Evaluation Report

OFFICE OF THE INSPECTOR GENERAL

MEDICAL READINESS TRAINING FOR RESERVE PHYSICIANS

Report No. 97-036 December 2, 1996

DEPARTMENT OF DEFENSE

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Acronyms

ASD(HA)	Assistant Secretary of Defense (Health Affairs)
DMRTEC	Defense Medical Readiness Training and Education Council
GAO	General Accounting Office
MERLIN	Medical Readiness Learning Initiative
MRSP	Medical Readiness Strategic Plan
OASD(HA)	Office of the Assistant Secretary of Defense (Health Affairs)

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
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MEMORANDUM FOR ASSISTANT SECRETARY OF DEFENSE
(HEALTH AFFAIRS)

SUBJECT: Evaluation of Medical Readiness Training for Reserve Physicians
(Project No. 6LH-0016)

Introduction

We are providing this report for your information and use. Of the approximate 19,000 physicians in the Active and Reserve components of the Military Departments, 5,700 (about 30 percent) are in the Reserves, and 64 percent of the 5,700 Reserve physicians are assigned to a mobility mission[1]. Enclosure 1 provides information regarding the number of physicians assigned to the Reserves in FY 1996 by Military Department, primary medical specialty, and deployment role (mobility mission or backfill mission[2]). Physicians in Reserve units have a challenging role because they are required to balance their military responsibilities with their civilian careers. They have 39 days (24 days for weekend drills and 15 days for annual training) to obtain the military specialty, medical specialty, and individual and unit training needed to prepare them for deployment missions.

In May 1996, the Assistant Secretary of Defense (Health Affairs) (ASD[HA]) formally issued DoD Instruction 1322.24, "Military Medical Readiness Skills Training," December 20, 1995. The Instruction establishes medical readiness training requirements for personnel assigned to medical units in both the Active and Reserve components, and directs the Military Departments to implement medical readiness training programs supporting the requirements in the Instruction. In June 1996, the ASD(HA) established the Defense Medical Readiness Training and Education Council (DMRTEC) to assist the ASD(HA) in providing oversight of the Military Departments' medical readiness training programs and developing medical readiness training policy.

Evaluation Results

The Military Departments maintained Service-unique policies, procedures, and programs for medical readiness training of physicians in their Reserve components that did not adequately and consistently produce individuals or units prepared for deployment missions. In addition, the ASD(HA) was not

[1]A mobility mission is a mission in which medical support is provided to units engaged in combat operations in the theater of operations.

[2]A backfill mission is a mission in which the individual or unit replaces Active duty personnel who are deployed in a contingency.

adequately overseeing the implementation of the training objectives in the Medical Readiness Strategic Plan (MRSP) 2001. The ASD(HA) took corrective action by issuing DoD Instruction 1322.24 and by establishing the DMRTEC. Based on the recent ASD(HA) actions, we did not make any recommendations. However, we identified three areas of concern and offer one suggestion that the DMRTEC should address. The areas of concern include review of the Military Departments' medical readiness training implementation plans, revising DoD Instruction 1322.24, and reviewing the implementation plans for the MRSP 2001. Our one suggestion relates to evaluating the use of the Medical Readiness Learning Initiative (MERLIN) as an educational tool.

Evaluation Objectives

The primary evaluation objective was to evaluate the effectiveness of the policies, procedures, and programs for medical readiness training of physicians in the Reserve component of the Military Departments. We also examined the extent to which the ASD(HA) developed and implemented the medical readiness training objectives in the MRSP 2001. In addition, we sought to identify the best practices within DoD that could improve Reserve medical readiness training programs.

Scope and Methodology

Scope and Methodology. The evaluation focused on medical readiness training for physicians in the Reserve component of the Military Departments. The evaluation did not include the Marine Corps Reserves because the Navy supplies its physicians.

We reviewed journal articles; DoD and Military Department directives, instructions, and other doctrine, such as instruction manuals, dated from December 1987 through April 1996. We interviewed personnel from the Office of the Secretary of Defense, the Military Departments, military medical training centers, Guard and Reserve units, and trauma training organizations in the civilian sector, as discussed below. In conducting the interviews, we focused on six key areas. Those areas were DoD Instruction 1322.24; individual, unit, and joint training requirements; trauma training; use of distance or alternative learning techniques; training tracking and reporting methodologies; and medical readiness skills evaluation processes.

Management Level Interviews. Our management level interviews included key personnel in the Office of the Secretary of Defense and the Military Departments. Specifically, we interviewed personnel from the offices of the Joint Chiefs of Staff, Deputy Under Secretary of Defense (Readiness), ASD(HA), Assistant Secretary of Defense (Reserve Affairs), Surgeons General, Military Department Reserve Commands, and the National Guard Bureaus of the Army and the Air Force. We also reviewed the status of the MRSP 2001 with staff from the Office of the Assistant Secretary of Defense (Health Affairs) (OASD[HA]).

Medical Training Centers. The training centers we contacted or visited included both joint training centers and those focusing on medical readiness training for the Army, the Navy, and the Air Force. We observed the training program at one site and interviewed physicians attending the training to better understand their perspectives regarding field training exercises.

Guard and Reserve Units. We met with personnel from at least one Reserve unit for each Military Department, and one Guard unit for the Army and Air Force. The Military Department Guard or Reserve Commands recommended the units we visited. We visited those units to identify best practices.

Civilian Sector Visits. We met with staff from two key civilian organizations involved in trauma training. Our first visit was to the Henry M. Jackson Foundation (the Foundation), contractor to the Uniformed Services University of the Health Sciences and the Office of the Assistant Secretary of Defense (Reserve Affairs). The Foundation developed the MERLIN trauma training system, which was developed initially for the Air National Guard, but is deployable throughout DoD. We also met with the Director, Office of Physician Education, R. Adams Cowley Shock Trauma Center, University of Maryland Medical Center. The shock trauma center has a 1-year training program that results in general surgeons attaining a subspecialty in critical care surgery.

Evaluation Period, Standards, and Locations. This program evaluation was performed from November 1995 through July 1996 in accordance with Standards issued and implemented by the Inspector General, DoD. We did not rely on the use of computer-processed data or statistical sampling procedures for this evaluation. A complete list of organizations visited or contacted during the evaluation is in Enclosure 7.

Prior Audits and Other Reviews

In the past 5 years, nine reports related to medical readiness training in the DoD have been published. A summary of the prior audits and other reviews is in Enclosure 2.

Evaluation Background

Medical readiness training, as defined in DoD Instruction 1322.24, are courses, hands-on training programs, and exercises designed to develop, enhance, and maintain military medical skills. It includes individual, collective, and unit training experiences required to ensure that health care personnel and units are capable of performing operational missions.

General Accounting Office (GAO) and Inspector General, DoD, reports concerning medical readiness during Operations Desert Shield and Storm, combined with internal lessons learned and after-action reports, identified weaknesses in the readiness of medical units in the Military Departments. To

rectify those weaknesses, the ASD(HA), in coordination with the Military Departments, developed the MRSP 2001 in March 1995. It discussed key medical readiness issues, including medical readiness training. In May 1996, DoD Instruction 1322.24 provided more definitive information on medical readiness training policies and procedures to the Military Departments. To ensure that the Military Departments implement comprehensive medical readiness training programs, in June 1996, the ASD(HA) issued a memorandum to the Military Departments that established the DMRTEC to assist in medical readiness training policy development and oversight.

Medical Readiness Strategic Plan 2001. In the MRSP 2001, the ASD(HA) acknowledged that the focus during peacetime was on health care delivery and cost reductions in the Civilian Health and Medical Program of the Uniformed Services, often at the expense of medical readiness. The MRSP 2001 was designed to redirect the focus to medical readiness. It contains 42 readiness objectives, including 4 that relate specifically to medical readiness training.

DoD Instruction on Military Medical Readiness Skills Training. DoD Instruction 1322.24 is the first instruction DoD released defining medical readiness training skills requirements. The Instruction is an outgrowth of action plan 32 in the MRSP 2001 that requires the establishment of policy guidance for medical readiness training. The key elements of the Instruction define military medical skills training requirements, and require compliance by both the Active and Reserve components.

DoD Instruction 1322.24 requires that DoD medical readiness training include training courses and hands-on exercises, as well as programs that are designed to develop, enhance, and maintain military medical skills, including individual, collective, and unit training. The training is required to ensure that health care personnel and units are capable of performing operational missions. The Instruction also requires some medical readiness training for every person assigned to a medical Reserve unit, including health care providers, support staff, physicians, and nonphysicians. However, the level of training depends on the specialty and deployment role of the individual. That is especially true for physicians who require individual training (both medically and militarily related) tied to their deployment roles. Physicians also require training with their units and, ideally, participation in joint exercises.

Charter for the Defense Medical Readiness Training and Education Council. On June 6, 1996, the ASD(HA) established the DMRTEC and defined its responsibilities in a charter. The charter requires that the DMRTEC be composed of flag and general officers and senior civilians; meet quarterly; and perform key oversight functions regarding medical readiness training.

The key oversight functions of the DMRTEC are:

- assisting the ASD(HA) in carrying out the responsibility to provide oversight of medical readiness training and education;

- reviewing all medical readiness training requirements;

o recommending changes to joint doctrine, tactics, and procedures, as required to enhance medical support;

o reviewing and monitoring the MRSP 2001 training implementation plans;

o conducting program reviews as required to ensure medical readiness education and training;

o validating submissions for the Service's Program Objective Memorandum; and

o reviewing the results of alternative training concepts and providing recommendations on training courses.

Discussion

As discussed in prior audit reports and deployment after-action reports, medical readiness training of Reserve component physicians needed improvement. The Service-unique policies, procedures, and programs for medical readiness training of physicians in their Reserve components did not adequately and consistently produce individuals or units prepared for deployment missions. With the issuance of DoD Instruction 1322.24 and the establishment of the DMRTEC, the ASD(HA) has taken significant corrective action. The DMRTEC provides a mechanism for ensuring proper implementation and completion of needed changes in policies, procedures, and training. In this report, we have identified three areas of concerns that the DMRTEC should address. Specifically,

o implementation plans for the Military Departments' medical readiness training programs may not adequately address weaknesses in current medical readiness training.

o DoD Instruction 1322.24 needs to be examined for possible misinterpretations of various terminology.

o implementation plans for three tasks in the MRSP 2001 associated with medical readiness training were either not submitted or inadequate.

In addition, we suggest that the DMRTEC evaluate MERLIN as an educational tool that uses emerging technology to improve trauma and mass casualty management skills.

Implementation Plans for the Military Departments' Medical Readiness Training Programs. On May 6, 1996, the ASD(HA) issued a memorandum to the Military Departments requesting plans for implementing DoD Instruction 1322.24 in both the Active and Reserve components. The plans have been submitted to the OASD(HA). Based on our research and analysis, we have concerns that the plans will not adequately address identified weaknesses in the

Military Departments' current medical readiness training programs. Because the DMRTEC will review the plans, as its charter requires, the DMRTEC review should ensure that implementation plans:

- o tie training plans to requirements,
- o provide training on actual deployable medical systems equipment,
- o adequately incorporate trauma training into the total training program,
- o use external evaluators in the Military Departments' oversight programs to validate skills attainment, and
- o identify the training costs.

Specifics on each of the above areas are in Enclosure 3.

Interpretations of DoD Instruction 1322.24. The DoD Instruction 1322.24 needs to be examined for possible misinterpretations. During our interviews, several concerns surfaced about the Instruction. Some problems were minor, such as use of the term "all" in areas where the meaning was ambiguous. However, of major concern were the numerous categories of training specified in the Instruction, almost half of which were not adequately explained or defined. Enclosure 4 details this issue.

Medical Readiness Strategic Plan 2001. The MRSP 2001 discusses the most critical medical readiness issues and includes 42 action plans. Of the 42 action plans, 4 specifically discuss medical readiness training. The 4 action plans concerning medical readiness training contain 17 tasks. Each Military Department is required to submit an implementation plan defining its medical readiness training program. Implementation plans for 3 of the 17 tasks were either not submitted or inadequate. Details concerning the deficiencies are in Enclosure 5.

Medical Readiness Learning Initiative. The DMRTEC should evaluate MERLIN, an example of an emerging, computer-based training tool, which was designed to improve trauma and mass casualty management skills. DoD Instruction 1322.24 requires that medical readiness training programs "maximize the use of emerging technology, such as distance learning, computer simulation and virtual reality." The DMRTEC charter requires that it review the results of alternative training concepts. MERLIN is one such emerging technology that the DMRTEC should review for implementation at Active and Reserve units with deployment missions. Enclosure 6 contains details concerning MERLIN.

Conclusion

Medical readiness training is beginning to get the attention it needs for DoD to be prepared in the event of a major deployment. Issues reported in Inspector General, DoD, and GAO reports concerning medical readiness training and preparedness for Operations Desert Shield and Storm have been addressed in policy and planning guidance. The DMRTEC, the key organizational element assisting the ASD(HA) in medical readiness training oversight, however, should review the implementation plans the Military Departments submit on medical readiness training to ensure that the action plans include measures to correct the existing medical readiness training problems that DoD and GAO oversight organizations identified after Operation Desert Storm. The DMRTEC oversight should include reviewing the Military Departments' medical readiness training implementation plans, revising DoD Instruction 1322.24, reviewing the implementation plans for the MRSP 2001, and evaluating emerging educational technologies.

Management Comments

We provided a draft of this report to you on October 8, 1996. Because this report contains no findings or recommendations, comments were not required, and none were received. Therefore, we are publishing this report in final form.

We appreciate the courtesies extended to the evaluation staff. If you have any questions on this report, please contact Ms. Debra B. D. Murphy, Evaluation Program Director, at (703) 604-8762 (DSN 664-8762) or Ms. Betsy Brilliant, Evaluation Project Manager, at (703) 604-8771 (DSN 664-8771). See Enclosure 8 for the report distribution. The evaluation team members are listed inside the back cover.

David K. Steensma

David K. Steensma
Deputy Assistant Inspector General
for Auditing

Enclosures

Reserve Physicians Assigned by Primary Specialty and Mission (FY 1996)

	Army Reserve		Army Guard	Naval Reserve			Air Force Reserve		Air Guard
	Mobility	Backfill	Mobility	Mobility (Marines)	Mobility (Navy)	Backfill	Mobility	Backfill	Mobility
Aeromed/Flight Surgery	9	11	103	20	41	5	155	70	325
Anesthesiology	87	48	19	12	58	91	5	1	0
Cardiology	0	32	0	0	0	0	0	0	0
Dermatology	10	0	0	0	14	15	0	0	0
Emergency Medicine	122	84	24	0	60	45	0	0	3
Family Practice	151	102	101	4	73	117	1	1	1
Field Surgery	43	50	414	0	0	0	0	0	0
General Medicine	38	67	135	81	37	70	21	19	97
General Surgery	209	132	78	13	64	93	16	1	1
Infectious Diseases	12	12	0	0	0	0	0	0	0
Internal Medicine	118	142	49	2	50	92	21	3	1
Neurology	12	23	0	0	8	14	0	0	0
Neurosurgery	16	13	0	0	7	15	0	0	0
Nuclear Medicine	1	0	1	0	0	0	0	0	0
Obstetrics/Gynecology	35	6	7	0	11	26	0	0	0
Ophthalmology	18	30	6	0	14	25	0	0	0
Orthopaedic Surgery	141	94	24	11	48	76	0	0	0
Other Medicine	0	54	0	0	0	0	0	0	0
Other Surgery	0	10	0	0	0	1	0	0	0
Otolaryngology	8	17	1	0	14	18	0	0	0
Pathology	1	49	2	0	9	12	0	1	0
Pediatrics	0	0	0	0	0	13	0	0	0
Preventive Medicine	59	1	12	0	6	10	0	0	0
Psychiatry	105	66	14	2	15	33	0	0	1
Radiology	61	66	7	0	19	30	2	1	0
Thoracic Surgery	26	12	5	0	5	10	0	0	0
Undersea Medicine	0	0	0	1	0	5	0	0	0
Urology	26	27	0	0	14	19	0	0	0
Total	1308	1148	1002	126	567	835	221	97	429

Source: Data Provided by the Military Departments

Grand Total: 5733

Prior Audits and Other Reviews

The GAO; the Inspector General, DoD; the Army; and the Air Force issued nine reports related to this evaluation.

The GAO issued Report No. NSIAD-94-58 (OSD Case No. 9559), "OPERATION DESERT STORM: Problems With Air Force Medical Readiness," December 30, 1993. GAO reported that even though the Air Force medical units had to treat fewer casualties than were predicted, the units still experienced difficulty accomplishing their mission. Further, GAO reported that personnel arrived in-theater with limited training in their specialty; the medical skills of the Reserve personnel were not current; and personnel were not knowledgeable on the equipment deployed. The Air Force agreed with the report.

The GAO issued Report No. NSIAD-93-189 (OSD Case No. 9415), "OPERATION DESERT STORM: Improvements Required in the Navy's Wartime Medical Care Program," July 28, 1993. GAO reviewed the capabilities of the Navy medical units that supported Operations Desert Shield and Storm. GAO reported that Navy medical units were assigned wartime missions they were not prepared to fulfill. In addition, GAO reported that Navy medical personnel had not trained during peacetime to perform their wartime mission; most of the personnel assigned to fleet hospitals had not trained with several pieces of equipment before they arrived in theater; and many of the physicians and nurses who deployed had never treated trauma patients. GAO recommended that the Secretary of the Navy set and enforce time frames to correct shortcomings identified from lessons learned. The Navy agreed with the GAO findings and recommendation.

The GAO issued Report No. NSIAD-93-205 (OSD Case No. 9383), "MEDICAL READINESS TRAINING: Limited Participation by Army Medical Personnel," June 30, 1993. The review was conducted as a follow up on Report No. GAO/NSIAD-92-175. GAO reported that as of July 1992, the Army Medical Department Center and School had trained less than half of the Active duty physicians in key readiness courses due to heavy patient work loads. GAO noted that the Army Medical Department had undertaken several initiatives to increase participation in wartime mission-related training, but unless peacetime demands are balanced with the need to train for the wartime mission, those initiatives would not increase participation in medical readiness training. Although GAO did not make recommendations, it discussed its findings with responsible Army officials who generally agreed with the report.

The GAO issued Report No. NSIAD-92-175 (OSD Case No. 9019), "OPERATION DESERT STORM: Full Army Medical Capability Not Achieved," August 18, 1992. GAO conducted a series of audits in response to requests from the Chairman, Subcommittee on Military Personnel and Compensation, House Committee on Armed Services. GAO initially reported that many Army medical personnel had not trained during peacetime to perform

their assigned wartime mission. The Chairman asked GAO to follow up on its work by reviewing the Army medical wartime readiness training program, and the Navy and Air Force medical readiness problems identified subsequent to Operations Desert Shield and Storm. GAO followed up by issuing Report Nos. NSIAD-93-189, NSIAD-93-205, and NSIAD-94-58.

The Inspector General, DoD, issued Audit Report No. 96-168, "DoD Graduate Medical Education Programs and Medical Readiness Training," June 18, 1996. The audit focused on determining whether DoD physician education programs included adequate medical readiness training. The audit reported that a majority of DoD Active duty staff physicians assigned to combat support units at the eight medical centers visited, and graduate medical students at all DoD teaching hospitals had not received necessary medical readiness training and readiness training received was not adequately documented. The audit recommended that the ASD(HA) issue medical readiness training guidance and standards; update, distribute, and use approved military manuals and medical textbooks in all graduate medical education programs; and promote the development of an automated physician readiness training recording system. The ASD(HA) generally agreed to the recommendations.

The Inspector General, DoD, issued Evaluation Report, "Joint Medical Readiness Training Center," July 28, 1994. The Joint Medical Readiness Education Council, OASD(HA), requested an evaluation to determine whether the mission and functions of the Joint Medical Readiness Training Center were appropriate for contemporary requirements. The report stated that initial and sustainment medical readiness training should be a Military Department responsibility and that the Joint Medical Readiness Training Center should refocus on joint training. The report recommended the development and implementation of directives for both DoD and the Military Departments that will institute the requirement and outline the structure for providing medical readiness training. No comments were required in response to the final report.

The Inspector General, DoD, issued Inspection Report No. 93-INS-13, "Medical Mobilization Planning and Execution," September 30, 1993. The inspection objective was to evaluate the ability of DoD to provide adequate medical support during Operations Desert Shield and Desert Storm, and other contingencies. A major finding of the report was that insufficient training affected the availability of DoD medical personnel during contingencies. The report recommended that the ASD(HA), the Assistant Secretary of Defense (Reserve Affairs), and the Secretaries of the Military Departments ensure that medical personnel comply with requirements for officer basic training and field training, and that training requirements for medical sustainment and burn care be identified and funded. The ASD(HA) and the Military Departments essentially agreed with the recommendations.

The Army Audit Agency issued Report No. NR 95-214, "Regional Training Sites-Medical Program," September 14, 1995. The audit assessed requirements for medical training sites, cost-effectiveness of medical training sites, and the effectiveness of medical training. The audit concluded that the Army needed

only five sites to support the medical force planned for FY 1997 and recommended closing two sites. Also, the audit reported that the medical training sites under contract were not operated in the most cost-effective manner and recommended that the Army determine workload requirements at the sites, validate staffing levels, identify desired output from the management information system, develop management control procedures, and establish controls to make sure equipment available within the Army is considered before leasing. And finally, the audit reported the Army did not have a system in place to measure and evaluate the effectiveness of training provided at the medical training sites. The audit recommended the development of outcome-oriented performance measures to evaluate the effectiveness of medical training. Forces Command and the Deputy Chief of Staff for Operations and Plans agreed with the recommendations.

The Air Force Audit Agency issued a report for Project 96051012, "Air Force Reserve Medical Training Program," August 1, 1996. The audit assessed Air Force Reserve medical training. The audit concluded that the medical training program required improvement. Specifically, Air Force Reserve medical personnel did not meet required training requirements or specialty training, Reserve personnel inappropriately granted 5-skill-level upgrades to enlisted medical personnel, and the training data used to manage medical readiness training were not reliable. The audit recommended that the Air Force Reserve Surgeon General advise Reserve medical unit commanders to develop and execute a training plan to provide identified overdue training to medical personnel, fully utilize the capabilities of the automated training record database, implement a formal sustainment training program, and establish management controls to ensure sustainment training is accomplished when required. The Air Force Reserve agreed with the audit results.

Implementation Plans for Military Departments' Medical Readiness Training Programs

On May 6, 1996, the ASD(HA) issued a memorandum to the Military Departments requesting plans for implementing DoD Instruction 1322.24 in both the Active and Reserve components. The plans have been submitted to the OASD(HA). Because the DMRTEC will review the plans, as its charter requires, the DMRTEC review should ensure that implementation plans:

- o tie training plans to requirements,
- o provide training on actual deployable medical systems equipment,
- o adequately incorporate trauma training into the total training program,
- o use external evaluators in the Military Departments' oversight programs to validate skills attainment, and
- o identify the training costs.

Tying Training Plans to Requirements. The Military Departments should tie their training plans to mission requirements. DoD Instruction 1322.24 requires that Military Departments ". . . establish procedures to ensure both [the] Active and Reserve component[s] . . . develop medical readiness training standards to meet Service and the Unified Combatant Commanders missions." Programs of the Military Departments were not always tied directly to mission requirements; therefore, individual training requirements were not always tied directly to the individual's deployment mission. Individuals with mobilization roles to support overseas operations, whether in a backfill capacity or an actual deployment to the theater of operations, require different training than the physician designated to backfill at a continental United States medical treatment facility. Individual training plans need to reflect those unique requirements.

Individual training plans should be just that, individual. However, the training plans of the Military Departments were too general; that is, the plans were not tied to individual needs. The Military Departments need policy that requires individual development plans that are tailored to the unique needs of the individual, as well as mission requirements. For example, a physician with a specialty in critical care medicine in his or her private practice requires different medical specialty training than a family practice specialist.

Reserve physicians were not always provided sufficient time to complete their individual training requirements. Many of the interviews we conducted at the unit level revealed that Reserve physicians were detracted from medical readiness training because they were required to administer immunizations, provide physicals for other medical and nonmedical Reserve personnel, participate in social training classes, attend meetings, and perform nonessential

administrative functions. Those requirements reduced the time available for individual medical readiness skills training and active participation in unit training.

The DMRTEC, as part of its review of the Military Departments' medical readiness training implementation plans, should ensure that the medical readiness training programs include individual development plans. Those development plans should be tailored to support the unique needs of the individual, as well as mission requirements.

Training on Deployable Medical Systems Equipment. Reservists need to be trained on the actual equipment they would use in the field. DoD Instruction 1322.24 requires that health care personnel receive an orientation and annual operation unit mission briefing with the type of equipment that the member will use upon deployment. In addition, the Instruction requires field training exercises employing unit equipment, operating under simulated combat conditions. While some Reserve units had deployable medical system equipment sets on which limited training was given, most Reserve units did not have the equipment. Reserve units with the equipment had insufficient quantities of the equipment, and conducted limited training on the equipment. The training usually entailed merely examining the equipment or, in some cases, just looking at the equipment. The equipment was neither used for actual health care delivery, nor routinely used in health care simulations. Training on equipment was also very limited at the Military Department medical readiness training centers. While providing each Reserve unit with deployable medical systems equipment is not realistic, the Military Departments need to address methods for providing equipment training opportunities.

Two of the DMRTEC responsibilities are to "ensure the Services maximize use of DoD, regional, and local medical field training sites and sets . . . and ensure medical readiness training provides the skills necessary to meet military medical readiness competencies." One of the key competencies is the ability to perform health care delivery using actual field equipment. The DMRTEC should review the Military Departments' plans for training on deployable medical systems equipment to ensure that adequate medical readiness training will be provided.

Trauma Training. Physicians assigned to deployment missions need to be trained in trauma and mass casualty management. Trauma training is a critical type of sustainment training. DoD Instruction 1322.24 defines sustainment training as "training required to maintain or enhance the proficiency of individual and unit/platform skills." The Instruction further explains that through sustainment training, health care personnel maintain medical readiness skills by completing medical specialty proficiency training, such as war wound and casualty management.

Training programs for Reserve physicians do not generally include trauma training. Certification and legal restrictions prevent many Reserve physicians from participating in hands-on health care in civilian facilities while serving in their Reserve capacities. However, many of those interviewed, including the

Director of Physician Education at a major shock trauma center, recommended that Reserve physicians, whose deployment mission is to handle casualties, observe actual health care provided at civilian shock trauma centers to enhance their readiness skills. While the actual training would not include hands-on health care, it would provide the Reserve physician with exposure to the latest techniques in handling shock trauma patients, include medical discussions on the actions that did occur at the shock trauma center, and allow Reserve physicians to experience the level of activity associated with shock trauma care.

Observing in a trauma center is one training opportunity. Attending the Advanced Trauma Life Support Course is another training opportunity. While the course provides some level of education regarding trauma care, it does not provide experience in an actual trauma health care setting. The DMRTEC should review and consider the implementation plan of each Military Department to ensure that its proposal increases trauma training opportunities for Reserve physicians who need training before deployment.

Use of External Evaluators for Skills Attainment Validation. The Navy and the Air Force should use external evaluators to verify the attainment of medical readiness skills. DoD Instruction 1322.24 requires an annual review of the medical readiness certification of health care personnel. The certification process "verifies" the preparation of health care personnel for operational readiness. Attending training is not enough. Preparation also requires that skills, such as triage or war wound and casualty management, be attained and documented. Reserve component medical units were not uniformly evaluated externally by objective, neutral observers who validated medical readiness skills learned at the field readiness training centers. They were not evaluated because the Military Departments did not have uniform procedures in place to periodically assess and validate readiness skills proficiency of Reserve units. As a result, commanders could not be assured that units had mastered the medical readiness skills required during deployment.

Army. The Army had a well-developed system for evaluating medical readiness. The Army assessed and validated medical readiness training skills at Army Regional Training Sites - Medical. Evaluation methods included a variety of exercises and reviews by neutral observers, such as training assessment model evaluators at the unit's annual training; 72-hour exercises in the middle of a 2-week annual training program; observer and controller personnel from other Reserve units supporting exercises; after-action reviews; external evaluations; and, for high priority deployable units, operational readiness evaluations.

Typically, every Reserve unit with a deployment mission underwent training 3 of every 4 years at one of the regional medical training sites. In the fourth year, the unit participated in some type of evaluated training. Generally, the unit performed under an external evaluation at the training site using approximately 40 evaluators. Alternatives included participating in a joint training exercise opportunity or an overseas deployment training program.

Navy. The Navy had neither a system in place to inspect individuals and units on specific tasks, nor a system of objective observers to validate skills during medical readiness training at any of the Navy training centers. Operational readiness exercises are performed only on nonmedical units. While Navy personnel assigned to support the Fleet Marine Force (Marine Corps) received training at the Navy's Field Medical Service Schools and those assigned to fleet hospitals, at the Fleet Hospital Operations and Training Command, neither school evaluated skills attainment by Reserve physicians. The Field Medical Service School evaluated the success of its training programs through course critiques from each student. Fleet Hospital Operations and Training Command staff evaluated units by requiring them to satisfactorily show competence in four areas: assembly of a 50-bed hospital, functional area training, casualty exercise, and disassembly of the hospital.

The Commander, Fleet Hospital Operations and Training Command, supported an evaluation method, such as an operational readiness exercise. He indicated that an evaluation process could be developed at the training center by either creating a new phase with evaluation characteristics tailored for medical units, or by reducing the number of classes per year and incorporating an evaluation element into the annual schedule.

Air Force. The Air Force had three levels of oversight, including training centers, inspections by the Air Force Inspection Agency, and operational readiness inspections. However, none of those used objective observers and controllers to validate attainment of medical readiness skills. The evaluation method used by the Air Force training center was individual graduate assessment surveys, whereby supervisors were asked to rate the students and return the surveys. Inspections by the Air Force Inspection Agency are performed on Reserve units every 3 years, but the inspections are primarily paper exercises that review a variety of documents, including lesson plans, after-action reports, and completion rates of medical readiness training courses. The operational readiness inspections performed at the wing or major command level did not assess the medical proficiency of the units in specific tasks. Some minimal readiness skills validation were observed, such as putting on chemical suits, cardiopulmonary resuscitation, and weapons familiarization, but the operational readiness inspection did not assess the medical proficiency of the medical unit.

Every Reserve medical unit with a deployment mission should be validated at least once every 4 years, using a system of objective, neutral observers to assess medical skills proficiency on the units' deployment platform, whether that be in a field hospital, fleet hospital, or air transportable hospital. Only then can commanders be assured, short of mobilization, that units can perform the duties expected of them during deployments. As part of the review of the Military Departments' implementation plans, the DMRTEC should ensure that the plans discuss methods for evaluating individual and unit readiness. The DMRTEC should ensure that the Military Departments have uniform procedures in place to

periodically assess and validate medical readiness proficiency of the Reservists and their units. The evaluation process should include external, objective observers, who validate individual and unit medical readiness skills attainment.

Identifying Training Costs. The Military Departments need to fund the implementation of DoD Instruction 1322.24. The Instruction contains new requirements for both the Active and Reserve components, such as joint exercises with medical units, and detailed initial and sustainment training requirements with specified time frames. Those requirements were added during a time when funds were being reduced. The Military Departments identified the shortage of funds as one of the key elements preventing Reserve physicians and their units from getting the training needed. Funding and personnel resources should be provided to support meeting those training goals. While training is outlined in the Military Departments' budgets, medical readiness training is not specifically identified. The Instruction changes that requirement. The Instruction requires that the Military Departments program, budget, and account for the costs of implementing the Instruction across all components, Active and Reserve. The DMRTEC is required to validate the projections in the Program Objective Memorandum. Because sufficient funding to support the increased medical readiness training requirements is critical to its successful implementation; and because the Military Departments' Reserve management indicated that funding was a major problem, we suggest that the DMRTEC examine the implementation plans to validate that the Military Departments have allocated adequate funding for medical readiness training.

Interpretations of DoD Instruction 1322.24

The DoD Instruction 1322.24 needs to be examined for possible misinterpretations. During our interviews, several concerns surfaced about the Instruction. Some problems were minor, such as use of the term "all" in areas where the meaning was ambiguous. However, of major concern were the numerous categories of training specified in the Instruction, almost half of which were not adequately explained or defined. The following were included as categories of training.

- First aid training
- Initial medical readiness training*
- Initial occupational skill training
- Initial skills training
- Medical readiness training*
- Medical skills training
- Medical specialty proficiency training*
- Military medical skills training*
- Military specialty proficiency training*
- Service and command training
- Service specific training
- Service training requirements*
- Sustainment medical readiness training*

Of the 13 training categories, 7 were defined. Several of the training categories, such as military medical skills training, were described using other training categories that were not defined in DoD Instruction 1322.24. Because almost half of the training requirements were not defined, there could be difficulty and confusion when the Military Departments implement the Instruction. For example, one Military Department may interpret initial skills training as including basic training for officers, another may not. The DMRTEC is required in its charter to recommend changes to joint doctrine.

*Training categories defined in DoD Instruction 1322.24.

We suggest that the DMRTEC review DoD Instruction 1322.24 for possible misinterpretations and areas that could be misconstrued, and recommend any changes to the ASD(HA) for future policy revision.

Medical Readiness Strategic Plan 2001

The MRSP 2001 discusses the most critical medical readiness issues and includes 42 action plans. Of the 42 action plans, 4 specifically discuss medical readiness training. The 4 action plans concerning medical readiness training contain 17 tasks. Each Military Department is required to submit an implementation plan defining its medical readiness training program. The DMRTEC charter requires that the DMRTEC review and monitor the MRSP 2001 implementation plans.

Of the 17 medical readiness training tasks, 2 have been completed, action plan 32, tasks a. and c. Action plan 32 required that DoD establish a system to provide and monitor medical readiness training. Tasks a. and c. support completion of that system. They required the ASD(HA) to establish guidance for medical readiness training (Task a.) and identify minimum medical readiness standards (Task c.). Both tasks were completed with the release of DoD Instruction 1322.24. Of the 15 unfinished tasks directly related to medical readiness training, the following three require DMRTEC close monitoring.

Action Plan 32, Task e. Task e. of action plan 32 requires that the Military Departments develop a standard method to document training completion. The task contains two key components: a method for documenting training and standardization of that method. The methods proposed are the same as those in use, which the Military Departments acknowledge do not adequately document training completion. In addition, the implementation plans the Military Departments submitted do not support standardization, because each Military Department is relying on its own system. Two Military Departments discuss the use of the Defense Medical Human Resources System as the system needed to complete this task. That system is not scheduled to be operational until FY 2000, yet the same Military Departments indicated that the task would be completed in 1996. The DMRTEC needs to ensure the Military Departments implement a "standard method" to track completion of individual and unit training.

Action Plan 35, Task a. Action plan 35 requires increased opportunities for Service-specific and joint exercises. Task a. requires that DoD plan and program for one major joint exercise annually and that the exercise include medical units. While the task was originally assigned to the commanders-in-chief, in February 1996, the OASD(HA) transferred the action assignment to the Joint Staff. The transfer was not officially approved and, as a result, the Joint Staff did not submit an implementation plan. Implementation of the task is needed because joint exercises with participation from both the Active and Reserve components are beneficial for maintaining readiness. The DMRTEC, as part of its oversight function, should identify the organizational element responsible for the task, request an implementation plan, and review that plan to ensure it includes annual joint exercises with medical unit participation.

Action Plan 35, Task c. Task c. of action plan 35 requires joint medical field exercises at the combat training centers. The task was assigned to the U.S. Army. The plan submitted was not adequate because it did not consider joint training that satisfies the requirement for more involvement among the Military Departments. The DMRTEC should ensure that the Army submits a new implementation plan that promotes joint training with increased involvement by the Navy and the Air Force.

Medical Readiness Learning Initiative

The DMRTEC should evaluate MERLIN, an example of an emerging, computer-based training tool, which was designed to improve trauma and mass casualty management skills. DoD Instruction 1322.24 requires that medical readiness training programs "maximize the use of emerging technology, such as distance learning, computer simulation and virtual reality." The DMRTEC charter requires that it review the results of alternative training concepts. MERLIN is one such emerging technology that the DMRTEC should review for implementation at Active and Reserve units with deployment missions.

The development of MERLIN began in FY 1994 as part of an Office of the Secretary of Defense (Reserve Affairs) program known as CAREFORCE. CAREFORCE is a pilot civilian-military program designed to bring realistic "hands-on" training to National Guard and Reserve forces through experience in regional trauma centers and support of medically underserved communities. MERLIN was tested under CAREFORCE through an Air National Guard exercise called Operation Arch Angel.

MERLIN - Emerging Technology in Training. MERLIN was developed as an interactive program to augment training for mass casualty management. MERLIN provides a general review of the concepts of triage, the theory behind the stabilization of trauma victims, and a simulated environment in which to practice those skills. It is the medical equivalent of a war game. Through a computer-based training program, doctors, nurses, and medical technicians can train for combat in armories, offices, and even at home. MERLIN can operate as a stand-alone medical readiness training system or, with further development, across a network distribution system forwarding training to interactive network servers around the globe.

The computer disk technology of MERLIN presents health care providers with realistic medical emergencies and requires them to act quickly and correctly to save patients. On-screen scenarios, accompanied by the sound of helicopters bringing in casualties with realistic appearing wounds, require MERLIN users to make rapid triage and combat trauma care decisions. As in reality, MERLIN is programmed so that making the wrong medical decision, or failing to provide treatment in time, could be fatal. Users get immediate feedback as to the adequacy of their triage and treatment choices.

Hands-on Exercise to Evaluate MERLIN. Operation Arch Angel was a CAREFORCE hands-on exercise held in August 1995 in St. Louis, Missouri. The objective of the research design of Operation Arch Angel was to compare identical patient treatment at five air transportable clinics in which three groups had received MERLIN training and two had not.

The results of Operation Arch Angel, published in "Evaluation at Operation Arch Angel: Executive Report," February 1996, suggest that advanced MERLIN training for medics, corpsmen, and line combatants will greatly

improve both casualty care and the quality of the data transmitted by radio and other conventional means to the receiving stations. Throughout the operation, patient outcomes indicated that CAREFORCE teams that received MERLIN training attained a statistically significant increase in efficiency over teams that did not receive MERLIN training. The units without MERLIN training averaged 35 minutes per patient (down to 27 minutes as the week progressed); and those units with MERLIN training averaged 25 minutes per patient (down to 20 minutes as the week progressed). The conclusions of the executive report, relative to triage and treatment cycle time, were twofold. First, all sites improved their cycle time performance. Second, sites that received MERLIN training not only appeared to have initially outperformed those that did not, but they continually outperformed them.

The MERLIN trained triage teams also worked well as units and displayed a higher level of independent decision making at the battalion aid station level than untrained triage teams. Teams without prior MERLIN training improved as the event unfolded because they were "getting trained" at the expense of the initial casualty waves. The MERLIN training approach allowed individuals to progress in their skills, do their jobs better, and do more than they could do before. By making such interactive programs widely available, MERLIN developers believe "we can make soldiers, sailors, airmen, and marines more like today's medics; medics and corpsmen more like physician assistants; and physician assistants and nurse practitioners more like physicians." Interactive computer simulations, such as MERLIN, have the potential to dramatically extend improved medical readiness training to our forces.

Costs to Implement MERLIN. There is no cost for the MERLIN software; the system is government-owned and easily reproduced. The significant costs are for the hardware, which varies based on hardware options selected. For example, costs for a fully-configured base model, including personal computer with 16 megabytes of random access memory, sound card, modem, 17-inch monitor, computer disk drive, video card, laser disk player, and associated cabling are about $4,500. A middle-of-the-road configuration model with touch screen monitor costs approximately $6,100. A deluxe model configuration with a larger touch screen monitor and an upgraded laser disk player costs about $8,100.

Organizations Visited or Contacted

Office of the Secretary of Defense

Deputy Under Secretary of Defense (Readiness), Washington, DC
Joint Staff, Deputy Director for Medical Readiness, Washington, DC
Assistant Secretary of Defense (Health Affairs), Washington, DC
Assistant Secretary of Defense (Reserve Affairs), Washington, DC

Department of the Army

Army Audit Agency, Alexandria, VA
Army Forces Command, Atlanta, GA
  Army Reserve Command, Atlanta, GA
  94th General Hospital, Seagoville, TX
  5501st Army Hospital, San Antonio, TX
  807th Medical Brigade, Seagoville, TX
  Regional Training Site - Medical, Camp Parks, CA
Office of the Surgeon General, Falls Church, VA
  Army Medical Command, San Antonio, TX
  Army Medical Department Center and School, San Antonio, TX
5th US Army, San Antonio, TX
Army National Guard Bureau
  Army National Guard Readiness Center, Arlington, VA
  126th Medical Company (Air Ambulance), Mather Air Force Base (AFB), CA
  175th Medical Brigade, Sacramento, CA
Joint Readiness Training Center, Fort Polk, LA
National Training Center, Fort Irwin, CA

Department of the Navy

Office of the Surgeon General, Washington, DC
Bureau of Medicine and Surgery, Washington, DC
  Fleet Hospital Operations and Training Command, Camp Pendleton, CA
  Field Medical Service School, Camp Pendleton, CA
Naval Reserve Force, New Orleans, LA
  Fleet Hospital 22, Cleveland, OH
  Naval and Marine Corps Reserve Center, Mirimar, CA
  Readiness Command 19, San Diego, CA
  Surgical Co A, 4th Medical Battalion, San Diego, CA

Department of the Air Force

Air Force Audit Agency, March AFB, CA
Air Force Inspection Agency, Kirtland AFB, NM
Office of the Surgeon General, Washington, DC
Air Force Reserve Command, Warner Robins , GA
  452d Air Staging Squadron, March AFB, CA
  452d Medical Squadron, March AFB, CA
  752d Medical Squadron, March AFB, CA
Air National Guard
  Air National Guard Readiness Training Center, Andrews AFB, MD
  161st Medical Squadron, Phoenix, AZ
82nd Training Wing, Sheppard AFB, TX

Other Defense Organizations

Defense Manpower Data Center, Arlington, VA
Joint Medical Readiness Training Center, San Antonio, TX
Uniform Services University of the Health Sciences, Bethesda, MD

Non-Defense Organizations

Congressional Budget Office, Washington, DC
General Accounting Office, Washington, DC

Non-Government Organizations

Henry M. Jackson Foundation, Rockville, MD
R. Adams Cowley Shock Trauma Center, University of Maryland Medical Center, Baltimore, MD

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Auditor General, Department of the Air Force
Surgeon General of the Air Force
Chief, Air Force Reserve
  Surgeon, Air Force Reserve
Director, Air National Guard Bureau
  Surgeon, Air National Guard Bureau

Other Defense Organizations

Director, Defense Contract Audit Agency
Director, Defense Logistics Agency
Director, National Security Agency
  Inspector General, National Security Agency
Inspector General, Defense Intelligence Agency
President, Uniformed Services University of the Health Sciences

Non-Defense Federal Organizations and Individuals

Office of Management and Budget
General Accounting Office
  National Security and International Affairs Division
    Technical Information Center
  Health, Education, and Human Services

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Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
House Committee on Appropriations
House Subcommittee on National Security, Committee on Appropriations
House Committee on Government Reform and Oversight
House Subcommittee on National Security, International Affairs, and Criminal Justice, Committee on Government Reform and Oversight
House Committee on National Security

Evaluation Team Members

This report was prepared by the Logistics Support Directorate, Office of the Assistant Inspector General for Auditing, DoD.

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