major Ends:

- Provision of world-class Warrior healthcare

- Health protection of US and Coalition forces

- Support for self-reliant ISF and GoI healthcare

These major Ends are only possible through close coordination with the MNF-I Surgeon to validate our alignment with the medical strategic plan; and the synchronization across all multination divisions/force to provide a seamless and integrated health system for the Warrior.

COUNTERINSURGENCY DOCTRINE IMPACT ON HEALTH SERVICE SUPPORT

Command and Control

The COIN operational environment requires an echelon-above-division command and control structure that covers the breadth of medical functional responsibilities represented in the theater. Medical command and control for a theater of operations requires key personnel enablers. These subject matter experts provide a unique contribution to the fight with their knowledge, skills, and abilities. This manning should include the following additional personnel: public affairs noncommissioned officer, medical operations officer (Captain, AOC 70H*), medical plans officer (Captain, AOC 70H), civil affairs noncommissioned officer (Master Sergeant, MOS 38B5L†). Additionally, the following positions are critical and key enablers for the commander and medical task force: deputy commanding officer (Colonel, AOC 70A‡), inspector general (Lieutenant Colonel), and equal opportunity noncommissioned officer (Sergeant First Class, MOS 42A40§). The addition of these specialty areas brings the right enablers for effective command and control by an echelon-above-division medical brigade.

Hospitalization

A workhorse in the COIN environment is the combat support hospital (CSH). The CSH brings a plethora of life saving and life sustaining capability that can provide split-based operations. Additionally, the CSH brings a medical diplomacy aspect to the strategic objectives within the theater. As a theater matures, the CSH's enduring operation is degraded, and split-based operations present unique challenges that are difficult to resolve with the manpower that remains after a CSH is divided into 2 elements. Current mission requirements in Iraq have created a demand for multiple services that are not part of the standard combat-focused mission. A CSH personnel and equipment authorization document is not designed for enduring split-based operations in a lethal COIN environment. The population at risk is significantly different, presenting requirements such as OB-GYN, pediatrics, chronic diseases, and geriatrics derived from the local population and contractors. There is a requirement for specialty clinical staff in the areas of pediatrics, fellowship trained trauma surgeons, additional emergency medicine physicians, gastroenterology, cardiothoracic surgeon, infectious disease specialist, vascular surgeon, OB-GYN, pulmonologist, urologist, and a burn surgeon. The situation of the Ibn Sina CSH presents another problem with resource allocation. Although they are not authorized a trained public affairs officer or a protocol officer, the Ibn Sina CSH hosts multiple

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*Area of Concentration 70H: Health Services Plans, Operations, Intelligence, Security, and Training Medical Operations Officer

†Military Occupational Specialty 38B: Civil Affairs Specialist

‡Military Area of Concentration 70A: Healthcare Administration Officer

§Military Occupational Specialty 42A: Human Resources Specialist

military and civilian dignitaries, as well as US, Arab, and international media agencies due to its location in Baghdad. Lastly, personnel depth does not allow enough resources to conduct safe or efficient 24/7 operations. To sustain split-based operations, additional authorizations are required in the following specialties: emergency medicine physician (AOC 62A), diagnostic radiologist (AOC 61R), operating room nurse (AOC 66E), critical care nurse (AOC 66H8A), emergency medicine nurse (AOC 66HM5), operating room specialist (MOS 68D), and pharmacist (AOC 67E).

Critical Medical Team Sourcing

The implementation of COIN doctrine for maneuver units has, as an unanticipated consequence, resulted in a degradation of critical medical teams (treatment, trauma, behavioral health, and critical care) capability and capacity in the Iraq theater of operations. The doctrine has decreased available level I/II on forward operating bases (FOBs). As maneuver units are moving off FOBs, the operational reach is extended via command outpost/joint security station/patrol base (COP/JSS/PB) expansion to maintain control of battle space. This COP/JSS/PB expansion plan impacts the theater's healthcare support system footprint as the organic or habitual level I/II capability is displaced from the FOB. Additionally, the deployment of nonstandard maneuver brigades into the theater has created a gap in level I/II medical capacity.

An additional critical concern is that medical units are deployed at a P-2* unit status reporting personnel rating without regard to the manning of critical medical teams and key individuals, which in turn creates a shortage of medical team capacity. Minimal manning of the critical medical teams is not acceptable without the key individuals and places an increased reliance on echelon-above-division medical assets for nondoctrinal missions. A corporate change to *Army Regulation 220-1* [4] is warranted to track critical medical teams as reportable in accordance with Table 7-5 "Squad/crew/team/system manning and qualification criteria." Also, this will enable validation of training of medical units and maneuver units with medical elements only if the medical team is fully manned with the designated "key individual," minimal manning is not an option.

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*Personnel manning of qualified personnel and senior leadership between 75% and 84% of authorized personnel strength. [4(p35)]

SUMMARY

The foundation laid during OIF 07-09 can be the foundation for the Army and Military Health System's vision in creating and modifying the delivery of US standard healthcare in a combat theater. The COIN environment presents unique challenges for medical forces providing support to our Warfighters in Iraq and Afghanistan. Medical infrastructure in second and third world countries presents challenges for our national and military leadership that must be addressed to be successful in the long term campaign planning associated with counterinsurgency operations. Depending on the security situation, governmental and nongovernmental healthcare organizations may not be able to provide the nexus for long-term recovery in these regions. Although all medical operations must be linked to a long-term recovery of the indigenous health system, the medical task force possesses unique capabilities and capacity in their lexicon that must be leveraged. Medical leadership must be creative, adaptive, and disciplined to provide resources for the eventual success of COIN operations.

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The Complexity of Moving Patients in Today's Maturing Counterinsurgency Environment: Who, When, and How

LTC Michael C. Richardson, MS, USA

ABSTRACT

Medical regulating operations and the theater medical rules of eligibility are inextricably linked in the delivery of combat health service support in the Iraq theater of operations. The link between medical regulating operations and the medical rules of eligibility is more than the medical regulating operations officer (MRO). In an operational environment as vast as Iraq involving host nation civilians, Iraqi military personnel, Iraqi dignitaries, and a host of other potential patients, the complex mission of executing medical regulating operations while adhering to medical rules of eligibility is an extremely dynamic undertaking. The theater MRO is always expecting—but never knows—what to expect in that next call or that next email.

In late August 2007, approximately 2 weeks after Task Force 62 Medical Brigade (TF62 MED) assumed the medical command and control mission in Iraq, the theater medical regulating officer (MRO) received an email with a red exclamation point from the TF62 MED commander requesting an explanation as to why 2 Iraqi patients were regulated from "Medical City" in Baghdad to the Air Force Theater Hospital (AFTH) in Joint Base Balad. The MRO responded that the theater MRO does not regulate patients from Medical City to Joint Base Balad because, without proper authority, that would be a clear violation of the medical rules of eligibility. The MRO stated that there would be an inquiry about how the patients arrived, focused on the email from the commander of the Joint Base Balad hospital which clearly implied that the theater MRO had in fact regulated these Iraqi patients from Medical City to his hospital.

Earlier in the day the AFTH at Joint Base Balad had in fact received 2 Iraqi patients who had obviously received medical treatment prior to arriving at that facility, and it was clear that the medical treatment had been ongoing for days. One patient in particular was paralyzed with gunshot wounds to his upper torso. The other patient had various serious wounds which had been inflicted during combat operations. Both patients were in need of continued urgent medical care. During the hours-long investigation as to how these patients came to arrive at the Joint Base Balad hospital, all parties involved in the patient transfer were contacted. This included the medical evacuation (MEDEVAC) company that flew the mission, the battalion command post that called in the MEDEVAC request, the troop

medical clinic to which the patients were initially brought by the unit patrolling the area, and the command sergeant major (CSM) of the battalion involved. Basically, at the time of the incident, the region from which these patients came was experiencing most of the effective enemy attacks against Coalition Forces in the entire Iraq theater of operations (ITO). The CSM detailed the mission that preceded the patient transfer and indicated that a high level insurgent was now in custody because of the operation. During the followup missions with local leaders, there was a request from one of those leaders to have a US military physician look at these patients to determine if Coalition Forces (CF) could help them. The patients were transported to a small troop medical clinic with one healthcare provider who determined that these patients would die if they did not receive competent medical attention. An evacuation request was made, a MEDEVAC unit responded and took the patients to the closest level III facility, which was the Joint Base Balad hospital. After informing the CSM of the second and third order effects of such a transfer and reiterating the medical rules of eligibility (MROE), the CSM stated that, because of this transfer, the next street they patrol in this town will not be littered with improvised explosive devices. That is a difficult position to challenge. The theater MRO's responsibility is to receive and respond to countless inquires of this type to determine how patients that appeared to violate the MROE could be "regulated" to CF hospitals.

To understand the link between medical regulating operations and the MROE, this article addresses

medical regulating operations, then the MROE, how they each play a role in the maturation of the delivery of combat health service support, and how they each can be used to assist in the successful counterinsurgency operations expected in Iraq for years to come.

MEDICAL REGULATING OPERATIONS

Doctrinally, the MRO at the medical brigade (medical task force) regulates hospital transfers between US and Coalition Forces level III facilities and coordinates for the strategic aeromedical evacuation (AE) flights leaving theater. The theater MRO in the ITO operates far from the doctrinal blueprint.

Medical regulating operations at the medical task force level spans the tactical, operational, and strategic influences throughout the entire ITO. Medical regulating gets the right patient to the right place, at the right time, by the right means. The MRO coordinates and synchronizes a vast array of resources to ensure lives are saved and the resources are used as efficiently and effectively as possible. During the initial stages of conflict, effective is more critical than efficient. However, as the theater matures and footprints shrink, as in level III facilities becoming Level II, or a reduction in the number of MEDEVAC helicopters available in theater, or perhaps the decrease in the number of aeromedical evacuation flights leaving the ITO, efficiency plays an increasingly important role.

The resources include every level of US medical care in-theater, from the smallest of clinics to the largest of hospitals, which are not all equal in capability or capacity, as well as the military hospital in Germany and the most advanced medical facilities in the United States. In addition to US military medical care, NATO* and non-NATO medical units from Britain, Poland, Korea, and Armenia are medical resources in-theater which are part of the medical regulating puzzle that is assembled in various ways every day to ensure success in caring for the theater's patients. Medical regulating resources also include the helicopters dispersed throughout the ITO, which includes US Army, Navy, Marine Corps, Coalition Force, and Iraqi Air Force, as well as airplanes from those sources and the US Air Force and civilian air ambulances.

*North Atlantic Treaty Organization
†Computed tomography
‡Magnetic resonance imaging

PATIENT REGULATING RESOURCES

Medical Treatment Facilities

The medical task force does not exercise command and control over all medical assets in theater, only those that are echelons-above-division (EAD). However, there are EAD medical resources, such as the Air Force theater hospital or the Air Force expeditionary medical squadron, that may or may not have a command relationship with the medical task force. This lack of command and control creates challenges for medical regulating in that patients flow from numerous clinics to hospitals without the knowledge of the MRO. Only those EAD medical treatment facilities that fall under the purview of the medical task force are required by order to report patient transfers to the theater MRO for appropriate regulation. As such, patients often arrive at a hospital that does not have the capability to care for the patient. As discussed previously, not all hospitals are equal in capability or capacity. They all have inpatient capability, CT† scanners, operating rooms, laboratory, etc. However, in most cases patients requiring movement after initial resuscitation need a specific specialty such as neurosurgery, ophthalmology or gastrointestinal intervention to address their medical conditions. It is the lack of a specific medical specialty at the facility where the patient first arrives that accounts for most of the errors in patient movement among clinics outside of the control of the theater MRO. Regardless, it is imperative that the MRO know the current capabilities and capacity of every level III and level II+ medical facility in the ITO, as well as in Kuwait and Qatar, to ensure the appropriate regulation of patients.

Kuwait and Qatar have their own medical treatment facilities which the theater MRO uses as necessary to appropriately regulate patients. The Expeditionary Medical Facility-Kuwait (EMFK), a Level III hospital operated by US Navy, has increased capability due to the availability of civilian assets in Kuwait City. Specifically, Kuwait City has an MRI‡ scanner that is available for diagnostic purposes. In addition, both Kuwait and Qatar have the ability to allow Coalition Forces and some civilians to receive treatment and/or recuperate at their locations for up to 30 days. The Warrior Return Unit is located in Kuwait and the Theater Transient Holding Detachment (TTHD) is located in Qatar. This 30-day recovery period allows injured Warriors to remain in the US Central
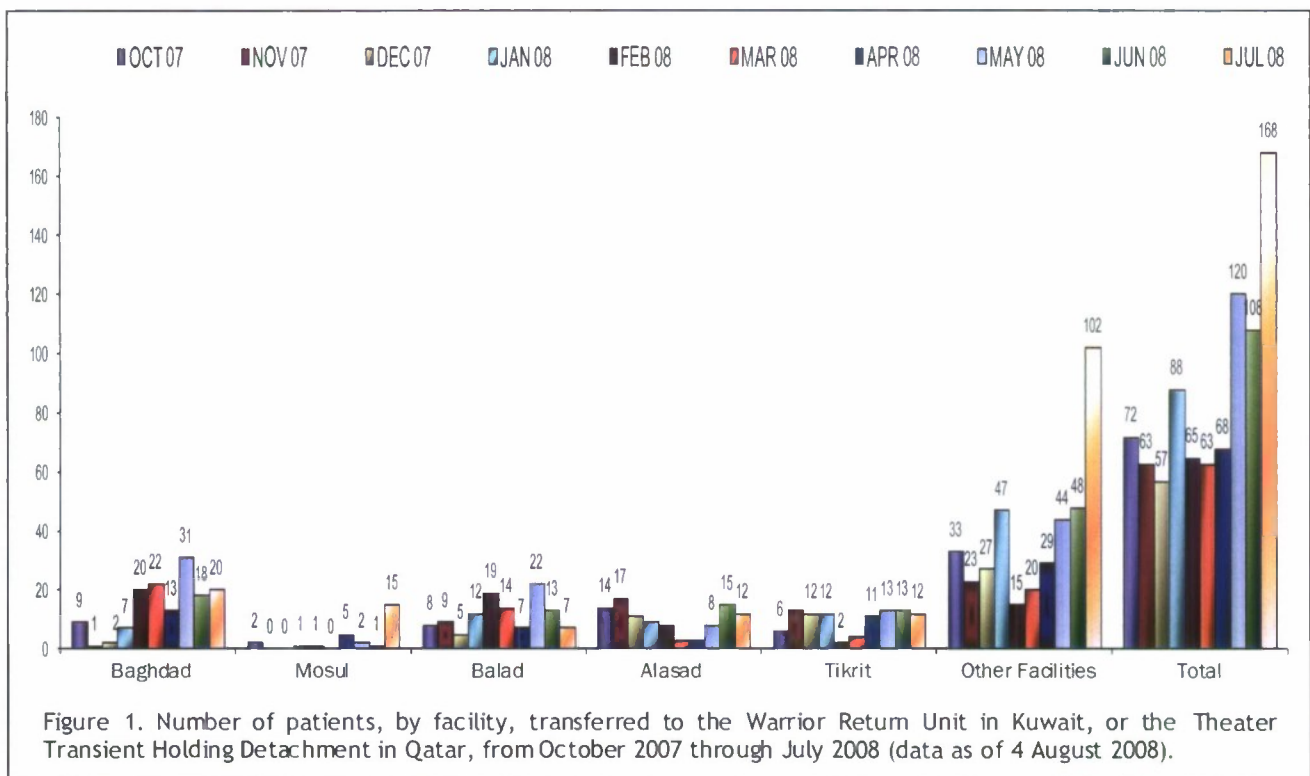
Command area of responsibility, conserving fighting strength, increasing the return to duty rate, and optimizing the health of the force. If it were not for the Warrior Return Unit or the TTHD, the Warriors who require an extended period of recovery would have to be regulated to Germany, or, in many cases, to the United States. The combined return to duty rate for both the Warrior Return Unit and the TTHD is approximately 94%, whereas the return to duty rate for Landstuhl Regional Medical Center in Germany is approximately 24%. Figure 1 shows the increase in patients being regulated from the ITO to the Warrior Return Unit and TTHD since October 2007. Through education and increased emphasis on "regulating south to Kuwait and Qatar versus north to Germany," the use of these facilities from the ITO is on the rise.

"Regulating south versus north" is not only for the Warrior Return Unit and the TTHD, but is also driven by geography and capability. The US hospital in Bucca, Iraq, primarily treats detainees. There are also 2 clinics with surgical capability and a British hospital located in the southern portion of Iraq. Each of these facilities often receives patients beyond their capability and, after initial resuscitation, the patients must be further regulated to a higher level of care. Regulating south to Kuwait from this area of Iraq for those
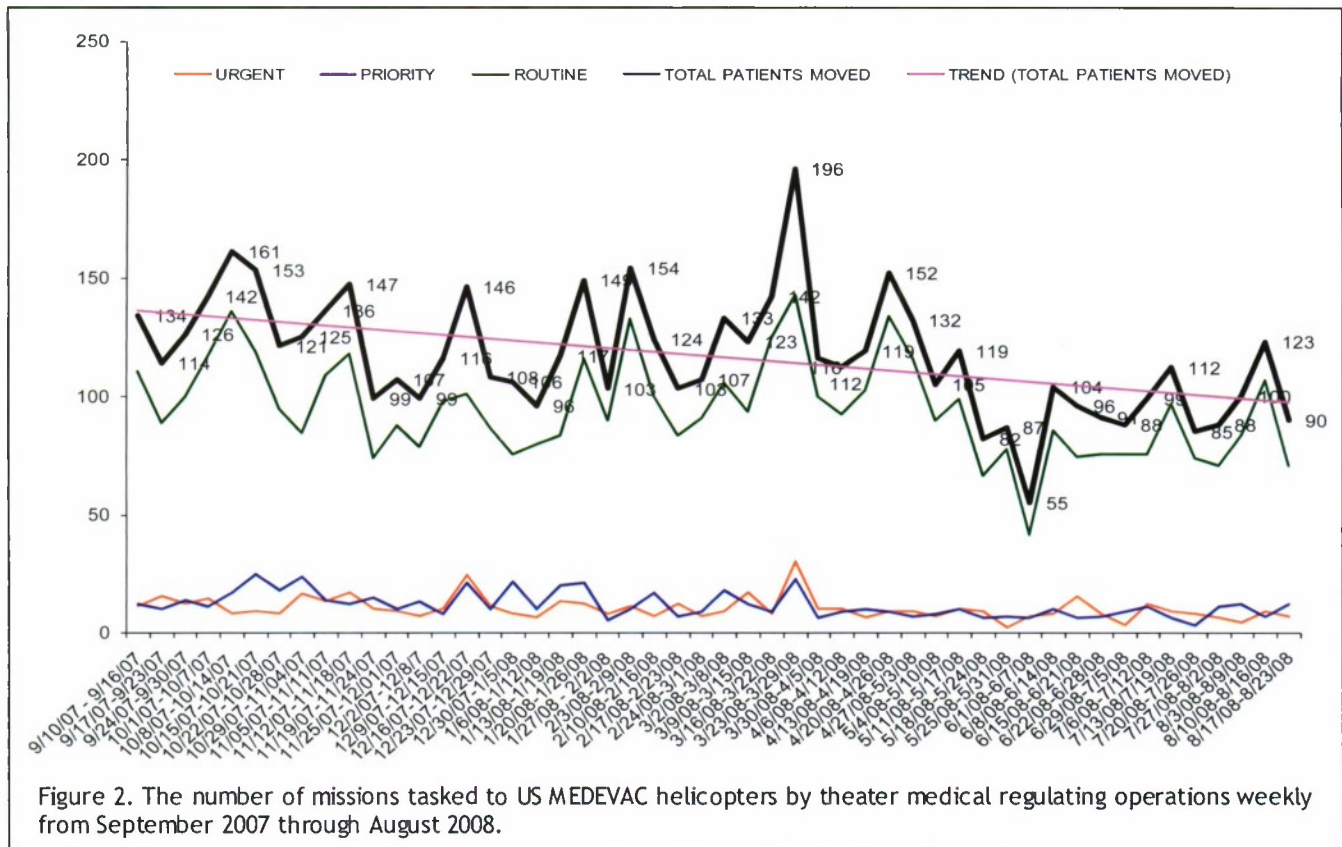
patients that are eligible is always the first choice. The theater MRO instituted this regulating technique in September 2007. Prior to that, most patients from these facilities were regulated north to Baghdad or Joint Base Balad which exhausted the limited MEDEVAC assets in the southern portion of Iraq. It takes approximately 4 to 5 hours and numerous MEDEVAC aircraft to move one patient from Bucca to Balad, whereas it takes 25 minutes and only 2 aircraft to move a patient from Bucca to Kuwait. The greater efficiency affected the MEDEVAC resource, which is the primary transporter of patients between facilities within the ITO, and to and from Kuwait.

Patient Movement by Helicopter

The vast majority (99%) of all the intratheater patient movements regulated throughout the ITO are moved via MEDEVAC helicopters. However, not all patients moved via MEDEVAC helicopters in the ITO are regulated through the theater MRO. Most of the point of injury (POI) missions, such as an attacked convoy, are called directly to the closest MEDEVAC company from the forces at the scene. These POIs, as well as those missions from non-EAD medical facilities, are not typically regulated by the theater MRO. The theater MRO does have visibility of these missions through the use of Microsoft Internet Relay Chat

Figure 1. Number of patients, by facility, transferred to the Warrior Return Unit in Kuwait, or the Theater Transient Holding Detachment in Qatar, from October 2007 through July 2008 (data as of 4 August 2008).

Figure 2. The number of missions tasked to US MEDEVAC helicopters by theater medical regulating operations weekly from September 2007 through August 2008.

(mIRC), which is the single best innovation in medical regulating and situational awareness since the high frequency radio, in terms of communication capability.

For patient movement and situational awareness, mIRC allows real-time chat among all involved parties. All MEDEVAC requests are posted in mIRC so the theater has visibility on what is happening, and when. It is not perfect, but it comes very close to real-time awareness. The mIRC capability allows one of the most significant deviations from doctrine in the MRO's available tools. It allows the theater MRO to regulate patients from POI to the most appropriate facility, especially during a mass casualty producing event.

A case in point: as a result of a suicide bomber in a market, 36 host nation patients, consisting of Iraqi civilians and Iraqi Security Force (ISF) personnel with horrendous injuries, were brought into a small forward operating base which had only 2 healthcare providers. The clinic called an urgent MEDEVAC request. The MEDEVAC operations dispatcher posted the request into mIRC to provide theater-wide visibility of this mass casualty situation. Through mIRC chat, the

theater MRO directed the first lift to take its patients to the closest facility, while directing the next 2 lifts, one of which was from a completely different MEDEVAC company, to evacuate the patients to 2 other facilities, thereby distributing the patients among 3 hospitals. This is an example of how regulating from POI is crucial to ensure that best care is provided to those in need, while efficiently and effectively employing the theater healthcare and MEDEVAC assets.

The MEDEVAC capability in the ITO consists of US Army, Coalition Force, and Iraqi Air Force assets. The MEDEVAC resources are arrayed throughout the ITO to support the primary mission of POI urgent and priority requests. However, in reality, most of the missions executed by MEDEVAC are transfers from one hospital to the next as regulated through the theater MRO. The theater MRO regulates much more than patients. Blood, supplies, medical personnel, medical equipment, escorts, etc. are all regulated and tracked in the same manner as patients.

Figure 2 presents the weekly workload of missions passed to the US MEDEVAC community by the theater MRO from September 2007 through August

2008. Figure 3 shows the movements by priority and type from August 2007 through July 2008. The weekly average remained relatively constant through the peak in March 2008 during ISF led operations, and then began a decline through the August 2008 numbers.

Patient Movement by Airplane

Helicopters account for more than 99% of all intratheater movement, while airplanes perform more than 99% of all intertheater patient transportation. There are instances where patients are regulated intra-theater via airplane, such as when weather restricts helicopter flight, but does not hinder airplane oper-ations. Also, sometimes the Iraqi Air Force is involved in the movement or transfer of an Iraqi patient, or a civilian air ambulance is used to move a contractor or other patients approved to be moved outside of Iraq.

Regulating airplane-transported patients requires significantly increased levels of coordination to syn-chronize patient movement. This synchronization in-volves the clinics and hospitals, the theater MRO, the Joint Patient Movement Requirements Center (a US Central Command asset located in Qatar), the US Air Force, contractors, civilian air ambulance companies, and other countries around the Middle East. Patient movement by airplane is the prime example of span-ning the tactical, operational, and strategic lines of the operation.

The emphasis by the most senior leaders in the Department of Defense (DoD) on intertheater patient movement is remarkable. The process is fluid and responsive. There are countless examples of the expeditious movement of US urgent patients from Iraq to Germany, and even to the United States, in as little as 16 hours. Figure 4 depicts the weekly average of patients moved via US Air Force airplanes out of the ITO, July 2008 through August 2008. There is a slight downward trend in the numbers over the course of the last year, excluding the last week of the period.
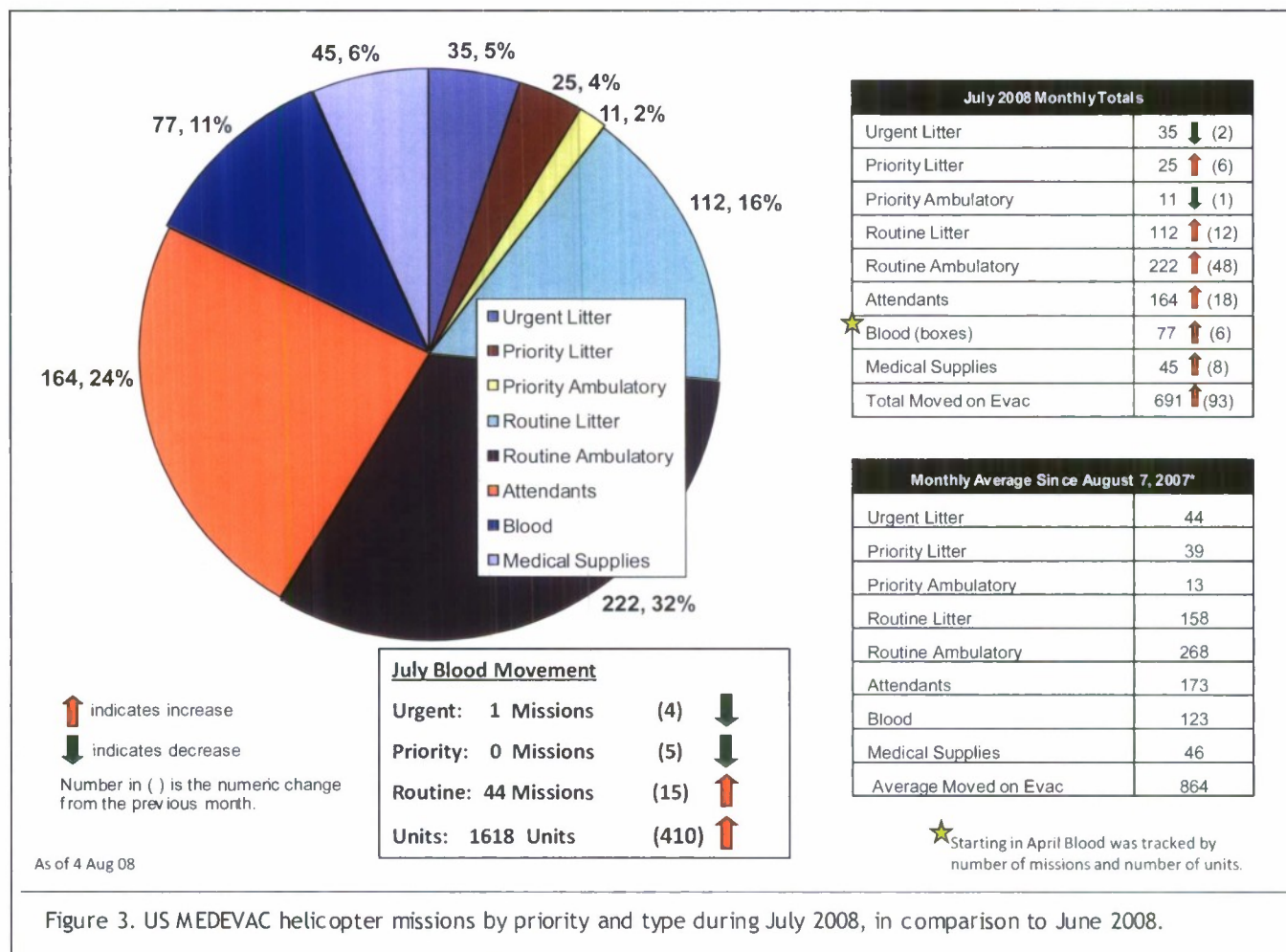

July 2008 Monthly Totals		
Urgent Litter	35 ↓	(2)
Priority Litter	25 ↑	(6)
Priority Ambulatory	11 ↓	(1)
Routine Litter	112 ↑	(12)
Routine Ambulatory	222 ↑	(48)
Attendants	164 ↑	(18)
Blood (boxes)	77 ↑	(6)
Medical Supplies	45 ↑	(8)
Total Moved on Evac	691 ↑	(93)

Monthly Average Since August 7, 2007*	
Urgent Litter	44
Priority Litter	39
Priority Ambulatory	13
Routine Litter	158
Routine Ambulatory	268
Attendants	173
Blood	123
Medical Supplies	46
Average Moved on Evac	864

↑ indicates increase
↓ indicates decrease
Number in ( ) is the numeric change from the previous month.

July Blood Movement		
Urgent: 1 Missions	(4)	↓
Priority: 0 Missions	(5)	↓
Routine: 44 Missions	(15)	↑
Units: 1618 Units	(410)	↑

As of 4 Aug 08

★Starting in April Blood was tracked by number of missions and number of units.

Figure 3. US MEDEVAC helicopter missions by priority and type during July 2008, in comparison to June 2008.
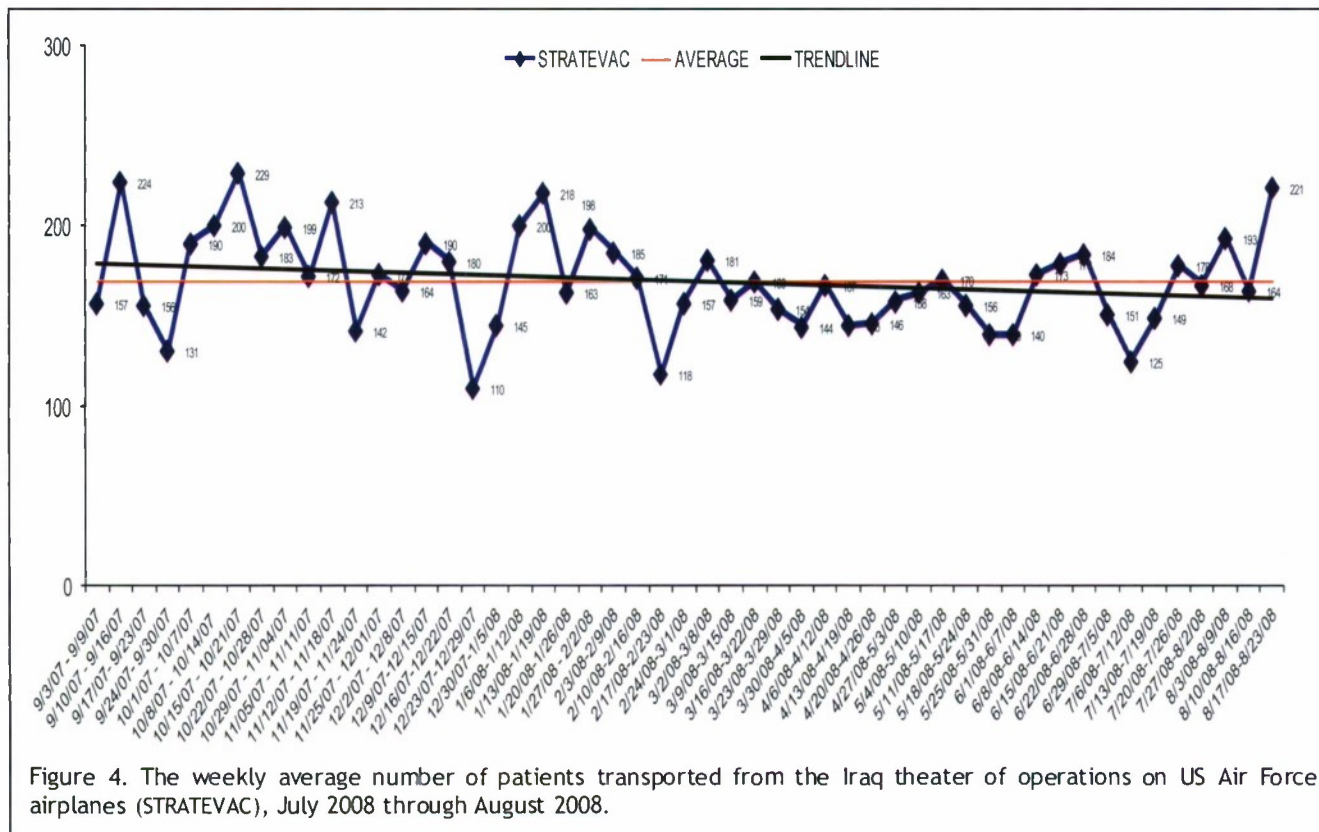
Iraqi Air Force Transport of Iraqi Patients

As the theater matures, increased emphasis is placed on the Government of Iraq healthcare/military system to care for its citizens. The emphasis on patient movement is no exception. There is evidence of progress towards self-reliance in the Iraqi Air Force in the movement of Iraqi patients throughout Iraq. All Iraqi military airplanes and helicopters belong to the Iraqi Air Force. They have 3 C-130 transport airplanes and a fleet of UH-1 and MI-17 helicopters in their inventory for many uses, including, of course, patient transportation.

Through coordination and synchronization with the theater MRO, the hospitals, and the Coalition Air Force Transition Team, the Iraqi Air Force has completed 8 patient movements by airplane, totaling 18 patients, in the last year. Each of the 18 patients was transferred from a US military hospital to an Iraqi medical facility. Each Iraqi Air Force airplane mission marks a successful step in the direction of self-reliance.

While those 8 missions were coordinated through the theater MRO, during the ISF led operation in Basrah in March 2008, the Iraqi Air Force executed more than 250 ISF patient moves from Basrah to the Baghdad area, and further ground-evacuated the patients into Iraqi medical facilities. The Iraqi Air Force moved almost 600 units of blood from the Baghdad area to Basrah to support combat operations. All of these missions were executed using the Iraqi Air Force C-130s.

Self-reliance for patient movement is not limited to airplanes. In March 2008, 2 Iraqi Air Force medics graduated from the first class of the Iraqi Air Force Flight Medics Course. In May and June 2008, the Iraqi Air Force completed 2 helicopter patient movements using both the UH-1 and the MI-17 helicopters, with at least one of the flight medics on board each mission. The 2 missions moved patients from the US hospital in Joint Base Balad to the US military hospital in Baghdad, where both patients were further regulated to Medical City in Baghdad. With guidance, the Iraqi Air Force will continue to move patients, with the goal of Iraqis moving Iraqis to Iraqi health care facilities. This will assist with the self-reliance of the Government of Iraq, lessening the reliance on the US military health care system, and allowing greater adherence to the medical rules of eligibility.

Figure 4. The weekly average number of patients transported from the Iraq theater of operations on US Air Force airplanes (STRATEVAC), July 2008 through August 2008.

MEDICAL RULES OF ELIGIBILITY

Medical Rules of Eligibility guide the DoD medical elements with regard to whom they can treat, when they can treat, and why they can treat. The MROE have not changed significantly since the early 1990s, and as such remain somewhat vague.

A RAND Corporation report, *Securing Health: Lessons from Nation-Building Missions*,[1] looks at the health aspects of nation building during the occupations of Germany and Japan, as well as operations in Somalia, Haiti, Kosovo, Afghanistan, and Iraq. The following citation from that report on the mission in Kosovo captures the essence of DoD/US policy with regard to the provision of health care to host nation civilians during operations:

> US policy tended to favor a narrower definition of the medical mission, one that focused on providing medical support to the force and provided care to civilians only in emergencies. According to US policy, military medical units were not to get involved in refugee care or in the rebuilding of health care infrastructure.

The MROE for Iraq is basically the same. Military medical units are authorized to treat anyone to prevent loss of life, limb, or eyesight. Other than Coalition Forces, detainees, and select US civilian personnel, there is ambiguity as to who is entitled to what care, and when. This creates challenges to everyone involved in patient treatment and movement. The theater MRO is the subject matter expert on MROE. Questions concerning eligibility number the hundreds, answering them is challenging at best. For example:

> If we don't take this ISF out of this Iraqi facility he will die. Does that make it life, limb, or eyesight?

> This Ugandan contractor has a terminal disease but we can't do anything for him. Can we admit him and send him to the US?

> An Iraqi general's single daughter is pregnant with complications and will be killed if the locals find out. We have to get her to Baghdad

Every one of these questions has the same answer— perhaps. Some are much more executable than others, but each one is real, each one is now, each one is important, and, on any given day, many of them are occurring at the same time. This is the ambiguity of the MROE: Did we cause it? Do we care for it? Can we care for it? What's the process?

Therein exists the inextricable link between medical regulating and medical rules of eligibility. There is always "the process" alluded to above. That process involves requesting exceptions to policy. This process can be challenging, but, given the current policy of restricting care versus complete access to care, especially for host nation civilians, it is meant to be challenging. It is challenging to protect US military healthcare resources and support the legitimacy of the Government of Iraq through allowing the Ministry of Health to care for Iraq's sons and daughters.

MEDICAL DIPLOMACY: MEDICAL REGULATING AND MEDICAL RULES OF ELIGIBILITY

Nagl et al[2] speak to "securing the civilian," "battle for civilian support," and focusing on the "neutral or passive majority." Medical diplomacy can help in providing security for the civilian populace, while battling for civilian support. Medical diplomacy focuses on the passive majority in providing care as an adjunct to the Iraqi healthcare system, not "as the Iraqi healthcare system." A player in the counterinsurgency fight could be, and should be, medical diplomacy by using the military medical capacity to treat Iraqi civilians and "win the hearts and minds" of the local populace.

A key component in medical regulating and strict MROE is limited medical capacity and capability. If the US had 10,000 inpatient beds spread across 500 hospitals with every conceivable specialty at each facility, there would be no need to medically regulate patients or adhere to the current MROE. The reality is that DoD medical facilities are extremely limited in the number of beds and specialties in theater, where they are located, experience constant turnover of personnel, are under pressure to downsize the medical footprint, and function under a policy of not readily providing care to other than those clearly eligible. Therefore, there is a requirement for aggressive medical regulating and strict adherence to the published MROE.

Aggressive medical regulating begins with the "stabilize to transport" mindset. This mindset is the medical regulating mantra to ensure the DoD hospitals transport Iraqi civilians from US facilities and into the Iraqi healthcare system at the earliest opportunity, as directed by competent medical authority. By regulating patients earlier rather than later, the theater is better able to manage bed capacity, hospital

specialty, and movement resources. The Iraqi patient transport is facilitated by the Civil-Military Liaison Officers (CMLO) and the Bilingual Bicultural Advisor-Subject Matter Experts (BBA-SME), which are part of civil-military operations under the medical task force. These CMLOs and BBA-SMEs ensure that Iraqi patients are appropriately regulated to accepting Iraqi facilities. The theater MRO and the civil-military operations officer synchronize the coordination and execution to aggressively regulate Iraqi patients into the Iraqi health care system. The limiting factor for both the US military and the Iraqi health care systems is capacity.

US MILITARY MEDICAL CAPACITY

The limited US military inpatient beds spread across the ITO are underutilized as evidenced by the bed fill occupancy numbers. Since January 2007, the average daily bed fill across all inpatient hospitals is 41%. Figure 5 details the average bed fill through July 2008. Further, as shown in Figure 6, the significant majority of patients in those occupied beds are Iraqi, a fact that has existed for the 20-month period covered by the data (December 2006 through July 2008).

There were 1,346 admissions in January 2007, and over 1,600 in May and June 2007. Since, we have seen a steady decline in admissions with a low of 972 in May 2008. June and July 2008 reflect only a slight increase at 984 and 1,055 respectively.

The demographics of those admitted to US military facilities are changing. Prior to June 2008, US military admissions accounted for more than 40%, whereas Iraqis accounted for almost 38%. In July 2008, US military admissions accounted for a 15-month high of 51%, and Iraqis (host nation civilians and Iraqi Security Forces) combined accounted for a 15-month low of 17%.

Finally, the makeup of admissions is changing as well. Since January 2008, the rate of admissions for battle injury declined from over 400 in January through March 2008, to just more than 180 for June and July 2008. Figure 7 presents the data.

From May to July 2008, an average of only 32% of the beds were occupied, indicating excess capacity. There is also excess capacity in our outpatient clinics as well. This excess capacity allows implementation and expansion of medical diplomacy in the counterinsurgency fight.

MEDICAL DIPLOMACY

Nagl et al quote former Army Vice Chief of Staff, General Jack Keane[2(pxiv)]:

> After the Vietnam War, we purged ourselves of everything that had to do with irregular warfare or insurgency, because it had to do with how we lost that war. In hindsight, that was a bad decision.

Perhaps we could learn from the medical diplomacy of Vietnam as detailed by Wilensky[3]:

> Almost 40 million encounters between American military physicians and Vietnamese civilians occurred from 1963 to 1971 in the Medical Civic Action Program (MEDCAP) alone during the Vietnam conflict. ...Aside from the humanitarian reasons for the various civilian medical aid programs, Spurgeon Neel thought that medical services were properly used for political gain. MEDCAP was a tactical employment of medical capability to "try and influence the people we were there trying to help."...Neel also felt that another reason for the programs was that they improved the image of the United States.

Medical Civic Action Program events (MEDCAPs) are being conducted sporadically throughout Iraq by small unit engagements, but, outside of the Erbil region, there is no apparent concerted effort to use MEDCAPs in counterinsurgency operations to win the hearts and minds of the Iraqi populace. The Zaytun Division of the Republic of Korea Army in the Erbil region is a prime example of medical diplomacy. The Korean hospital, in cooperation with Korean civil affairs, treats approximately 120 Iraqi (Kurdish) patients 4 days per week. This accounts for more than 90% of their outpatient workload. The civil affairs unit screens the local Iraqis needing care, provides them a "ticket" which entitles them to acute and chronic care in the Korean hospital. The Koreans provide a monthly, fair-like event which, in addition to Tae Kwon Do and magic show demonstrations, includes health screening and education. The events have had no security issues. The hospital leadership attributes the medical care provided to the local populace as a key element in the security successes enjoyed in the northern part of Iraq.

It is impossible to satisfy everyone. However, using medical diplomacy as a tool in the counterinsurgency fight is an alternative to significantly restricting access
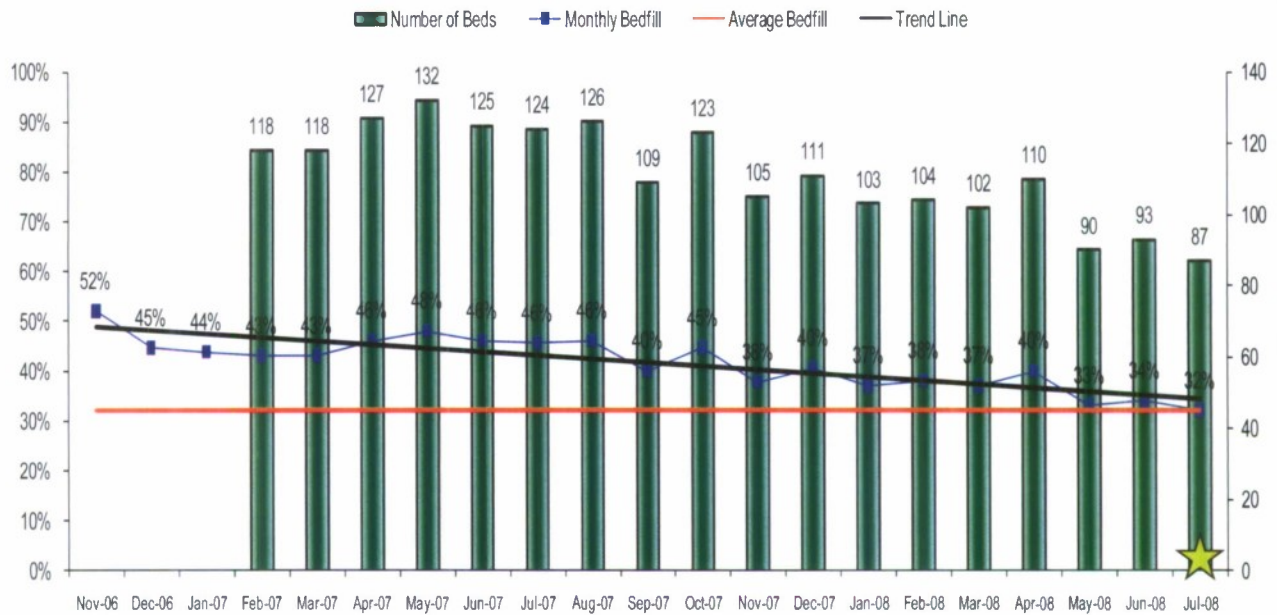
Figure 5. Percentage average daily inpatient bed fill at US military facilities in the Iraq theater of operations, November 2006 through July 2008, based on total of 274 operational available beds.* Data as of 4 August 2008. Note: Inpatients consist of US, Iraqi military, and others eligible under the medical rules of eligibility.

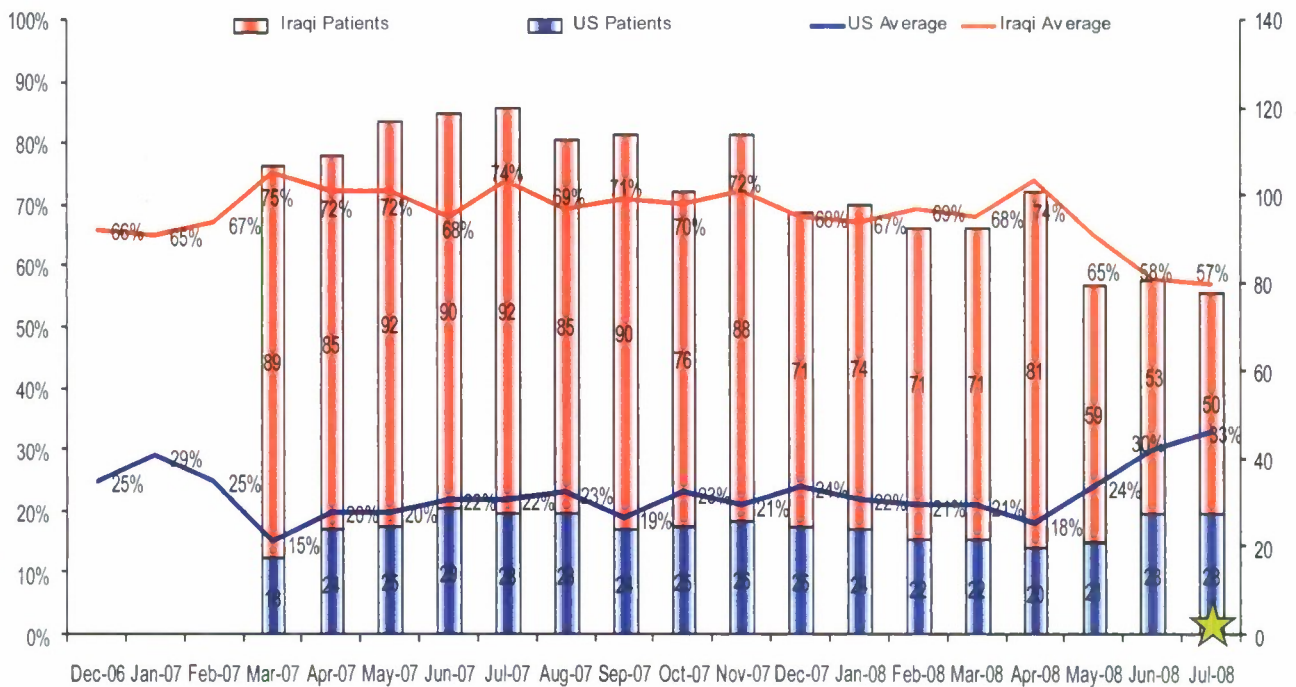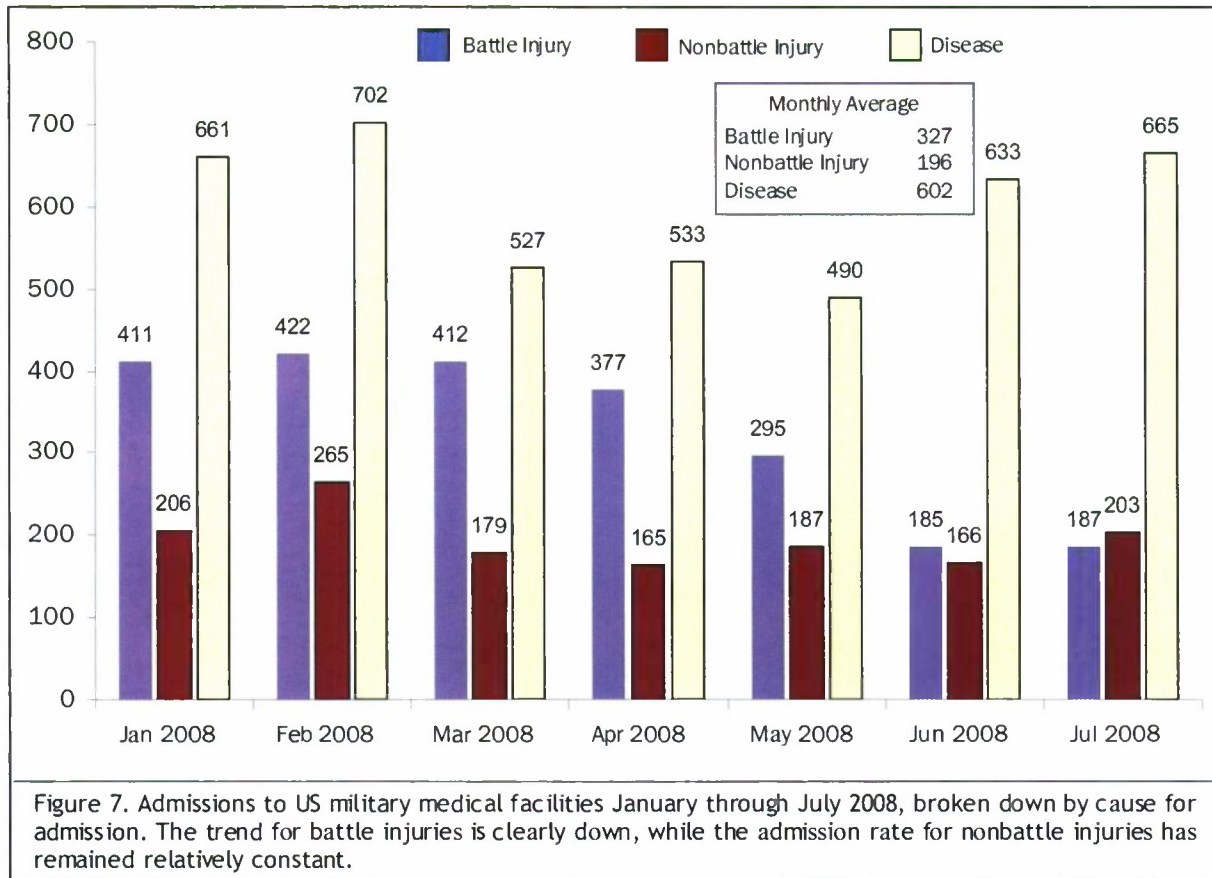*Available operational beds decreased to 254 on 17 July 2008

Figure 6. Comparison of US and Iraqi patients (actual numbers and percentages) occupying inpatient beds at US military facilities in the Iraq theater of operations from December 2006 and July 2008. Data as of 4 August 2008.

Figure 7. Admissions to US military medical facilities January through July 2008, broken down by cause for admission. The trend for battle injuries is clearly down, while the admission rate for nonbattle injuries has remained relatively constant.

to care. A balance must be struck between the acceptable CF medical footprint—the ability, through security, to provide care to the local populace while ensuring excess capacity is maintained for that expected surge in CF casualties—with the ability to ensure the Government of Iraq is caring for its citizens. This paradigm shift in the medical diplomacy line of operation in support of the counterinsurgency fight would certainly involve medical regulating operations and a variance of historical DoD/US policy on medical rules of eligibility. Perhaps then the next street the command sergeant major and his unit patrols will not be littered with improvised explosive devices.

CONCLUSION

The inextricable link between medical regulating operations and the medical rules of eligibility is more than the medical regulating operations officer. In an operational environment as vast as Iraq involving host nation civilians, Iraqi military personnel, Iraqi dignitaries, and a host of other potential patients, the complex mission of executing medical regulating operations while adhering to MROE is an extremely dynamic undertaking. The theater MRO always

expects—but never knows—what will be contained in that next call or that next email:

> There are conjoined twins in an Iraqi hospital that the King of Saudi Arabia has accepted. If the Saudis cannot get them moved, can we move them into our facility and then arrange for transportation to Saudi Arabia?

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AUTHOR

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Clinical Quality Management in a Mature Combat Environment

COL Susz Clark, AN, USA
MSG(P) Richard Brewer, USA

Planning guidance to staff:

> Strive to synchronize a sustainable healthcare system defined by measurable outcomes, innovation, and performance excellence in pursuit of perfecting combat medicine.
>
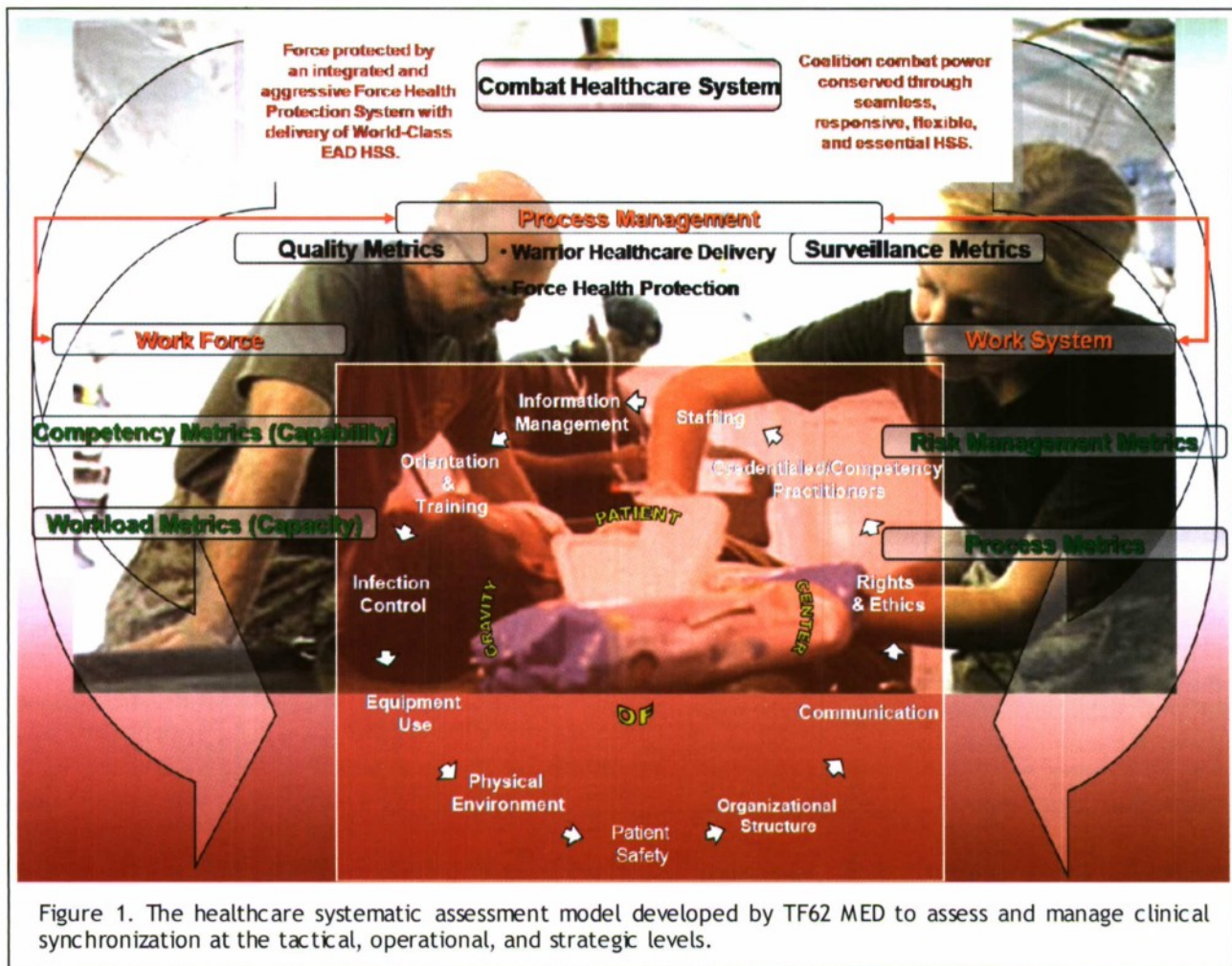> COL Patrick Sargent, Commander,
> Task Force 62 Medical Brigade

When the Task Force 62 Medical Brigade (TF62 MED) assumed control of the theater medical command mission in 2007, it was clear from the 98% patient survivability rate that previous medical task forces had been successful at providing medical care. Understandably, in the support of extensive combat operations, there had been little systematic planning for more than one year at a time. Also, a systemized healthcare delivery network that used evidence-based standards and knowledge management to qualify and improve patient outcomes had not yet been developed. Considered the "tip of the spear" for healthcare delivery, TF62 MED launched a campaign plan to build a sustainable healthcare system. This system had, as its foundation, standards-based healthcare delivery infused with a relentless focus on evidence-based combat health care and performance excellence, two of the commander's top 10 priorities. The success of this campaign would be the template for future deployable medical systems, and would ensure a codified standards-based continuum of care delivery system.

HEALTHCARE SYSTEM ASSESSMENT

A major long-term investment associated with healthcare excellence is gained by creating and sustaining an assessment system focused on healthcare outcomes. An effective healthcare system depends on the measurement and analysis of performance. We developed the healthcare systematic assessment model (Figure 1) to assess and manage clinical synchronization at the tactical, operational, and strategic levels to keep our combat healthcare system on track towards the 2 supporting conditions relative to our near-term objectives: aggressive force health protection and conservation of combat power.

The 3 core competencies delineated in Figure 1 that supported our healthcare system were: process management, work force, and work systems. Process management allowed us to assess and benchmark processes in our Warrior healthcare delivery system using quality outcome metrics such as those with the ventilator associated "care bundle"* to evaluate patient outcomes. Ongoing assessment of surveillance metrics such as disease and nonbattle injury rates and reportable medical events reports provided critical data points that allowed adjustments in force health protection strategies. We analyzed the workforce by examining workforce capacity, defined as our ability to ensure sufficient staff to accomplish our work processes and successfully deliver patient care. Work force capability was defined as our ability to accomplish our work processes through the knowledge, skills, and competencies of our staff. We assessed work force capacity, for example, by using workload metrics such as the number of surgical cases, surgical hours, bed occupancy rates, and nursing care hours. We built a metrics workbook for each facility that allowed us to analyze each facility's progress, as well as compare and contrast data among facilities. These metrics, when compared to work force metrics such as numbers and skill mix of staff, allowed us to optimize workload to work force ratios. One of the ways we assessed work force capability was to track staff competency metrics, such as credentialing, privileging, and licensure. We continuously assessed work system design using key work process metrics to evaluate strategies for redesign of systems and processes to make them safer for our patients. We used risk management metrics, such as incident reporting, trending and analysis, to systematically assess our key work processes. Decisions about the 3 core competencies (process management, work force, work systems) guided brigade strategies. The decisions involved defining, protecting, and capitalizing on our

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*Mandated by the Office of The Surgeon General/US Army Medical Command Policy Memo 07-011, dated April 26, 2007.

Figure 1. The healthcare systematic assessment model developed by TF62 MED to assess and manage clinical synchronization at the tactical, operational, and strategic levels.

critical health service support capabilities and systems in order to be a sustainable healthcare system.

PATIENT SAFETY: THE FIRST STEP

An initial, early assessment of units in theater at the time revealed that there was no standardized approach to patient safety and clinical risk mitigation. Subsequently, the task force developed and implemented a task force-wide patient safety program to decrease variation of patient safety practices, improve measurement reliability, and promote patient safety best practices within the system. Incident reporting which summarized both error occurrence as well as near-miss reporting (where the error is identified prior to impacting the patient) was tracked at the direct reporting unit level for summary and analysis across the task force on a monthly, quarterly, and annual basis. Direct reporting units remained responsible for corrective action and error prevention

training based on the incident report findings at each unit, while task force-wide trends identified generalized training needs. Incident reporting analyses lead to the development and implementation of standardized blood administration, moderate sedation delivery and inpatient medication administration guidelines, and a sharps safety training package for use throughout the task force.

IMPLEMENTING QUALITY IN DEPLOYED HEALTHCARE

Today's Army healthcare system continues to exemplify the highest quality of patient care, both in the United States (CONUS) and forward deployed. Although providing the same consistency of healthcare in an austere deployed environment has its challenges, the expectation to provide a standard-based healthcare system remained our goal. Since the inception of mobile combat hospitals to treat the sick and wounded, the concept has remained the same: provide a standard

of care based on the experience and training of the clinical staff deployed from CONUS-based medical facilities. This doctrinal concept has shown resilience, but it lacked a process to validate and codify best practices within the mobile combat hospitals.

Historically, deployable hospitals are not required to withstand the rigors of a Joint Commission* inspection. Higher headquarters have historically provided various degrees of oversight and instituted clinical polices to maintain standards of care. To ensure a standards-based healthcare system, we leveraged proven clinical practice guidelines and most of the Joint Commission's nationally established standards of care to validate medical units rotating into theater. Prior unit inspections focused on availability of clinical policies and standard operating procedures. In order to adequately assess the components of the healthcare systematic assessment model, we had to go beyond paper policies to look at the processes and systems driving healthcare delivery at the frontline of care delivery—the unit. To do so, we focused on the patient and devised the concept of the quality healthcare assistance visit (QHAV) that used patient and system tracer methodology to evaluate clinical processes.

In the early stages of development, the staff created a graphic model (Figure 2) to visually portray the diverse patient systems that compelled the validation process and drove standards-based care delivery.

The model depicts the patient as the "center-of-gravity" for all healthcare delivery processes, from point-of-injury through level III hospital care and theater evacuation, with an emphasis on quantifying and qualifying patient outcomes. Using the Joint Commission functions to define patient care and support processes, we developed a 120-item QHAV checklist (Figure 3) to use with tracer methodology in order to evaluate each of our level III hospitals.

Patient and system tracer methodology allowed the QHAV team to follow, observe, and evaluate a patient's care throughout the healthcare process. The patient tracer process started from the moment a patient entered a level I (aid station) thru level III (hospital) activity, and continued throughout his/her

*Joint Commission on Accreditation of Healthcare Organizations, One Renaissance Blvd, Oakbrook Terrace, Illinois 60181

stay or until discharge or evacuation from the Iraq theater of operations. This process ensured all healthcare functional areas were synchronized to provide the best outcome for the patient. Furthermore, it gave the QHAV team the opportunity to assess policies and procedures and provide recommendations for performance improvement.
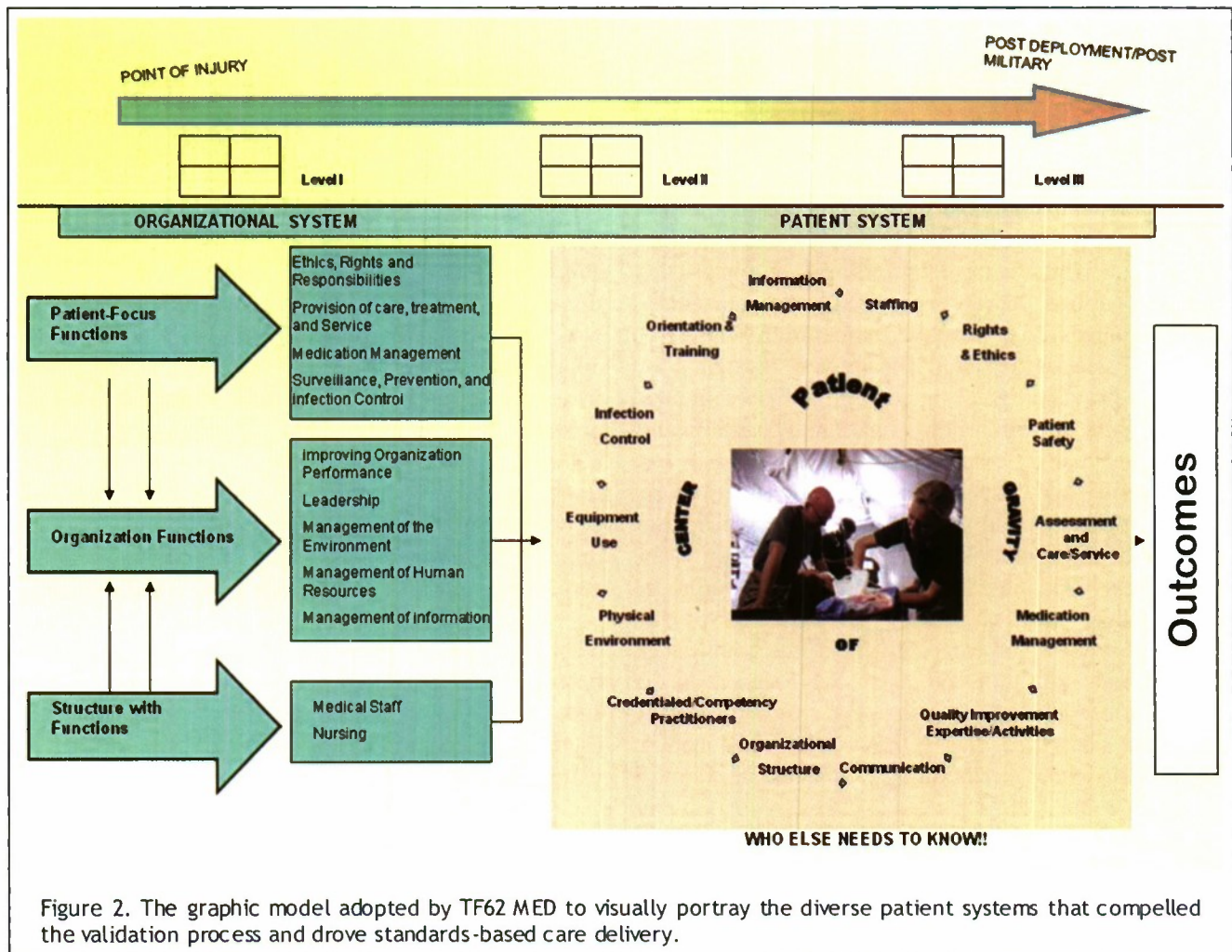
We used this process to evaluate 7 geographically dispersed level III hospitals twice, once at 30 days after transfer of authority (initial arrival) to ensure appropriate standards and processes were codified and in use. They were evaluated a second time 120 days prior to their redeployment to ensure standards had been maintained for handoff during the unit's transition. The model and the QHAV checklist provided the direct reporting unit commanders and their staffs priority focus areas to consider in their respective unit's organizational risk assessment. The concept allowed a continuous improvement process during the unit's tour of duty and identified numerous best practices that were disseminated throughout the task force. In addition, and most importantly, it ensured a standards-based healthcare system that was validated and codified.

The end state was a comprehensive evaluation of systems that were patient-centric and allowed for an overarching collaborative approach to resolve clinical issues that had inundated the rotations of previous medical brigades. Undoubtedly, the ability to apply Joint Commission standards in an austere environment is limited by conditions on the ground and resources available. Though there are numerous differences between the environments of care in CONUS and Iraq, we directly challenged the false assumption that we initially heard, "we can't do that quality improvement stuff in a combat zone." However, the belief still exists that we can expect and should hold ourselves to a US standard of care—one founded on proven guidelines, practices, and patient safety.

STANDARDS-BASED HEALTHCARE DELIVERY: NURSING

After visiting several units, we found early-on that the medication management system required some reengineering specific to medication administration. Concurrently, medication administration errors were consistently in the top 3 errors reported via our incident reporting system. During the QHAVs, we observed that nurses, used to electronic medication

Figure 2. The graphic model adopted by TF62 MED to visually portray the diverse patient systems that compelled the validation process and drove standards-based care delivery.

dispensers in CONUS-based medical treatment facilities, had problems completing the 10 rights of medication administration without the electronic systems and a clear delineation of an alternate method of administering medications. In addition, long hallways at several of the facilities increased the distance between the patient and the nurses' station, where the medications were stored, which increased the chance of error. During a QHAV, we discovered a best practice in use at one of our facilities: mobile medication carts. Nurses formerly used medication carts to deliver medications, but these were outmoded by implementation of electronic delivery devices. The medication carts could be stocked with medications at the nurses' station, and then rolled to the patient, thereby decreasing the steps required, literally and figuratively, for medication administration. To minimize medication administration errors among the new nurses, we revised an old adage, "new nurses learning old tricks." The medication carts, along with a standardized medication administration policy that served as an operator's manual for the carts, were disseminated throughout the task force to promote patient safety and decrease medication errors.

STANDARDS-BASED HEALTHCARE DELIVERY: EQUIPMENT

The patient and system tracer methodology identified a staff that was unfamiliar with the type of dated equipment being employed in theater. Similarly, the procedures to request and standardize equipment were not well-established, causing further delays in obtaining modern equipment. This required staff coordination between the clinical operations staff and S4 (logistics) to develop a process that allowed a seamless and transparent platform by which units could order equipment. First, units had to establish a competency checklist relevant to their equipment. This provided a codified system by which staff could

demonstrate their competency on a particular piece of equipment. Next, the Deputy Commander for Clinical Services established a Medical Equipment Standardization and Validation Board consisting of clinical hospital leaders and equipment proponents. Through a virtual meeting room; clinical staff reviewed, approved, and standardized equipment requested by units. Likewise, it allowed them to look for redundancies or like items that had been previously approved. This systematic approach allowed the task force to purchase approximately 1,340 items, valued at approximately $15.7 million. Of note, the QHAV program's focus on evidence-based practice identified forward surgical team equipment modifications in the type of refrigerators and beds necessary to support current clinical practice guidelines and standards of patient care.

STANDARDS-BASED HEALTHCARE DELIVERY: DOCUMENTATION

Figure 3. Excerpt from the integrated quality healthcare assistance visit team checklist.

Documentation is a critical component of the delivery of healthcare, not only within Iraq but throughout the care continuum to the level IV medical centers in CONUS. The QHAV team recognized early that, although the Army had an electronic medical record (EMR), there were enormous gaps in knowledge about and use of the system. The medical staff was not familiar with various mandatory form fields to be completed. Conversely, the medical staff complained of a lack of fields needed to complete their documentation. Technical problems beleaguered the system to the point that medical documentation was either lost or delayed, causing breaks in the chronological order of treatment. TF62 MED Clinical Operations and Health Information Systems had to collaborate to institute changes that were requested by the units. Working with medical communications for combat casualty care (MC4) system consultants, this team educated staff on the EMR/MC4 systems use. Furthermore, working in conjunction with physicians and nurses, the team drove an upgrade to the EMR, adding more fields to support clinical notes. Improvements in connectivity, access, and medical record audits increased visibility and use of the EMR, not only in Iraq, but also in our level IV medical

centers back home. In the previous 2 years there were approximately 23,000 inpatient and 1,840,000 pharmacy, laboratory, and radiology (PLX) EMR encounters. At the time this article was written (July 2008), the 62nd Medical Brigade had entered approximately 17,250 inpatient and 2,115,00 (PLX) encounters since it assumed authority for the theater medical mission (August 2007). This extraordinary increase was reflective of the institution of standardized detailed medical records documentation through medical automation systems within the theater and across the continuum of care.

CONCLUSION

The expectation of our patients is "we train as we fight," honing those clinical skills that will result in flawless delivery of healthcare. Warfighters withstand unit, battalion, and brigade inspections which constantly evaluate tactics, and work toward improving and synchronizing operations with the goal of accomplishing the mission and bringing the Soldiers home safely. Those tactics, techniques and procedures (TTPs) get codified and standardized, and in turn become an Army standard. Those TTPs are learned through experiencing harsh realities, from the

shedding of US blood and loss of our Soldiers' lives. We recommend deployable medical units adopt the same concept and ensure that codified, evidence-based standards that cover the rigors of a Joint Commission inspection be the foundation for deployed healthcare delivery.

Present and future deployable medical units should build their capabilities on codified standards developed from organizations that have tried and tested clinical processes. Degradation of capabilities is apparent as units bring a variety of their own policies and procedures to the fight. Too many units stagnate initially, as they go through the growing pains of trying to implement their standards, only to find out that the previous unit had anguished through the same process, and ultimately resorted back to an objective set of standards. The perspective frequently encountered in a deployed environment is one that is distorted: US standards do not or can not apply and modifications, if you will, are acceptable. It is our belief that this perspective adversely affects how we train and evaluate our deployable medical units. It requires significant change and renewed focus on current, US standards-based healthcare. As an example, Annex Q* describes TF62 MED policies and procedures relevant to all Iraq theater of operations healthcare facilities and units. It has elements of performance and performance measurements, along with National Patient Safety Goals[†] to help assess the performance of an organization. To ensure a continuous improvement process, periodic semiannual reviews of systems will appraise action plans and mission success.

Future organizational inspection programs and training exercises should focus not only on the command and control aspects, but also on the clinical doctrine through an established, deployable, US standards-based inspection system. The system should define common policies and procedures specific to deployable organizational equipment, facilities, staffing, scope of practice, environment of care, and logistics. The mindset of current exercises focuses on trauma-heavy patient play, mass casualties, treatment, and evacuation. All of these are relevant, however, upon further review, none of those particular areas have an associated, codified, standards-based ideology, nor do they reflect the majority of challenges faced by healthcare facilities in a mature operational environment. When reviewing and questioning the processes used by units, the normal response is subjective—"that's how we do it back home." Again, relying on the their clinical experience learned within CONUS facilities, physicians, nurses, medics, and administrators apply those often nonstandard clinical practices associated with a robust medical system. Unfortunately, in a deployed environment, services, equipment, staffing, and logistical constraints dictate a different approach as to how we deliver healthcare. However, US standards and principles should be employed through specific policies and procedures tailored for deployable medical units. Leaders implementing these standards will encounter initial resistance, but healthcare professionals quickly recognize the benefits of delivering US quality standards-based healthcare wherever in the world their nation sends them.

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*Annex Q is the Medical Services Annex to the TF62 MED Operations Order 08-02 (internal military document not readily accessible by the general public).

†Starting in 2003, the Joint Commission annually releases a number of National Patient Safety Goals, and directs all accredited healthcare organizations to implement those goals. Although they are termed as goals, they are mandatory practice changes modeled after best-practices throughout the world. The goals, ranging from very simple to very complex, address a variety of safety issues that confront hospitals on a daily basis. Available at: http://www.jointcommission.org/patientsafety/national patientsafetygoals/

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Medical Capability Team: The Clinical Microsystem for Combat Healthcare Delivery in Counterinsurgency Operations

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ABSTRACT

Today's operational environment in the support of counterinsurgency operations requires greater tactical and operational flexibility and diverse medical capabilities. The skills and organizations required for full spectrum medical operations are different from those of the past. Combat healthcare demands agility and the capacity for rapid change in clinical systems and processes to better support the counterinsurgency environment. This article proposes the Army Medical Department (AMEDD) develop and implement the medical capability team (MCT) for combat healthcare delivery. It discusses using the concept of the brigade combat team to develop medical capability teams as the unit of effectiveness to transform frontline care; provides a theoretical overview of the MCT as a "clinical microsystem"; discusses MCT leadership, training, and organizational support, and the deployment and employment of the MCT in a counterinsurgency environment. Additionally, this article proposes that the AMEDD initiate the development of an AMEDD Combat Training Center of Excellence to train and validate the MCTs. The complexity of combat healthcare demands an agile and campaign quality AMEDD with joint expeditionary capability in order to promote the best patient outcomes in a counterinsurgency environment.

We will not be effective and relevant in the 21st century unless we become much more agile but with the capacity for a long-term, sustained level of conflict. Being relevant means having a campaign-quality Army with joint expeditionary capability. It must be an Army not trained for a single event like a track athlete, but talented across a broad spectrum like a decathlete.[1(p4-6)]

General Peter J. Schoomaker

INTRODUCTION

Although there were lonely voices arguing that the Army must focus on counterinsurgency in the wake of the Cold War, the sad fact is that the Army was unprepared to fight the insurgency in Iraq when it began in the late summer of 2003. The story of how the Army found itself less than ready to fight an insurgency goes back to the Army's unwillingness to internalize and build upon the lessons of Vietnam.[2] If the Army Medical Department (AMEDD) does not want to follow suit and repeat history, the AMEDD must internalize and build upon the lessons learned in Iraq to update doctrine, continue its transformation, and modularize the medical force structure by developing highly trained medical capability teams. In Iraq, counterinsurgency operations are playing an essential role in shaping the strategic, operational, and tactical environment, and securing peace in Iraq. Combat healthcare is proving to be an important "weapon system" in its own right, and a counterinsurgency combat multiplier across the Iraq theater of operations. Therefore, the complexity of combat healthcare in a counterinsurgency environment demands an agile and campaign quality AMEDD with joint expeditionary capability; a capacity for rapid change and flexibility in how medical units are trained, deployed, and employed in theater; as well as changes in combat healthcare clinical work systems and processes.

The purpose of this article is to propose the AMEDD develop and implement a modular, interoperable, joint expeditionary combat healthcare model, the medical capability team (MCT), as the "clinical microsystem" for combat healthcare delivery that promotes the best patient outcomes in a counterinsurgency environment.

STRUCTURING THE BRIGADE COMBAT TEAM CONCEPT FOR HEALTHCARE DELIVERY

As described in Army *Field Manual 1*,[1] the Army restructured from a division-based to a brigade-based

force—the modular force—in order to meet the vision of a campaign quality Army with joint expeditionary capability. This modular organization simplifies providing force packages (eg, brigade combat team) that are strategically flexible, meet operational requirements, and increase tactical independence. The brigade combat team enhances integration with Army, joint, interagency, and multinational forces. This organizational transformation has made the operational Army more powerful and responsive, as demonstrated in Afghanistan and Iraq, allowing the Army to sustain deployment of brigade combat teams for over 5 years. Having an enlarged force pool of available maneuver brigade-based forces enables the Army to generate forces in a predictable rotation and give Soldiers and units more time between deployments. Further, this modular force stabilization allows higher quality training and better support to combat commanders.[1(p4-7)]

The AMEDD should initiate a modular organizational transformation to become campaign quality (operationally sustaining) with joint expeditionary capability to be more agile, relevant, and flexible. This modular concept creates a large pool of medical force packages that enable the AMEDD to meet operational requirements across the full-spectrum of operations, from combat to stability operations. This enlarged force pool will also give AMEDD personnel and TO&E* units greater predictability and more dwell time between deployments. It demands a change in the AMEDD Professional Filler System† by assigning those personnel to a specific MCT. More importantly, this modular AMEDD force will allow the opportunity for higher quality individual and team training, thus providing better support to the operational force—the Warfighter.

Today's operational environment in the support of counterinsurgency operations requires greater tactical and operational flexibility and diverse medical capabilities. The skills and organizations required for full spectrum medical operations are different from those of the past. Combat healthcare demands agility and the capacity for rapid change in clinical systems and processes to better support the counterinsurgency environment.

THE MCT AS THE FRONTLINE CLINICAL MICROSYSTEM IN COUNTERINSURGENCY OPERATIONS

The concept of clinical microsystems is based on the science of chaos theory and complexity science.[4] Both sciences postulate that even the most seemingly disordered systems have hidden ordered processes; the whole of the systems is greater than the sum of its processes, and that complex systems are self-organizing and highly adaptive. Chaos theory and complexity science reject the notion that systems are composed of repairable, replaceable parts that can be separated and analyzed.[5] These theories describe systems as dynamic, that is, systems whose state evolves with time and are highly sensitive to initial conditions. Behavior appears chaotic, but these systems are actually deterministic; future dynamics are fully defined by their initial conditions, with no random elements involved.[5] James Quinn states that system redesign must begin at the "smallest replicable unit as early as possible in the design process."[6]

Based on this theory, the MCT is the "smallest replicable unit," or the unit of effectiveness, designed to align AMEDD strategy with clinical capability and combat healthcare delivery. The MCT is modeled after the brigade combat team concept in an effort to modularize force structure into medical force packages that are patient-centered and team-driven. An MCT can be defined as a modular, interoperable, highly-trained medical operational unit of effectiveness that is task-organized with specific medical capabilities and equipped to perform a patient-focused mission under the direction of the MCT leader in combat. The MCT is the locus between the AMEDD vision and combat healthcare delivery, serving as a catalyst for change at the frontline care interface that links the AMEDD's core clinical competencies with the healthcare needs of Soldiers, Marines, Sailors, and Airmen. The MCTs are small, interdependent groups of professionals who regularly work and train together in order to develop into highly proficient specialized medical teams that provide combat healthcare to a specific group of patients. As a clinical microsystem, MCTs have unique clinical aims, linked processes, shared information environments and performance outcomes. MCTs are embedded in the "macrosystem," the combat support hospital (CSH) where, as a type of

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*Table of Organization and Equipment: Defines the structure and equipment for a military organization or unit.

†Predesignates qualified Active Duty health professionals serving in Table of Distribution and Allowance units to fill Active Duty and early deploying and forward deployed units of Forces Command, Western Command, and the medical commands outside of the United States upon mobilization or upon the execution of a contingency operation.[3]

complex adaptive system, they must do the work, meet patient and staff needs, and maintain themselves as a clinical unit of effectiveness. Emergence theory advocates environments that encourage people to organize themselves around common problems in order to seek creative solutions.[5] Central to every microsystem is the patient. MCTs are organized around the common problem sets associated with combat healthcare delivery for resuscitative, surgical, and critical care patients. The team possesses the appropriate clinical competencies to resolve combat healthcare delivery problem sets associated with their specific group of patients. For example, the resuscitative MCT includes, at a minimum, an emergency medicine physician (AOC* 62A), emergency medicine nurse (AOC 66HM5), and specially trained health care specialist (MOS† 68W). The microsystem is the place where clinical quality management, efficiency, and innovation are made, and staff morale and patient satisfaction begin. Finding time to improve care can be difficult, but the only way to improve and maintain quality and safety is by blending analysis, measuring and redesigning into the regular patterns and the daily habits of front-line clinicians and staff.

At the foundation of the MCT concept is the importance of sourcing combat healthcare delivery the way clinicians provide care—as a team. Traditionally, health professionals' training and socialization emphasizes individual skills, education, and achievement that leads to difficulty, when deployed, with collaboration and the development of teamwork competencies. The AMEDD's sourcing of clinical capability is unit-centric (ie, CSH) and AOC/MOS-driven, and runs counterintuitive to what clinicians bring to the fight in combat: patient-centered, team-driven care. There is growing evidence that the focus on individual skill development and individual accountability and achievement that results from existing models of health professional training, and which is continually reinforced by human resource management practices within healthcare systems, is not consistent with the competencies required for effective teamwork.[7] Teamwork is essential in the provision of healthcare. The division of labor among medical, nursing, and medics means that no single staff member can deliver a complete episode of healthcare. In healthcare, where patient outcomes are

*Area of Concentration
†Military Occupational Specialty

dependent on effective interdisciplinary teamwork, there is a need for better preparation of health professionals in teamwork. Many studies have identified teamwork as a requirement for high quality, safe care.[7]

The MCT is the unit of effectiveness that provides an innovative means to perfect combat medicine by aligning AMEDD strategies of how we deliver care with the AMEDD imperatives of quality, safe, "world-class" care by producing patterns of critical results, such as patient and risk outcomes.

KEY SUCCESS FACTOR TO THE MCT: THE MCT LEADER

The Joint Commission's series of articles, "Microsystems in Health Care" identifies 9 success characteristics of high-performing microsystems.[8] These characteristics paralleled those described in the study by the Institute of Medicine[9] with the difference being leadership emerged as a key success factor at the microsystem level and resonated throughout the other eight characteristics.[4]

In a study by Leggat[7] which examined critical team-work competencies for health service managers, the number one individual characteristic for a team that most contributed to the success of the team and effective teamwork was leadership. The term "leader" is a word that arises from the root words *laitho* or *laithan* meaning way, journey, or to travel. Thus, MCT leadership is less who a person is or what they do as a leader, but more of how they influence the team's journey as the team adapts to environments of care.[10] The leader provides constancy of purpose to create a team environment that centers on the patient, promotes team autonomy and accountability, embraces process improvement, and harnesses data and technology to develop performance patterns and outcomes. The following paragraphs discuss the top 3 MCT leader-ship imperatives we believe are crucial for high-per-forming, quality teams.

KNOWLEDGE MANAGEMENT

Weick observed that systems can not be improved until the "performance of the factors preventing failure are noticed."[11] Leaders must notice and "make sense" of these factors. After making sense of what's been noticed, leaders must take action. MCT leaders must be knowledgeable on the different management and process management models for success in chaotic and

complex systems within a macrosystem (eg, CSH) where nonlinear problems and processes exist. Since traditional statistical tools are generally insufficient to capture the richness of information in healthcare systems infused by the complexity that humans introduce into a system, MCT leaders must be able to create context for statistical data for use by the MCT. For example, flowcharts that use boxes to capture the dynamics of a process do not clearly articulate the importance of the relationships among the boxes where "intracare gaps" can occur; for example, during patient care handoffs between MCTs (eg, resuscitative MCT to a surgical MCT) or during medical evacuation (MEDEVAC) transports between different echelons of care. Leaders should be aware of new management theories such as clockware and swarmware which offer the MCT leader an intellectual diagram for outlining general goals and boundaries for team improvement.[5] Clockware defines those boundaries delineated by tactics, techniques, and procedures (TTPs) to which a team must adhere for standards-based care. For example, blood administration is an example of clockware in that it requires adherence to regulations and policies enforcing safe patient care to prevent errors. Traditional clinical quality management benchmarks work well to measure this type of process. Leaders use swarmware theory when creativity and innovation are required to produce solutions outside the boundaries of TTPs. For example, enabling an MCT to redesign the MEDEVAC patient transfer process for efficiency and safety to prevent patient delays would use traditional metrics to evaluate the process (eg, turnaround time), but realize some variables that impact patient outcomes during that process might not be so easily quantified. When used together to produce both tight and loose parameters, clockware and swarmware theories encourage agile, adaptive team responses to a variety of scenarios.

CREATING SYNERGY

Leaders can strongly influence the way work gets done in an MCT microsystem by understanding process management and using specific processes to make things happen. Complexity science delineates "strange attractors" in nature such as the phenomena of eddies in rivers that cause new flow patterns.[5] MCT leaders inherently are strange attractors who create boundaries or restraints from which patterns in systems evolve. In order to do so, the MCT leaders possess characteristics

such as an ability to facilitate a common team language to avoid confusion and promote team effectiveness. Over time they create shared definitions. For example, each team member should understand what constitutes, for the team, a successful patient outcome as delineated by palliative versus aggressive treatment of a patient.[12] Leaders leverage team communication venues as an invention platform where the voltage of new ideas creates team synergy for process redesign and improvement. Leaders are able to structure the shared information then connect it to plans for action. Therefore, MCT leaders must be adept at facilitating reciprocal relationships between other microsystems and linking the MCT to the macrosystem in order to mitigate intracare gaps among different microsystems. They must facilitate collaboration and a common vocabulary with other microsystems to manage overlapping shared processes, such as patient admissions and discharges, or management of supplies and equipment used by the team.

CENTERING

The MCT leader must be a virtuoso in "mindful watchfulness," an ability to constantly and actively attend to and focus the team on the patient as the team's center-of-gravity. Leaders must be able to orchestrate a team interdisciplinary approach that provides care synchronicity for good patient outcomes and mitigates a competing focus on disciplinary-centered care (ie, physician, nursing). Leaders identify and help the team address other strange attractors, such as team member characteristics, technology, environment, and process design that either accelerate or decelerate the team's ability to provide patient-focused care. MCT leaders use team stress or conflict in a "forged by fire" method to achieve team congruence and catalyze change. They make individual and team values actionable and accountable.

Finally, effective quality leaders recognize the complexity that humans introduce into systems. Leaders create a team culture that promotes flexibility of roles and understanding and respecting each others' roles with respect to professional scopes and standards of practice.[10] Each team member should feel they are a member of an elite team and have confidence in each other's competence. Leaders must create venues, over

time, to allow the team to reflect on what is working and what is not in order to create change and patient care improvements.

BUILDING AN MCT: TRAINING, MANNING AND ORGANIZATIONAL SUPPORT

Although microsystems work at the microinterface of frontline care, they can produce results at the macro-organizational level. As microsystems, the MCTs provide more agility and responsiveness to adaptation and can more quickly provide lessons learned at the microlevel frontline of care. The lessons learned at the microlevel, aggregated at the macrosystem level, identify organizational best practices and provide coherence throughout the macrosystem as a learning organization. The MCTs require organizational support from a macrosystem (eg, CSH) in the form of "resources to enhance and legitimize the work of the microsystem."[4]

Particularly important is the need for ongoing team training for the MCTs. Team training must be resourced appropriately to ensure the MCTs develop team work systems and work processes over time in support of patient-centered care. Current predeployment training and validation exercises (eg, mission readiness exercise) conducted for echelon-above-division (EAD) medical units are only at the macrolevel and do not address the microsystem level. Therefore, the AMEDD should initiate the development of an AMEDD Combat Training Center of Excellence that focuses on the training and validation of these MCTs. The Center would ensure that the individuals and the team are highly proficient in their specialty, are ready to accomplish their mission prior to deployment, and will integrate well into their larger unit. As described, the MCT is the unit of effectiveness designed to align AMEDD strategy and core clinical competencies with capability and combat healthcare delivery. The MCT is patient-centered and team-driven, and therefore should be trained and validated by an AMEDD Combat Training Center to ensure that they are trained on teamwork competencies across the mature theater continuum. The properly trained and prepared MCT will then deploy as a highly proficient, specialized medical team that provides quality combat healthcare. These MCTs are the building blocks that form the CSH. The quality of the CSH can be no better than the care produced by the MCTs that deliver patient-centered combat healthcare.

Moreover, there is a problem with current sourcing of medical units and degradation of critical medical team capability and capacity in the areas of treatment, trauma, behavioral health and critical care. In particular, the current manning and qualification of medical units in *Army Regulation 220-1*[13] does not accurately identify the critical medical manning and qualifications required for EAD medical forces. Therefore, Task Force 62 Medical Brigade in Iraq has recommended an update to *Army Regulation 220-1* to the US Army Medical Command to track critical medical teams and qualification criteria to ensure the deployment of highly trained medical teams. To this end, the AMEDD should develop and implement the MCT process in order to ensure that units are trained and validated prior to deployment into theater.

THE MCT: DEPLOYING IN A COUNTERINSURGENCY ENVIRONMENT

The maturation of the combat theater in Iraq has provided optimal conditions for the medical task force to make major improvements in health system-wide quality and management practices in the counterinsurgency environment. The medical task force has taken advantage of this unique time in history to place a concerted focus on institutionalizing our combat healthcare support system. The medical task force is implementing an initiative using the CSH modified table of organization and equipment as a sourcing platform to develop MCTs as part of a deployment manning document to support level II+ and level III operational requirements across the Iraq theater of operations. The medical task force is focusing on the capabilities required and assigning specific medical areas of concentration to respective MCTs—treatment, ancillary, surgical, critical care, specialty care, and resuscitative—based on the functional area in order to optimize staffing for full-spectrum operations (normal state to mass casualty events). To make the AMEDD more agile, relevant, and flexible, a smaller modular organizational transformation is needed to better support the MCT concept and identify additional specialty personnel skill identifiers in order to facilitate task-organizing personnel to respective MCTs. As a result, the AMEDD can optimize clinical capability while decreasing the clinical capacity required. Additionally, the MCTs should rotate as a unit team rather than having only a portion rotate into combat theater for 180 days, when others serve for 12 to 15 months.

CONCLUSION

The condition of the Army today can only be understood when one considers where we have been and where we are going ...The changes in the world have made us realize that to ultimately be successful in the Global War on Terror, we must transform our capabilities.[1(p4-1)]

<div align="right">Francis J. Harvey</div>

Today's operational environment in supporting counterinsurgency operations requires greater tactical and operational flexibility and diverse medical capabilities. The skills and organizations required for full spectrum medical operations are different from those of the past. Combat healthcare demands agility and the capacity for rapid change in clinical systems and processes. This discussion proposes that the AMEDD build upon the lessons learned in Iraq to modularize the medical force structure and develop highly trained, medical capability teams to be more agile, relevant, and flexible. The AMEDD must develop the capacity for rapid change and flexibility in how medical units are led, trained, and employed in theater. Teamwork is an essential component of the combat healthcare delivery system. This article submits that the AMEDD develop and implement medical capability teams as the frontline clinical microsystem for care delivery and initiate the development of an AMEDD Combat Training Center of Excellence to train and validate the MCTs.

Moreover, the complexity of combat healthcare demands a responsive and campaign quality (operationally sustaining) AMEDD with joint expeditionary capability. The MCT, at the frontline of healthcare delivery, can provide the agility and responsiveness necessary for patient-centered, team-driven care that promotes the best patient outcomes in a counterinsurgency environment.

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The Deployed Electronic Medical Record

MAJ Leslie E. Smith, MS, USA

ABSTRACT

This article reviews the current state of the electronic medical record in the deployed environment, with a discussion of challenges faced in the course of mission execution. Focus discussion includes current system architecture, system integration, interoperability, networking, and security concerns. The Department of Defense electronic medical documentation system does function, and records care from the point of injury through enduring care within the Veterans Health Administration. However, there is a high cost in dollars and man-hours, which should be aggressively addressed and improved.

THE DEPLOYED ELECTRONIC MEDICAL RECORD

One of the principal reasons America's armed forces are successful in warfare is the confidence every service member has in the military healthcare system. Soldiers, Marines, Sailors, and Airmen know they have the best medical system available if they are injured. This knowledge translates as a combat multiplier on more than the immediate battlefield; it also affects recruiting, retention, and Family support.

With a 97.5% survival rate for all casualties arriving at our deployed combat support hospitals (CSH), the military healthcare system is providing the highest survival rate of any war in history. This remarkable statistic reflects highly on the quality of our medical professionals: combat medics, doctors, nurses, therapists, and the supporting specialists and technicians. In addition to record levels of quality care, the Department of Defense (DoD) medical system also has the most robust electronic medical documentation system ever created for military applications.

Ensuring that quality documentation is created and maintained is incumbent on every leader in the Army Medical Department (AMEDD) and the other components of the military healthcare system (MHS). The purpose of this article is to review the current state of electronic medical documentation and outline some of the challenges experienced in the Iraq theater of operations. The discussion consists of 2 elements: first, an evaluation of the development of health information systems (HIS) and a survey of how the stage was set for the existing situation; next, a synopsis of the current HIS challenges and the significance of these limitations.

DEVELOPMENT OF HEALTH INFORMATION SYSTEMS

During the Gulf War in 1991, electronic medical documentation did not exist. Follow-on care for Veterans was dependent on the accuracy and maintenance of paper records. Oftentimes, medical documentation at the point of injury and initial care could not be obtained or re-created. The problems with documentation continuity and availability resulted in DoD initiatives in the research of electronic medical documentation throughout the 1990s.

Operation Iraqi Freedom (OIF) provided the opportunity to implement the first deployed electronic medical record (EMR). The Defense Health Information Management System (DHIMS) developed software and programs for the individual services. The Army's implementation of the DHIMS toolset is called Medical Communication for Combat Casualty Care (MC4).

Deployed medical leadership faces numerous challenges and responsibilities across the battle space, with the most important being the provision of care and its subsequent electronic documentation. The continuity of this care must be complete from the point of injury through long-term care with the Department of Veterans Affairs (VA). The importance of initial documentation cannot be overstated. Incomplete

NOTE: The October-December 2006 issue of the *Army Medical Department Journal* contains a special section of 6 articles addressing electronic medical records within the Department of Defense in general, and Army medicine in particular. Those articles are complementary to the information presented by MAJ Smith in this article. That issue of the *AMEDD Journal* is available online at http://www.cs.amedd.army.mil/dasqadownload.aspx?policyid=160.

The Editors

doeumentation that only becomes detailed upon a casualty's arrival at MHS hospitals is akin to writing a book and skipping the first several ehapters.

Some of the most challenging and complex injuries seen during OIF are the result of blast trauma. There have been hundreds of amputees and eases of mild traumatic brain injury. Providers caring for these injuries not only need to know the first few chapters of previous care delivered to these Soldiers, thcy also need to know the most detailed story that ean be written. Imagine yourself as the recipient of this eare: how important would it be for you to know your provider is making decisions based upon thc details that were electronically documented at your point of injury?

From a top-down view, the currcnt state of our electronic medical rccord system can be described as separate, stove-piped systems and applieations across the spectrum of care. Many of these systems are small and standalone, while a fcw are larger but still limited in their scope and range. Some of thc systcms interface with eaeh other and others arc complctely disconnected. The large systems include DHIMS, Armed Forces Health Longitudinal Teehnology Appli-cation (AHLTA[1]), and the Veteran's Health Information Systems and Teehnology Arehitecture (VistA), while the smaller ones are independent initiatives that are focused on a certain specialty of care.

Working with and supporting a nonhomogeneous elec-tronic medical record system can be confusing; however, by reflecting on thc recent history of information technology, the current situation is better understood. The trend influencing the current state is the incredible rate with which information technology has improved in capability, as well as its rapid perme-ation throughout culture and business processes. Fifteen years ago, desktop eomputers in work areas and in homes were the exception, Microsoft was just starting to work in networking teehnology, and the internet was infrequently accessed by the average military professional. During this time, the DoD began the development of an electronic medical documen-tation solution for deployed forces.

The current state of our EMR is a produet of these efforts and limits. While significant progress has been made in the DoD EMR, there is still mueh room for improvement. Yingling asserted the following:

> To prcpare forces for war, the general must visualize the conditions of future combat. To raise military forces properly, the general must visualize the quality and quantity of forces needed in the next war. To arm and equip military forces properly, the general must visualize the materiel requirements of future cngagcmcnts. To train military forces properly, the general must visualize the human demands on future battlefields, and replicate those conditions in peacetime excrcises.[2]

The same principles leaders apply to suecess in warfare can be applied to a suceessful EMR—visualization of futurc conditions, quality and quantity of forces, required material, and an assessment of human demands.

The challenges to the EMR have been rooted in the simultancous development of multiple systems that were not centrally managed and coordinated. The multiple systems arc a result of separate initiatives started early in the information technology development curve, with each having a separate scope and goal. The garrison/peacetime AHLTA focuses on fixed faeility eare to DoD health care beneficiaries. The VA's VistA has many merits, but was designed and is used by a department outside of DoD, and the multiple tools developed by DHIMS are designed for use in a deployed theater. Larger HIS tools, along with many smaller, independent HIS tools, must be inte-grated into a single portfolio of interoperable systems that generate a high quality, longitudinal EMR. While many initiatives havc demonstrated success from their respective vantage points, a strategic review of the direetion, eapability, and cost of the DoD EMR is needed.

CURRENT HEALTH INFORMATION SYSTEM CHALLENGES

Within the medical task force, providers use multiple systems and experience first hand the challenges associated with implementing electronic documentation. This experienee is unique because the documentation of care starts only from the position of the deployed foree. Further, the deployed force healthcare documentation must fully navigate the entire myriad of automated systems, all the way back to the Clinical Data Repository.

The challenges of successfully documenting care in the EMR start with provider training and preparation to electronically document patient encounters. The principal interfaces used are DHIMS tools: AHLTA-Theater (AHLTA-T) used to document outpatient care, and the Theater Medical Information Program Composite Health Care System Cache (TC2), used to document inpatient care. MC4 fields these systems to the Army with training available in the United States through one of 3 regional offices. Despite the requirement to electronically document care, training is not mandatory for deployment, rather it is only recommended. Furthermore, no proficiency standard exists for users. One of the primary complaints by deploying providers is their unfamiliarity with MC4; they feel that the predeployment training they received has been inadequate in many areas. To address this, the AMEDD Center and School has recently taken responsibility for developing MC4 sustainment training, to include defining tasks, conditions, and standards.

The millions of dollars spent on the separate EMR programs and the expectation for continued expenditures demand conscientious leaders to strategically review the current state and engineer a plan for the future. The current plan is engineered around technology solutions anchored in the past that are not easily adaptable to emerging requirements. For example, the MC4 distributed server design has a separate AHLTA-T server at all clinics and CSHs. Additionally, there are separate inpatient TC2 servers at all level III CSHs. These separate servers are effectively isolated islands of care documentation.

This distributed server design presents many challenges. The most significant is maintenance and security. A high level of daily, weekly, and quarterly maintenance is required on each server and approximately 1,000 MC4 laptops. The maintenance support plan for MC4 computers relies on non-MOS* specific unit level administrators assigned by the medical unit. This is usually a Soldier with a strong computer background. The unit level administrators receive training and are expected to perform essential backups and daily maintenance required for successful EMR transmission. Given the approximately one thousand MC4 computers across the Iraq theater of operation (ITO), there are a thousand points of potential failure. Within the divisions, the second tier

*Military Occupational Specialty

of support falls upon the battalion S6 (communications and information technology) sections that are not part of the AMEDD and have little or no healthcare management knowledge. The top level of support for MC4 is a contractor support structure distributed throughout the ITO. These MC4 contractors work diligently to maintain a complex system that has many technical flaws.

An additional challenge of the distributed server design is that the speed of technology advances outpace the speed of DHIMS and MC4 upgrades. Strict information assurance (IA) requirements demand secure strategic networks. Since the deployment of MC4 in 2003, the operating system has been out of date and has consequently become an information assurance risk. Deployed with Microsoft NT as the operating system in 2003 when Windows 2000 was the standard, the current version of MC4 includes the Windows 2000 operating system, while Windows XP is the standard. The next release of MC4 will have the XP operating system, however the question remains as to whether this release will occur before the next version of Windows becomes the new standard. The point is that information technology development is a dynamic environment, compounded by the pitfalls and challenges of IA security requirements. Our EMR platform must be able to adapt to the fluid IA landscape.

Changing the distributed server design model can eliminate or significantly minimize the maintenance and security requirements. A web-based interface connecting to a remote server is a proven model that is not only secure, but is also independent of deployed server and client hardware requirements. Web-based interfaces to remote servers provide many functions across numerous other disciplines and, in some cases, are successfully used as part of the DoD solution. Examples include the Theater Medical Data Store (TMDS), and Corporate Dental Application. Web-based applications are not only an industry standard, but comply with IA requirements and do not require the heavy maintenance cost in dollars and man-hours that is part of the current distributed server design. The comparison of the distributed server solution and the proposed web-based or thin client solution further makes the case for a strategic review of how to proceed for future HIS design and development. However, challenges exist, such as the theater network

infrastructure available in theater is not always robust enough to support extensive web traffic. Also, joint requirements call for an HIS that can function on ships with extremely limited bandwidth.

The next generation of health information systems should have a combination of both standalone capability and web-based flexibility. Additionally, the future solution must require minimum user maintenance as well as have the ability to keep up with changing security standards. The development of such a solution is a challenging endeavor, but one that must be pursued. Solutions include a more robust AHLTA-Mobile device coupled with the continued use of very small aperture terminal systems, and the possibility of thin clients connected over a local area network.

Perhaps the most significant challenge in assessing the viability of the theater EMR has been the measurement of reliability. Between September and December 2007, Task Force 62 performed 18 audits of 1,284 AHLTA-T encounters across the ITO. The goal of the audits was to test the reliability of AHLTA-T encounters reaching and being accessible in TMDS. The study revealed a 93% reliability rate for a first time reference to TMDS for encounter results. Most missing encounters were recoverable within DHIMS, ultimately showing a reliability rate of 99% for subsequent encounter references. As of 27 July 2008, 4 encounters remain missing.

There are several potential causes of this problem. Lack of regular maintenance (daily, weekly, monthly on each MC4 computer) could have contributed to some of these errors. Another potential cause of the 4 remaining missing encounters (and the one proposed by the DHIMS and MC4 technical experts) is that an MC4 configuration altered to adhere to IA security requirements can cause encounters to be lost. These modifications include updating the antivirus program, installing common access card software, and updating the Microsoft Office application software. Another potential cause for these errors is the instability of AHLTA-T software that has been described by DHIMS technicians as "not fault tolerant." A future release of AHLTA-T will include an expeditionary framework design that is expected to be more fault tolerant and eliminate most of these transmission errors.

One of the principal complaints from providers across numerous deployments has been the interface challenges of TC2. The consensus is that the archaic text interface is not conducive to documenting care. A graphical user interface is currently under development within DHIMS that will provide a familiar Windows interactive environment. This upgrade, scheduled for release in calendar year 2008, should facilitate some easing of electronic medical documentation procedures.

Efforts to improve and expand the interoperability of the numerous health information systems must continue. The recent merge of the joint patient tracking application and TMDS is a good step. As DHIMS continues to develop solutions, focus should be on a single login. Many of the different health information systems address a niche medical need, and are not strategically integrated in the portfolio. Under the current design, a typical provider seeking to properly deliver care must log onto multiple systems, and sometimes multiple computers. Each of these requires a separate account login and a separate action to activate the application. There are some tie-ins. However, the constant is that full delivery of care, and subsequent documentation, is complicated; not intuitive, user friendly, nor convenient; and in desperate need of further integration.

A byproduct of these discontinuous systems is the challenge of providing data queries for command decision support, which results in great frustration among the leaders of military healthcare. In general, these systems offer limited query tools. Further, with the separation inherent in the current design, the ability to mine data across systems is problematic at best, and in some scenarios impossible. In addition to the myriad of separate systems, CSH staffers find the tools and functionality often lacking and insufficient for their needs. This results in workaround solutions, such as the development of Microsoft Access Databases and Excel spreadsheets that are used to track pertinent patient data. The impact is that data gathered locally are not completely captured in the EMR, and are not real-time. There are copies of these work flow data tools in DHIMS, and there are plans to incorporate them into future releases of DHIMS products.

The end result of the disparate medical systems used to document care, combined with the less than 100%

reliability of AHLTA-T, is an envelope containing paper copies of a Soldier's medical record that is sent with the Soldier when he or she is evacuated from theater. Paper records moving with the patient is an indication of how much work remains in the improvement of our EMR.

Separate HIS solutions exist as a result of the lack of overarching corporate direction and encompassing guidance driving all health information systems. These solutions are good ideas that do serve a legitimate medical need, however, without proper coordination, prioritization, governance, and integration with a larger HIS strategic plan, navigating these systems causes frustration as well as man-hour and monetary expense inefficiencies. The 62nd Medical Brigade Chief of Clinical Operations, COL Susz Clark, said it best as she described our EMR, "The way we document care is not the way we deliver care." Understanding how care is delivered in theater must be the driving force behind the development of health information systems. The DHIMS organization, responsible for the development of deployed systems, has been very responsive to feedback and input from the 62nd Medical Brigade, and has taken steps to improve the immediate product as well as implement changes that will affect future releases.

THE ROAD AHEAD

The complexity of DoD health information systems is extensive. The only way the AMEDD can successfully address these concerns is to communicate through direct human interaction and involvement. The theater needs can only be fully assessed from the perspective of the deployed force—the functional users. The leadership of DHIMS and MC4 should remain in theater assessing the application of their tools while interacting with the Soldiers who use these systems. As important as the logical data connections are to the use of these tools, so are the human connections that

must take place for top decision makers to fully communicate with the forward deployed providers.

The above discussion points out the challenges with health information systems that healthcare personnel experience in the course of mission execution in-theater—the ultimate test for the utility of an HIS. There are times during an operation when it is appropriate to pull back, regroup, and evaluate the potential for a new plan. The leadership of DoD and AMEDD should assess our current HIS solutions from the perspective of the deployed force. The current design is neither cost effective nor manpower efficient. Furthermore, it does not fully satisfy the current documentation requirements. Just as generals must visualize the conditions for future combat, so too must the evolving technology landscape be visualized and adaptive changes made.

The ultimate goal of military healthcare system documentation must be a top quality electronic medical record that facilitates care of the Soldier from the point of injury through enduring care within the Veterans Health Administration.

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Medical Equipment Standardization in a Maturing Combat Theater

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US Army medical units have supported Operation Iraqi Freedom (OIF) for more than 5 years. US forces have transitioned from conducting full spectrum operations to primarily counterinsurgency operations. As the situation improved with regard to stable positioning, security, and the improvement of infrastructure within our bases, there was, unfortunately, little standardization of the various aspects of health-care support, including medical equipment, beyond that which the individual units had implemented.[1] Each newly arrived unit essentially reinvented the approach to executing the mission that their predecessor had followed during their tour. With maturation of the theater of operations, the environment became more conducive to efforts to standardize both equipment and supplies. The Task Force 62 Medical Brigade Headquarters had great success in standardization efforts and made substantial progress in the development of a standardized equipment guideline. The keys to success in this endeavor include command emphasis and a combined effort between the clinical leadership and logisticians working synergistically to achieve the same end state: standardization of medical materiel.

Counterinsurgency operations in the Iraq theater demonstrated the lethality and destructiveness of the improvised explosive devices, explosively formed projectiles, and indirect fire. The resulting casualties stimulated the reengineering of tactical combat casualty care. OIF represents the first protracted, large-scale, armed conflict since the advent of civilian trauma systems. Collaborative efforts among the joint military forces of the United States initiated development of a theater trauma system in May 2004. The implementation of a theater trauma system demonstrated numerous opportunities to improve the outcome of Soldiers wounded on the battlefield. As of the end of July 2008, there had been 30,490 service members wounded in action.[2] The covenant of the Iraq theater medical task force is to provide the highest level and quality of healthcare to patients that transit the continuum of care in Iraq. The key to this is to ensure that the theater has the right clinician, at the right place, with the right equipment to preserve life and prevent suffering.

Medical units deployed in support of the initial phase of OIF with standardized MTO&E* medical assemblages. The assemblages include standardized unit sets, including nonexpendable, durable, and expendable medical supplies and equipment. The medical assemblages were designed to provide treatment primarily to service members in generally good health conducting offensive or defensive operations. The baseline service medical assemblages and equipment items are not ideally suited to optimally support the bulk of the current patient caseload within theater. With the increasingly stable security situation, operations in Iraq gradually changed to mostly stability operations, with the focus being on counterinsurgency operations. Units providing medical treatment and hospitalization developed new equipment requirements as their missions changed. The requirement to treat contractors and Iraqis, from infants to the elderly, drove equipment needs beyond what standard medical assemblages could provide. Units ordered what they required to support their healthcare mission, but there was no task force level effort to standardize equipment requirements across the medical task force. Individual and piecemeal service and unit replacement efforts, while bringing needed and enhanced medical care capabilities, brought some new medical equipment items into the theater with incomplete or partial logistical support tails. This resulted in equipment being nonmission capable for significant periods of time due to lack of maintenance and equipment repair parts.

Based on the Task Force 62 Medical Brigade Commander's guidance upon assuming the medical

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*Modified Table of Organization and Equipment: Defines the structure and equipment for a military organization or unit, adapted to the special circumstances of that unit.

task force mission, the Task Force Deputy Commander for Clinical Services (DCCS) and the S4 (logistics) section developed a plan to implement a monthly task force medical equipment validation and standardization board (MEVSB) involving both the DCCS and medical logistics personnel of our direct reporting units. *Army Regulation 40-61* states

> ...materiel standardization can support clinical efforts for utilization management and development of outcome-based pathways and protocols.[3]

Establishment of the board would improve other aspects of healthcare standardization within the task force. The MEVSB serves as a medical equipment standardization tool for the medical task force commander. As the name implies, the board both validates the unit's requirement and establishes a standardized materiel solution (ie, manufacturer, model). The board is guided by the following principles:

- Equipment should support a capability which is appropriate to the mission and role in theater.

- Equipment should represent a clear advantage to the patient and/or the units we support.

- Equipment should be sustainable within theater without creating overwhelming support problems.

- Equipment should be procured to be usable by subsequent rotations, not to support a one-time special skill.

- Equipment should be standardized within theater to the extent possible.

Task force subordinate units submit a letter of justification (LOJ), to justify an equipment requirement to (1) replace unserviceable/uneconomically repairable equipment, (2) replace lost equipment, or (3) replace an existing shortage. The condition code, which is used to identify the degree of serviceability, condition, and completeness in terms of readiness for issue and use, must be verified by the unit biomedical maintenance officer. That documentation becomes part of the LOJ process. Upon receipt of the letter of justification, the task force headquarters staffs the request with the clinical operations, operations (S3), and logistics (S4) sections. The staffing is focused on several considerations, including: clinical justification, currently used equipment (if applicable), maintainability, sustainability, required training, and standardization. Detail on each of the considerations is shown in the graphic (right).

Requests for equipment not previously approved by the MEVSB will be prepared for presentation at the next scheduled board. Minutes are recorded for each of the board proceedings. Once equipment requests have been validated, the requesting unit is provided with a written document authorizing them to order the equipment through their supporting class VIII supply support activity. To date, 65 types of equipment have been standardized within the task force. The US Central Command (CENTCOM) Surgeon further improved standardization efforts with the recent visit of an assessment review team of clinical equipment subject matter experts.

The Army utilizes a team known as the technology assessment and requirements analysis team. In keeping with this concept, the CENTCOM Surgeon requested a joint technology assessment for the purpose of establishing a standardized theater medical equipment formulary. The Joint Medical Technology Assessment Review Team (JMTART) was commissioned by CENTCOM to apply commonly accepted practices that each service medical logistics agency uses to support their US based medical treatment facilities in upgrading medical technology. The JMTART provided a valuable external perspective to assist the theater with medical equipment standardization. The JMTART visited all 9 level III medical treatment facilities in the CENTCOM area of responsibility in June and July 2008, and presented their recommendations in August 2008.

Task Force 62 standardization efforts, in conjunction with those of the JMTART, have validated modern equipment that is supportable and will both reap financial savings and streamline future medical task force standardization efforts. Standardization and follow-on life cycle management must continue in the

Medical Equipment Request Considerations	
Justification	Why is this particular equipment required?
On Hand within the Task Force	Is this equipment already in theater?
Maintainability	Who is qualified or will maintain the equipment?
Sustainability	How will the equipment be sustained (repair parts)?
Training Required	What level of training is required to optimally use the equipment?
Standardized	Is there a standard for the equipment?

theater to sustain the US standard healthcare that our service members and DoD civilians deserve. Future medical task force headquarters must employ medical equipment standardization efforts early in their deployment as a means to both manage the quality of healthcare delivered, and stay on the relevant and capable edge of the technology curve. Commanders, clinicians, and senior leaders should understand the tools they have available to ensure medical equipment life-cycle management and standardization to maintain the fleet of state-of-the-art medical equipment in a maturing combat theater of operations.

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Applied Ethics in a Combat Theater of Operations

MAJ Frederick C. Jackson, MS, USA

We all approach the subject of ethics differently. For every individual there is an interpretation of what is right and what is wrong; we all come from different backgrounds and different belief systems. However, in order for an organization, any organization, to be successful, it must rely on a set of core values and beliefs that are adopted corporately and shared individually. This is particularly true in the United States Army—the Army requires predictability. As junior Soldiers and leaders, we are taught early the importance of being "in the right place, at the right time, in the right uniform." The knowledge that those serving to our left and right are known quantities is an essential key to our Army's operations, in peace and in war. This predictability extends to our ethics and values; knowing your peers share and embrace the same ethical standard is crucial to the maintenance of good order and discipline within the Army, the Army Medical Department, and deployed units.

The Commander, Task Force 62 Medical Brigade (TF62 MED), identified a requirement for a training model to address ethical lapses within the task force. The purpose of this model was to explain, in plain language, some of the common ethical failures that subjected Soldiers to disciplinary action under the Uniform Code of Military Justice,* including perhaps even prison, and always put at risk careers, marriages, freedom, and sometimes even lives. As shown in Figure 1, the task force experienced a high level, relative to unit strength, of officer and senior noncommissioned officer misconduct. Incidents of adultery, inappropriate relationships, and the use of alcohol and pornography in violation of General Order Number 1[†] were frequent. In a single TF62 MED unit, every officer was relieved. The acts of misconduct and the resulting punishments were rank indifferent. TF62 MED initiated UCMJ action against Soldiers of every

rank, from colonel to private. The question became: Why?

The task force commander directed an examination of the misconduct occurring across the task force. He believed that understanding the reasoning and methodology behind ethical failures and misconduct could lead to a training module which would explain to every Soldier currently in, or entering, TF62 MED how to avoid common mistakes. Certain predictable behavior leads to certain predictable results—examining the UCMJ case files of those who had already failed could provide insight into how to mitigate future acts of indiscipline across the task force.
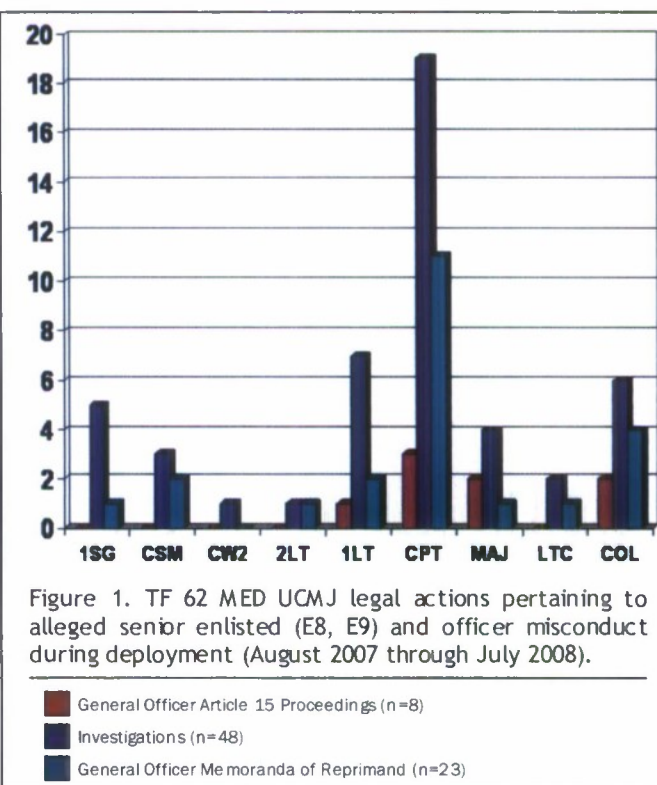

Figure 1. TF 62 MED UCMJ legal actions pertaining to alleged senior enlisted (E8, E9) and officer misconduct during deployment (August 2007 through July 2008).

- General Officer Article 15 Proceedings (n=8)
- Investigations (n=48)
- General Officer Memoranda of Reprimand (n=23)

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*The Uniform Code of Military Justice (UCMJ), a federal law,[1] is the judicial code which pertains to members of the United States military. Under the UCMJ, military personnel can be charged, tried, and convicted of a range of crimes, including both common-law crimes (eg, arson) and military-specific crimes (eg, desertion).

†US Army 5th Corps General Order Number 1 (03/19/2003).

An ethical value system is crucial to helping Army Medical Department personnel avoid some of the ethical "landmines" they will encounter while deployed in support of Operation Iraqi Freedom. Acts of indiscipline usually result in punitive action, but they also have the secondary effect of invaluable time lost to mission performance, as investigating officers are pulled from operational duties, units face the disruptions of investigations under *Army Regulation 15-6*,[2] and good order and discipline, trust ,and camaraderie are damaged. The effects of undisciplined acts are wide ranging.

The chain-teaching* module, Applied Ethical Framework, a part of TF62 MED's overall combat health support system, the model of which is shown as Figure 2, was the result of the Commander's desire to address acts of indiscipline across the task force. The applied ethical framework covers 7 ethical training modules, and includes several case studies of actual failures on the part of Soldiers and leaders. We designed the applied ethical framework training approach from the perspective that: the teaching would be accessible to all ranks; it would take less than 50 minutes to deliver; it would be visually interesting; and the overall tone of the brief was to aid in critical thinking, but not scold the Soldiers.

The 7 modules of the Applied Ethical Framework training package were core ethics, the patient-centric task force module, financial stewardship, ambassadorship, personal courage and integrity, behavior in accordance with *Army Regulation 600-20*,[3] sexual harassment, and inappropriate relationships.

The remainder of this article describes the Applied Ethical Framework training package and its purpose in providing assistance to Soldiers in building, maintaining, and remaining within a sound and proven ethical framework.

THE CORE ETHICS MODULE

The ethical framework is a basic enabler of success for the TF62 MED combat healthcare support system. It is vital, therefore than each individual's values support actions which maintain that ethical framework. TF62 MED bases its ethical framework on the idea of Family, leadership, ambassadorship and growth (F.L.A.G.) (see Figure 3), which represent the Army values in action. Part of the TF62 MED Commander's continuous operational focus was the inculcation of F.L.A.G. across the task force footprint.

If the Army values and F.L.A.G. each describe what we should do, then the core module must address some reasons why we vary from sound ethical practices and commit acts of indiscipline. The focus of the applied ethical framework was to reach 2 types of Soldiers:

1. Soldiers who just do not know the regulations and policies. We wanted these Soldiers to know that the Army has a regulation for everything; find a supervisor or leader and ask.

2. Soldiers who just do not understand the letter or the spirit of the regulation. Again, we wanted them to know to ask a leader; alternatively, they could ask an equal opportunity or inspector general representative—someone will have the answer to the question.

Unfortunately, we also identified the third type of Soldier: the Soldier who will not comply. This was the smart Soldier; the Soldier for whom Army regulations and command policies did not apply. We often encountered this individual. The case files of the Multi-National Corps-Iraq Judge Advocate General are filled with the stories of those Soldiers who would not comply. What these Soldiers fail to understand is that the Army has been in Iraq for awhile; every type of misconduct has been seen, recognized, and subjected to the Uniform Code of Military Justice. What we were able to pull from the case files were the specific patterns of behavior that resulted in acts of indiscipline.

Just about every investigation, Article 15[†] proceeding, or courts-martial centered on one of 3 things: power, money, and/or sex. We are Soldiers, but we are also

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*Chain-teach is a method of unit training in which designated unit members first receive the training, after which it is their responsibility to train another level of personnel, who in turn will continue training others. The training continues in a pyramid fashion until all personnel requiring such training have received it.

†Nonjudicial punishment (NJP) refers to certain limited punishments which can be awarded for minor disciplinary offenses by a commanding officer or officer in charge to members of his/her command. Article 15 of the Uniform Code of Military Justice, and Part V of the *Manual for Courts-Martial*,[4] constitute the basic law concerning NJP procedures. The legal protection afforded an individual subject to NJP proceedings is more complete than is the case for nonpunitive measures, but, by design, is less extensive than for courts-martial.
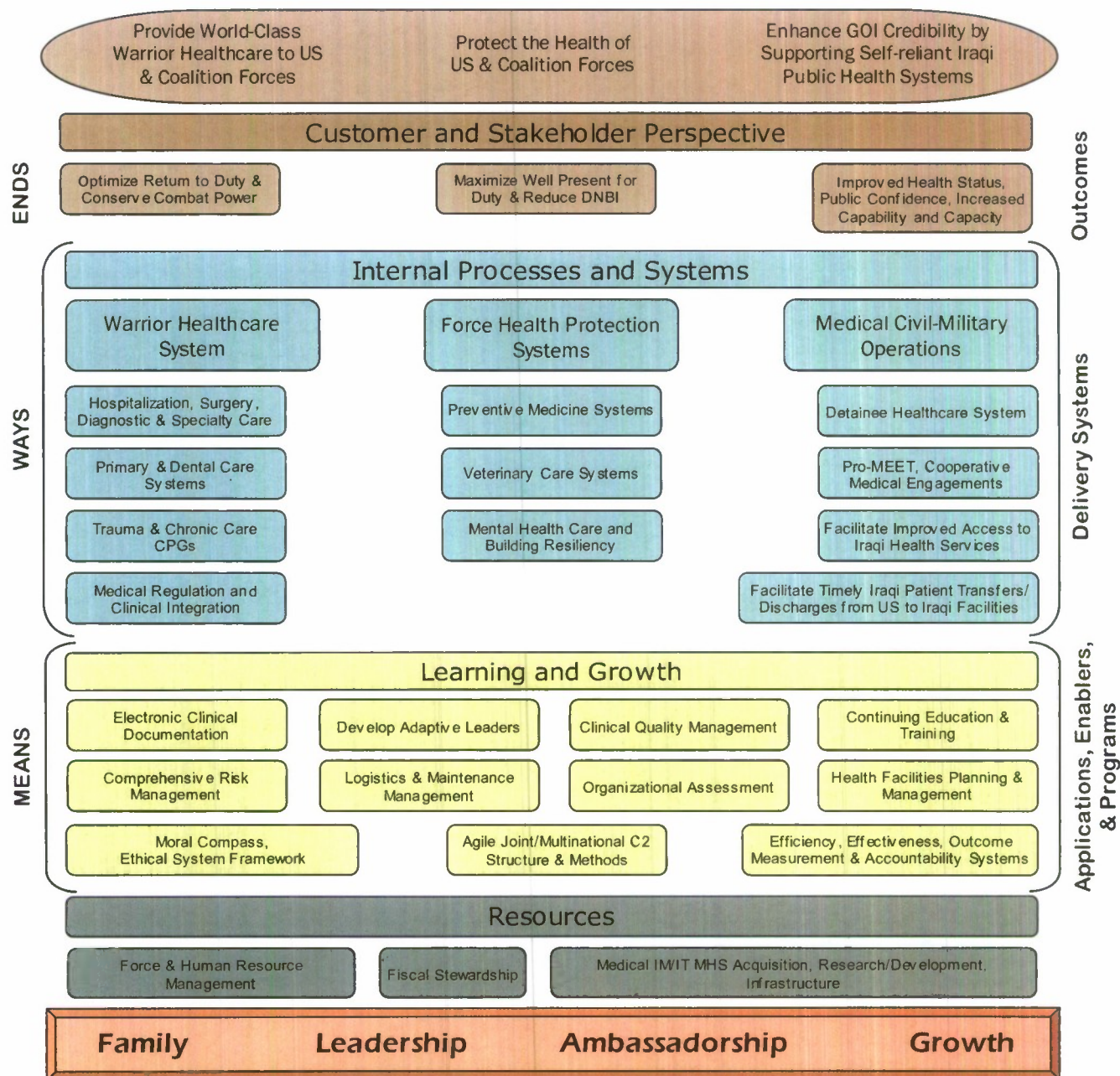
Figure 2. The Task Force 62 Medical Brigade model for development and execution of the Combat Healthcare Support System. The model was conceived and designed to optimize healthcare support in the mature combat theater while operating in a counterinsurgency environment.

human. By not maintaining the appropriate boundaries, we subject ourselves to the temptations of power, money, and/or sex. Under the UCMJ, we cannot be punished for temptation, however, succumbing to temptation, committing the act of indiscipline, is punishable under the UCMJ. We needed a methodology of identifying and mitigating "improvised ethical decision-making."

The TF62 MED Commander insisted that every decision made by his subordinate commanders would be able to withstand inspector general inquiry, equal opportunity questioning, and congressional and civilian authority oversight. In short, he insisted on transparency as the key to organizational integrity. With transparency in mind, we laid out the steps to

achieve ethical failure points following the simple mantra, "it is what it is."

Ethical violations begin at the top of a slippery slope. A pattern of behavior and thought leads to conclusions not in line with Army regulations and policies. We found that an individual starts acting based on "thinking (assuming) or feeling." These individuals were not well grounded in the standards, regulations, and policies that govern our organization. Instead, they operated on "gut" feelings. Next, we saw a tendency to "situationalize" ethics; we saw statements such as "we are at war" or "we are in Iraq." The individuals convinced themselves that Army standards of behavior no longer applied outside of the continental United States (CONUS) garrison environment, when, in fact, those very Army standards of behavior were designed to help us maintain discipline in combat and under combat conditions. "Self-justification" was another frequently observed behavior. Soldiers convinced themselves, usually in instances of inappropriate relationships, that somehow it was "OK." Over and over, in case after case, these type behaviors appeared: thinking or feeling, situationalized ethics, and self justification. We saw these as the steps leading to the triggering of improvised ethical decision-making.
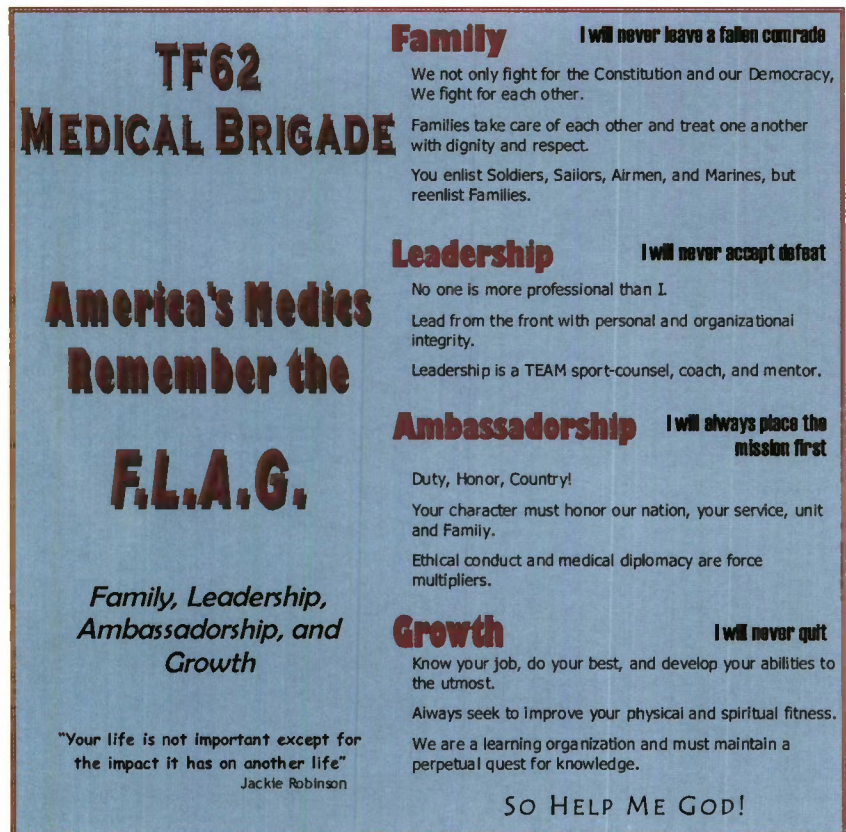

Figure 3. Reproduction of the in-theater poster displaying the tenets of the F.L.A.G. institutional philosophy developed by the TF62 Medical Brigade as the foundation for the combat healthcare support system.

The teaching of applied ethical framework stressed to Soldiers the importance of setting limits as represented in Figure 4, of conducting an honest self-assessment and establishing strong boundaries to guide themselves. By remaining within a strong ethical framework, Soldiers would be able to avoid those actions which violated Army regulations and policies. We stressed the role of perceptions as a vital component of the strong ethical framework. As individuals, we cannot control peer or group perceptions. However, our actions play an important role in shaping group and peer perceptions. By having a strong ethical framework, one which did not "edge up" against or shortcut Army regulations and policies, we ensure that our peers have the correct perceptions of our actions. The applied ethical framework addressed the role of honest
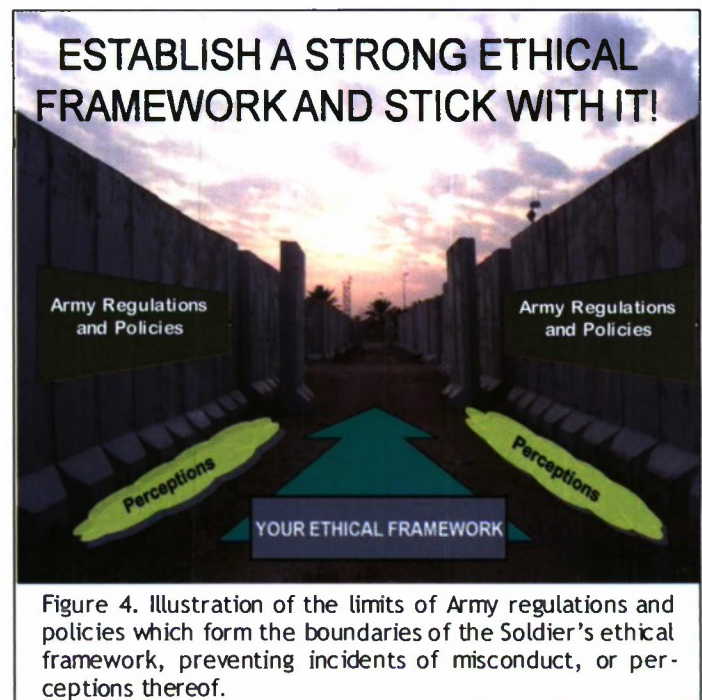

Figure 4. Illustration of the limits of Army regulations and policies which form the boundaries of the Soldier's ethical framework, preventing incidents of misconduct, or perceptions thereof.

identification of personal limitations, self knowledge, establishing blocks against temptation, and commitment to a strong ethical framework as key to avoiding improvised ethical decision-making.

Finally, Soldiers are taught ownership as part of the core module; ownership of Army values and ownership of personal responsibility. The TF62 MED Commander often stated that we are "entitled to our own opinions, but not our own set of facts." Ultimately as Soldiers, Army regulations and the Uniform Code of Military Justice determines what is right and what is wrong. We must ensure that our behavior, actual and perceived, is above reproach.

A PATIENT-CENTRIC TASK FORCE MODULE

The medical task force in the theatre of operations is a "patient-centric organization." But what does that mean? It means the patient—military, civilian, and detainee—is the sole reason we are there. Our core business is to meet the medical needs of our patients on the battlefield. As such each member of the medical task force was assigned the individual responsibility to act as patient advocates; the applied ethical framework taught that we demonstrate patient advocacy in a number of ways.

We start with patient privacy. Soldiers were taught to ask "how much do I really need to reveal" about a patient. One of the greatest barriers to care is the perception that some treatments or procedures are embarrassing. Mental health and the need to maintain a resilient force is one such category of care we strive to destigmatize. In their training as medical professionals, Soldiers were taught that they are the guardians of patient privacy, and that patient privacy is not only a right, it is a law. We stress that commanders have a limited right to know, especially when an issue may impact the overall health of their commands, but that Soldiers need to be vigilant, and, when erring, to err on the side of patient rights.

Next, Soldiers are taught to view patients as customers—not robots. Soldiers are taught to always aim to be the best; that we measured our care against evidence-based standards and best healthcare practices as codified by tactics, techniques, and procedures in CONUS-based medical treatment facilities. The applied ethical framework defined this as the quality of care we deliver. The TF62 MED Commander committed the task force to building a combat

healthcare support system which would validate our stated mission of providing world class healthcare. Key to world class healthcare was the recognition of the dignity of human life. Soldiers learn to treat each life as unique and precious.

Soldiers receive instructions on detainee care. The instructions were blunt and to the point: when detainees are under our care, then they are patients, period. The medical task force does not support 2 standards of medical ethics; one for our guys and one for those guys. Our medical ethic is not situational, and as such the delivery of detainee care is no different from the care we provide our Soldiers, Marines, Sailors, and Airmen.

FINANCIAL STEWARDSHIP MODULE

The facts surrounding financial impropriety are usually very simple. Most instances of financial impropriety involve small dollar amounts, and represent a misuse of government resources for purposes the individual could have easily met with his or her own means. Some financial improprieties were even approved by superiors. Nonetheless, Soldiers are expected to use their own judgment and should not rely solely on the judgment of their superiors when it comes to ethical conduct. Ethics are an individual responsibility.

As custodians of the taxpayer dollar, Soldiers are taught to conserve the nation's financial strength. Part of this process is the establishment of sound financial controls, or placing a policing mechanism upfront in that process. In the Iraq theater of operations, we utilize bulk funding—actual US cash—to meet operational needs. This access to cash could represent a temptation, but it is a temptation Soldiers avoid by actively seeking to be kept accountable.

We teach Soldiers that our nation spends some $80 billion a year prosecuting the Global War on Terror. A large part of that money ends up in Iraq. Part of conserving the financial strength requires asking simple questions:

- ➢ Does this purchase further my deployed mission?
- ➢ Can I defer this purchase?
- ➢ Is there a cheaper option?

Our nation will spend what it takes to win the Global War on Terror, but it should not be forced to pay for our personal desires. The resources we have are not infinite, nor are they for personal use.

AMBASSADORSHIP MODULE

This module stresses that all Soldiers will behave as ambassadors for their unit, the Army Medical Department, the Army, and our nation.

Soldiers are taught that the enemy is intelligent and an opportunist. He understands that he will not defeat us conventionally, the likelihood of Al Qaeda and associated militias rolling tanks down the streets of New York City approaches zero. The enemy knows this, so how does he plan to defeat us?

He seeks to defeat us strategically through informational operations. The enemy loves propaganda and spreads it at every opportunity. Creating negative propaganda about our forces does 5 things for the enemy:

1. It allows him to destroy our international legitimacy.

2. It allows him to erode our domestic support.

3. It allows him to win the "hearts and minds" of local nationals.

4. It allows him to cause us to doubt our mission.

5. It allows him to win support to his side.

The enemy spreads his propaganda through technology and tried-and-true methods from the printing press to simple word of mouth. Every time we commit some unethical act, we give the enemy a strategic win. Even the perception of impropriety injures our cause. As Winston Churchill observed, "A lie gets halfway around the world before the truth has a chance to get its pants on."[5]

Ambassadorship is one of our responses. Ambassadorship is how we conduct ourselves and how we perform. Ultimately, ambassadorship is the story we tell through our actions. A key and essential part of how we demonstrate ambassadorship is in the treatment of our patients—fairly—in compliance with accepted medical standards.

Any maltreatment of patients is an "unforced error" that gives the enemy a strategic win.

PERSONAL COURAGE AND INTEGRITY MODULE

The applied ethical framework package teaches the importance of personal courage and integrity. The intent is to make every Soldier a stakeholder in the process of sound behavior. Soldiers are encouraged to display personal courage and integrity by reporting ethical lapses and failures, without fear of retribution. The training module stresses to Soldiers that if the ethical framework is what you know to be right, then personal courage and integrity is what you do with that knowledge. People will often "act out" against perceived injustices; provided they do not personally have to take responsibility. The training stresses a simple rule of thumb:

> If you do not have the courage of your convictions, it is because you do not have convictions.

Personal courage is doing what is right and correcting what is wrong, no matter the cost. Personal courage is not dependent on who you hang around with, what your position is or where you are. Personal courage is the ability to take ownership of what is right. Personal courage keeps the Army strong. As an organization, we are respected because what we do is open to inspection, always. We do not hide. The Army has many management controls, and Soldiers were encouraged to use those controls.

ARMY COMMAND POLICY BASED BEHAVIOR MODULE

Army Regulation 600-20[3] addresses our most important resource, our people. It tells us

> ...military discipline is founded upon self-discipline, respect for properly constituted authority, and the embracing of the professional Army ethic with its supporting individual values.[3(p21)]

That excerpt clearly explains the Army's concept for good order and discipline. Again, the Army has regulations for everything. Commanders do not have to make up our values, our ethics, or good order and discipline as we go along. Nine times out ten, the lack of military courtesy—familiarity—and Soldier conduct is what starts the ball rolling towards unethical behavior. Military authority must be exercised promptly, firmly, courteously, and fairly.

Army Regulation 600-20 provides a prohibition on relationships between Soldiers of different ranks. The trend in theater for Soldiers deviating from those prohibitions shows the following: "Compromise or appear to compromise," "actual or perceived," "involve or appear to involve," "actual or clearly

predictable." Perceptions of our actions, which are often heard on the "rumor mill," are just as important as the actions themselves. Leaders must ensure that perceptions and realities line up.

Leaders maintain good order and discipline in several ways:

- They address all problems when raised, and do so directly and promptly.

- They understand that there is no "grace period" for compliance with Army regulations.

- They know that perception is as injurious to good order and discipline as actual acts.

- They deal with issues before they become problems.

- Leadership is an action verb, not a position or title.

Leaders must constantly act to ensure good order and discipline are maintained within their units.

SEXUAL HARASSMENT MODULE

When a command responds to complaints of sexual harassment, the leaders often hear that Soldiers, whether they are victims, witnesses, or perpetrators, thought the acts were "all a joke." With sexual harassment, the closer an individual gets to the line, the easier it is for actions to be viewed by an impartial observer as sexual harassment. Sexual harassment is a violation of *Army Regulation 600-20*. Like many of the issues discussed above, being a perpetrator of sexual harassment can land a Soldier in the "danger zone" of an improvised ethical decision.

What gets a Soldier into the realm of sexual harassment is a repeated pattern of behavior that targets the same person or groups of persons, again and again. The Army breaks sexual harassment into 3 categories. Verbal and nonverbal patterns often build into some sort of physical act of harassment. The maltreatment of Soldiers (which is what sexual harassment really is) will never be tolerated. Army policy seeks to handle cases, especially unintentional cases, of sexual harassment at the lowest level possible. These are the informal approaches. Using the direct (talking), indirect (letter writing), or third party approach (having a peer speak on one's behalf) will

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Earn an Article 15 Procedure for Adultery/Fraternization!
Classic Behaviors

1. Opposite gendered "workout partners" or "smoking buddies"
2. Constantly "hanging around" the work area of the other person
3. Sending or receiving emails and instant message chats of a familiar or suggestive nature
4. Spending time alone away from one's assigned place of duty
5. Hiding: attempts to wipe clean computer hard drives, meeting "off-site," unexplained absences during the duty day
6. Displaying casual familiarity in the workplace either through verbal or body language: using first or nicknames, touching, "back rubs," or leaning closely in a way that violates normally established personal space
7. Having conversations that are intimate (sensitive, personal, not necessarily sexual) which end when others come near
8. Visiting the quarters of Soldiers of the opposite gender alone
9. Finding that special person who is a "really good listener who understands what I'm going through"
10. It is common for one to use intimacy to get sex, while the other uses sex to get intimacy.

Though there are many other signs not listed here, the cumulative effect of engaging in these predictive behaviors normally leads to inappropriate relationships.

Figure 5. The 10 key indicators of the potential for, or existence of, an inappropriate relationship, as described by the TF62 MED ethical framework training package.

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usually do the job. But if the behavior continues, or if there is an identifiable pattern, it should be reported to the chain of command.

The key is that the behavior stops immediately. There is no grace period.

INAPPROPRIATE RELATIONSHIP MODULE

Inappropriate relationships are perhaps the most corrosive form of ethical violations we saw. Inappropriate relationships between Soldiers of different ranks, Soldiers who were married, and Soldiers in positions of authority and trust did grave damage to the good order and discipline of units where these relationships took place.

Each inappropriate relationship basically follows the same depressing pattern. The applied ethical framework identified 10 key indicators, shown in Figure 5, that an inappropriate relationship was incipient or already ongoing. These indicators consistently repeated themselves. They were known patterns within units, they were revealed during investigations or mentioned during rebuttals to Article

15 procedures or requests for leniency. Inappropriate relationships occurred across all ranks and grades, but they all followed the same inevitable pattern.

The chain of command should try to stop individuals from going down this path. There should be some initial counseling. If the Soldier understands and complies, then the desired result is reached. If not, the commander should issue a "no contact order." If the Soldier understands and complies, the final step is avoided.

Most inappropriate relationships do not come to light until near the end of the tour. There have even been cases of redeploying Soldiers returned to Baghdad, from Kuwait, to face disciplinary action. Most cases of inappropriate relationships are brought to light in the course of unrelated investigations or events. Again, this is the pattern, over and over.

CONCLUSION

Our training stresses that the problem is not temptation. The problem, such as inappropriate relationships, comes from succumbing to temptation. Soldiers failed when they allowed personal wants to overcome their oaths, their Army values, and external commitments. We have temptations. Applied ethics requires indentifying those temptations up front and mitigating them. Army regulations make no allowances for passive ethical failures.

There are all kinds of temptations in a theater of operations. No one has ever been punished for being tempted. What is punishable is succumbing to that temptation. Everyone has ethical failure points. Some of those points are where temptation overcomes our defenses. Each individual needs to conduct an honest self-assessment and identify his or her specific temptations and failure points. Then, establish fences between them and the failures. Change what you do, where you go, or with whom you associate. Maintain an ethical situational awareness and be on the constant lookout for temptations that could end your career, destroy your honor and family life, or even place you in prison.

Control your individual ethical framework. An individual's behavior is what shapes the perceptions of unit leadership and peers. Ultimately, for Soldiers, Army regulations and the Uniform Code of Military Justice determine "what is right and what is wrong." We must ensure that our behavior, actual and perceived, is above reproach.

Ethics is an activity. The values and ethics we profess are also what we must continue to practice and use daily. We do this by grounding ourselves in the letter and spirit of Army regulations and policies. Army regulations address not just the action, but also the perceptions of those actions. We must ensure that we use a strong ethical framework which will ensure perceptions of others are in line with your actions.

Finally, although deployed, our ethics are based upon who we are, not where we are.

Set Your Ethical Bar High!
Make Sure You Clear It—Every Time!

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Health Facilities Planning: Determining Infrastructure Requirements for Form and Function from Clinical and Operational Capabilities

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ABSTRACT

This article describes the practical application of documenting the operational concept and scope of services for military combat hospitals providing joint health service support during Operation Iraqi Freedom. Due to the rapid changes that take place in healthcare in general, and, in particular, in a large, rapidly maturing military theater of operations, a clear operational concept and accurate scope of services is essential for hospital commanders and medical planners. A highly structured, yet flexible collaborative approach to health facility requirements development begins with a clinical concept of operations (CONOPS). Initial, up-front investment of time in the requirements process, and subsequent reviews and revisions result in a definitive description of the clinical and operational requirements. Those requirements in turn become the authoritative source for space, building systems, equipment, functional arrangements, and financial justification. A recent case study highlights the utility of the CONOPS document in translating the necessary clinical capabilities and capacities into facility space and building systems required to support them in a very tight schedule driven process normally not associated with the military construction program and in particular medical projects.

INTRODUCTION

Military healthcare in a deployed environment parallels many of the same characteristics Keating[1] used to describe civilian healthcare organizations: turbulent environments, constrained resources, expensive modernization requirements, and ever-changing customer expectations, just to name a few. However, even more overwhelming is the 100% to 200% turnover in personnel every year due to unit rotations; cumbersome, bureaucratic acquisition regulations; and a politically charged climate, not to mention the very real and dangerous environment that is pervasive throughout Iraq. Medical forces repre-sented merely 4% of the total forces in Operation Iraqi Freedom (OIF) in 2004[2] and there is acute political pressure to reduce the military force numbers and the medical footprint in general.

In testimony to the House Appropriations Committee in April 2007, ADM William Fallon, Commander of the US Central Command said

> Our MILCON [military construction] program is critical to continued combat operations and posturing forces for the future...These initiatives provide critical operational, safety, health, and quality of life support to our service members serving in Operations Iraqi Freedom in Iraq and Enduring Freedom in Afghanistan.[3]

The MILCON provides the resources that commanders in Iraq required to achieve their operational priorities and enable consolidation of the military presence in Iraq.[3] Military operations in a counterinsurgency environment present unique challenges to medical personnel. Like logistic support, medical or health service support to counterinsurgency operations is often accomplished from bases or forward operating bases that provide relatively secure locations.[4] Placement of medical facilities, hospitals in particular, is extremely important in that geography, time and distance, troop population densities, and the medical regulating within the combat health support system in the Iraq theater of operations (ITO). It is this "diversity of phenomena that can arise though the interaction of simple components" that tends to make the interactions of hospitals and other medical units complex. In other words, "the whole is more than the sum of the parts."[5]

A clinical concept of operations (CONOPS) is a tool that can aid investigation and understanding of the key capabilities, scope of services, and interactions within a medical treatment facility (MTF). The CONOPS is a foundational document which helps direct the design development of a health facility project. It is a forward looking document articulating to the design consultants a word picture of the future facility and scope of services to be provided in the new or remodeled space. The narrative is the format to "write the story" of how an area operates. The narrative should allow the reader to "walk" through the new area and "see" the operation in action. It should contain and describe the integration of each of the following functional elements, all in support of the services offered:

mission	population served
scope of services	manpower
equipment	supply
traffic patterns	procedural policies
adjacencies	

In effect, the CONOPS helps to simplify the complexity that surrounds day-to-day operations of a hospital organization. Also, it provides substance and unity in the planning between multidisciplinary functional areas that cannot be just assumed by the medical planner, clinician, engineer, or logistician.

BACKGROUND

Bases and construction in the ITO are governed by *US Central Command Regulation 415-1*,[6] also called "The Sand Book." Bases within the ITO are categorized as contingency bases, and are defined as "sites to support immediate contingency operations that are temporary in nature."[6] There are 3 subcategories outlined in The Sand Book:

Contingency Operation Bases (COB): Its purpose is typically a command and control hub and/or regional logistics hub; characterized by advanced infrastructure for facilities and communications for the expected duration of the operation.

Contingency Operation Sites (COS): Capable of providing local and regional operations, security, and/or humanitarian assistance relief. The site size and capabilities are scalable to support rotation of forces or prolonged contingency operations. Characterized by limited infrastructure and may be dependent on contracted services.

Contingency Operation Locations (COL): Capable of quick response to operations, security, civic assistance, or humanitarian assistance relief. A COL will be dependent upon COS or COB for logistical support; characterized by stark infrastructure primarily dependent on contracted services or field facilities.

Contingency base camp support construction is characterized as being either initial, temporary, or semipermanent:

Initial: Initial standard includes expeditionary (unit organic and military service provided equipment and systems) up to initial facilities designed and constructed on an expedient basis and characterized as austere requiring minimal engineer effort. Initial standard is intended for immediate operational units for a limited time (less than 6 months) and may require replacement by more substantial and durable facilities subject to Central Command (CENTCOM) approval if exceeding the initial standard.

Temporary: Temporary standard increases efficiency of sustained operations for use up to 24 months. Temporary standards provide a wider selection of minimum facilities, thereby increasing the efficiency, safety, durability, morale, and health standards of personnel on operations.

Semipermanent: Designed and constructed with finishes, materials, and systems selected for moderate energy efficiency, maintenance, and life-cycle cost with a life expectancy of more than 2 years, but less than 25 years.

Over time, military medical units have for the most part gradually transitioned from the large semimobile deployable medical system (DEPMEDS) comprised of expandable tactical shelters and frame tents into buildings of opportunity or modular trailer facilities. While deliberate planning by the Multi-National Force-Iraq Surgeon and Medical Command occurred for key hospitals, much of this transition occurred in an ad hoc basis, with each medical unit left to fend for itself, sometimes with the assistance of the base camp mayor's cell. The gradual shift into slightly more durable, cleanable, and maintainable facilities helped mitigate the exposure to the harsh environmental

conditions that challenge maintenance efforts, shorten medical equipment lifecycles, stress infection control programs of any hospital over the extended length of theater operations. Additionally, infrastructure requirements have increased due to the introduction of new equipment as outlined by Syvinski and Elliott,

> ...through the collective efforts of the Military Health System-Forward and use of state-of-the-art technology, conditions are set for a continual increase in hostile survivability as seen from 78.3% in 1991 to 90% in 2007.[2]

The new equipment introductions have been based on the actual healthcare requirements of the population being supported, and the skill sets of the assigned clinical staff.

In August 2007, on the heels of the transition of authority ceremony when Task Force 62 Medical Brigade took over the command and control of all echelons-above-division medical forces in Iraq, an opportunity to replace the last remaining DEPMEDS hospital presented itself. After identifying the obvious need to replace the dilapidated deployable hospital on the base, the COB Speicher received funds from a cancelled military construction project. However, time was of the essence as the project was already a couple of months behind schedule compared to the other fiscal year 2007 projects. Also, the required documentation which describes the proposed project, the operational requirement, the current situation, and the impact if not provided had not been completed at that point.

The hospital logistics officer and the utilities warrant officer measured every room, tent, vestibule, and ISO* expandable tactical shelter that comprised the hospital at that time. They submitted this as the requirement for the new hospital. While intuitively, a one-for-one replacement seems like an acceptable solution to most people, the logic and the assumptions upon which it is based are flawed. By replacing "like in kind" space requirements, the hospital would lock in the existing inefficiencies, functional inadequacies, and other deficiencies challenging healthcare delivery today. The total space requirement initially identified just by measuring interior dimensions was just over 30,000 sq ft. However after validating the space requirements derived from the CONOPS using Department of

Defense space planning criteria, the total space required before design alternatives were considered jumped to 60,000 sq ft. Inadequate space criteria combined with the fact that interior dimensions represent net rather than gross square feet, the space requirement dramatically underestimated the full space requirements by 30,000 sq ft, with the net to gross ratio alone representing 20,000 sq ft.

Through cooperative discussions with a focus on reaching the goals of the project, a decision was proposed by the Army Corps of Engineers TransAtlantic Program Center to incorporate two 6,000 sq ft options that, if exercised, would bring the project up to a total maximum 42,000 gross sq ft. The remainder of the shortfall, or nearly 18,000 sq ft, would be addressed by reusing the 2 existing hardstand buildings, reusing a few specific DEPMEDS containers, and eliminating or trimming some scope through a deliberate process that considered design alternatives discussed later. At the 35% design review, it was decided to plan and design the full 42,000 square foot project documented in the space program for design derived from the CONOPS. This decision making process was successful because the brigade health facility planner and the hospital leadership had a very good understanding of the clinical and other functional requirements due to a well documented CONOPS. The CONOPS guided the entire design process and was referred to frequently when certain design decisions were necessary.

DRAFTING THE CLINICAL CONCEPT OF OPERATIONS

The next 2 days were spent with the officer and noncommissioned officer-in-charge of each section within the hospital, conducting intensive interviews and documenting the relevant information. These discussions provided insight into the existing hospital (system) in place and already operating. This is important because we were not designing a new hospital, but replacing an existing facility. Transforming, replacing, modernizing, or relocating an existing system (or in this case a facility) is vastly different than starting from scratch.[7] There are existing contextual issues requiring consideration, such as current conditions, staff, equipment, policies, procedures, and what the desired end state mission and capabilities are at project completion. These contextual issues constrain the number of potential solutions available, but often there is still room for small,

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*International Organization for Standardization

incremental improvements, as well as large scale changes within the scope of the project. These opportunities can only be gleaned by first documenting what is currently done, and then what can and should be improved.

Determining the operational, clinical, quality, or capability shortfalls is absolutely necessary in order to improve operations. It requires great tact and judgment to determine what gaps should be addressed by the project. The facility is only one aspect or component in a complex system of systems comprised of people, technology, policies, procedures, information technology, logistics, maintenance, and command and control systems. Care must be taken not to look for deficiencies that do not exist or are inconsequential in the grand scheme. Judgment must be exercised in trying to resolve larger problems where facility constraints thought to be the problem are really only symptoms rather than the source of the malady. The clinical CONOPS serves as an excellent tool. It is designed to guide discussion through a series of questions that tease out the necessary information. It also documents other issues that may be invisible to hospital leadership and staff due to the complexity of the environment, allowing those issues to be brought to their attention later as necessary.

While formats vary, the important point to remember about the CONOPS is that it serves to document the vision for the future facility and the scope of services to be provided in the new or remodeled space. It should be noted that the CONOPS is not a description of the physical facility. Although drawing pictures may help the staff develop the narrative, a preferred floor plan is not part of the document. The format is designed for the clinical, administrative, and logistical staff to document their operational requirements and explain how they envision the operation of the hospital. An example CONOPS format is provided as a potential template that can be modified for a specific situation. The template is a series of questions that, when answered, can be reformatted and edited into a standalone narrative describing in fairly specific detail the intended scope of services, procedures, and adjacencies, and desired improvements upon the conclusion of the project.

COMPONENTS OF A CONCEPT OF OPERATIONS

Mission. Restate the current (unclassified) mission statement for the medical treatment facility and every section within the facility in general terms. This is usually straightforward for the overall facility, but often requires some thought for individual sections. Official missions of the organization includes type of patients, level of care, and any other mission requirements impacting the operation or ongoing design of the renovated facility.

Population Served. This identifies the served population, or to whom the MTF provides healthcare services, and can be broken out by percentages for each category. In a deployed environment there is less of a focus on whether the patient is Active Duty, Reservist, dependent, or retiree, and more on whether they are a US service member, coalition force, US government civilian, local national, contractor, detainee, or others. It should include gender ratios and ages of the served population. Also, this section identifies any projections of increases or decreases in the supported population due to base closures, consolidations, or openings.

Scope of Services. The scope of services section is probably the single most important part of the document. If careful consideration and detail are not included in this section, it is very likely that the facility which is designed and built will not properly support the full medical mission requirements. This section also provides appropriate boundaries on the scope of the project to prevent including capabilities and requirements that are not appropriate or exceed the resources of the MTF. The scope of services statements should not only discuss services currently provided, but also those services which have command endorsement and are not currently provided, and identify if the problem is due to equipment, space, and/ or personnel.

Manpower. Current Army Medical Department facility master planning relies on manpower as one key input variable in determining the appropriate size and shape of a facility. By aligning the facility to personnel requirements, and aligning positions to mission and capabilities, the resources closely follow. Facility planners will not program space for services where staffing does not exist, or is not forecasted. Additional considerations requiring discussion include identification of borrowed military manpower positions, volunteers, students, research, and any other unique types of personnel. Organizational structure

and/or product line affiliations should be discussed within this paragraph. Attach a manning document to supplement the information provided.

Equipment Issues. The Space and Equipment Programming System provides a comprehensive room-by-room equipment list drawn from a current database. There might be specific equipment requirements to meet patients' needs in the future. Briefly describe those requirements and any training needed to use the equipment. If the MTF is currently incapable of providing a full range of services due to a lack of equipment, it should be documented. If a draft equipment room content list has been developed, reference it here, or reference and include it as an attachment. Remember, if the effort is a renovation project, frequently the equipment must be moved and used in the swing space.

Supply. Considerations of changing supply requirements necessary for patient care treatment and procedures are documented in this section. Office and administrative supplies are discussed. This paragraph also outlines changes in types of supplies being used (eg, disposable versus reusable) that will affect storage space and restocking procedures. New equipment and/or new services may significantly drive logistical requirements and, in turn, resource requirements. Identify who (by position) within the section is responsible for supplies.

Traffic Patterns. Only after the previous paragraphs have been fairly well developed can this section be tackled effectively. At this point, detailed descriptions of traffic flow for patients, staff, materials and supplies, and waste management is required. After identifying the high traffic areas and choke-points, determine if any processes can be modified to avoid cross-traffic and/or constricted areas (laboratory, radiology, check-in, pharmacy waiting, etc). Describe how "way finding" should be handled in each area (eg, signage package, color schemes). Answer these same questions for transition (swing) space if applicable.

Procedural. Given current operations, describe what works well within the department and should be continued. Consider what is dysfunctional to prevent those habits from continuing in the new footprint. Provide examples of what workarounds had to be developed in order for the staff to accomplish their jobs, and for the MTF to fulfill its mission. Discuss

different ways of performing the current operation that would improve services to the primary customer, the patient. While tactical standing operating procedures may be useful in completing this section, avoid using them verbatim, especially if those procedures already have been modified, or will require modification to work in a fixed facility.

Adjacencies. Adjacencies describe the physical location of spaces to one another. There are at least 4 types of adjacencies that should be discussed in this section: department; functional area; room to functional area; and room-to-room. First, identify which departments should be next to each other (eg, radiology and emergency care). Next discuss functional areas that should be adjacent (eg, immunization to primary care). Then, determine what rooms should be aligned with functional areas (eg, isolation room near the reception and waiting spaces or dental chairs to x-ray). Finally, associate rooms that have adjacency requirements such as toilets next to ultrasound and treatment rooms.

Composing a detailed clinical CONOPS for anything larger than a very small aid station can be an overwhelming task. The collection of information can take days or even weeks, and very likely will require follow-up questions and clarifications. As such, the CONOPS should be considered a "living document," requiring periodic updating as more facts become available and assumptions are validated. It is likely that the scope of the project may grow and contract over time depending upon mission, cost, schedule, and other influences.

Therefore, it is recommended that the hospital initially complete the CONOPS development process as thoroughly and quickly as possible to document the preliminary description of the facility project's goals. The draft should then be reviewed by both hospital personnel and the health facility planner. This allows the health facility planner to continue with the remaining planning processes while the hospital completes another iteration of the CONOPS development. Each time the document is advanced, goals can be reformulated, priorities can be developed and the scope of the project adjusted.[8] If constraints in terms of approved scope or funding require elimination of space, then alternative strategies can be developed to address those items as separate projects as necessary.

Attempting to complete a CONOPS in a single draft without moving through the steps in the facility planning process will likely result in project delays, suboptimization, wasted time and money (particularly when faced with cost constraints), and in some cases may lead to early project failure.[8] All too frequently hospital leadership defines the problem as needing a better building, usually qualified with an expansion in space, which constrains the definition of the problem and the potential solutions too early. To mitigate this, the CONOPS serves as an organized and detailed methodology to identify and explain the project goals (provision of clinical capabilities) that should be addressed in the statement of work for the facility project.

THE SPACE PROGRAM FOR DESIGN

The next step of the overall facility planning process is development of a program for design (PFD). The PFD is a room by room, department by department listing of space requirements for the entire facility. The PFD is tied directly to and derived from the CONOPS. The PFD translates the clinical and operational capabilities, personnel, and other functional requirements outlined in the CONOPS into space requirements for the architect to develop a workable solution or design.

Unfortunately, throughout the ITO, construction projects, including those for medical purposes, are completed every day with very little consideration of the clinical and procedural implications.

Engineers and clinicians jump straight to the solution by drawing what they think they want without really defining the problem statement or goals of the project. Many projects are to correct deficiencies from previous projects, likely due to poor upfront planning and requirements development. This becomes a vicious cycle and in the end drives up costs, increases frustration, and reduces overall efficiency of the entire healthcare system. The environment in which medical organizations operate within the ITO is tumultuous. Unit and individual rotations, enemy actions, constraints on permanent construction, and varying methods and priorities of medical and nonmedical leadership make medical projects extremely difficult. The CONOPS provides a historical record of the decisions taken to develop the

project and generally stabilizes the overall project development process.

Finally, the CONOPS serves to validate the PFD as well as provide justification to operational and medical planners, military leadership, and resource managers. When decision makers are faced with tough decisions on project scope, the CONOPS informs and enables them about alternative scenarios to satisfy the operational and clinical space requirements. When a CONOPS does not exist, this becomes a risky guessing game with unpredictable results that are difficult to anticipate, let alone mitigate. Late adjustments to a project without a CONOPS, which leaves the decision makers uninformed, could mean delaying or even jeopardizing the project's viability.

CASE STUDY: DEPMEDS HOSPITAL REPLACEMENT AT CONTINGENCY OPERATIONS BASE SPEICHER

Existing Conditions

The existing level III hospital at COB Speicher consisted of a mixture of expeditionary structures (DEPMEDS ISO containers, and TEMPER [Figure 1]), and existing single story, hardstand buildings occupied by the hospital. Some improvements have been made to the MTF (CT[*] scanner added,
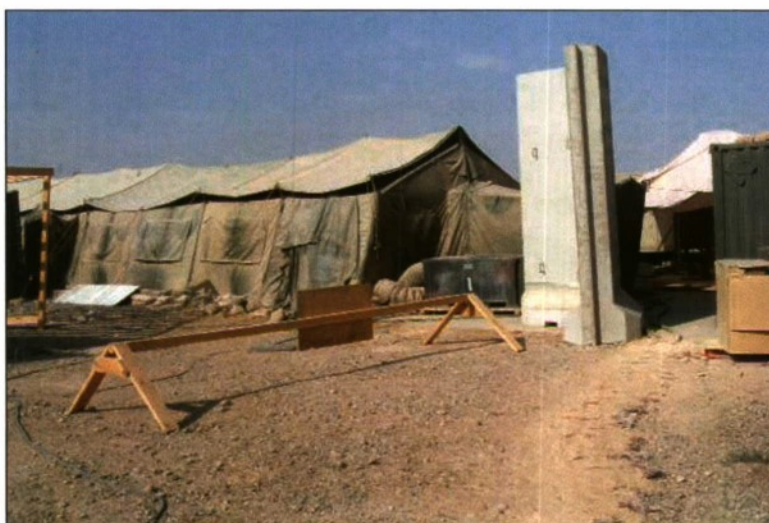

Figure 1. TEMPER (Tent, Extended Modular Personnel)

microbiology added to the laboratory), but generally the DEPMEDS ISOs and TEMPER had exceeded their service lives and require replacement. Figure 2 is an aerial view of that hospital showing how DEPMEDS

*Computerized Axial Tomography

Figure 2. Aerial view of the hospital at COB Speicher prior to construction of the replacement preengineered buildings.

and TEMPER layout on the site between the 2 existing hardstand buildings. The site identified for the new facility would be to the left of the area illustrated in the figure.

Power generation is provided by a combination of prime power, commercial, and military generators. Both 220V 50Hz and 110V 60Hz power are maintained in the building due to large quantities of DEPMED ISO and medical equipment requiring 110V power. The harsh environment and heavy electrical loads from the hospital exceed the available power capacity and there are frequent power failures. These are quickly resolved through a triple-redundant mix of commercial and military generators, but the resources and effort to maintain that redundancy are significant and unsustainable.

Inherent deficiencies in the DEPMEDS are inadequate dust control, noise abatement, and lack of privacy, elements unacceptable in any hospital. Two building methodologies were discussed in detail during the design charette.* The first was the common precedent of the trailer hospital. While quick and cheap, it was judged as inferior to that of a preengineered building (PEB), similar to the one recently constructed at Logistics Support Area Anaconda, near Balad. A PEB is a large, temporary metal building with an interior that can be configured to suit the application.

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*A final, intensive effort to finish a project before a deadline. Source: *Random House Unabridged Dictionary.* New York, NY: Random House, Inc; 2006.

The PEB was determined to be the best value for the money and would overcome many of the shortcomings experienced by both expeditionary and trailer hospitals. This type of construction would provide cleanable surfaces, reducing infection rates and improving outcomes. It would also reduce exposure to excessive noise levels for the patients and staff, an environmental factor which has also been shown to lead to more favorable outcomes, such as less pain medication and faster recovery rates. It would provide a more robust infrastructure to support improved healthcare capabilities and extend lifecycle management of the state-of-the-art medical equipment in a maturing combat theater of operations.

Timeline

Day 1

Arrived, Contingency Operating Base Speicher
Meeting with Speicher Facility Engineer Team
Meeting with Corps of Engineers
Tour of hospital

Day 2

Conducted individual meetings with the 18 sections that comprise the hospital

Day 3

Completed interviews and follow-up with key staff

Consolidated key capabilities identified during interviews into a single document

Integrated and validated functional relationships into adjacencies

Developed the space program for design based upon the clinical capabilities

Preparation and coordination

The design process began with an initial meeting at COB Speicher with the Corps of Engineers design team from the TransAtlantic Program Center to conduct the design charette. This meeting was useful in understanding the purpose and scope of the project and constraints due to funding and schedule. An early idea of the design team was to select a recently completed hospital project and duplicate that facility at this location. However in an article on a systems-based

methodology for analyzing organizational structure and performance improvement within healthcare, Keating posits

> Every organization in the health sector, from small clinic to national health service, can be viewed as a complex system, integrating people and technology through relationships to achieve desired purposes.[1]

Therefore, while intuitively this sounds like a very practical idea, for those who are not familiar with medical projects, as well as medical personnel who are not familiar with facility requirements, it is fraught with assumptions and potential disappointment.

The underlying assumptions and key criteria driving the appeal of cookie-cutter medical facilities is that whatever is built is an improvement to what is currently there. Just because a solution worked in one context does not mean that it will transfer to a new location, organization, and situation with different personnel, equipment, financial resources, and operational environment, and produce the same outcome. Due to the characteristics that differentiate complex systems from simple systems, it follows that solutions for complex problems should not be duplicated by making assumptions that oversimplify the system.[7] Therefore, replicating a preexisting design or performing a site adaptation is not always the best solution.

The technical and administrative coordination and points of collaboration were discussed and a tentative plan and a sequence of events were outlined to refine the project scope and gather the key data required to properly plan the project. This concluded the initial preparatory and coordination portion. The next phase involved data gathering and analysis requirements, beginning with a tour and orientation to the existing hospital complex. At the conclusion of the tour of both the existing hospital and a terrain walk of the proposed future site adjacent to the hospital, final administrative coordination occurred with both the base facility engineer and Corps of Engineer program manager. Scope of the project, cost planning factors, and the overall programmed amount of the project were tentatively established, with mechanisms in place to revisit as knowledge of the project requirements were defined and justified.

Preparation of the CONOPS: The Value It Provides

After establishing a tentative plan to finalize the scope of the project for the design team, interviews with the hospital staff were conducted. Pertinent information was captured from the 399th Combat Support Hospital (CSH) staff from each of their 18 sections. Notes taken from these interviews were transcribed into the initial draft of the CONOPS. The following day, each section was provided the opportunity to review and amend their section. Key data points such as recommended staffing positions and surgical, inpatient, outpatient, and ancillary workload data were obtained for the previous year to validate capacities. That data was used to properly size areas within the hospital, such as waiting rooms, number of exam rooms, and number of beds. Laboratory, pharmacy, radiological workload, and other key data points were obtained in order to determine the right mix of services and project capacity.

In fact, the data gathered, coupled with historical bed census, resulted in the decrease of 4 intermediate care inpatient beds. This was not an arbitrary reduction, but a fully informed and staffed decision because of the transparency and visibility which allowed planners, leadership, and clinicians to feel comfortable with the decision. Another example of an informed decision resulted later in the actual design of the facility when it became apparent that some scope reduction was required. Dental services were initially included within the footprint of the acute care clinic. However, collaboration with the dental company leadership revealed a greater need to consolidate dental assets rather than locate a couple of chairs within the hospital. While there was not room within the scope of this project, a deliberate decision was made to develop the requirements and justification for a separate, standalone dental clinic to provide the necessary capacity and efficiencies for dental care needed on COB Speicher. This would not have been possible without the later insight that the CONOPS provided.

An added value is that continuity has already been realized as the 399th CSH has been replaced by the 325th CSH, which was subsequently replaced by the 345th CSH. At least one more CSH will rotate into COB Speicher before the facility is complete. The turnover (400%) of personnel by the hospital and the garrison is quite high by any standard. The CONOPS

provides a written continuity of decisions on the medical services offered within the hospital, and has reduced the number of total changes in scope normally associated with poorly defined projects, or projects where turnover in leadership results in shifts in mission and vision of the organization.

SUMMARY AND CONCLUSION

The clinical CONOPS is a foundational document which helps direct the design and development of a health facility project. It is a forward-looking document articulating to the design consultants a word picture of the future facility and scope of services to be provided in the new or remodeled space. The narrative is the format to write the story about the operations. It serves to validate the project as well as provide justification to operational and medical planners, military leadership, and resource managers. When faced with resource constraints, the CONOPS allows informed decisions and enables alternative scenarios to satisfy the operational and clinical space requirements.

While drafting the CONOPS appears, on the surface, to be a formidable task to complete, it really involves answering questions about everyday procedures, processes, equipment, and functions carried out by the staff members of the hospital. In other words, the hospital staff has to explain what they do to take care of patients now, and how they would like to provide improved care in the future. Since the value of the hospital and its cumulative contribution to the health service support plan in support of contingency operations is more than the sum of its parts, documenting the activities carried out and the improvements envisioned exists as a critical task to be completed in the early stages of any facility improvement project.

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Expanding a Professional Dental Care System: Experiences of Task Force 261 Multifunctional Medical Battalion During Operation Iraqi Freedom 07-09

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ABSTRACT

During Operation Iraqi Freedom 07-09, Task Force 261 Multifunctional Medical Battalion managed an extensive dental care system stretching throughout the Iraq theater of operations. We illustrate several of the unique challenges faced by Task Force 261's headquarters and its dental and area support companies, and describe the remedies emplaced by the Task Force. Personnel structure, the evacuation chain, supply and facility management, dental civil-military operations, detainee care, information technology applications, and public health initiatives are discussed in detail.

INTRODUCTION

In September 2007, Task Force 261 Multifunctional Medical Battalion, headquartered at Joint Base Balad, assumed command and control of the 561st and the 257th Medical Companies (Dental Services), as part of their larger mission to provide synchronized, world-class, echelon-above-brigade combat team (EABCT) healthcare across the Iraq theater of operations. The 257th Medical Company from Fort Bragg was immediately replaced by the Reserve Component's 307th Medical Company. The 673rd Medical Company from Ft. Lewis replaced the 561st Medical Company in December 2007. In addition to the 2 dental companies, Task Force 261's task organization included 5 area support medical companies, each with an organic dental corps officer and enlisted dental technician, 2 ground ambulance companies, 4 optometry detachments, one forward surgical and one head and neck surgical team, and the headquarters detachment.

Each dental company was given a geographic area of responsibility, with one company primarily operating in northern Iraq, responsible for the operation of dental clinics at 6 locations, with a "flagship" clinic at Joint Base Balad, and the other in southern Iraq, with 6 (later 7) clinics, including a flagship facility at Camp Liberty, Victory Base Complex, Baghdad (Figure 1).

Both companies maintained a command post at Joint Base Balad, and worked together to meet the task force's vision of "Dedicated to Establishing a Professional Healthcare System."

One dental company was given administrative control of a 3-person optometry detachment at one location, a testament to the increasing "plug-and-play" nature of the Army Medical Department.

STARTING POINT

Previously deployed dental companies and battalion task forces performed pioneering work, initiating the transition from generator powered, mobile facilities using deployable field equipment, to fixed clinics with plumbing, prime power, and durable equipment. By September 2007, Multinational Corps-Iraq's medical brigade task force had established a comprehensive and enduring dental care footprint, with EABCT dental care located at 12 enduring forward operating bases (FOBs.) Construction had been completed at the flagship locations for each dental company. Camp Liberty's clinic was equipped with 8 dental chairs, sterilization, laboratory, and digital radiography, including panographic capability. Joint Base Balad's clinic was nearly operational, opening with 8 functioning dental operatories, later increasing capacity to 18 operatories, and also had sterilization,

laboratory, and digital plane and panographic capabilities. Other clinic locations varied from modular buildings to hardened preconflict buildings, most still working on field compressors and generator-based power.

PROVIDER VARIABILITY

Dental companies are staffed with Dental Corps providers based upon their station and component. Active component companies are predominately resourced through the Professional Filler System (PROFIS),* which rotates providers from US Army Medical Command facilities for 6 to 15 months, and in which specialty substitutions may be made. For example, a comprehensive dentist billet may be filled by an endodontist for 6 months, then replaced with a prosthodontist. Active Duty companies originating from US Army Europe are staffed with dentists who deploy for the duration of the unit's deployment, usually 12 or 15 months. Reserve component companies rotate their entire provider set every 90 days, also with specialty substitutions permitted. Area support medical company dental officers deploy for the entire duration of the unit's deployment, typically 12 or 15 months.

The new PROFIS policy, released in January 2008, limits active duty PROFIS provider deployments. It was greeted with mixed emotion by those officers already in theater. While a positive step forward to decrease deployment time for PROFIS providers, a great deal of inequity seemed to apply as dental officers served 6 months or 15 months, depending on what day one arrived in theater. Many of the 15-month providers will have seen numerous dental officers rotate in and out of theater because their deployment date was posted after the cutoff date.

The end result is a great deal of personnel turbulence, with a resulting requirement to closely manage specialty care dentists, placing them at the highest volume facilities to maximize their efficiency and reduce evacuations, yet ensuring continuity of care as deployments occur.

SYNCHRONIZATION WITH AREA SUPPORT MEDICAL COMPANIES

The 5 area support medical companies (ASMCs) within Task Force 261 were responsible for providing level II medical care at key troop concentration areas, in addition to level I care at outlying areas. Each ASMC deployed to Iraq with both a Dental Corps officer and a dental specialist. At Joint Base Balad and Camp Liberty, the ASMC dentist and specialist integrated into the staff of the flagship clinics. The same arrangement was made at one other high volume location. At the 2 other ASMCs, where there was significant geographic dispersion between the ASMC's clinic and the dental company's clinic, ASMC dental personnel maintained a single-chair capacity within the level II medical clinic. At all locations, a senior dental officer was identified by Task Force 261 (TF261) to supervise and synchronize care, maximizing efficiency of available personnel and dentists, and providing professional developmental opportunities for junior personnel.
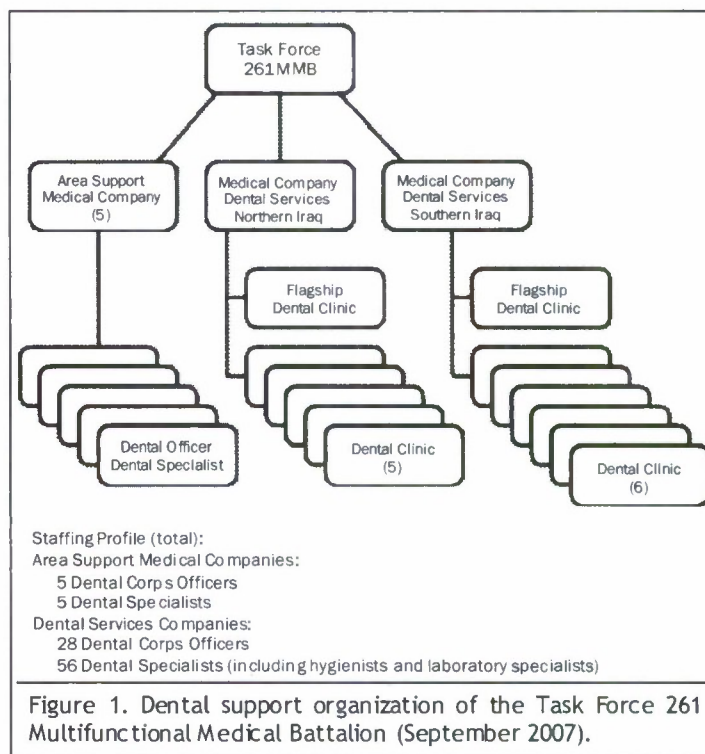

Figure 1. Dental support organization of the Task Force 261 Multifunctional Medical Battalion (September 2007).

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*PROFIS predesignates qualified Active Duty health professionals serving in Table of Distribution and Allowance† units to fill Active Duty and early deploying and forward deployed units of Forces Command, Western Command, and the medical commands outside of the continental United States upon mobilization or upon the execution of a contingency operation.[1]

†Prescribes the organizational structure, personnel and equipment authorizations, and requirements of a military unit to perform a specific mission for which there is no appropriate table of organization and equipment (the document which defines the structure and equipment for a military organization or unit).

HUB-AND-SPOKE MODEL OF SPECIALTY DENTAL CARE

One of the major goals of TF261's dental elements was to build upon the success of preceding units to minimize the number of Soldiers evacuated out of theater for specialty or complex dental care. The simplest and most successful strategy was to emplace specialty care dentists at each of the 2 company flagship clinics, ensuring that as providers rotated in and out of theater, specialty care access was maintained at each facility. This occasionally resulted in a requirement to balance specialists among companies. The next challenge was to market this change, the availability of specialty care at the 2 hub locations, to dental officers across Iraq, including at the brigade combat team level, to sister services, and to coalition forces. This process was aided by the theater dental consultant and the 62nd Medical Brigade's senior dental noncommissioned officer (NCO) who updated and distributed the theater dental provider list to each dental officer in theater. Finally, coordination for patient movement, housing, treatment, and return to home forward operating base (FOB) was required (Figure 2).

Patients seen at any outlying clinic were referred to the flagship clinic within the geographic responsibility of one of the 2 dental companies. The receiving clinic, through a single screening and coordinating provider, arranged housing and care with the appropriate specialty provider. It is the responsibility of the referring clinic, the patient's unit, and the patient to ensure that dental records, including radiographs (if available) are available at the specialty care appointment.

If one flagship clinic lacked a particular specialty, it would use a comprehensive dentist to screen the patient, and, if needed, refer to the other flagship clinic. These occurrences were exceptionally rare during TF261's deployment to Iraq.

Utilization of the hub-and-spoke model, with close cooperation between referring and accepting dental officers, dramatically improved access to specialty dental care across Iraq, and virtually eliminated evacuations out of theater.

DEVELOPMENT OF THE DENTAL FACILITY ADVISORY BOARD

Upon completion of the initial battlefield surveys of TF261 dental facilities, it became evident to the leadership that there was a requirement to provide dynamic oversight of the conversion from field to fixed facilities and equipment, and to ensure that dental officers and specialists were integrated into the decision-making cycle when planning new construction or renovation of dental clinics. Most of the existing facilities had been established in pre-war buildings, modular buildings, or deployable medical systems containers, leading to inefficiencies in design, ergonomics, and patient flow.

The Dental Facility Advisory Board (DFAB) was chartered to guide the "way ahead" as clinics were renovated or constructed, providing engineers and FOB mayor cells with recommendations to maximize the efficient use of space, ensure sufficient dental chairs and operatories to support the current and future installation population, and provide technical input, including unique compressor, sterilizer, plumbing, and medical gas requirements.

The DFAB consisted of the senior dental company commander (acting also as Theater Dental Consultant), the junior dental company commander, the deputy commander for clinical
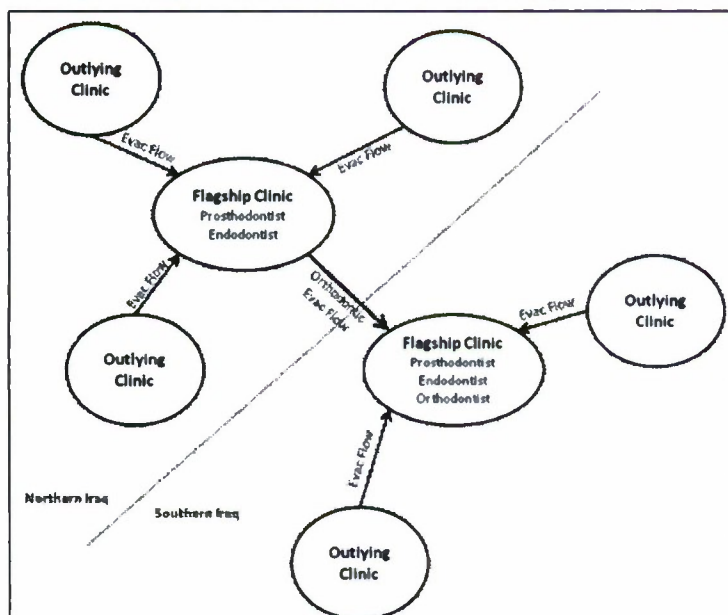

Figure 2. The hub and spoke organization established by Task Force 261 to provide specialty dental care across the Iraq theater of operations.

services for each dental company, the battalion senior dental NCO, the battalion medical maintenance officer (also serving as facilities manager) and senior NCO, and the battalion medical supply officer and senior NCO. Meeting first in January 2008 and monthly thereafter, the DFAB continuously researched anticipated troop shifts and developed comprehensive scopes of work for each dental clinic in the task force footprint. As an example, work on a new design for a 6 chair clinic at Contingency Operating Base (COB) Endurance to meet projected population shifts in the coming year had already been started. This clinic design was later accepted by the DFAB as the blueprint for a standardized medium-size clinic design which could be later used, expanded, or contracted at different locations to support the current and future population at risk. The DFAB will continue to work closely with installation mayor cells and TF261 facility engineers and planners to provide information and clinical relevance to future dental facility construction projects.

THE CORPORATE DENTAL APPLICATION

Like our predecessor, we continued using the Corporate Dental Application (CDA), a comprehensive workload and readiness reporting system developed by the US Army Dental Command (DENCOM) and used throughout the Army Dental Care System. The application is internet based and user friendly. In the fairly mature environment of Iraq, sufficient bandwidth is present to support CDA at all care locations. Additionally, the DENCOM CDA team is available to provide end-user support for the application.

other miscellaneous groups. Working through the DENCOM's chief information officer, we were able to get a modification to the CDA that separated individual patient categories for US and foreign contractors (Figure 3). This allowed our dental commanders to better track expenditure of dental resources throughout the theater of operation, and provided situational awareness of the time and cost associated with contractor care.

The central management of EABCT dental care under one task force allowed better data collection and decision-making. Prior to our arrival in theater, dental provider location in the CDA database was somewhat unorganized. Some area support and dental company providers were reporting their data under the generic "Southwest Asia Dental Clinic," with separate duplicate entries under their respective units. These inaccuracies were compounded by the constant turnaround of personnel rotating at 90- and 180-days,
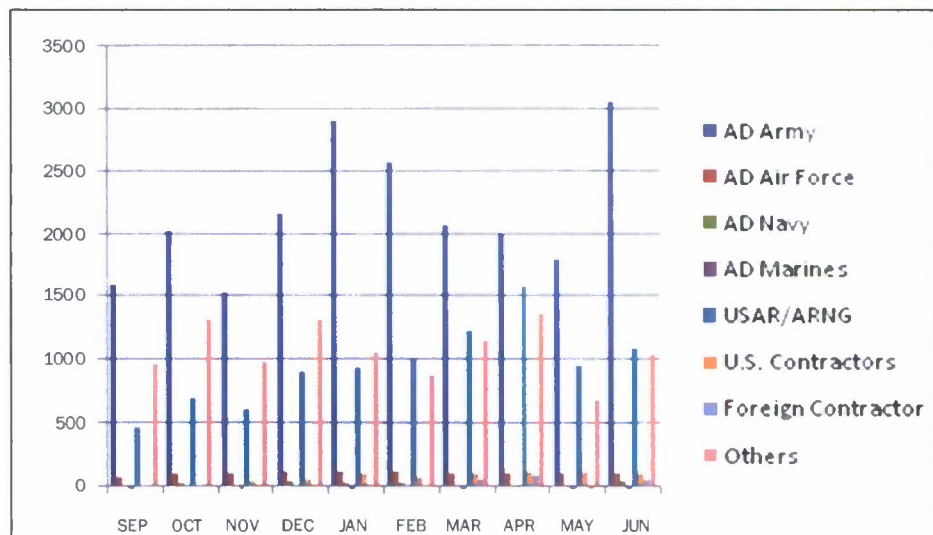

Figure 3. Category of patients seen at Task Force 261 Dental Clinics, Sep 2007-Jun 2008. Data extracted from US Dental Command Corporate Dental Application.

Upon assuming the mission, TF261 recognized that a significant portion of dental professional time and resources were being used in the care of contracted personnel, a potentially reimbursable expense. At the time, contractors were not included in CDA's patient care categories, instead being lumped together under the "other" category, which included detainees and

which made it difficult to pull and compile accurate workload data for each provider or each individual location. Together with the DENCOM CDA staff, the theater dental leadership conducted an education and quality management campaign, ensuring all providers were correctly mapped to their individual units. Task force dental personnel then used an internal tracking matrix to link their workload to their respective satellite location. This data allowed the Task Force commander to easily identify workload trends and

make required staffing decisions (Figure 4). An added benefit to using CDA is the ability to calculate the relative dollar value of care rendered, based on the current dental terminology codes built into the database. Each dental procedure is assigned a weighted value, with a value of 1.00 being equivalent to 100 dollars. This allows commanders to see the relative dollar value of services rendered with each workload rollup (Figure 5).

CHALLENGES OF IN-THEATER DIGITAL DENTAL RADIOGRAPHY

The ability for dental providers to view, use, retrieve, and transmit radiographic images for clinical practice is understood as the standard of care when evaluating and examining patients. Department of Defense Instruction 6490.03[2] states:

> To the extent feasible, deployment health data will be collected and maintained in DoD-approved automated health information management systems. Information shall be shared as broadly as possible (except where limited by law, policy, or security classification), and any data produced as a result of the assigned responsibilities shall be visible, accessible, and understandable to the rest of the Department as appropriate....

During the Task Force's initial assessment of our dental clinical informatics infrastructure, the inability to upload and store digital dental radiographs to the Corporate Dental System (CDS) for review through CDA emerged as one of the primary concerns for
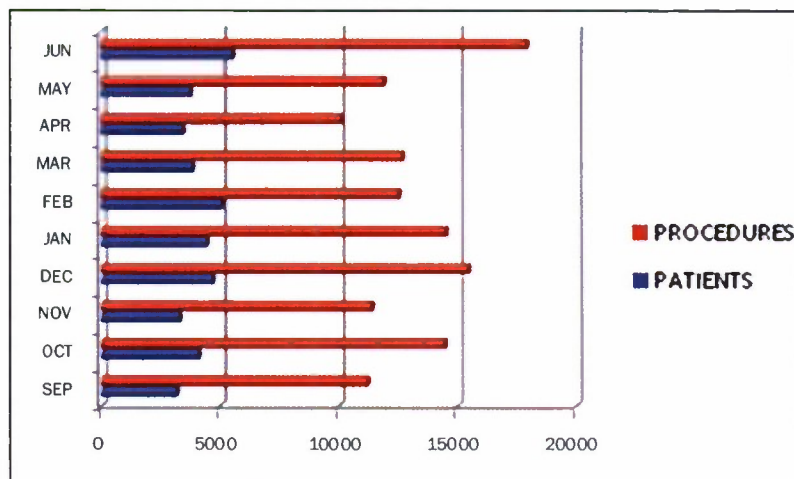

Figure 4. Monthly workload (raw numbers) at Task Force 261 Dental Facilities, Sep 2007-Jun 2008.

providers. As the Iraq theater has matured, many Soldiers have served multiple deployments, and have had extensive dental care in-theater. All dental radiographic images had previously been stored on the local hard drives of imaging systems used at the individual clinics. As each unit or clinic team transitioned in and out of theater, the images were carried home on unit equipment, or remained stored on media residing in the clinic. Further, as hard drives filled and storage space diminished, thousands of images were deleted.

There are currently no means to send dental radiographs stored at each theater facility to the Army's repository at Fort Sam Houston, Texas. However, the Digital Enterprise Viewing and Acquisition Application (DEVAA), the DENCOM corporate solution in the sustaining base, has the capability to accomplish this task. TF261 began necessary coordination with the DENCOM DEVAA Sustainment Manager to determine the system and network requirements to make this initiative a reality.

As TF261 and the Theater Dental Consultant began aggressive cooperation with the Multinational Corps-Iraq (MNC-I) information assurance network engineers to implement DEVAA at their dental clinics, it became clear that this was a project best developed in coordination with the sister services, as the capability to transmit locally archived imagery to each services' repository is crucial, as all components share these medical resources in the
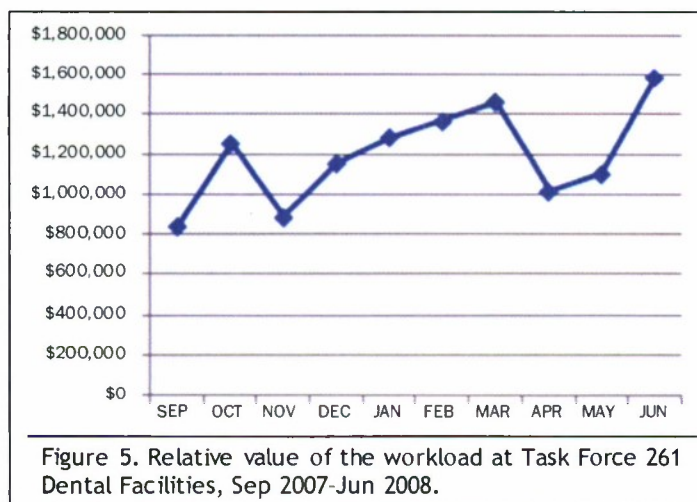

Figure 5. Relative value of the workload at Task Force 261 Dental Facilities, Sep 2007-Jun 2008.

Iraq theater of operations. TF261 garnered support from the Task Force 62 Medical Brigade, and developed a series of briefings and information papers for the MNC-I Health Information Systems Officer, who then worked with the CENTCOM medical chief information officer to sponsor this initiative. At the June 2008 Theater Functional Working Group meeting, the cochairs requested that the integrated requirements design, joint capabilities integration development systems staff conduct a capabilities based analysis (CBA) for digital dental imaging in theater. This CBA covers an analysis of the functional area, needs, and recommended solutions for theater digital imaging.

It is the hope of TF261 that this grassroots effort will ultimately result in a solution for the current capability gap that exists in joint service dental digital imaging.

STANDARDIZATION OF DENTAL SUPPLY CHAINS AND SUPPLY MANAGEMENT

Even before TF261 assumed its mission in Iraq, the Theater Dental Consultant and dental company commanders had determined that the class VIII supply system then in place was far too cumbersome to facilitate effective supply chain management and stock levels. It had become standard practice for individual clinics to order as much of an item as possible, and stockpile materials for later use. Additionally, many providers would order specific supplies and durable equipment to accommodate their particular treatment peculiarities. When the provider rotated out of the area or redeployed, a new provider would start the process again, leaving unused, excess supplies on the shelves to expire. At the time TF261 began to provide dental care, over 9,000 individual lines of supply were available to the dental companies, an amount far too unwieldy for the medical logistics units to stock at the theater's central class VIII warehouse.

These practices had become commonplace and were counterproductive in effectively establishing logistical support. The medical logistics system works on the principle that the more an item is ordered, the more available it must be for the customer, and it is stockpiled at theater and strategic logistics depots. An individual line item must be ordered at least 6 times in one year for that item to be carried in warehouses as a routinely stocked item. When an item is not ordered with that frequency, it is dropped from the routine

supply channels, and the customer must initiate a new item request, starting a 3-month process of approvals and verification, a frustration to providers.

Clearly, a more effective and less cumbersome dental class VIII supply system had to be established. The standardization of class VIII dental supplies across all facilities became a top priority for the Task Force. The first step was to establish standard operating procedures for the management of dental supply rooms, with several goals in mind. First, supply discipline had to be established as a commander's priority, to be measured and periodically reviewed. Second, minimize the total number of dental lines of supply available, eliminating infrequently used equipment and standardizing operative and interventional equipment sets. Third, effectively manage each facility's supply room, establish 30-day benchmark stock levels, turn in existing excess for redistribution, and identify what shelf level will trigger a reorder. Fourth, maximize proactive ordering efficiency by leveraging existing technology and systems, specifically the Defense Medical Logistics Standard Support Customer Assistance Module (DCAM), as a management tool to identify, assess, track, and facilitate the proper flow of supplies across the theater. Fifth, maximize use of government assets and prevent fraud, waste, and abuse. Sixth, provide the customer with the best logistical support possible through training, follow-up on identified concerns, and reliable communication. Finally, establish and maintain effective managerial control and provide checks and balances at the company level. This policy was gradually implemented at TF261 facilities, and introduced into the entire theater by the Theater Dental Consultant for implementation across the theater, including Navy and Air Force dental assets.

The second goal was achieved by the development of a standardized list of close to 300 class VIII items, carved out of over 9,000 line items available. This standardized supply list encompassed all critical areas of treatment, and included sterilization, hygiene, and subspecialty requirements. The list was developed and refined by a committee of dentists from both dental companies, supply specialists, and medical logisticians in TF261, as well as the 56th Multifunctional Medical Battalion Task Force.

The medical logistics specialists at both TF261 dental companies are engaged and using DCAM to the

fullest, processing more than 190 requisitions per month. Clinic representatives across the theater submit orders as needed via email or telephone to their company's medical logistics specialist, who enter the order into the DCAM system using codes that allow direct shipment to the customer's installation. This employment of centralized management imposes a high level of command supply discipline, and decreases the incidence of waste and excess. Early in 2008, the 2 dental companies turned in a cumulative total of more than $480,000 in excess material, which was redistributed throughout the theater.

At the time of inception, the central medical class VIII warehouse had the items requested by the 2 TF261 dental companies available only 7% of the time. This extremely low demand accommodation rate was significantly below the Department of the Army's goal of 60%. Within 4 months the accommodation rate had escalated to an average of 58% for the 2 companies. Finally, by stocking the smaller list of line items on the shelf, the order-to-receipt time was decreased from an original 30-60 days to 6-9 days. Further program success is evident in an all time high customer demand satisfaction rate, which has improved from 18% to over 90% since the program's inception.

PROVISION OF DENTAL CARE TO THE DETAINEE POPULATION

TF261's dental companies were also tasked to augment the split-based combat support hospital charged with providing healthcare to detainees housed at theater internment facilities. The detainee population presents unique challenges to the dental officers and technicians assigned to these locations, and require unique compassion and patience.

US Army doctrine, specifically Special Text 4-02.46, Medical Support to Detainee Operations,* provides guidance for the provision of dental care to the detainee population. In accordance with these policies, detainees are entitled to operational dental care, defined as emergency and essential dental care, which is inclusive of restoration, minor oral surgery, endodontic, periodontic, and prosthodontic procedures, as well as prophylaxis.

An initial dental screening examination is performed on all detainees and made part of the dental record.

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*Internal Army document, not readily accessible by the general public.

However, this screening is typically performed by a physician extender, not a dental officer. Currently, TF261's dental personnel detailed to detainee care are developing a procedure by which all detainees are screened by a dentist. Detainees are also periodically screened, and may be referred for additional dental care based on consults from other providers or by a detainee presenting at sick call. Inpatients may also generate dental consults.

The language barrier is often the most challenging aspect of providing detainee care. Despite the presence of translators, the inability to communicate directly with the patient hinders the history development, examination, and treatment phases of the encounter.

Both the language barrier and the Army uniform may be detrimental towards the establishment of patient confidence. It is our experience that the screening examination represents the first visit to a dentist for many of the detainees. As the whole experience is foreign to them, exceptional patience is required on the provider's part, and frequently extraordinary selflessness and compassion must be displayed to reassure the patient that the dental care system is there to provide for them, regardless of the actions leading to their internment.

Such limited exposure to dental care means that the detainee population has tremendous need. The population's general dental health can best be characterized as exceptionally poor. Badly infected, broken teeth, large caries burdens, and unrelenting periodontal disease are endemic.

The overwhelming need for comprehensive dental care makes the screening process essential. This process is hindered by the logistics of detainee movement. Detainees must be accompanied by guards, and, as a security precaution, only a fixed number of detainees are allowed in the entire facility complex at any one time. Dental instruments must be inaccessible to detainees, and the detainees cannot have easy access to exits.

The number of detainees requiring dental care can easily exceed the allowable number of detainees in the facility, and this in turn can quickly lead to a large backlog. As a result, the dental officer must triage patients appropriately, with the majority of the care provided being emergent or urgent in nature. On some

occasions, detainees will request to attend dental sick call, only to refuse treatment when they get there—a trip into the treatment facility is seen as a social event, a break in the monotony of confined living in the internment center. These aspects, in combination, present a challenge to the dental providers in getting the care to the population with the greatest need. Functionally, the restrictions of movement, the tremendous demand for care, and the language restrictions hinder accomplishment of the goal of providing essential dental care to the entire detainee population. There remains a significant mismatch between supply and demand. As such, detainees who, under ideal conditions with unlimited resources would receive more definitive and complex procedures, typically undergo simple extraction to prevent pain and suffering, and mitigate the need for complicated follow-up care. TF261, together with other theater dental assets, continues to strive to meet the goal of providing the same level of essential dental care to the detainee population, inclusive of endodontic, periodontic, prosthodontic, and prophylactic care, as that provided to coalition forces. To do so will require an influx of personnel, equipment, and a supporting guard force at our detainee care facilities.

Treating all detainees with dignity and respect is a critical tenet of the overall dental care plan. Detainees should know that they will receive quality care at our theater internment facilities, receive the pharmaceuticals required to relieve pain and treat infection, and have the right to informed consent, and to refuse treatment.

PUBLIC HEALTH AND PREVENTIVE MEDICINE INITIATIVE SUPPORT

Soft drinks, sports drinks, and energy drinks are offered in abundance in all dining facilities (DFACs) and post exchanges across theater. These drinks are free to the Soldiers at the DFACs, and readily available at every turn. Heat, long hours, the operational tempo, and numerous other activities encourage consumption of high quantities of these cariogenic beverages. The high number of deployments and infrequent dental care during deployment are without question merging, resulting in a significant increase in the caries and treatment-need backlogs that are occurring at redeployment clinics. The need for effective preventive measures to counter the assault has led the Army to seek solutions. The

Office of The Surgeon General, the Army Center for Health Promotion and Preventive Medicine, and the Army Dental Command used input from dental units in both Iraq and Afghanistan to request and receive approval from the Army G-4 to procure xylitol gum for mass distribution in theater DFACs.

Xylitol gum use has been proven to be extremely effective in reducing caries by 30-85%. First put into Meals, Ready to Eat (MRE) in 2004,[3] with a maturing theater and infrequent MRE use it was decided that the gum should be available in DFACs. Fielded in summer 2008, the xylitol gum campaign has been supported and advertised by each TF261 clinic through direct contact with the local DFACs. The Task Force has been able to assist in the distribution of promotion materials, flyers, and posters in the local dental clinics and dining facilities to increase use. Additionally, the timing of the gum's fielding coincided with the first Medical Brigade Health Fair, supported by TF261 dental assets.

The Medical Brigade's premier health fair was held in April at the Al Faw Palace (Multi-National Corps-Iraq (MNC-I) Headquarters) in Baghdad. The dental booth was supported by TF261 dental assets, including dentists, hygienists, and dental assistants, who talked with key leaders about dental topics and issues in theater. A whole host of educational, thought-provoking materials were presented and discussed. Free samples of toothbrushes, toothpaste, floss, and xylitol gum were distributed. Hygiene demonstrations were provided along with static displays. The dental section was voted the favorite by participants of the health fair. From the dental perspective, a key feature of the second health fair was the importance of support for the xylitol gum initiative. The significance of having key leaders working at MNC-I aware of the xylitol campaign and other ongoing dental care issues will no doubt pay dividends as this and other initiatives move forward.

ESTABLISHING A PARTNERSHIP WITH OUR IRAQI COLLEAGUES

One of the critical missions of TF261 was to work together with the 62nd Medical Brigade and MNC-I to assist our Iraqi colleagues, both in the Ministry of Defense and the Ministry of Health, to develop self-supporting systems to provide comprehensive healthcare to the Iraqi populace.

TF261's staff included Dr Khalid,* a native Iraqi dentist, trained in the United Kingdom, who, in conjunction with an appointed master sergeant, coordinated all of TF261's partnerships with our Iraqi counterparts. Early in the deployment, Dr Khalid made contact with the senior dental officers in the Iraqi Ground Forces Command (IGFC), the Iraqi Air Force, and the Ministry of Health. Within 6 weeks of assuming the mission in-theater, the TF261 conducted the first in a series of continuing dental education (CDE) programs at the Medical Brigade Headquarters, Victory Base Complex in Baghdad with lectures on forensic odontology and bony pathology of the craniofacial skeleton. For the remainder of TF261's deployment to Iraq, additional CDE events were presented every 6 to 8 weeks, led by the dental companies, with events in Baghdad, Tallil, and Balad. Each event experienced increased participation from our Iraqi colleagues. Eventually, CDE events were planned by the Ministries, with lectures developed and given by Iraqi dental officers, and included other Coalition Forces, including Romanian, Polish, Australian, and British dental officers and specialists.

The professional interaction between members of the Task Force and the Iraqi Ground Forces Command were recognized by the IGFC Command Surgeon, Brigadier General (Dr) Jowad Madhi, as the epitome of cooperation between Coalition and Iraqi forces. Brigadier General Madhi and Dr Khalid later worked together to develop numerous other programs within the larger Task Force, including combat lifesaver training, development of a ground ambulance and emergency medical response system, and standardization of battalion-level aid stations, all using the interpersonal networks first established by the dental leadership.

CONCLUSION

Through the coordinated and synchronized effort of a variety of subject matter experts at company and battalion level, TF261 Multifunctional Medical Battalion was successful in improving the delivery of dental care across the Iraq theater of operations, using multiple strategies to systemize and standardize personnel utilization, equipment supply and storage, the evacuation chain, information technology solutions, and preventive medicine efforts. Care was

also optimized for the detainee population, and our Iraqi colleagues became part of the combined dental care effort throughout Iraq. Consolidating dental assets under one headquarters allowed effective and seamless command and control of all efforts, allowed development of a true dental care system, and ensured mission completion.

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*Name changed for security reasons.

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