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Perspective

Future Battle

Major General James B. Peake

Army After Next is the process being used to look into future warfighting for the Army. It is giving glimpses of rapid strategic deployment of forces; full dimensional operations; and immediate, simultaneous application of joint interdiction and maneuver. The enemy is destroyed or concedes in the face of follow-on forces. The fight is over before the enemy can dig in or mount a counterattack. Army After Next is being wargamed now and will provide the axis for developing doctrinal organization and materiel for the Army of the third decade of the new millenium.

This picture poses significant challenges to the provision of medical care on the future battlefield. A smaller combat service support footprint means a leaner medical presence in the area of operations. Dramatically increased battlespace translates into prolonged evacuation times, while short evacuation policies (length of stay) in-theater reduces inpatient needs but increases evacuation care requirements. All the while, expectations are rising on the degree and sophistication of medical care available to American soldiers wounded on the battlefield.

The AMEDD is rising to the challenge in numerous ways. Smaller, highly mobile medical modules and specialty teams are being designed and fielded. Shifting inpatient resources to resuscitative and stabilization capabilities will ensure the safe and rapid evacuation of critical casualties out-of-theater. Two new evacuation platforms, the UH-60Q Blackhawk helicopter and the armored medical evacuation vehicle, are in the pipeline and provide the AMEDD with enhanced capabilities. New technologies such as fibrin-impregnated bandages, the Life Support for Trauma and Transport platform, and the personal information card hold the promise of enhancing forward medical care. Initiatives to improve combat medic training parallel improvements in technology.

In this issue of the AMEDD Journal are several articles that provide glimpses of some of the issues facing the AMEDD in the next century:

- *Experiences of a Medical Company Commander in Bosnia.* Provides a first-hand account of the commander of an Area Support Medical Company in Operation "Joint Guard." Peacekeeping and other military operations other-than-war figure prominently in the future and the "AMEDD After Next" must be prepared to commit its full range of capabilities to support the force.

- *Electronic Monitoring of Temperature Sensitive Pharmaceuticals.* Describes the process used by the U.S. Army Materiel Center Europe to ensure the proper storage and shipping of important medicines. The article highlights the success in ensuring the integrity of the anthrax vaccine supply. Anthrax is a potential weapon of mass destruction (WMD) and defense against anthrax and other WMD is an important factor in the Army After Next concept.

- *Case Reports: Smokekeless Tobacco Cessation Therapy and Naltrexone Related Smoking Cessation.* Two case reports outline pharmacotherapy and psychoeducational approaches that show promise in ending nicotine addiction and reducing the myriad of negative health effects of smokeless tobacco.

- *Tattoos: Attitudes and Beliefs Among Enlisted Medical Personnel.* Reports on a survey of attitudes towards tattoos. The results are interesting and have relevance to leaders and medical providers counseling young people on the potential impact of getting a tattoo.

- *The Smile Center: Innovation Increases Patient Access to Care.* Describes the successes of the Pacific Regional Dental Command in improving dental readiness of soldiers through improvements in appointment scheduling. Access to care remains a top concern for the AMEDD, and the approach outlined in the article serves as a useful model.

- *The Economic Efficiency Factor Applied to the U.S. Army DENCOM.* Describes the use of a specific metrix to analyze staffing ratios and clinic efficiency. As the AMEDD looks to the next century, it must strive for ways to maximize performance while minimizing costs.

Also included is an interesting and informative article, *The Army Medical Department Regiment...Helping Maintain a Tradition of Caring.* It focuses on the heritage, goals, and responsibilities of the AMEDD Regimental System and the importance the Regiment holds for the entire AMEDD community.

Experiences of a Medical Company Commander in Bosnia

CPT James Perkins†
2LT Peter Vangeertruyden††

As the commander of an Area Support Medical Company deployed to Bosnia-Herzegovina in support of Operation Joint Guard, I have had the opportunity to build up valuable experience that I would like to share with others in the Army Medical Department. Our two main company missions in Bosnia were: (1) to provide a quick response medical team that could react to a mass casualty (MASCAL) situation and (2) to prepare a ground treatment team that would be able to medically supplement another Stabilization Force 2 (SFOR 2) base camp given the order to execute a contingency plan (CONPLAN). In initial exercises, we found that as higher headquarters activated contingency plans or alerted us of a MASCAL, the time and effort it took to prepare a medical response team/ convoy was very intensive. After preparing the minimum four-vehicle convoy, delivering a convoy brief, verifying vehicle dispatches and DA Form 2404 (Preventive Maintenance Checks Service Form) and loading the radios with communication security data, 15 to 20 minutes seemed to be the standard time before departure. In contrast, the Norwegian contingent collocated in our base camp reacted to medical emergencies within minutes. This quick reaction time came with the availability of the SISU, a heavily armored ambulance that can maneuver into a hostile situation without an escort. Furthermore, Norwegian policy allowed for a one-vehicle convoy. The U.S. Army M997 Field Ambulance, being a light-skinned vehicle, required an escort to transition into or near a conflict. Another challenge we faced as a company included delivering medical support to other base camps given the road conditions during a Bosnian winter.

Through experience as well as trial and error, we created three medical packages that would decrease our emergency response time while increasing our overall medical capabilities in theater: (1) a four-vehicle MASCAL medical response package; (2) a four-vehicle contingency medical package for use in CONPLANs; and (3) a slingload team capable of delivering a Level I treatment team via UH-60 with OH-58 escorts. These are all prepackaged systems with medical response personnel preidentified. Most importantly, the medical provider, physician or physician assistant, would hand carry a medical bag called the "trauma ruck." We will further discuss and describe the experiences of a medical company providing medical support in the Bosnia area of operations with emphasis on the development of the three medical response packages as well as the issue of convoy operations in Bosnia. In addition, this article will show how these three packages exhibit the six principles of Combat Health Support (CHS) outlined in FM 8-10-24: conformity, proximity, flexibility, mobility, continuity, and control.[1]

The Mass Casualty Package

The company developed a MASCAL response package and standard operation procedures (SOP) for reacting to situations such as motor vehicle accidents, bomb explosions, or any other instances where numerous casualties would be in need of evacuation to a medical facility. Although other medical evacuation assets included air evacuation by an air ambulance company or ground evacuation by the NORDPOL (Norway, Finland, and Sweden) Brigade's SISU vehicles, certain instances were present where we were the first response to these MASCAL situations.

The MASCAL SOP initially outlines the preparation necessary for a successful response: identify the medical assets within the area of operations (Level I, II, and III); coordinate with air ambulances within your area; identify all nonmedical evacuation assets (for example, M1078 Light Mobile Tactical Vehicle [LMTV] or M998s; and

establish a first-up response team. The first-up response team consists of: one Field Medical Assistant (70B) command and control element, one Field Surgeon (62B) or Physician Assistant (65D), one Emergency Treatment NCO (91B30), eight Medical Specialists (91B10), and one M249 gunner. The vehicles of the first-up MASCAL response team include two M997 Field Ambulances, one command M998, and one empty LMTV (M1078). If we relied on the equipment of the ambulances to respond to a medical emergency, we would be limited to two Ambulance Medical Equipment Sets (MESs). A new concept we employed was the use of what has come to be known in our battalion as the "trauma ruck." This rucksack, capable of use by paratroopers in airborne operations, contains equipment that dramatically increases the level of medical care: minor surgical sets, cut-down trays, chest tube packages, and other stabilizing equipment.

On the scene of the MASCAL, each member of the response team has a certain responsibility. The site manager is responsible for the command, control, and security of the area and must also coordinate calling in a nine-line medical evacuation request and continuously send updates to the next level of healthcare. The physician on-scene is responsible for the initial triaging and the performing of life support on urgent casualties. The noncommissioned officer in change (NCOIC) is responsible for managing medical assets and overall coordination of medical care. The medics are responsible for treating and evacuating casualties.

Contingency Plan Package

The company developed a second package using a CONPLAN jump treatment team to reinforce and supplement other aid stations around Bosnia. Without going into detail of the various CONPLANs for reasons of operational security, imagine the imminent possibility of other base camp aid stations in Bosnia requiring additional medical support given a certain operation – this treatment team significantly increases the trauma and patient holding capabilities. Before departing base camp, the jump treatment team must also make certain preparations: identifying medical assets in proximity to the base camp destination, coordinating for air ambulance assets as a means of evacuation, and establishing a first-up response team. The CONPLAN jump treatment team consists of one Field Medical Assistant (70B) command and control element, one Field Surgeon (62B) or Physician Assistant (65B), one Emergency Treatment NCO (91B30), eight Medical Specialists (91B10), and one M249 gunner. The vehicles used for the CONPLAN team include one command M998, two M997 Field Ambulances, and one LMTV pulling a 10K generator with trailer. The medical equipment loaded on the LMTV includes one Trauma MES and one Patient Holding MES packed by Unit Assemblage List (UAL) standards. Other equipment includes the trauma rucksack and two ambulance MESs.

During the CONPLAN, each soldier is assigned a specific task. The site manager is again responsible for the command, control, and security of the site, the coordination of any nine-line medical evacuation request, and the coordination with the base camp aid station that is to be supplemented. The NCOIC is responsible for the convoy preparation, the setting up of medical assets on site, and overall coordination of medical care. The physician is responsible for the initial triage and performing life support on urgent casualties. The medics are responsible for treating and evacuating casualties.

The Slingload Treatment Team

The "slingload treatment team" is a Level I, rapidly-deployable medical package that can be air delivered to all base camps in the theater within 1 hour. We developed the air treatment team because the ground medical packages could take hours to deliver given the narrow, winding roads that run through mountainous passages. In addition, Bosnian roads are infiltrated with pedestrian and horse-drawn cart traffic, neither of which obey traffic laws. During winter months, roads often become impassable as a result of snow and ice; in these instances, the SFOR allows no vehicular movement. The alternative was air delivery of medical support in the form of a treatment team.

The treatment team equipment is packed into a 10,000-pound cargo net. The team loads the UH–60, then flies to the pick-up zone (PZ) where a trained air assault team provided by the medical company carries out the

hook-up (Figure 1). The aircraft flies the treatment team to the base camp that requested augmentation. As the team moves into the medical facility located at the base camp, the aircraft returns to the PZ, picks up the M998, and delivers it to the requesting base camp (Figure 2). Whenever possible, these two movements are conducted simultaneously by multiple aircraft.

The air assault treatment team consists of one Physician (62B) or Physician Assistant (65D), one Emergency Treatment NCO (91B20), and one Medical Specialist (91B10). The slingloaded medical equipment consists of one trauma set, two litters, and litter stands. The medic carries the two M-5 bags and the physician carries the trauma rucksack. The vehicle is the M998. All supplies are packed according to the UAL with the exception of the trauma rucksack.

Fig 1. Treatment team equipment from D/261st Area Spt Med Bn being loaded for "slingloading" to base camp.

Fig 2. An M998 command vehicle from D/261st Area Spt Med Bn being "slingloaded" by the 159th Med Co (Air Amb).

Convoy Operations

There is an extensive pre-convoy checklist prior to conducting a MASCAL convoy or CONPLAN support convoy in Bosnia. Before leaving home station at Fort Bragg, NC, we rehearsed convoy operations to identify associated problems. Congruent with the concept of performance-oriented training outlined in FM 25-101, leaders and soldiers participated in convoy lane training and practical exercise.[1] The result of this training was the development of a detailed convoy SOP that included a convoy checklist. The checklist, though time intensive, heightened the awareness of safety and force protection.

Once in Bosnia, it became obvious that we would have to develop a plan that would reduce the pre-convoy preparation time. The company received a daily morning convoy brief that detailed how to react to enemy fire calling in SALUTE (Size-Activity-Location-Unit-Time-Equipment) and ACE (Ammo-Casualties-Equipment) reports, accident/breakdown procedures, mine detonation, and scheduled/unscheduled halts; the convoy briefing also covers important radio frequencies and the location of other SFOR base camps. The intelligence summary, which covers current political and military events, followed the convoy brief. Other pre-convoy events included: conducting morning vehicular preventive maintenance checks/services, weekly communication exercises, verifying presence of a 72-hour supply of MREs and water, extra fuel cans, a tow bar, and tire chains in the vehicles. Finally, pre-combat inspections ensured each soldier had their SFOR card, identification tags, full combat load, and a ruck containing equipment for 72-hour sustainment.

Principles of CHS

In various ways, these different packages exhibit the six principles of CHS outlined in FM 8-10-24: conformity, proximity, flexibility, mobility, continuity, and control.[2]

The company MASCAL SOP required conduct of a quick mission analysis and implemented one of the six principles of providing health service support conformity. In addition, the steps taken to reduce the convoy preparation time displays conformity by the creation and implementation of well-structured plans.

The CONPLAN package exhibits two more of the six principles of CHS: continuity and flexibility. The CONPLAN operations call for our Level II medical company to supplement the Level I assets of U.S. Army camps as well as multinational base camps; currently, there are over a dozen scenarios we are prepared to support. The end-state of our CONPLAN operation is increasing the medical capabilities in theater by tailoring a modular medical package forward to reinforce other medical elements and ensure a progressive and seamless CHS system. The slingload package best exhibits two more of the six principles of CHS: proximity and mobility. This package places CHS units and personnel in the right place at the right time; it also enhances mobility through the echelon of medical assets to maneuver units in need of reinforcement.

Conclusion

Employing the principles of CHS in creating these three unique medical packages are examples of how to

	Personnel	Vehicles	Equipment
CONPLAN PACKAGE	1 Field Medical Assistant (70B) command and control element 1 Field Surgeon (62B) or Physician Assistant (65B) 1 Emergency Treatment NCO (91B30) 8 Medical Specialists (91B10) 1 SAW gunner	2 M997 Field Ambulances 1 Command M998 1 LMTV filled with equipment (M0178)	1 Trauma MES 1 Patient Holding MES 1 Trauma Rucksack 2 Ambulance MESs
MASCAL PACKAGE	1 Field Medical Assistant (70B) 1 Field Surgeon (62B) or Physician Assistant (65D) 1 Emergency Treatment NCO (91B30) 8 Medical Specialists (91B10) 1 M249 gunner	2 M997 Field Ambulances 1 Command M998 1 Empty LMTV (M0178)	2 Ambulance MESs 1 Trauma Rucksack
SLINGLOAD TEAM	1 Field Surgeon (62B) or Physician Assistant (65D) 1 Emergency Treatment NCO (91B20) 1 Medical Specialist (91B10)	1 M998	1 Trauma MES 2 Litters and Litter Stands 2 M-5 Bags 1 Trauma Rucksack

Summary Table of Medical Packages for Area Support Medical Company in Bosnia

provide world-class medical support given limitations and restrictions. Detailed SOPs and a comprehensive understanding of them proved the keys to cutting down the emergency response time. Pre-staging the four vehicle packages, daily identification of the MASCAL and CONPLAN package personnel, daily pre-combat inspections, and daily convoy briefs further cut down the response time. Implementing the concept of slingloading a treatment team further exemplifies overcoming obstacles such as weather and harsh road conditions. Discovering alternative methods of accomplishing missions exponentially increased the capability of our Medical Task Force as well as the overall capability of all American forces in Bosnia (see summary table, preceding page).

References

1. FM 25-101, Battle Focused Training, Headquarters, DA, Washington DC; 1990:1-5.

2. FM 8-10-24, Area Support Medical Battalion, Headquarters, DA, Washington DC; 1993:1-1 -1-3.

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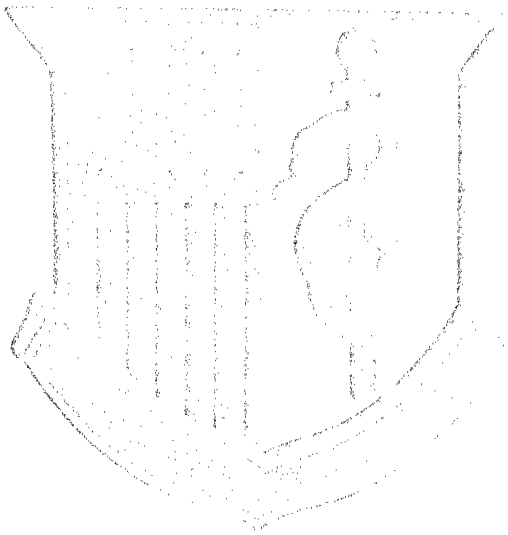

Tattoos: Attitudes and Beliefs Among Enlisted Medical Personnel

MAJ Larry Applewhite†
MAJ Diane Zierhoffer††

This study investigated the beliefs and attitudes about tattoos in the military. The sample consisted of 110 Army and Navy enlisted personnel attending specialized medical training courses at the Army Medical Department Center and School (AMEDDC&S). A survey questionnaire was administered to each volunteer participant. The survey consisted of three parts. In addition to demographics, the survey focused on attitudes about tattoos with some questions focused on the compatibility of tattoos with military service and on the participants' own experiences with tattoos. This was designed as a descriptive study to investigate current beliefs and attitudes about tattoos. This population reported that tattoos are common in society, and while those with tattoos are believed to be negatively stereotyped, only 11% of the participants interpreted getting tattoos as a rebellious act. Those in the study with tattoos expressed no regrets at having them. It was concluded that tattoos are compatible with a military lifestyle. It appears that tattoos do not create a barrier to developing cohesion. Implications for further research and training are discussed.

Introduction

Tattoos appear to be growing in popularity. Much of the growth may have been stimulated by many entertainment celebrities and professional athletes, both male and female, who seem to endorse the practice by openly displaying their own body art. It is difficult to determine if this phenomenon will prove to be a short-term or long-term trend because it is currently unknown if tattoos have shed their culturally negative image and replaced it with a widespread social acceptance. Regardless, young adults and adolescents today may be susceptible to being influenced by public role models and attempt to emulate them by becoming tattooed by either professional or amateur methods. It is this population that the military services must draw from to meet the bulk of the Defense Department's personnel needs. It may, therefore, be safe to assume that increasing numbers of recruits enter the military sporting a tattoo or may get one shortly thereafter. Ramifications of this trend may be reflected in the recent updating of Army Regulation 670-1, *Wear and Appearance of Army Uniforms and Insignia*, which added further guidance on publicly displaying tattoos.[1]

While tattoos have been traditionally associated with soldiers and sailors, little is known about contemporary enlisted service members' experiences and attitudes about tattoos. This study was undertaken to explore tattooing in the military by estimating the prevalence of tattoos among enlisted personnel and identifying common attitudes and beliefs about tattoos and those who have them. Implications for the Armed Services, and specifically the Army Medical Department, are addressed.

Literature Review

It is estimated that 3% of the general population are tattooed and that between 50,000 and 100,000 females get tattoos annually.[2] Tattooing may be even more prevalent among adolescents. Armstrong and McConnell used a self-report questionnaire to survey 642 high school students from six Texas schools.[3] Fifteen percent (105) reported having one or more tattoos. The vast majority (90%) were between the ages of 14 and 18 when they got their first tattoo. Many (40%) believed that the tattoo had positively changed their lives by making them feel special and unique. However, the tattoos came with various social consequences, as some students reported having experienced such adverse reactions as fights with parents, embarrassment, gossip, and police harassment

related to their tattoo. Interestingly, only one student described his tattoo as being related to gang membership. Clinicians and social scientists alike have attempted to understand the motivation behind the decision to get a tattoo. Hamburger and Lacovara examined the records of 500 inmates at a Federal Correctional Institute and found that 65.2% had tattoos.[4] Further inquring of inmates revealed that the primary reason for getting a tattoo, both prior to and during incarceration, was a tendency to succumb to group pressure. Researchers also found that an individual sense of insecurity and personality disturbances were contributing factors in tattooing.

A qualitative study composed of semistructured interviews with college students from Lancaster University, in England, was designed to identify the rationale people have for voluntarily submitting themselves to a relatively uncomfortable and invasive procedure.[5] Common themes expressed by Lancaster students seemed to satisfy either a personal or social desire. Demonstrating mastery of pain, overcoming fear, establishing a sense of individual identity, and affiliating with a distinct counterculture were prominent explanations for getting a tattoo.

The psychodynamic implications of tattoos were discussed by Grumet after an extensive literature review.[6] He predicated his review on the assumptions that a tattoo is a form of nonverbal communication and that a tattoo worn for many years becomes a source of emotionally charged memories and meanings from which psychological motives can be derived. Establishing individual identity, proclaiming group allegiance, expressing antisocial sentiments, and exhibitionism were identified as common motives for being tattooed. Similarly, Martin offered clinical interpretations for the motivational factors which drive an adolescent towards getting a tattoo.[7] He reasoned that, particularly for adolescents, a tattoo reinforces the developmental striving for individuation and provides a degree of symbolic permanence and stability at a time when much in life seems transitory and turbulent.

Any perceived psychological benefit to having a tattoo must be weighed against social costs. While most tattooed people continue to experience their tattoo positively, many eventually develop negative opinions often related to personal life changes such as divorce or separation, employment difficulties, and social perceptions which frequently associate people with tattoos to criminal and violent segments of society.[8] Pers and Von Herbst, as quoted in Grumet, found that fully half of a sample of 819 military recruits felt that their tattoos had become a handicap.[6] Also related to military service, Wright noted that the British Royal Navy does not employ tattooed women.[8]

There is evidence that attitudes about tattoos may be formed at an early age. Houghton, Durkin, and Carroll reported in a focus group study of 80 students, ranging from 6 to 16 years old, that the children generally expressed negative attitudes about tattoos.[9] Tattoos were thought to convey a negative image and were associated with lower status employment or illicit activities. The sole exception was the favorable attitude expressed by early adolescent females towards small tattoos; however, the positive perception was restricted to the peer group, as it did not extend to tattooed adults working in positions of responsibility.

Some of the stereotypical beliefs about people with tattoos may be rooted in the numerous reports which have focused on tattoos and socially inappropriate behavior. Harry evaluated the body image of 45 adult male offenders incarcerated for violent crimes.[10] He found that the 21 prisoners with tattoos were more likely to have a drug abuse diagnosis and a history of self-mutilation. Although the author cautioned against generalizing the findings from such a small sample, he suggested that tattooed men may tend to have a differentially lower self-esteem and higher levels of impulsivity than nontattooed men. In an earlier research review, post concluded that the preponderance of information supports the assumption that persons with tattoos most likely have, or did have, a personality disorder which is reflected in the tattoo.[11]

A report focusing on adolescents with amateur tattoos or those applied by crude methods, usually through self-administration or by friends, indicated that tattooed students tend to have a history of lower academic performance and are subjected to negative judgments from peers, parents, and authorities but, nevertheless, they usually obtain more tattoos.[12] Further empirical support for the aforementioned is found in a study of 464 randomly

selected high school students in Australia.[13] The researchers discovered that almost 14% had tattoos mostly of the amateur or "homemade" variety. These students scored substantially higher on self-reports of behavior problems in school and many expressed regrets about getting tattooed.

In addition to possible psychosocial reactions, there are data which indicate that tattooing may pose a potential health risk. While the probability is apparently low, transmission of blood borne diseases such as human immunodeficiency virus and hepatitis B is possible. Moreover, having a tattoo, particularly a "homemade" or "jailhouse" one, may be a manifestation of a rebellious lifestyle which places the bearer in an at-risk category.[14,15]

The literature reflects a broad range of individual and societal beliefs about tattoos, and more importantly, those who wear them. While evidence suggests that some hold distinctly negative perceptions of people with tattoos, and some tattooed individuals may regret getting one, others report positive outcomes associated with the experience. However, it remains to be determined if these disparate perspectives exist in today's military.

Methodology

To explore the range of attitudes and beliefs about tattoos in the military, a cross-sectional, descriptive study was designed and conducted with Army and Navy enlisted personnel attending courses at the AMEDDC&S, Fort Sam Houston, TX. A self-report survey was administered with the support of the Dean, Academy of Health Sciences, and technical assistance from the Department of Academic Support (DAS). Trainees receiving specialized medical training participated in the survey.

The survey questionnaire consisted of three sections. The first asked for standard demographic data and information about the member's military service. The second contained 25 four-point Likert-scale items designed to gauge attitudes and beliefs about tattoos in general and, specifically, about their compatibility with military service. A "neutral" or middle category was not included, to reduce any tendency to avoid taking a position. The third section asked participants to respond to questions about their own experiences with tattoos. The instrument's face validity was assessed through an independent review by a systems training evaluator within the DAS. The reliability coefficient for the full 25-item instrument was .52; however, reliability for the four items which focused specifically on beliefs about the compatibility of tattoos within the military was established at .71.

In order to get a broad cross section of enlisted medical personnel, four separate courses were selected for participation. Surveys were administered by the authors, using standardized instructions, to students attending the Mental Health Specialist Course (n=42, 91% of those enrolled in the course), Physical Therapy Specialist Course (n=27, 87%), Occupational Therapy Specialist Course (n=24, 92%), and Preventive Medicine Specialist Course (n=17, 85%) for a total sample of 110% , or 89% of those enrolled in the combined courses. Respondents remained anonymous, and participated voluntarily. All who were present during the survey administration opted to complete the survey.

Findings

The Sample. As one would expect, the vast majority (76%) of the respondents were from the lower enlisted ranks with only 23% identified as noncommissioned officers. Accordingly, 83% had six or less years time-in-service. Army personnel, including active duty, Reserve, and National Guard components, comprised 80% of the sample. The remaining 20% were active duty Navy. A full three-fourths (76%) of the individuals were between 17 and 26 years old. Only six participants (6%) were 32 years or older. Two-thirds (64%) were male and 36% were female. A little over half (56%) were single, whereas 40% were married. A small fraction (4%) was divorced. Half (54%) identified themselves as Caucasian, 26% as African American, 7% as Asian American, and 5% as Hispanic. A significant portion (21%) had a college degree, or had at least some college credit (47%). A third (33%) had either earned a high school diploma or completed the General Educational Development program.

Experiences with Tattoos. Fifty respondents (46%), 32 males and 18 females, reported having a tattoo. Nine (9%), five males and four females, had three or more

Number	Item	Response			
		Strongly Disagree	Disagree	Agree	Strongly Agree
Q1*	A tattoo is compatible with military service.	5	15	62	28
Q2	A tattoo is a source of pride.	7	30	50	24
Q3	Getting a tattoo is an act of rebellion.	49	49	10	2
Q4*	It is all right for military officers to have a tattoo.	5	7	67	31
Q5	Getting a tattoo is usually an impulsive act.	24	47	34	6
Q6	A tattoo is a fashion statement.	9	32	52	17
Q7	A tattoo is common in today's society.	1	2	61	47
Q8	A person with a tattoo most likely has been a member of a gang.	87	21	3	0
Q9	A person with a tattoo is more likely to abuse alcohol than someone without a tattoo.	79	26	4	2
Q10	A person with a tattoo is more likely to have taken illicit drugs than someone without a tattoo.	78	23	8	2
Q11	People with tattoo are negatively stereotyped.	5	10	57	39
Q12*	It is all right for an enlishted service member to have a tattoo.	2	6	57	45
Q13	A person with a tattoo is most likely a member of an extremist group.	78	29	3	1
Q14	A tattoo is a way of expressing one's individuality.	5	13	66	24
Q15	There are a number of health risks associated with getting a tattoo.	4	32	61	14
Q16	People who get a tattoo at a young age will most likely regret it when they get older.	15	50	39	6
Q17	Getting a tattoo is a sign of immaturity.	56	44	8	2
Q18	A tattoo says a lot about a person's personality.	4	27	63	16
Q19	Generally, I would feel comfortable being treated by a healthcare provider with a tattoo.	3	12	60	36
Q20	A tattoo indicates a person is likely to conform to rule and regulations.	12	65	27	4
Q21	Tattoos are an expression of American culture.	10	31	48	19
Q22*	Tattoos have a traditional place in military society.	6	26	46	29
Q23	Tattoos seem to be more acceptable among young adults than in older adults.	7	20	54	29
Q24	Tattoos are more prominent in working and lower middle class segments of society.	18	39	41	11
Q25	Tattoos have recently become more acceptable among females.	3	5	66	36

**Included in compatibility with the military subscale*

Univariate Distribution of Attitude Items

tattoos. Thrity-two respondents (29%), indicated that they had been tattooed since enlisting in the military. However, it is not known if this was their first tattoo or an additional one. Incredibly, three participants reported getting their first tattoo when they were 10 years old or younger. One can only presume that these were accurate reports. Most, 29 (27%), however, were tattooed for the first time after reaching at least 19 years of age. Of those with tattoos, 26 (54%) have them in places which are publicly visible with only a few, five (10%), ever having attempted to conceal them. Only eight (16%) report having any regrets about getting a tattoo and only three (6%) have actually had a tattoo removed. Almost everyone (95%) reported having firiends who have tattoos.

Attitudes and Beliefs About Tattoos. Univariate distribution of the 25 attitude items addressing tattoos is detailed in the accompanying table. These data suggest that it is a widely held belief, by 97% of the respondents, that tattoos are common in today's society. Even though they may be more common, 75% think that tattoos are more acceptable among young adults than by older generations. The vast majority (93%) also believe that tattoos have recently become more acceptable among females. Most (62%) agree that getting a tattoo is a fashion statement while some (36%) believe that it is usually an impulsive act. Only a few (11%) interpret getting a tattoo as a rebellious act. Even fewer (3% and 4% respectively) associate people with tattoos with gangs and extremist groups. In fact, a large majority (83%) believe that a tattoo is a way of expressing one's individuality. Although it is widely thought (86%) that people with tattoos are negatively stereotyped, it appears that the negative perceptions are not held by this group as few (6% and 9%) think that tattooed individuals are more likely to abuse alcohol or have taken illicit drugs. Interestingly, given the medical training of this group, a full third (33%) do not believe that there are health risks associated with getting a tattoo and a majority (86%) feel comfortable being treated by a healthcare provider with a tattoo.

Compatibility with the Military. Tattoos are thought to fit well within the military environment as a large majority (81%) believe that having a tattoo is compatible with serving in the military and most (70%) see tattoos as having a traditional place in military society. Almost all (92%) of the respondents believe that it is acceptable for enlisted personnel to have a tattoo and this acceptance is not restricted to enlisted members as most (89%) also agree that it is acceptable for military officers to be tattooed as well.

Discussion

The data suggest that tattoos are probably more prevalent among enlisted military personnel than is found in the general population. Additionally, young soldiers and sailors may even get tattoos at a greater rate than civilian adolescents. Furthermore, the findings hint that tattooing may be more acceptable to females in the military than their civilian counterparts.

This military sample, albeit a limited one, did not attribute the negative characteristics to tattooed individuals which are typically described in the literature. Military personnel with tattoos are not believed to be likely members of extremist groups or gangs. Conversely, a tattoo tends to be associated with an expression of individuality rather than as a symbol of group affiliation. Nevertheless, since many service members get a tattoo after enlisting in the military, it is unknown if the decision represents being influenced by group pressure or an attempt to reinforce individuation in an organization which insists upon uniformity. Also, those with tattoos are not seen to be more likely to act out in such ways as abusing alcohol, using illicit drugs, or otherwise acting immaturely. Nevertheless, the widely held belief that people with tattoos are negatively stereotyped by others, implies that members of this sample may have had experiences where individuals with tattoos were singled out in some adverse way. This experience, however, could have occurred prior to entering the military.

Tattoos appear to be inextricably linked to the military. They are perceived to be more reflective of military society than the American culture as a whole. Therefore it is acceptable, and perhaps even desirable, for military members, to include officers, to have a tattoo. This is inconsistent with the conventional wisdom, as portrayed in the popular 1982 movie "An Officer and a

Gentleman," that officers don't have tattoos. But in today's climate of promoting tolerance, the findings propose that today's soldiers and sailors may have no difficulty with accepting a tattooed leader. Nevertheless, how an officer with a tattoo is viewed by peers and superiors is a question for further research. Given the degree of prevalence and apparent strong acceptance of tattoos within the military, it is understandable that most respondents would report having friends with tattoos. This finding signals that tattoos do not appear to create barriers to developing cohesion and supports the idea that there are more similarities than differences between those with and without a tattoo.

It is interesting to note, given the medical military occupational specialties of the respondents, that a considerable number are not aware of the potential health risks associated with tattooing methods. If this medically trained group overlooks the risks of tattooing, then it is probable that soldiers without a medical background may do so in even greater numbers and may be exposing themselves to even riskier tattooing settings. It may therefore be prudent to initiate preventive health efforts to educate soldiers about how to avoid risky tattooing methods and to properly care for a newly applied tattoo in order to reduce the chances of infection.

Very few respondents expressed regrets about getting a tattoo and fewer still have ever had one removed. This apparent general satisfaction with their tattooed existence suggests that there may not be a future increased demand on military healthcare resources to remove unwanted body art. Of course, this implication assumes that the reported attitudes, and current satisfaction, remain relatively stable over time.

Study Limitations

The principle limitations of this study are inherent in its reliance on survey methods. Additionally, the unique characteristics of the lower enlisted sample, taken solely from medical military occupational specialties, constrain the general findings to all military personnel. Particularly absent are respondents from the officer ranks. While they were purposely excluded, future research will need to include them to determine if their attitudes and beliefs are comparable to those of enlisted service members.

The survey instrument's moderately low reliability measure, with the notable exception of the items which address the perceived compatibility of tattoos within the military, compounds the methodological limitations. Nonetheless, some researchers have asserted that a .50 reliability is adequate in exploratory studies where the intent is to describe and not to establish policies or programs.[16] Future research may be well served by distinguishing between the types and styles of tattoos. A sharper distinction in the definition of tattoo should yield a higher reliability level. Moreover, tattoos can not be assumed to be a one-dimensional phenomenon. Therefore, there might be a point, such as design, location, and appearance, where a tattoo becomes unacceptable.

Conclusions

Although one should be careful not to overstate the applicability of findings derived from descriptive data, it appears that tattoos have entered the mainstream of the enlisted ranks. Tattoos are no longer seen as symbols of deviant subcultures, but as acceptable expressions of individual personalities. Young soldiers seem to hold predominantly tolerant attitudes about a physical characteristic which can, in some instances, clearly identify a person as being different. This apparent willingness to accept differences among peers portends well for the armed services, as it is the ability to cohere with others from diverse backgrounds that is the hallmark of an effective military unit.

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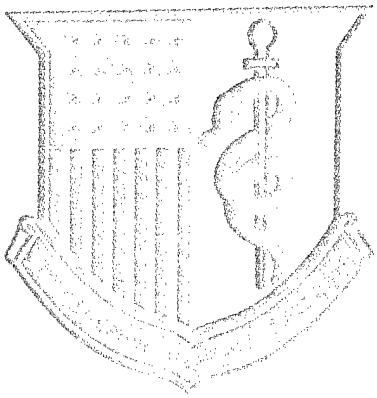
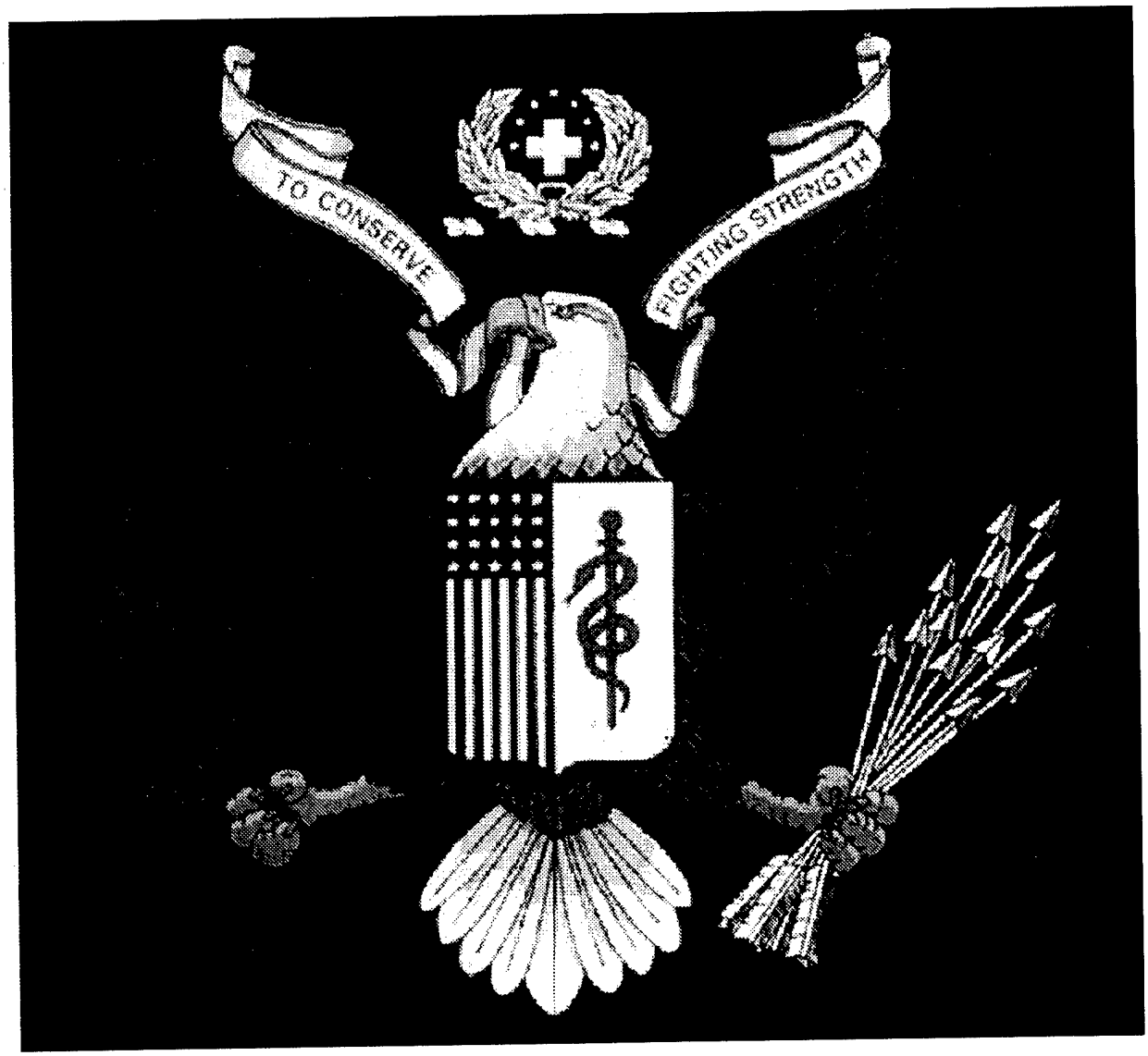


THE ARMY MEDICAL DEPARTMENT REGIMENT

...helping maintain the AMEDD tradition of caring

MAJ William R. Addison†



THE AMEDD REGIMENTAL FLAG

The U.S. Army Regimental System

The Regimental System was originated by direction of General John A. Wickham, Chief of Staff of the Army. The purpose of the system is to establish a method that would "enhance combat effectiveness through a framework that provides the opportunity for affiliation, develops loyalty and commitment, fosters an extended sense of belonging, improves unit esprit, and institutionalizes the warfighting ethos," by means of an affiliation process that would enable the soldier to serve with a particular unit. Units would move either inside or outside the continental United States with assigned personnel, thus creating a stabilizing effect on the unit's mission.

The concept was approved by General Wickham in 1981 and encompassed the active Army, Army National Guard, and U.S. Army Reserve. The Combat Service Support (CSS) regimental plan was to integrate the various branches into the Regimental System under a whole branch concept.

As with any major change in a large organization, some senior leaders felt the Regimental System could not be effectively introduced into CSS organizations. They expressed their concerns to the Chief of Staff by outlining the problems of the system and comparing the capability of the combat arms organizations to maintain cohesiveness through the COHORT system, which allows entire units to move together. The whole branch concept for CSS organizations precludes this option. General Wickham acknowledged the concerns from the field; however, he made the decision to make CSS organizations become part of the Regimental System and directed that they submit their implementation plans for review and approval.

Thirteen Years of Dedication

The U.S. Army Medical Department (AMEDD) Regimental plan was submitted to Headquarters, Department of the Army (HQDA) on 5 September 1985. The plan identified Fort Sam Houston, TX, as the "Home of the Soldier Medic" and The Surgeon General as Commander of the Regiment, with his immediate staff serving in positions on the Regimental staff. The single exception was the position of Adjutant, which would be filled by a nominative process, with each Corps providing an individual on a rotating basis. The plan was approved by the Chief of Staff in January 1986, with activation of the Regiment on 27 July 1986. This coincided with the anniversary of the AMEDD which was established on 27 July 1775. On 30 May 1986, HQDA issued General Order No. 24, establishing the Army Medical Department as the Army Medical Department Corps. Since the AMEDD was already made up of six Corps, the establishment of another Corps would have created confusion rather than the desired unity and cohesiveness that were the objectives of the Regimental System. This was resolved by the issuance of General Order No. 27, which rescinded the establishment of the Army Medical Department Corps and established the Army Medical Department Regiment.

The Regiment's activation was one of the most significant occasions in the history of the AMEDD in the last 50 years. The activation ceremony on 28 July 1986 was an event charged with a degree of emotion and excitement that was evident in everyone from the soldiers on the parade field to the distinguished visitors in the reviewing stand. Adjacent viewing areas were filled with thousands of spectators who stood silently shoulder-to-shoulder as the Regimental colors were uncased and presented for the first time. The ceremony concluded with a historic re-enactment of mounted cavalry drill and ceremonies by members of the First Cavalry Division from Fort Hood, TX, dressed in period uniforms. Several other ceremonies were also held, each focusing on events or individuals who have played key roles in establishing the history of the AMEDD. At the noncommissioned officer (NCO) dining-in, the first Commander of the Regiment, Army Surgeon General LTG Quinn Becker, was presented with a saber inscribed with the words "AMEDD Regimental Saber." The saber represents the authority of the Commander and displays the great respect the NCOs have for his position. A ceremony was also held at the Combat Medic Memorial, with the placing of a wreath by the Regimental Commander and an enlisted soldier, to recognize and pay tribute to all medical personnel who have proudly served their country in peace and war. A newly-constructed enlisted barracks

located on Fort Sam Houston was dedicated in honor of PFC Richard G. Wilson, who gave his life while caring for a wounded comrade on the field of battle during the Korean conflict. For his heroic actions, PFC Wilson was posthumously awarded the Medal of Honor; his mother and brother participated in the dedication ceremony. Religious services were conducted at the Academy Brigade Chapel to honor all soldiers and their families who have served their country.

The years since 1986 have all been filled with activities, projects, and programs created to ensure that past and present members of the AMEDD all retain the sense of affiliation and belonging inherent in the Regimental philosophy. It has been a period of many notable initiatives; the success of the Regiment's activation set a positive tone for the future.

One of the significant events of the Regiment's first year was the development of the "Heritage of Pride" documentary videotape series. Eight of the 11 living Medal of Honor winners who were members of the AMEDD when they earned their awards were invited to Fort Sam Houston to participate in a living history program. This venture gave them the opportunity to relate the circumstances that led to their being awarded the nation's highest honor. "Heritage of Pride" provides an unprecedented historic view of these soldiers and the lasting contributions they have made to the AMEDD Regiment, the U.S. Army, and the nation.

The year following the first anniversary was extremely busy, with the efforts of the Regiment focused on ensuring that Army National Guard and Army Reserve soldiers understood that they were an active and integral part of the AMEDD Regimental System. Another important initiative was successfully completed that year: the adoption of an enlisted Corps seal to represent them as a separate entity and stand alongside the seals of the six AMEDD officer Corps.

In late 1987, the Department of Defense announced the approval for issue of a new medal for prisoners of war (POWs) who had served honorably during their captivity. Much had been written about the experiences and ordeals of POWs during their internment by enemy forces. The best known of these stories centered on medical personnel who were considered to be noncombatants who cared for the wounded of their own country and, frequently, the enemy's wounded. The decision was made that the 1988 anniversary theme would be "Recognition of Prisoners of War." Invitations to the ceremony were sent to all POWs who could be located; a total of 34 POW medals were awarded during the Regimental ceremony. The recipients consisted of both officers and enlisted personnel from World War II, the Korean Conflict, and the Vietnam War. Although 34 medals were presented, only 33 individuals were present. Mr Benjamin Austria accepted two medals, one for himself and one for his father with whom he had been incarcerated during World War II. His father later escaped, only to be recaptured and executed for continuing to fight against the enemy. The presentation of these POW medals produced what was certainly the most emotion-filled ceremony in the recorded history of the AMEDD. When Army Surgeon General and Regimental Commander LTG Frank Ledford made the last presentation, the 6,000 spectators responded with a standing ovation that lasted more than 5 minutes. This brought tears to the eyes of all the POWs...they understood that the great sacrifices they had made for their country had not been forgotten.

The years since 1986 have seen a period of many notable initiatives. They have all been filled with activities, projects, and programs created to ensure that past and present members of the AMEDD retain the sense of affiliation and belonging inherent in the Regimental philosophy. These ensuing years have seen a multitude of significant events, not only for the Regiment, but for the entire AMEDD, including Operations "Desert Shield/ Desert Storm," and "Just Cause;" as well as humanitarian medical support missions into Haiti, Somalia, and Bosnia. It is evident that the success of the Regiment's activation and first several years set a positive tone for the future.

Goals

The AMEDD Regiment has the privilege of helping maintain the AMEDD's tradition and history of caring. Looking back in medical annals, we see the "soldier medic" following the Army, providing assistance, and learning how to best help others. The goals of the

Regimental System highlight and reinforce this proud history.

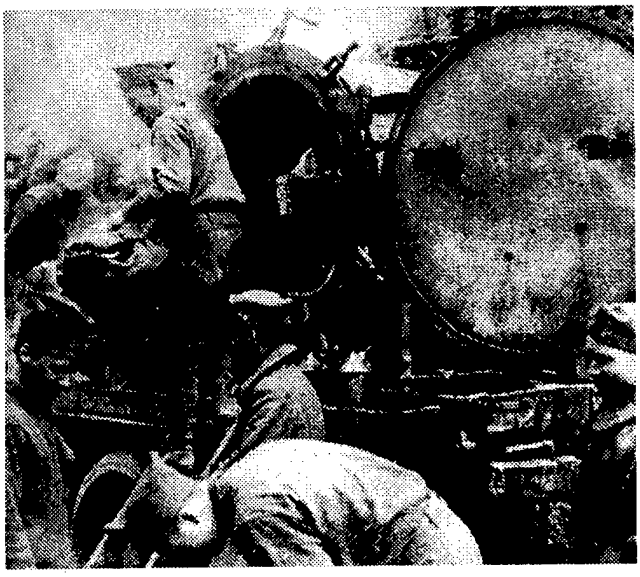
It gives soldiers a continuous identification to a single Regiment. As we look back to our past accomplishments, we can identify with those who came before us. Army nurses of today can certainly recognize and identify with their historical counterparts shown at this hospital ward (below) during the Spanish-American War in 1899.

The Regimental System emphasizes the history, customs, and traditions of the Regiment. It does this by holding sacred those fundamental ideals and philosophies of caring for others. In thinking about our history, we can see how the AMEDD has provided support on the battlefield, one of the most important of which was evacuation of casualties from the jungles of Vietnam (below).

It instills a sense of pride in the historical accomplishments of the AMEDD Regiment. When you look back into AMEDD Regimental history, you can be proud of what has been accomplished. It's possible that you can identify with some of the individuals who preceded you. Those of you who are administrators may be able to relate to this field medical records office of 1865 (below). The development of a recordskeeping system led to the publication of one of the greatest medical texts ever written: *Medical and Surgical History of the War of the Rebellion.* Published after the Civil War, it was hailed as a classic; the first time that American medicine was recognized for its achievements by the European medical community.

Any logistician will tell you that without supplies, an Army cannot move, and without medical supplies, a patient cannot be cured. World War I's mobilization brought with it the need for an organized system of supply as shown by these supply personnel checking in a shipment at a U.S. Army warehouse in France (below).

The need for preventive medicine to combat the diseases inherent to the battlefield brought about development of the Sanitary Corps. Safer water, better personal hygiene, and steam cleaning of uniforms to kill insects (below) are but a few of the innovations developed during the "war to end all wars."



World War I was the first war in history where the died-of-disease rate was less than that of killed-in-action. This is a testament to the skill and determination of preventive medicine personnel.

The stresses of combat call for individuals skilled and compassionate enough to help their fellow soldiers through the rough times, as shown in this photograph taken during the Korean Conflict (below).

Better techniques for treatment of combat stress casualties continue with the development of forward teams deployed where the need arises.

Clearing the battlefield of wounded has evolved from man to horse to machine. As shown in this European town during World War II (below), evacuation of casualties was difficult. This war, however, saw the development of a viable system of evacuation using air power.

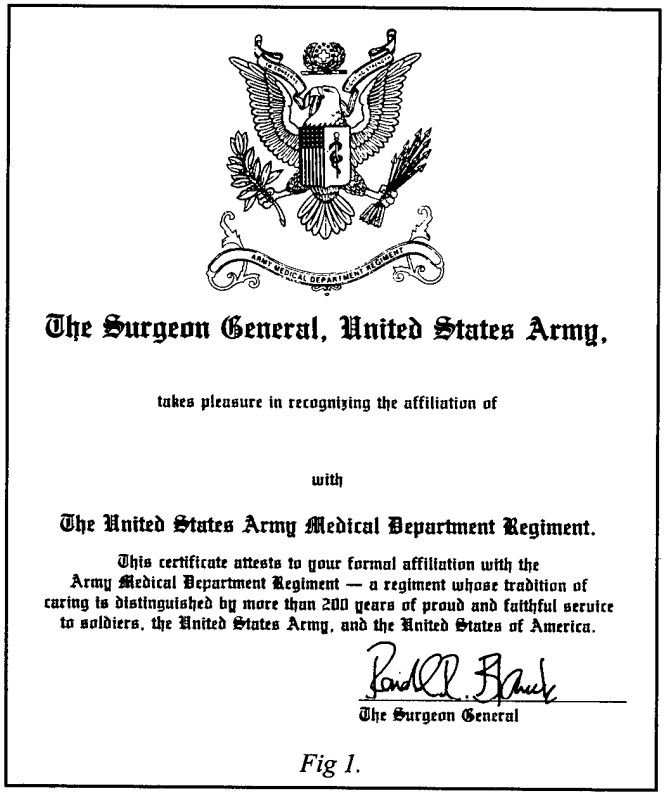
By employing fixed-wing aircraft, the movement of casualties from the front lines to hospitals flourished. We even saw the first use of helicopters for casualty evacuation in 1944. By the conclusion of the Korean Conflict in 1953, the helicopter was an accepted part of battlefield medicine. The Post-Korea era saw development of rotary-wing aircraft and doctrine that grew to fruition during the Vietnam War.

Responsibilities of the Regimental Office

In order to perpetuate our hard-earned heritage, the Regimental office is charged with a group of highly diverse and wide-ranging responsibilities:

Coordinate the AMEDD Regimental program. This is accomplished by educating AMEDD soldiers on AMEDD history, interacting with other Army components, both active and reserve, and emphasizing the affiliation process. Every soldier, officer or enlisted, who completes

their medical training, is affiliated with the AMEDD Regiment. They receive their affiliation certificate (Figure 1) upon graduation and their personnel file is updated to reflect this.



The Surgeon General, United States Army,

takes pleasure in recognizing the affiliation of

with

The United States Army Medical Department Regiment.

This certificate attests to your formal affiliation with the Army Medical Department Regiment — a regiment whose tradition of caring is distinguished by more than 200 years of proud and faithful service to soldiers, the United States Army, and the United States of America.

The Surgeon General

Fig 1.

Marketing the Regiment. The Regimental office has an inherent responsibility to market the Regiment as an AMEDD-wide organization. This is most effectively accomplished in several ways:

- *Conducting ceremonial events honoring the AMEDD.* Events such as the annual Regimental anniversary held at the AMEDD Museum gives the organization positive visibility.

- *Administering the traveling flag program.* Another method is to "show the colors." The office maintains several Regimental flags, one of which can be shipped to a unit for use at an event such as a dining-in. Various period uniforms, some authentic and some reproductions, can also be included (for example, use by a color guard).

- *Providing historical displays in NCO Academies and other schools.* The historical and period uniforms and materials that the office has acquired over the past 10 years provide the basis for numerous historical displays. Both military and civilian institutions have contacted the Regiment for assistance in setting up these displays in conjunction with various educational programs and local celebrations.

- *Developing static displays for major military and civilian conferences.* Numerous military and civilian-sponsored conferences worldwide provide venues for displays that identify and define Regimental goals and activities. Again, memorabilia and/or uniforms are frequently used to reinforce the historical significance of the Regimental concept.

Record the History of the AMEDD

One of the Regimental Historian's primary duties is to help record the history of the organization. In addition to conducting research and preparing documents concerning the AMEDD, he responds to historical background inquiries, both military and civilian, from all over the world. He also uses the Oral History interview as a technique to record and preserve veterans' experiences for the use of future generations. This type of interview has been of particular importance based on the significant participation of AMEDD soldiers in the Vietnam conflict and Operations Desert Shield /Desert Storm.

Administrative Support for Regimental Nominations

There are two honorary positions in the AMEDD Regiment organization: Honorary Colonel and Honorary Sergeant Major. They provide assistance to the Regimental Commander and Command Sergeant Major in addition to participating in ceremonial events; both of these positions carry 3-year terms. The AMEDD Regimental office provides ongoing administrative support for these individuals as well as processing of nominations to fill the positions when necessary.

To perpetuate the history and traditions of the Regiment and further enhance unit morale and esprit, the Regimental System provides for the recognition of individuals who have contributed to the Regiment. In

order to ensure that all deserving individuals are recognized, this program is divided into three categories:

• *Distinguished Member of the Regiment (DMOR).* The DMOR (Figure 2) is of the same distinguished stature as the Honorary Colonel and the Honorary Sergeant Major of the Regiment. Nominees are those who have made *ongoing, significant* contributions to the AMEDD and/or the Regiment. It is normally reserved as a retirement award. The DMORs share in the mission of perpetuating the history and traditions of the AMEDD. The nominee must be an officer, warrant officer, enlisted member of the active Army, Army National Guard, U.S. Army Reserve, retired member, or civilian employee affiliated with the AMEDD Regiment. Once appointed, tenure is indefinite. Duties of the DMOR are primarily ceremonial and participation in Regimental events is encouraged.

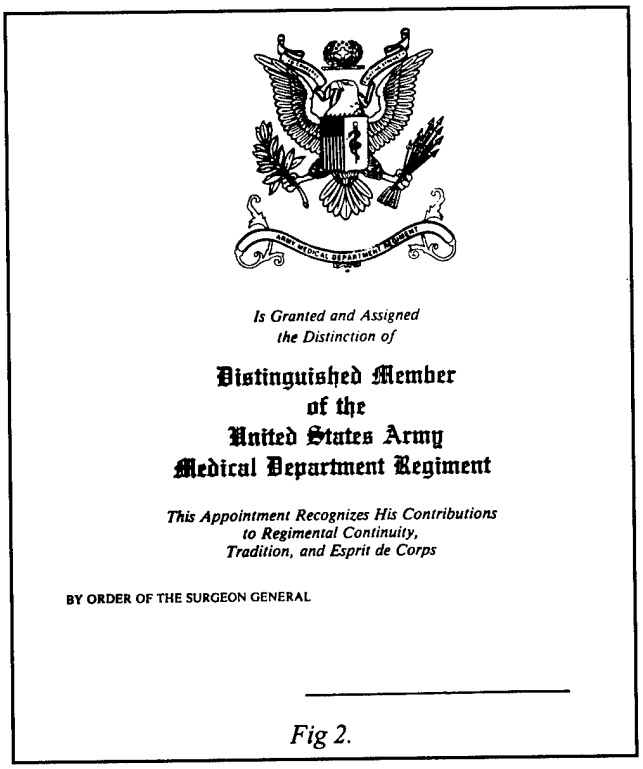


Fig 2.

• *Honorary Member of the Regiment (HMOR).* This program is designed to recognize individuals who are not affiliated with the Regiment, but who have made significant contributions to the AMEDD. Nominees for the HMOR (Figure 3) must not be eligible for recognition in any other category and must have a history of long and close association with the AMEDD Regiment or have performed a significant act or service for the organization.

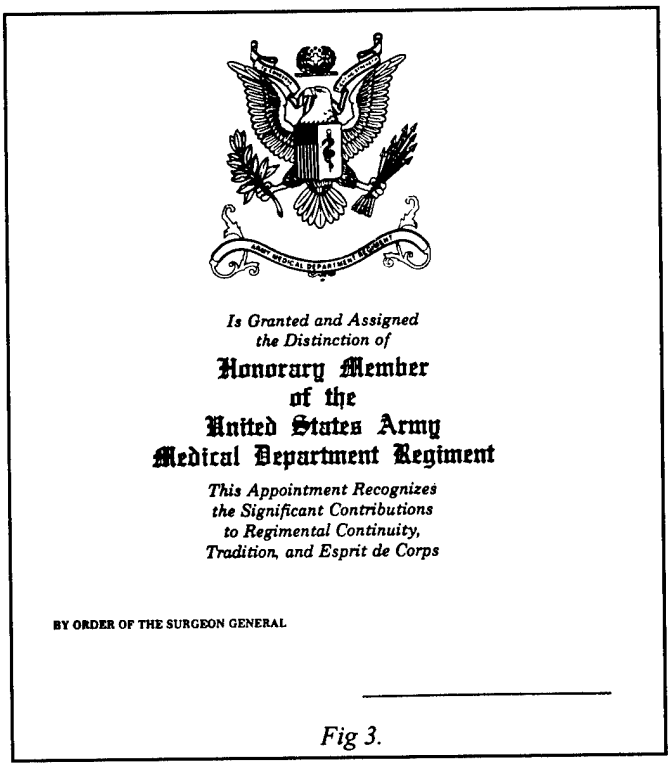


Fig 3.

• *Friend of the Regiment (FOR).* The FOR (Figure 4) designation was developed by The Surgeon General as a means to recognize individuals, groups, or businesses which are not affiliated with the Regiment but have made contributions to, or performed a service for the AMEDD Regiment.

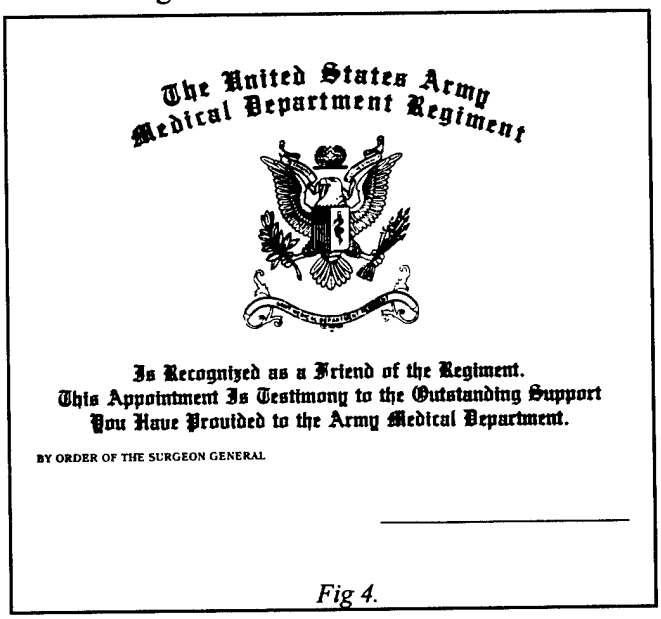


Fig 4.

Additional details concerning AMEDD Regimental recognition programs may be obtained by contacting the Regimental Adjutant or Regimental Historian. Address information is located at the end of this special section.

Officers and Noncommissioned Officers of the Regiment, 1986-Present

Commanders

LTG Quinn H. Becker	27 Jul 86 - 31 May 88
BG Robert H. Buker	1 Jun 88 - 15 Jun 88
LTG Frank F. Ledford, Jr	16 Jun 88 - 18 Jun 92
MG Frederick N. Bussey	19 Jun 92 - 4 Sep 92
LTG Alcide M. La Noue	5 Sep 92 - 31 Aug 96
LTG Ronald R. Blanck	1 Sep 96 - Present

Sergeants Major

SGM Daniel J. Bullis	27 Jul 86 - 30 Jul 92
SGM David MacIntosh	1 Aug 92 - 1 Oct 92
CSM Robert L. Adams	1 Nov 92 - 30 Sep 96
CSM Walter R. Scott	1 Oct 96 - Present

Honorary Colonels

MG Spurgeon H. Neel (USA Ret)	27 Jul 86 - 30 Jul 94
COL James G. Van Stratten (USA Ret)	1 Aug 94 - 31 Jan 97
COL T. R. Byrne (USA Ret)	1 Feb 97 - Present

Honorary Sergeants Major

CSM George A. Pearce (USA Ret)	27 Jul 86 - 28 Feb 90
CSM Howard R. Harrell (USA Ret)	1 Mar 90 - 31 Jan 97
SGM Julius Bennett (USA Ret)	1 Feb 97 - Present

Regimental Adjutants/Directors of Regimental Activities

MAJ James A. Swain	27 Jul 86 - 30 Jun 87
MAJ William T. Bester	1 Jul 87 - 23 Jun 88
CPT David A. Coker	24 Jun 87 - 28 Feb 90
SGM Terry L. Nigh	1 Mar 90 - 31 Aug 92
MAJ Sherry J. Morrey-Augsburger	1 Sep 92 - 31 Aug 94
SGM Kenneth M. Snyder	1 Sep 94 - 30 Nov 96
SGM Ronald F. Still (USA Ret)	1 Dec 96 - 31 May 97
MAJ William R. Addison	1 Jun 97 - Present

For additional information concerning the AMEDD Regiment or any of the Regimental programs, contact the Regimental office:

Commercial: (210) 221-8455
DSN: 471-8455
FAX: (210) 221-8697

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Case Report I: Smokeless Tobacco Cessation Therapy

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In the United States, approximately 6.9 million people use smokeless tobacco on a regular basis.[1] The Centers for Disease Control and Prevention (CDCP) found that approximately 20% of male high school students used smokeless tobacco in 1995.[2] Production of smokeless tobacco has also increased approximately 83% since 1981 according to the U.S. Department of Agriculture.[3] Anecdotal evidence suggests smokeless tobacco use is higher in the military than in the civilian population and is on the increase. Smokeless tobacco has numerous health risks associated with its use including increased rates of oropharyngeal cancer, leukoplakia, gum recession, bone loss around the teeth, and increased subsequent cigarette smoking.[3] Despite its widespread use and the clear impact on military readiness, there is only limited research in the literature regarding its treatment. We present a series of five cases documenting the successful treatment of smokeless tobacco utilizing a two-pronged approach combining pharmacotherapy and psychoeducational therapy. Bupropion hydrochloride was recently approved by the Food and Drug Administration for smoking cessation and has shown good overall efficacy when combined with counseling (cessation rates of 20% to 25% at 1 year).[4] Since addiction to nicotine is the common factor linking smoking and smokeless tobacco use, pharmacologic treatments that directly target neurotransmitters associated with nicotine addiction (primarily dopamine and noradrenergic receptors) should be effective regardless of the mechanism of tobacco consumption. A recent meta-analysis conducted by the CDCP in conjunction with the Agency for Health Care Policy and Research (AHCPR) shows a clear dose-response relationship between the intensity of counseling and successful cessation outcome.[5] They suggest optimal cessation rates can be achieved with therapy interventions of at least 4 to 7 weeks duration. The 82d Airborne Division Tobacco Cessation Program was designed with these guidelines in mind. The pharmacological intervention was conducted utilizing bupropion hydrochloride (150 mg b.i.d.) for approximately 10 weeks. The medication was started by the patient after gaining informed consent-ideally, at least 1 week prior to the start of the behavior modification classes. The 82d Airborne Division Psychiatrist was responsible for initial screening of patients for medical contraindications and ongoing medication management during the intervention. Because of the potential risk of seizures in patients taking buproprion hydrochloride, patients who had a personal or familial history of seizure disorder, present or past eating disorder, pregnancy, or were actively abusing alcohol were excluded from the pharmacotherapy portion of the treatment.

Several different counseling interventions have been used with tobacco cessation ranging from laypersons trained as group facilitators to clinical psychologists and psychiatrists providing structured therapy – all with some degree of success. The CDCP and AHCPR meta-analysis showed no significant differences between the types of providers and outcome. Because of the high operations tempo of the 82d Airborne Division, the number of group sessions was kept at the low-end of the CDCP recommendations (four 50 minute group sessions). Unfortunately, commanders are reluctant to release their soldiers for longer than 4 weeks due to mission needs, even for programs which provide them with a clear benefit, and tobacco cessation programs need command support to be maximally effective. The four group sessions were designed to combine skills training/ problem-solving work along with supportive therapy. Group size was limited to a maximum of 12 members so that each member could receive individually tailored

cessation recommendations. The Division Psychologist was responsible for initial evaluation and education, group therapy, and follow-up interviews.

The first case is a 31-year-old male with an 11-year history of one can per day of smokeless tobacco who denied any history of smoking. The patient previously made several attempts to quit his habit utilizing nicotine patches as well as abrupt cessation with limited success for a short period of time. The patient started bupropion hydrochloride sustained-release (150 mg b.i.d.) 1 week prior to group treatment. The patient noted, after approximately 1 week on medication, a reduction in cravings for the smokeless tobacco and by week 5 he was tobacco-free. He noted few side effects associated with the medication; noting a change in the taste of the smokeless tobacco as the most prominent. After approximately 3 days on bupropion, the smokeless tobacco was described by the patient as "tasting terrible" and he stated that the poor taste was one factor in becoming smoke-free. He also reported the coping skills learned in the group allowed him to withstand tobacco cravings and avoid relapse.

The second case is a 22-year-old male with an 8-year history of one-third can per day of smokeless tobacco use along with a 7-year history of smoking approximately one pack per day. The patient previously made several attempts to quit his habit utilizing nicotine patches as well as abrupt cessation with some limited success for a short period of time (approximately 2 months). The patient started bupropion hydrochloride sustained-release (150 mg b.i.d.) 1 week prior to group treatment. The patient noted, after approximately 1 week on medication, a reduction in cravings for the smokeless tobacco and by week 4 he was tobacco-free. He noted initial headaches associated with the medication, which subsided after approximately 3 days, but few other side effects; also noting a change in the taste of the smokeless tobacco as the most prominent. The patient also felt the poor taste was one significant factor in becoming smoke-free. In addition, he also felt the coping skills learned in-group allowed him to avoid relapse during the initial months.

The third case is a 37-year-old male with a 27-year history of one can per day of smokeless tobacco, who denied any history of smoking. The patient previously made several attempts to quit his habit utilizing nicotine gum as well as herbal snuff with only very limited success for approximately 2 days. The patient started bupropion hydrochloride sustained-release (150 mg b.i.d.) 2 weeks prior to group treatment. The patient noted, after approximately 1 week on medication, a mild reduction in cravings for the smokeless tobacco and by week 6 he was able to cut his tobacco use to approximately one-half can per day. Although he did not note a significant reduction in cravings prior to quitting, he did note the medication appeared to significantly reduce the cravings as he attempted to cut down. The patient noted no side effects associated with the medication and did not report the change in tobacco taste as had other patients. He felt the bupropion was only moderately effective in allowing him to deal with the physiological addiction, but the medication did give him time to apply the coping skills learned in-group to better withstand short-term tobacco cravings.

The fourth case is a 29-year-old male with an 14-year history of one-half can per day of smokeless tobacco who denied any history of smoking. The patient previously made several attempts to quit his habit utilizing abrupt cessation, staying tobacco-free for approximately 2 weeks. The patient started bupropion hydrochloride sustained-release (150 mg b.i.d.) 1 week prior to group treatment. The patient noted, after approximately 1 week on medication, a significant reduction in cravings for the smokeless tobacco and by week 3 he was tobacco-free. He noted no side effects associated with the medication other than a change in the taste of the smokeless tobacco. The patient also felt the poor taste was one significant factor in becoming smoke-free. Coping skills learned in-group again allowed him to avoid relapse.

The final case is a 31-year-old male with an 8-year history of approximately one can per day of smokeless tobacco who denied any history of smoking. The patient previously made numerous attempts to quit his habit utilizing abrupt cessation with some success (longest abstinence period was 6 months). The patient started bupropion hydrochloride sustained-release (150 mg b.i.d.) 1 week prior to group treatment. The patient noted, after approximately 1 week on medication, a dramatic reduction in cravings for the smokeless tobacco and by week 3 he

was tobacco-free. He noted virtually no side effects associated with the medication; noting a significant change in the taste of the smokeless tobacco as the most prominent effect. The patient felt the bupropion was key in his becoming tobacco-free. He felt the medication allowed him to effectively deal with the physiological cravings so that he could apply the coping skills learned in-group to withstand psychological tobacco cravings and avoid subsequent relapse.

Several common trends appeared when evaluating these cases. First, patients clearly stated that in most cases bupropion hydrochloride sustained-release significantly decreased the physiological cravings associated with traditional tobacco cessation strategies. Patients also reported the change in the smokeless tobacco taste significantly contributed to their ability to successfully abstain. Few, if any, significant side effects were reported by the patients and none of the side effects caused the patients to discontinue the medication. It also appears that the one case in which complete cessation was not achieved may have been in part due to the perceived lack of medication effect reported by the patient. This patient essentially reported no response (positive or negative) to the medication and, as a result, his ability to manage cravings was impacted.

Another trend noted with these cases is that all patients were highly motivated to quit and had previous experience attempting to quit. As a result, they all attended at least three out of four group therapy sessions. They each felt the psychoeducational therapy was a significant part of their continuing to be tobacco-free. One common comment was they suggested the number of group sessions should be increased. An increase in the number of group sessions would likely result in an increase in the program's efficacy and should definitely be considered in units where soldiers may be able to attend the majority of groups. Patients also reported the specific tailoring of the skills training to their particular situation was useful. Specific behavior modification skills applied to the individual case appear to impact the patient's ability to be successful.

Several cautions should also be noted with this report. First, the small sample size reported here does not lend itself to statistical analysis and may not be representative of smokeless tobacco users in general. All of these soldiers were highly motivated to quit and participated fully in the treatment. Soldiers who lack that motivation will likely show less successful results. In addition, all data is based on the soldier's self-report. Self-report data in tobacco cessation is subject to a number of limitations that objective data can help alleviate. Finally, since this program is so new, the soldiers are currently only reporting cessation success rates at the 6-month interval. Previous research clearly shows that successful tobacco cessation rates decrease from 6 months to 1-year reports.

Despite the cautions mentioned, the 82d Airborne Division Tobacco Cessation Program clearly shows significant promise in helping soldiers become tobacco-free. The combination of bupropion hydrochloride sustained-release and psychoeducational therapy enabled four out of five soldiers to be tobacco-free at 6 months and enabled the other soldier to reduce his smokeless tobacco consumption by approximately 50%. Clinicians throughout the Army should consider how to implement an organized tobacco cessation program in their area. In addition, this preliminary report suggests additional research is needed to better quantify the overall effectiveness of different types of pharmacological intervention, ideally using objective and self-report measures, along with different lengths of psychotherapy.

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Case Report II: Naltrexone Related Smoking Cessation

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Naltrexone is an opiate antagonist used as an adjunct in the treatment of alcohol dependence.[1] It has been reported to have possible efficacy for smoking cessation.[2] Two cases are presented in which patients taking naltrexone for alcohol dependence were able to discontinue cigarette smoking.

The first patient is a 28-year-old female diagnosed with alcohol and nicotine dependence averaging 24 to 30 cigarettes per day for 7 years. She reported several attempts to quit having employed nicotine patches, nicotine gum, and abrupt cessation ("cold turkey"). No single attempt lasted more than 2 days due to intense craving. As part of her alcohol treatment, she agreed to a trial of naltrexone 50mg/d. She noted at the end of 1 week of treatment that she had decreased her cigarette intake to 5 cigarettes per day. About 2 weeks into treatment, she had stopped smoking entirely, attributing it to a loss of craving. She remains active in her alcohol treatment and has 8 months of sobriety. She has been off the naltrexone for 2 months after 6 months treatment with naltrexone and is tobacco-free.

The second patient is a 32-year-old male who, after undergoing an unremarkable detoxification for alcohol, agreed to a trial of naltrexone 50mg/d. He initially complained of excessive sedation and his dose was decreased from 50 to 25mg/d with an improvement in tolerance. At the end of 1 week, his dosage was increased to 50mg/d. At 2 weeks, he noted that his cigarette intake had diminished from 30 cigarettes per day to 10 in 3 days. He felt less of an urge to smoke and, as his physical condition improved, he had less desire to smoke. After 3 weeks on naltrexone 50mg/d the patient had stopped smoking entirely. He has almost 18 months of sobriety, has been off naltrexone for 12 months, and is tobacco-free for 18 months.

The neurobiology surrounding nicotine dependence is not fully determined, but it appears that the mesolimbic dopamine system and locus ceruleus may play a role.[3] The role of the opiod system in nicotine dependence, however, is not fully explained.[4] Previous studies with naltrexone and naloxone did not effect cigarette smoking.[5,6] There has been at least one case reported supporting naltrexone in tobacco intake reduction.[7]

Although in the cases presented, the patients did not specifically contribute their decrease in tobacco to an altered taste perception as in the previously-reported cases, the patients noted a decrease in nicotine craving. Both factors may have contributed but it is also important to consider that as they were active in an alcohol dependence recovery program they were engaging in less nicotine reinforcing behaviors. As the neurobiology of nicotine addiction is further delineated, the psychopharmacologic interventions will be better defined. Although naltrexone may have contributed to the patient's smoking cessation, the role of naltrexone in tobacco cessation will need to be further studied.

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The Economic Efficiency Factor Applied to U.S. Army DENCOM

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The current healthcare environment is marked by shrinking payments, increasing competition, and increased Federal scrutiny. The population continues to age, costs continue to rise, access continues to decrease, and technology and health sciences continue to advance. All these factors indicate that changes must occur for our healthcare system to survive.[1] As the Military Health System (MHS) turns to TRICARE for solutions, it is imperative that military healthcare administrators comprehend the importance of cost containment and system efficiency. There is no known single precise business method or technique to ensure system efficiency. This article focuses on the utilization of an efficiency metric known as the Economic Efficiency Factor (EEF). In the context of this project, the EEF was used to analyze staffing and staffing ratios in determining a correlation between staffing and dental clinic efficiency. This study examined the staffing and staffing ratios of United States Army Dental Command (USADENCOM) Dental Activities (DENTACs) to identify the implications on organizational efficiency, and to demonstrate how staffing ratios may serve as indicators of productivity.

Introduction

Healthcare is one of the highest priorities on the national agenda. Healthcare reform is considered a mandate – linking cost containment to the nation's health and economy. If improvements in the nation's healthcare system, as well as the MHS, are to occur, more cost-effective measures must be implemented. A specific area of healthcare that is often overlooked or given a lower priority is the provision of primary dental care as part of maintaining proper health and overall military readiness. The historic separation of dental and medical care in the U.S. has contributed to the fragmentation of primary healthcare delivery.[2]

According to James Berry, Associate Publisher, Journal of American Dental Association, the dental industry is running parallel to the overall healthcare industry in that major changes have to occur for dentists and dental practices to remain solvent.[3] He indicates the importance of running the practice of dentistry as a business. The key to success lies in the implementation of business methods such as activity-based accounting, money management, quality control, and efficient staffing configurations.

To address the turbulent field of healthcare, including the practice of dentistry, today's healthcare leaders must become proficient in administering precious resources in a manner that effectively achieves the goals and expectations of the organization and meet the needs of its beneficiary population. One potential tool to assist managers in effectively managing decreasing healthcare resources is the EEF.[4] The EEF was originally developed

for evaluating the efficiency of military treatment facilities (MTF). It is a financial ratio measuring the revenue earned (in the case of Federal systems cost avoidance) divided by costs.

This article discusses the authors' validation of the EEF model and its application in determining efficient staffing levels in DENTACs. The EEF is used to analyze staffing and staffing ratios in an effort to determine if any correlation exists between staffing and clinical efficiency. The staffing and staffing ratios of USADENCOM activities are examined in order to identify the impact of staffing levels on organizational efficiency, and to demonstrate how staffing ratios may serve as indicators of productivity.

Purpose

The purpose of this project was to: (1) build a financial tool that provides a method to compare and evaluate U.S. Army dental clinic business-process efficiency; and (2) provide an analysis of the financial tool as it is correlated with different staffing ratios.

The EEF is a metric that provides a single numerical factor that represents the financial level of efficiency at which an MTF performed over a defined period of time. This metric was modified for use on DENTACs. The goal is to assist commanders in focusing their efforts on areas where they will most likely obtain significant improvement in their facilitie's overall efficiency. This allows the DENTAC commander to focus on obtaining the greatest "bang for the buck." The tie-in with staffing ratios was intended to provide the USADENCOM leadership with information on the correlation between staffing ratios and higher or lower EEF scores.

Background

The Government Accounting Office (GAO) issued a report; dated 21 Feb 97, concerning the Defense Health Program. The report indicates that the Department of Defense (Health Affairs) Program Objective Memorandum overestimated utilization management savings and did not factor in increased operating costs for new technology and medical intensity. The GAO estimate for the required medical reprogramming is $8.4 billion from FY 1998 to 2003.[5]

This climate of extreme pressure to make the leaders within the MHS, including the USADENCOM, accountable, has driven senior leaders to search for a method of measuring efficiency in the capitated managed care environment. The most fundamental element of measuring efficiency remains understanding the operational costs and comparing it with output. "In the 21st century, the first line healthcare organization will control cost and quality as one of its central functions."[6]

The USADENCOM leadership is working on developing capitation rates for use in funding their DENTAC and comparing it with output. They are also working to develop staffing ratios and other methods to evaluate and measure efficiency in order to more effectively allocate scarce resources to ensure the highest level of dental readiness for U.S. Army soldiers.

Literature Review

- *Industry-Wide Staffing Ratios.*

According to Neidle, by approaching any business from the perspective of productivity and efficiency, managers can obtain results that are not simply good, but optimal. Managers can accomplish this by evaluating their options and selecting the best one before proceeding to the next step. One key facet in this optimization process is using key operating ratios on a monthly basis to monitor operations. One of the ratios that many businesses are focusing on to ensure customer satisfaction and operational efficiency is the staffing ratios that assist in determining the appropriate number of personnel per service.[7]

Industry-wide, organizations have identified the power of established staffing ratios as they relate to, and determine, staffing efficiency. This staffing efficiency can assist managers in making their overall businesses more efficient and effective. The difficulty lies in obtaining or developing the staffing ratios that are congruent with their specific business and being able to integrate the staffing ratio to ensure staffing efficiency.

- *Staffing Ratios in Healthcare.*

The healthcare industy has also identified the importance of properly staffing hospitals, clinics, and private practices in order to save healthcare dollars and operate a successful organization. Pindus and Greiner point out that although research to date cannot tie specific restructuring activities or staffing ratios to specific changes in patient outcomes, the evidence does point to a relationship between staffing, skill levels, and quality.[8] Additionally, as with civilian industry, there are trade-offs involved in reducing costs. Healthcare managers are seeking a better understanding of what constitutes the most cost-effective service delivery, and consumers are seeking assurance that the trade-off does not result in quality falling below acceptable thresholds.[9]

The measurement of quality and efficiency in healthcare is relatively new and there are many subtleties involved in measuring how different inputs (staffing) affect the end-state, patient outcomes. One significant application of this measurement in healthcare is utilization management and, specifically, its subcomponent staffing ratios. Staffing ratios allow healthcare administrators to efficiently manage human resources by assigning an appropriate number of providers to a given beneficiary population according to an established rate of assignment. For example, the generally accepted ratio of a full-time equivalent primary care physician to beneficiary population is 1 to 2000.[10]

The nursing profession also frequently uses staffing ratios in order to forecast the appropriate number of nurses required for a specific patient load. These staffing ratios are based on the number of patients, category of patient, type of care required, and the specialty service. The focus of these efforts is not, however, on financial efficiency, but on the impact of staffing ratios on quality of care.

Measurement of the quality of care and service is a relatively new science and there are many subtleties involved in measuring how different inputs (for example, staffing, preventive care) affect the end-state, patient outcomes.[11] Additional research is underway on staffing-related issues, including a national nursing research grant program on staffing and quality, sponsored by the Agency for Healthcare Policy and Research in conjunction with the National Institute for Nursing Research and the Division of Nursing of the Health Resources and Services Administration.

As part of the healthcare initiative TRICARE, the MHS developed a staffing ratio/efficiency model in order to estimate the total number and specialty mix of healthcare providers needed to serve a defined population. Military commanders in charge of TRICARE regions, known as "Lead Agents," wanted a tool to estimate the proper military staffing in conjunction with contract providers to ensure that the appropriate number and mix of providers were available to serve the beneficiary population.[12]

The benefits of successful implementation of staffing ratios include efficient use of human resources, lower cost of care, and higher satisfaction by both providers and beneficiaries. The efficient use of human resources allows the highest number of beneficiaries to be served with available providers while ensuring that populations are neither underserved nor overserved. By minimizing provider assignment to overserved beneficiary populations, organizations can lower the cost for providing care by eliminating the use of unnecessary provider coverage. Finally, effective staffing ratios increases satisfaction for both providers and beneficiaries when providers are responsible for an appropriate amount of the healthcare population and beneficiaries have access to an acceptable level of provider availability.[13]

- *Staffing Ratios in Dental Care.*

According to Dr Gordon Christensen, Senior Consultant, Clinical Research Associates, in order to develop a successful dental practice, administrators must focus on primary human resource factors such as: (1) having a positive attitude as a leader; (2) building trust among coworkers; (3) installing confidence in the staff; (4) praising staff members; (5) constructing a competitive reward/compensation package; (6) developing a human resource planning strategy; and (7) having the right mix of provider-staff.[14] As Christensen points out, having the right mix of provider to support staff and provider to beneficiary population is a step toward efficiency.

Internet searches were conducted to identify and

locate existing dental staffing ratios. These searches generated a large number of data hits that centered on the application of staffing efficiency, specifically, staffing ratios. However, upon closer inspection of over 50 sites, all of these internet hits turned out to be requests from other individuals searching for information on dental staffing ratios. Each of these sites were e-mail entry inputs, where the site authors are requesting information other people have pertaining to dental efficiency and staffing ratios.

Dental practices that want to properly serve their customer base, as well as lower personnel costs, rely on determining the correct staffing ratio. The American Dental Association recognizes as appropriate anywhere from a 1 to 1,500 up to a 1 to 1,850 general dentist-to-beneficiary ratio.[15]

Similarly, Colonel Frank Nasser, Chief, USADENCOM Reengineering Initiative, notes that no standard exists within the Army for an appropriate dental provider-to-beneficiary ratio, but statistics gathered from private industry insurance companies indicate that a ratio of 1 provider to 1,200 beneficiaries is generally the norm. Additionally, Colonel Nasser reports that insurance companies can provide no model to indicate a basis for staffing, thus indicating that the information is either confidential proprietary information or it does not exist.[16]

- *USADENCOM.*

The worldwide mission of USADENCOM is to provide dental care to active duty Army personnel in order to maintain dental readiness. Additionally, the USADENCOM leadership is charged with providing dental care for dependents of active duty personnel that reside in duty stations outside of the continental United States. The total beneficiary population for USADENCOM is approximately 508,000.

An examination of the FY97 USADENCOM total dental budget reveals that over 83% of the funding for direct dental care is for personnel (Table 1).

This highlights the importance of ensuring that each dental clinic has the right number and mix of providers.

Military Pay	$123,046,884	58.99%
Civilian & Contract Pay	$53,113,000	25.46%
Other O&M	$34,964,000	16.76%
Total Direct	$208,599,584	100.00%

Table 1.

For commanders to make real savings, they must first look to their staffing and staffing costs.

The USADENCOM currently does not have an established dental-beneficiary staffing ratio within the organization. The organization, through the Dental Command Reengineering Initiative, is currently investigating ways to implement staffing ratios to the unique beneficiary population to enhance human resource utilization. The modified EEF metric developed as part of this study could be the efficiency measurement that the USADENCOM is seeking.

Data Sources

The MHS uses a cost accounting system known as the Medical Expense Performance Reporting System (MEPRS). The MEPRS accounts for the standard government costs of civilian pay, travel, supplies and equipment, as well as the salaries paid to the military personnel assigned to fixed healthcare facilities. The dental expenditure data from the MEPRS is found in the C-Account of a standard MEPRS report.

However, the Resource Management Division (RMD) of the USADENCOM was able to provide a better breakdown of costs from a query database. They provided MEPRS costs in two forms for each DENTAC. The first method included military pay, civilian pay, contract expenditures, travel costs, all supply and equipment expenses, and the costs of services "used" from the supporting MTF in the form of ancillary (pharmacy, lab, etc) as well as administration (resource

management, logistics, housekeeping, etc). The first method of cost accounting is called the sum total expenses because of the inclusion of indirect expenditures (ancillary and administration) that the DENTAC commander does not have direct control over. The second method included only the direct expenses of military pay, civilian pay, contract expenditures, travel costs, and all supply and equipment expenses.

The second source of data was a USADENCOM resource management computer file with a listing of Operations and Maintenance (O&M) expenditures for each DENTAC during FY97. This data was detailed enough to provide expenditures for civilian pay, travel, contract costs, and purchases of supplies and equipment by individual DENTAC.

Another important source of information provided by the USADENCOM RMD were manpower staffing spreadsheets by individual DENTAC for the month of Aug 97. This manpower spreadsheet was detailed enough to list by number, specialty (Dentist, hygienist, dental assistant, 91E-enlisted dental, technician, etc), and category of employee (military, direct hire government civilian, or contracted hire civilian) actually assigned. While this does not ensure that all employees listed were available, it does provide a good initial starting point for gathering staffing information. This information was entered into a Microsoft Excel spreadsheet and used to calculate ratios for all DENTACs.

Finally, the RMD of the USADENCOM provided a database that showed the value of dental technical procedures and dental laboratory procedures. This database also provided a dollar value for the amount that those listed procedures would cost during a defined period of time. The costs in the USADENCOM database are based on FY95 civilian data. However, the dental technical and laboratory procedures were from FY97.

Assumptions

The model was built using several technical assumptions. First, it was assumed that the MEPRS cost data from the USADENCOM database was accurate. If the MEPRS cost data from each DENTAC is accurate, then the FY97 O&M expenditures could be subtracted from the direct MEPRS total, leaving the remaining amount as the military pay expenditures for each DENTAC. For example, if the total FY97 "direct" expenditures for the DENTAC at Fort "Somewhere" was $21,500,000, and the known FY97 O&M expenditures were $7,000,000, then the delta of $14,500,000 can be assumed to be for dental military personnel costs.

This same assumption does not hold true if the sum total expenses amount is used. This amount includes the ancillary and administrative support that the DENTAC "uses" or "purchases" from the supporting MTF. Therefore, not all costs in the delta between MEPRS and FY97 O&M expenditures would be for dental military personnel costs.

The second technical assumption is that the manpower spreadsheet information is accurate – more precisely, that the input from each DENTAC for assigned, or on-hand strength is correct. The RMD of the USADENCOM had many months of FY97 manpower data available. The information concerning assigned personnel was entered by each individual DENTAC. Requirement and authorization information was centralized at the Headquarters level, but was not utilized in this study.

The month of Aug 97 was selected for the purpose of standardizing the data. It was assumed that the on-hand or assigned strength in August would have risen back from the lower staffing, called "underlap," that can occur during June and July as military personnel move to new duty locations during the summer months.

Another assumption was that the reported FY97 dental and lab procedures for each DENTAC was correct. Additionally, the other information from the query database concerning the civilian equivalent cost was accurate. The database converts the FY97 dental and lab procedures into dollars, based on FY95 civilian costs. Finally, the assumption is that the FY95 civilian equivalent costs for each DENTAC could be inflated by 4.0% for both FY96 and 97, to provide an accurate estimate of FY97 civilian equivalent costs.

Method and Design

The method for conducting this study can be divided into four major tasks. The first component was the collection of data. The data sources and assumptions are discussed.

After data collection, the second major task was to construct the metric. The authors utilized an EEF that was originally intended for use in evaluating the efficiency of military hospitals. The concept was to convert the FY95 civilian equivalent cost to FY97 dollars by multiplying by 4% per year for 2 years. The estimate of FY97 civilian equivalent cost was divided by the sum total expense. These calculations were completed for each DENTAC.

The DENTACs located in the Washington DC area, Germany, and Japan initially displayed high EEF scores. However, when civilian equivalent costs were compared with dental and lab procedures, they clearly varied by location. After review of the data, it was determined that the civilian equivalent cost data might be very relevant for a cost-benefit analysis, but would not be an accurate reflection of the DENTAC level of efficiency.

In an effort to normalize the data, the total USADENCOM civilian equivalent cost was divided by the command's total raw dental and lab procedures. This produced a USADENCOM civilian equivalent cost per raw procedure of $12.35. The dental and lab procedures from each DENTAC were multiplied by the normalized $12.35 and the adjusted EEF was calculated.

This method was briefed to the USADENCOM leadership in early Apr 98. The organization's leadership disagreed with the methodology concerning MEPRS costs. They maintained that the DENTAC commanders do not have control over the ancillary or administrative costs that are part of the sum total expenses obtained from the C-Account MEPRS information. Agreement was reached upon the proposal to use the direct expenses – which do not include ancillary or administrative costs. This modified EEF was calculated for each DENTAC and used as the dependent variable for the study.

The raw manpower, financial, population, and dental readiness class statistical data were entered into a Microsoft Excel spreadsheet. Calculations such as dentists per supported population or enlisted personnel per dentist were performed in the Excel program.

This database was loaded into the Statistical Program for the Social Sciences (SPSS). The SPSS was used to calculate the statistics for the analysis in this study. Descriptive statistics were conducted on the dependent variable (modified EEF scores) and the 20 independent variables used in this study. A Pearson's *r* correlation was conducted to test the relationship between the EEF scores and each independent variable. Finally, multiple regression was performed to measure the overall effect that the 20 independent variables had on the EEF scores.

Analysis

The modified EEF for each facility was compared to the results of four separate calculations. These calculations are based on ratio of assistants, enlisted soldiers, and administrative personnel per dentist as well as the ratio of hygienist per 1000 members of the population. The overall Regression Analysis yielded an Adjusted R^2 of 0.814.

The four most efficient facilities (facilities with greater than 1.0 standard deviation from the mean EEF of .77) were compared to the four least efficient facilities (facilities with less than -1.0 standard deviations from the mean EEF). Two other groups were included in the analysis. Those groups included DENTACs that had EEF scores between 0.87 to 0.96 (0.50 to 0.99 standard deviations from the mean) and EEF scores from 0.67 down to 0.57 (-0.50 to -0.99 standard deviations from the mean). These facilities were then analyzed in terms of the four separate calculations described above. The mean enlisted soldiers per dentist ratio was .91 in the most efficient facilities compared to a mean of 1.55 in the four least efficient facilities. Likewise, the mean of the number of assistants per dentist increased from 2.04 in the most efficient facilities to 2.63 in the least efficient facilities. The mean number of administrative assistants per dentist remained relatively unchanged with .41 in the most efficient facilities and .43 in the least efficient facilities. The mean number of hygienists per 1000 members of the

Independent Variable ("SPSS Name")	Pearson's Correlation (r)	Regression beta (β)	Regression significance
**Direct Total Expenses per Population ("Sum Exp Dir / Pop")	-.576	-.697	.000
* Number of Administrative and Ancillary Civilians per Dentist ("CIVIL_DC")	.358	-.545	.309
Primary Care Dental Residents (Yes/No)("RESIDEPC")	.258	.358	.020
Operation and Maintenance Dollars Spent per 1000 population ("O_M_1000")	.276	.433	.046
Number Dentists Assigned to TOE Billets ("TOEDen63")	.273	.030	.858
FY 98 Population ("FY98 Pop")	.200	-.060	.788
Percent of Population in Class III Status ("PERPOP3")	-.195	-.379	.008
Number of Enlisted Soldiers Minus Dental Hygienists (91EX2) ("ENL_DENT")	-.192	.486	.643
Number of Administrative Personnel (Civilian and Military) per Dentist ("ADMIN_DC")	.189	.402	.183
Number of Civilian Personnel per 1000 Population ("Civ/Pop per 1000")	.176	3.439	.197
Number of Hygienist per 1000 Population ("Hyg/Pop per 1000")	.147	-.695	.460
Rank of the MSC Officer-Assigned ("MSC RANK")	.142	-.149	.501
Number of Support Personnel per Dentist ("SPTPERDEN")	-.134	.131	.879
Number Primary Care Dentists per 1000 population ("PCDC1000")	.110	-1.180	.236
Percent of Population in Class I & II Status ("Cl I&II %")	.105	.112	.389

Correlation Significance of: ** <. 001, *<. 05

Table 2.

population was .55 in the most efficient facilities and .45 in the least efficient facilities.

The data suggests that the facilities with more enlisted soldiers and assistants per dentist were less efficient. Additionally, while the number of administrative assistants does not appear to have an affect on the facilities overall efficiency, the facilities with a greater number of hygienist per 1000 population correlated with higher EEF scores.

Further statistical analysis using Pearson's *r* indicated that the correlation between the modified EEF and the sum of the direct total expenses per population and the number of administrative and ancillary civilians per dentist were the most significant with *P* values of <.001 and <.05, respectively. Table 2 summarizes the statistical analysis of 15 of the studied variables.

Perhaps the most significant finding from regression analysis is the relationship between lower direct total expenses per population and greater O&M dollars per 1000 population with the higher levels of efficiency. This relationship suggests that DENTACs with more O&M

dollars per 1000 population and lower levels of military pay provide greater amounts of dental care to the supported population. Additionally, the regression analysis indicates that DENTACs with greater efficiency (higher modified EEF scores) had significantly ($P<.01$) lower prercentages of Dental Class III beneficiaries. This indicates that the more efficient activities appear to better meet the dental care needs of their beneficiaries. Further studies could be done to ascertain whether higher percentages of military personnel are being used in the delivery of dental care or in the growing administrative functions. This should also be analyzed in terms of rank and pay grade levels and then correlated to the amount of direct dental care provided.

Conclusion

With today's dwindling resources and increased focus on the rising cost of healthcare, the MHS faces unprecedented challenges in the execution of its total healthcare mission. The USADENCOM faces dwindling resources and decisions on how to allocate money and military personnel in the most efficient manner possible. Staffing and personnel costs account for 83% of the USADENCOM budget used for the delivery of dental care. Therefore, in order to obtain the greatest impact, dental leaders should focus on staffing ratios to achieve cost savings and increases in efficiency. The modified EEF and the relationship with staffing ratios allow the establishment of benchmarks. These benchmarks allow the comparison of financial efficiencies and staffing ratios with other like-sized facilities or peer groups. This will allow the identification, establishment, and measurement of performance goals. Utilizing the staffing ratios and the modified EEF metric, the USADENCOM leadership can identify the least efficient DENTACs and staffing patterns. In this way, the leadership can achieve significant improvement in overall financial efficiency while maintaining or improving the quality of care they render.

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Electronic Monitoring of Temperature Sensitive Pharmaceuticals

MAJ Kirk J. Frank†

This article reviews the United States Army Medical Materiel Center, Europe (USAMMCE) guidelines for using temperature monitors (TempTale®) while in storage and shipping vaccines and immunologic drugs around the world. It also provides an overview for shipping the anthrax vaccine by a standardized method to ensure recommended temperature guidelines are met. This article is intended to provide the reader with an understanding of the importance of temperature monitoring vaccines and immunologic drugs.

Introduction

Immunofacts - Vaccines and immunologic drugs suggest that failure to properly store or handle immunologic products as designed "can degrade potency and may harm patients." Subpotent vaccines may not prevent infection, subpotent immunoglobulins may not protect against disease, and subpotent immunodiagnostics may yield inaccurate test results, leading to erroneous clinical decisions.[1] Studies have shown that in developed and developing countries, when vaccines are not stored according to manufactured guidelines, the vaccine cold chain can be disrupted. An Australian study evaluated if Sabin oral poliomyelitis vaccine and Recombinant hepatitis B were being exposed to unsafe temperatures. These two vaccines were "often exposed to temperatures outside the recommended range during transport and storage" resulting in a potential loss of potency.[2] In Mar 97, the Pentagon recalled 20,000 anthrax vaccine vials (200,000 doses) worth approximately $700,000, bound for soldiers in the Persian Gulf. The vaccine had frozen in shipment potentially "destroying its effectiveness."[3] To ensure vaccine storage specifications from the point of distribution to the end user are being followed, temperature monitoring should be part of the strategic evaluation process.

Since 1995, the USAMMCE has been a dedicated user of temperature monitors to record in-transit temperatures when shipping vaccines and immunologic drugs to destinations throughout Europe and the Middle East. Additionally, to ensure the quality of temperature-sensitive products through the cold chain, temperature monitors are required in shipments from logistical sources in the U.S. en route to USAMMCE. Using temperature monitors during transport provides factual information on variations in environmental temperatures, helps to reanalyze our protocol for re-packaging and shipping, and measures the pharmaceutical vendor's performance. Temperature monitors enable us to track and certify the quality of the vaccines and immunologic drugs while in storage or in-transit to far-off destinations around the world.

Description of Temperature Monitor

The USAMMCE uses Sensitech's TempTale® electronic monitors, a PC-based Windows™ operating tool, to monitor and archive time-temperature history of our temperature sensitive shipments. These multiple-use temperature monitors are compact and durable, weighing less than three ounces each. They are configurable to record ambient and/or core temperatures (-22°F to 185°F) continuously and automatically throughout shipment. The software allows for rapid download of information, graphic displays, summarization data and storage of in-transit temperature and humidity information throughout

the entire monitoring environment.[4] Using these monitors, USAMMCE is able to track carrier (military and civilian) performance, comply with Food and Drug Administration recommendations, reduce our product loss, and validate quality in the packaging and routing of our temperature sensitive products.

handling recommendations, although some vaccines and immunologic drugs tolerate higher temperatures during storage and shipment without significant loss of potency. The monitors begin reading temperatures 90 minutes after activation. This start-up delay period allows for temperature equilibrium within the container and surrounding

Fig 1. Temperature Monitoring Routes showing transfer of products from logistical distribution centers and manufacturers in the U.S. to USAMMCE via Federal Express and Emery deliveries, from USAMMCE to priority customers, first to commercial truck customers located greater than 2 hours away, followed by Air Mobility Command (AMC) flights, United Parcel Services (UPS), U.S. Embassy customers (planning phase) and military truck customers located in Italy, England, Spain, Bosnia, and Hungary.

Movement of Temperature Monitors Throughout the Area of Operations

Coordinating the shipment and recovery of temperature monitors can be a difficult task. Individuals who ship, receive, and return monitors are continuously trained in the importance of monitoring vaccines and immunologic drugs, the reporting process, and an understanding of temperature monitoring routes. Over 1,200 temperature monitors readings from 44 TempTale® users are evaluated annually by the USAMMCE pharmacist. The USAMMCE currently has approximately 135 TempTale® monitors in use throughout Europe, the Middle East, and U.S. civilian and military logistical sources in the U.S. Figure 1 represents temperature monitored shipments traveling a distance of greater than 2 hours from USAMMCE.

Method

Our TempTale® monitors are configured to read an ideal temperature range between 33°F to 46°F, based on general vaccine and immunologic drug storage and environment thus preventing false temperature readings. Once the prescribed start-up delay period has expired, the monitors begin recording temperatures at pre-defined time intervals, every 30 minutes.

Data collected from Jan through Oct 98 using TempTale® on 750 temperature-sensitive shipments indicating whether monitors received by customers were "green" (pre-defined temperatures limit 33°F to 46°F) or "red" (temperatures below 33°F or above 46°F) is shown in Figure 2.

During this period, our temperature monitors displayed summary data of temperature over time in a graphic format. Because damage to vaccines depends on the ambient temperature and the interval of exposure to adverse temperatures, assessment of the vaccine cold chain should document both variables.[5] By evaluating these two consequential pieces of data, we are able to decide whether a product should or should not be issued for patient use.

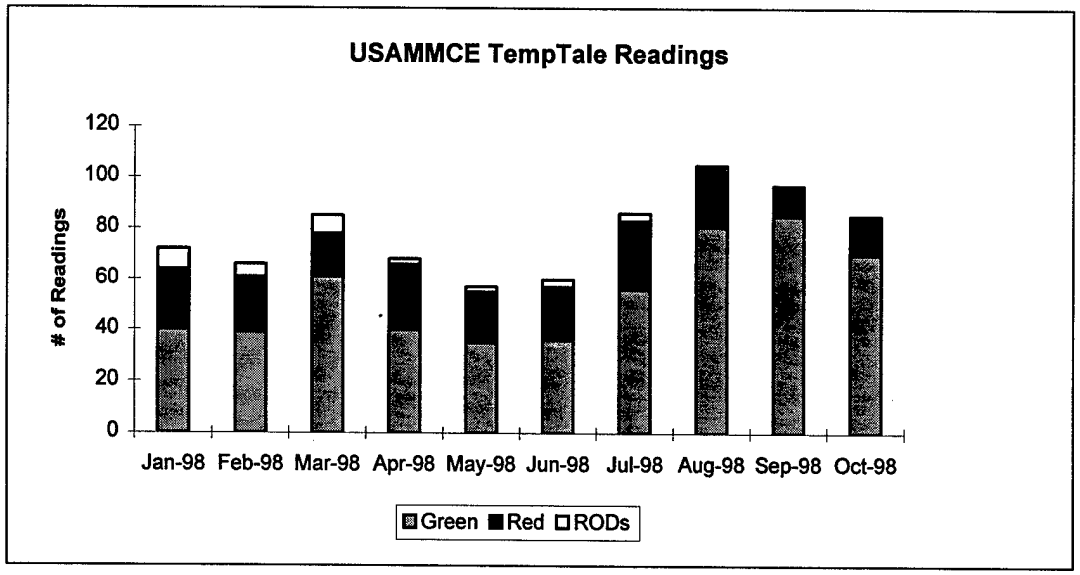

Fig 2. Graph shows the total number of "green" and "red" temperature monitors during a 10-month interval. Reports of Discrepancies (RODs) are also noted.

Results

In this study, 72% (n=543) of monitors were returned by customers in a "green" condition, indicating temperatures within the shipping container had not risen above 46°F or had fallen below 33°F. The remaining 28% (n=207) of monitors were returned in a "red" condition indicating a suspected problem in meeting the ideal temperature range of 33°F to 46°F. Of the 207 "red" monitors, 15% (n=31) were determined unacceptable for issue by the pharmacist. Subsequently, a Report of Discrepancy was filed and the vaccines or immunologic drug(s) deemed unacceptable for use were returned for credit. By using temperature monitors in our distribution network and the right type of standardized packaging for that environment, we were able to ensure the quality and safety of our products that customers purchased.

Shipping Anthrax Vaccine Using TempTale®

The USAMMCE pharmacist serves as the representative for all technical and pharmaceutical decisions pertaining to the storage and shipment of USAMMCE-stocked vaccine. These responsibilities include determining vaccine efficacy if compromised in shipment or storage, configuring TempTale® for shipment, establishing and ensuring guidelines for appropriate pre-testing, and packing of the vaccine for shipment to designated locations.

In this regard, USAMMCE leads the way in successfully shipping over 26,000 vials (260,000 doses) of the anthrax vaccine from Feb through Oct 98 within manufacturer's temperature storage guidelines. Shipments of the vaccine have been transported from USAMMCE throughout Europe, the Middle East, and other overseas locations where climate temperatures can vary by more than 40°F. According to the anthrax vaccine manufacturer, Bioport, (formerly Michigan Biological Products Institute) the vaccine is rendered ineffective if stored below 32°F or above 77°F.[6] Therefore, strict environmental conditions must be monitored and maintained during storage and distribution to assure U.S. Forces overseas receive a full potency vaccine.

The USAMMCE transported the anthrax vaccine within pre-tested 2-cube containers diagrammed in Figure 3. In the pre-testing phase, standardized packaging procedures were established in simulated cold and hot weather conditions using TempTale® monitors to archive temperatures. Tests confirmed, in order to maintain relatively constant temperatures within a 2-cube container, a combination of gel packs stored at 17°F and 36°F with

plastic and cardboard barriers are essential. In-transit temperatures inside the containers during shipment ranged from 36°F to 44°F holding steady up to 48 hours without adding, replacing gel packs, or changing the interior configuration of the 2-cube (200-vial capacity) containers.

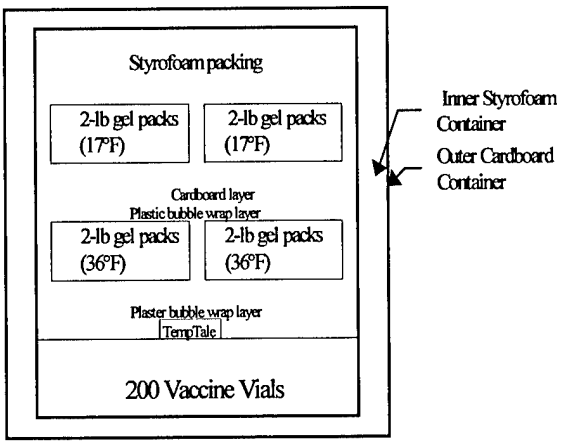

Fig 3. USAMMCE's packing guidelines for the anthrax vaccine within a 2-cube container (13 ¾ X 13 X 10"; Polar Tech Industries) showing placement of gel packs (Freez-R-Brix®, Polar Tech Industries) barriers, TempTale®, and vaccine vials.

Conclusion

Temperature monitoring assures an essential step in the proper storing and handling of vaccines and immunologic drugs during transport. Vaccines such as the anthrax vaccine require constant temperature monitoring. Packaging developed at USAMMCE specifically for this vaccine assures its temperature conformance to manufacturer storage and handling recommendations as proven by TempTale®.

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The Smile Center: Innovation Increases Patient Access to Care

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MAJ Edward A. (Drew) Moore†††
SFC John C. Hart††††
COL Charlotte K. Jones†††††

Introduction

The Pacific Regional Dental Command (PRDC) and the United States Army Dental Activity, Hawaii, hosted the ceremonial opening of the Smile Center, the Oral Health Center at Schofield Barracks, 9 Feb 98. MG James Hill, Commander, 25th Infantry Division (Light), and BG Warren A. Todd Jr, Commander, Pacific Regional Medical Command and Tripler Regional Medical Center, assisted COL Charlotte K. Jones, PRDC Commander, at the Ribbon Cutting Ceremony (Figure 1).

Fig 1. MG Hill, COL Jones, and BG Todd at the opening of the Smile Center.

The Smile Center is a reflection of the restructuring of the U.S. Army Dental Care System as it enters the 21st century. The dual mission of dental readiness and oral health promotion demands flexibility and responsiveness to our soldiers' needs. The measurement of this success is in readiness levels and access to care.

The concept of the Smile Center evolved from the Dental Corps' Reengineering Initiative proposed by COL L. Darwin Fretwell et al, in Feb 97.[1] The Dental Corps' Strategic Analysis and Review Committee set specific and measurable goals for Oral Hygiene and Health Promotion. They included the goal of improved dental readiness and wellness of soldiers, as measured by 95% Classes I and II. Fifty-five percent of that group would be Class I. Class I patients require no dental treatment and Class II patients require only routine treatment with a low potential for a dental emergency. The committee also specified improved access for preventive patients (decreased waiting times), as measured by an appointment made in 21 days or less.[2] The Center for Health Promotion and Preventive Medicine and the Institute of Dental Research combined efforts to develop a patient education program based on risk assessment for caries, periodontal disease, oral cancer, etc.

Development

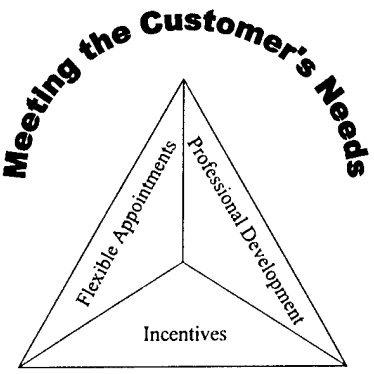
During the fall of 1997, COL Jones recognized that Hawaii Dental Activity was unable to meet the oral hygiene needs of the soldiers of the 25th Infantry Division (Light) at Schofield Barracks. The inflexible appointment

system (set up in 1-hour blocks), and the under-utilization of Preventive Dentistry Specialists (PDS), pushed the access to care standards above 5 weeks for routine prophylaxis appointments.

Colonel Patrice Primack, the Director for Dental Services for Schofield Barracks, organized a multidisciplinary process action team consisting of officers, noncommissioned officers and enlisted soldiers, as well as civilian hygienists and dental assistants to study the current practices and create a better way of doing business. She realized that there would be resistance to change from both within the organization and without. The team successfully used quality planning concepts as outlined by the Juran Institute to overcome resistance and anticipate second and third order effects of the new business practices.[2] The quality planning team was given the mission to develop an efficient and efficacious plan to use the Registered Dental Hygienists (RDH) and PDSs.

Fig 2. Doctor providing annual examination. At this time, hygiene needs of the solidier are determined.

Lieutentant Colonel Lawrence G. Breault, staff periodontist and clinical leader of the team, developed an innovative approach to staffing and managing the hygiene center. His challenge was to come up with a system that would increase utilization of current hygiene assets while at the same time consider the important aspects of professional education and employee satisfaction. His solution was simple: design a three pronged approach to meeting the internal and external customer's needs. The backbone of the plan was LTC Breault's flexible appointment system. During the exam process, the dentist matched the patient's hygiene needs to the appropriate appointment length (Figure 2). The flexible appointment system allowed tailored appointments from 15 to 60 minutes based on the patient's need (see following table). This replaced the traditional, inflexible 1-hour prophylaxis appointment.



Pro-1:	No calculus, minimal plaque, and minimal stain. (15 min rubber cup polish)
Pro-2:	Moderate plaque, stains, and calculus on the lingual of the mandibular anterior teeth. (30 min titan scale and polish)
Pro-3:	Moderate to heavy plaque, generalized stain, and moderate generalized calculus. (45 min titian scale, hand scale, and polish)
Pro-4:	Extensive plaque, calculus, and stain. (60 min version of Pro-3)
Pro-RDH:	Radiographic subgingival calculus and/or generalized periodontitis. (60 min appointment with RDH)

Flexible Appointment System Based on Patient's Need

The second imperative to meet the customer's need was to maximize the hygiene staff's professional development through continuing education. Formal hygiene continuing education lectures, provided by the periodontist, promotes

professional development of all Smile Center RDHs and PDSs. With implementation of an RDH mentoring program, the two civilian RDHs provide individual clinical development to the PDSs. They guide and mentor these hygienists during the course of patient treatment, ensuring the highest quality care, and at the same time providing invaluable, clinical "hands-on" training.

The final and major challenge of the hygiene concept was combating employee burnout and recognizing optimum performance. Lieutenant Colonel Breault developed an incentive program that encouraged access to care. Essentially, the program is based on the PDS receiving Patient Quality Production (PQP) points for each patient treated. Weighted points are based on appointment length with a range of 0.25 for a 15 minute prophy polish to 1.0 for a 60 minute scaling. Once the PDS reaches a goal of 288 PQPs, they are entitled to a time off award of 4 hours. This award may be combined and used as a 4-day pass in conjunction with a weekend (four consecutive awards). The dual benefit of the incentive program is to encourage the PDS to become more efficient, while at the same time providing a tangible reward and employee recognition within the clinic.

Results

With the organization of all assets in one clinic, an "esprit de corps" has developed among the hygienists. There is a significant increase in pride in the hygiene care provided for each patient with a greater sense of professional satisfaction (Figure 3). With a tangible reward system, the hygienists are taking a more proactive role in patient care. With the incentive to treat more patients, the individual providers are taking steps on their own to decrease patient failures, such as confirming hygiene appointments.

Once the patient receives a dental prophylaxis, if additional appointments for restorative or other care is required, these appointments can be made at the Smile Center via Composite Health Care System communications (Figure 4). This service not only provides a convenience to the patient, it fosters better continuity of care and decreases congestion at the Schofield Barracks Main Dental Clinic appointment desk.

Fig 3. Military Preventive Dentistry Specialist providing care to 25th ID soldiers.

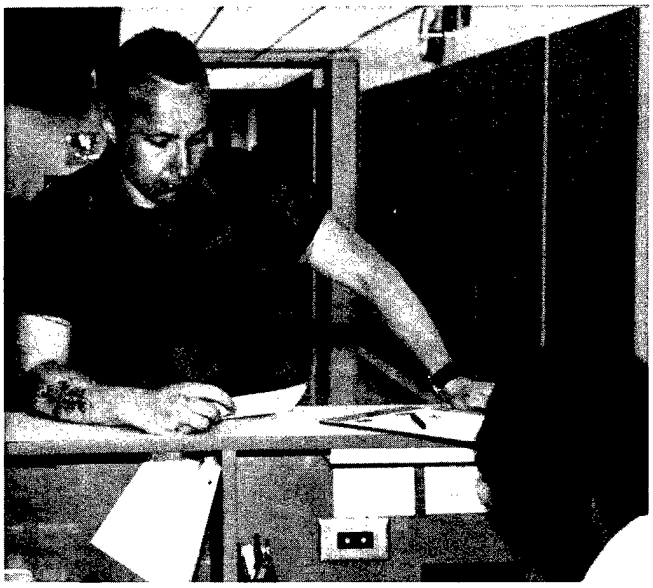


Fig 4. Patient receiving appointment through CHCS for additional dental treamtent.

The innovations at the Smile Center have resulted in an increase of available appointments from 800 to 1,100 per month. This represents an increase of 38% with the same number of healthcare providers. Additionally, the Smile Center has decreased patient waiting time from 5 weeks to less than 7 days. Patient satisfaction questionnaires demonstrate almost universal enthusiasm for the Smile Center. The concept is well received by the Schofield

community and is considered a valuable quality of life benefit.

With a DENCOM goal of 55% Class I dental patients, increased access to hygiene can have a significant effect on reaching this goal. With a younger soldier population, and the associated decrease in dental decay over the last three decades, often the only dental treatment required is the annual prophylaxis. With the opening of the Smile Center, the total numbers of Class I patients have increased for the Schofield Barracks community (Figure 5).

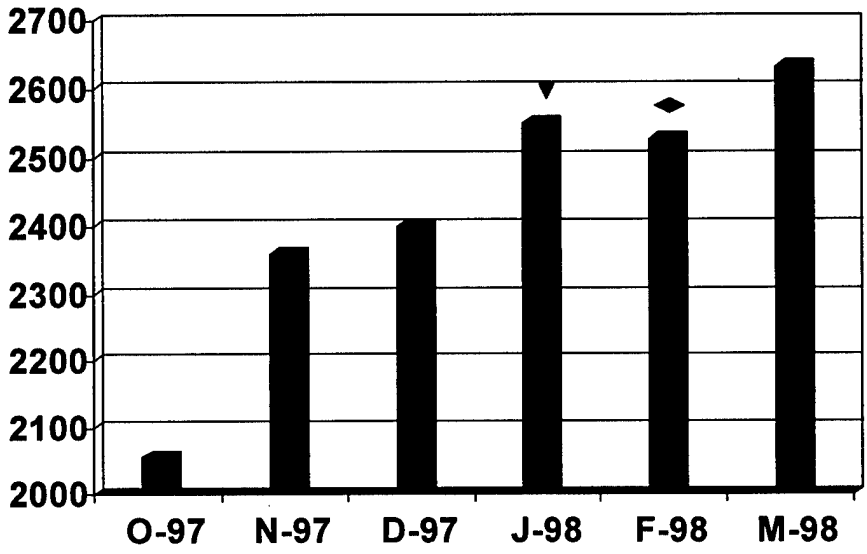


Fig 5. Number of Class I patients by month.

Conclusion

The Smile Center is a unique innovation utilizing a separate "hygiene" clinic. The Smile Center is able to increase "patient access to care" by incorporating a flexible schedule during the annual exam process. This scheduling has increased available appointments by 38% with the same number of providers. Although most DENTACs will not be able to devote a single dental clinic to hygiene, the concept of flexible hygiene appointments may be universally adopted in any clinic. The initial success of the Smile Center is encouraging, however, continued evaluation is undergoing. A 90-day re-evaluation has just taken place. One of the clinic adjustments is to increase the 15 minute prophy polish to 20 minutes for better infection control. Additional data, such as the continued effect of the clinic on the numbers of Class I patients, will be evaluated and presented over the next 6 months.

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†††††Dental Corps. COL Jones is the Commander, Pacific Region Dental Command and U.S. Army Dental Activity, HI.

AMEDD DATELINE

Dr Wayne R. Austerman†

2 Apr — Doctor James Tilton, Physician and Surgeon General, ordered U.S. Army surgeons to record daily weather observations at their posts. This marked the beginning of systematic meteorological observations in the U.S. **(1814)**

5 Apr — Daniel F. Blakeman was the last of approximately 200,000 veterans of the Revolutionary War to die. The 109-year-old soldier had earlier survived disease and wounds to follow General George Washington to victory in a conflict which claimed the life of an estimated one out of every 10 American troops. **(1869)**

6 Apr — Union and Confederate forces clashed at the Battle of Shiloh in southern Tennessee, generating over 23,000 casualties in 2 days of fighting in the largest mass casualty situation in American history up to that time. **(1862)**

7 Apr — Army nurses received a pay raise for the first time. At the start of the Revolutionary War, each nurse had received a salary of $2 per month and one ration per day. On this date, that sum was increased to $8 per month and one ration per day. **(1777)**

9 Apr — American Civil War ended with Confederate surrender at Appomattox, VA. Four years of conflict had left 620,000 Americans dead of wounds or (predominantly) disease. During the war, the U.S. AMEDD had treated 246,712 wound cases and 5,825,480 disease cases. Most common ailment was diarrhea, which killed 30,481 of the 1,325,754 troops seeking treatment for it. **(1865)**

14 Apr — Congress passed legislation providing for an AMEDD. Doctor Joseph Lovell began an 18-year stint as Surgeon General. **(1818)**

Assuming command of a detachment of troops in the temporary absence of any line officers at his post, Surgeon Bernard J.D. Irwin led them into combat with hostile Apache tribesmen as he relieved a force of troops held under siege by the chieftain Cochise at Apache Pass, Arizona Territory. This was the first officially recognized act of valor for which the Medal of Honor was subsequently bestowed. **(1861)**

16 Apr — Doctor Charles D. Brown, Official Embalmer of the U.S. Govenment, began preparing President Abraham Lincoln's body for burial following his assassination. A trained surgeon and dentist, this graduate of the University of Pennsylvania Medical School was appointed to this post by one of his former dental patients, Secretary of War Edwin M. Stanton. Doctor Brown subsequently returned to his New York City dental practice, whch he continued until his death in 1886. **(1865)**

19 Apr — Doctor Eliphalet Downer, member of a Massachusetts militia company, became the first American soldier to kill an enemy with a bayonet as he clashed with British troops in the wake of their engagements with local militiamen at Lexington and Concord. **(1775)**

21 Apr — General Sam Houston's Army of the Republic of Texas attacked and defeated General Santa Anna's Mexican Army at San Jacinto, thereby winning independence for Texas. Santa Anna was taken by surprise due to his recreational use of opium. Released by the victorious Texans, he lived until 1876, when he died while suffering from tertiary syphilis. **(1836)**

23 Apr — Congress enacted legislation extending recognition of Contract Dental Surgeons as a part of the U.S. AMEDD. **(1908)**

28 Apr — The U.S. Army suffered one of its worst mass casualty situations when the steam engine boiler of the troop transport *Sultana* exploded while the vessel was northbound on the Mississippi River. The boat carried 2,300 newly discharged Union soldiers, of whom 1,700 died of burns, scalding, or drowning in the disaster. **(1865)**

13 May — Hiram Cronk, the last surviving veteran of the War of 1812, died at the age of 105. Cronk, a New Yorker, had enlisted at age 15 and served with valor during the British attack on Sackett's Harbor, New York. Addicted to chewing tobacco since childhood, Cronk habitually drank at least two gallons of liquor each month until his death. **(1905)**

15 May — Noted pirate Captain Edward "Blackbeard" Teach blockaded the seaport of Charleston, SC, capturing eight vessels and holding their crews and passengers hostage until Governor Eden ransomed them with a chest of medicine, which was used to treat an epidemic of venereal disease among the pirates. **(1718)**

26 May — Aspiring poet and novelist Edgar Allan Poe enlisted in the U.S. Army under an assumed name. Despite a penchant for drug and alcohol abuse, he rose to the rank of SGM by the time of his discharge in 1829. In 1830, he was admitted to West Point, but was expelled after he appeared for dress parade while wearing only the crossbelts for his cartridge box. **(1827)**

The U.S. War Department ordered that vaccination, or Jennerian immunization using cowpox, be substituted for inoculation to prevent smallpox in the U.S. Army. A milestone in military preventive medicine, vaccination soon became the generally accepted method for the prevention of smallpox in both military and civilian medicine. **(1812)**

1 Jun — Ordered to hunt down and destroy "that devil Forrest," by General W.T. Sherman, Union Brigadier General Samuel D. Sturgis mustered a force of 8,000 troops and departed Memphis, TN, in pursuit of his quarry, MG Nathan Bedford Forrest, CSA. Upon reviewing his command prior to leaving the city, Sturgis had been so intoxicated that he had fallen off his horse in full view of the troops. Nine days later, a combination of Sturgis' befuddled leadership and heat exhaustion resulted in the destruction of the Union force by Forrest's 3,500 cavalrymen at Brice's Crossroads, MS. **(1864)**

3 Jun — The Union Army of the Potomac suffered 7,000 casualties in approximately 15 minutes when it launched a futile frontal assault against the Confederate lines at Cold Harbor, VA. General U.S. Grant refused to ask for a truce for the purpose of evacuating his casualties from the battlefield until 7 Jun, by which time most the wounded had died of shock, blood loss, thirst, and exposure. **(1864)**

President Woodrow Wilson signed legislation creating a commissioned Veterinary Corps. The law provided for a staff of one officer and 16 enlisted men to care for every 400 horses and mules in the service. **(1916)**

6 Jun — Operation OVERLORD, the Allied amphibious assault on Nazi-occupied Europe, incurred 5,000 American casualties by nightfall. **(1944)**

8 Jun — First Lieutenant Sharon A. Lane was killed by shrapnel wounds suffered during an enemy rocket attack on the 312th Evacuation Hospital at Chu Lai, Republic of Viet Nam. She was the only Army nurse killed in action during the Viet Nam Conflict. **(1969)**

10 Jun — Secretary of War Simon Cameron appointed Dorothea Dix, a nationally known advocate for humane treatment of the insane, as first superintendent of nurses for the Union Army. Although unpopular with many Army physicians due to her outspoken criticism of what she saw as the Medical Department's flaws, Ms Dix served ably until the end of the conflict. Secretary of War Cameron was subsequently forced to resign his office due to charges of corruption and incompetence. **(1861)**

Six months after William Roentgen's discovery of X-rays was publicly announced, a Roentgen tube at the Army Medical Museum was used to locate a bullet lodged in the hip of a shooting victim. The use of Roentgenologic equipment in the field and the hospitals during the Spanish-American War was described by CPT William Cline Borden, MC, in *The Use of Roentgen Rays in the Medical Department of the U.S. Army in the War with Spain.* Published in 1900, it was one of the earliest American monographs in radiology. **(1896)**

13 Jun — President Lincoln authorized the creation of the U.S. Sanitary Commission, a civilian volunteer organization which provided supplementary medical personnel and materiel to the U.S. AMEDD throughout the Civil War. **(1861)**

14 Jun — The surgeon of Jefferson Barracks, St Louis, MO, was shocked by newspaper reports complaining that garbage and filth accumulating in the city's streets had attracted packs of foraging hogs, which had attacked and killed several small children. **(1849)**

15 Jun — Brooke Army Medical Center initiated a 26-week course in psychiatric nursing at Fort Sam Houston, TX. **(1946)**

17 Jun — American troops inflicted heavy casualties on attacking British troops before being forced to retreat from entrenchments on Breed's Hill (aka Bunker Hill), near Boston, MA. Doctor Joseph Warren, a general in the colonial militia, was killed in action while commanding the patriot force. He was the first American general officer to die in battle. **(1775)**

18 Jun — Colonel Florence A. Blanchfield was given Serial Number N-1 as President Eisenhower presented her with the first regular Army commission ever given to a woman. In addition to COL Blanchfield, 72 others became regular officers in the Army Nurse Corps. **(1947)**

19 Jun — Surgeon Jonathan Letterman became Medical Director of the Union Army of the Potomac. His genius for medical administration brought about creative reforms which became a model for all subsequent modern armies. He devised a system of echeloned care at forward field hospitals, reorganized medical supply methods, and originated a centrally controlled Ambulance Corps for the swift and efficient evacuation of casualties from the battlefield. **(1862)**

21 Jun — Surgeon Albert J. Myer was appointed first chief of the U.S. Army Signal Corps. Doctor Myers' experiments with tactical communications via signaling with guidons or mirrors, while posted to Fort Davis, TX, during the 1850s, led to him assuming this position during the Civil War. **(1862)**

Nurse Edith Greenwood received the first Soldier's Medal ever awarded to a woman for her actions in saving the lives of her patients during a fire in the station hospital at Yuma, AZ. **(1943)**

25 Jun — Surgeons George E. Lord and James DeWolfe were killed in action along with LTC George A. Custer and 215 officers and men of Companies C,E,F,I, and L of the 7th U.S. Cavalry in an engagement with Sioux and Cheyenne tribesmen on the Little Bighorn River, Montana Territory. Also slain were medical orderlies John J. Callahan, Junius Helmer, and Elihu Clear. Doctor William R. Porter and medical orderlies Harry Abbotts and William E. Robinson survived to treat the 60 wounded men of Companies A,B,D,G, and H. It took 11 days for the 42 most severely wounded cases to reach the nearest post hospital at Fort Abraham Lincoln, Dakota Territory. By that time, three men had died in transit. **(1876)**

28 Jun — A cholera epidemic swept through the Rio Grande Valley. At Camp Lavaca, TX, 150 members of the 350-man garrison of the 8th U.S. Infantry died of the disease by month's end. An Army surgeon estimated that 20% of the region's 20,000 residents fell victim to the epidemic before it abated. **(1849)**

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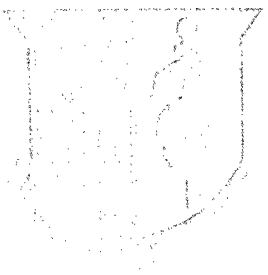

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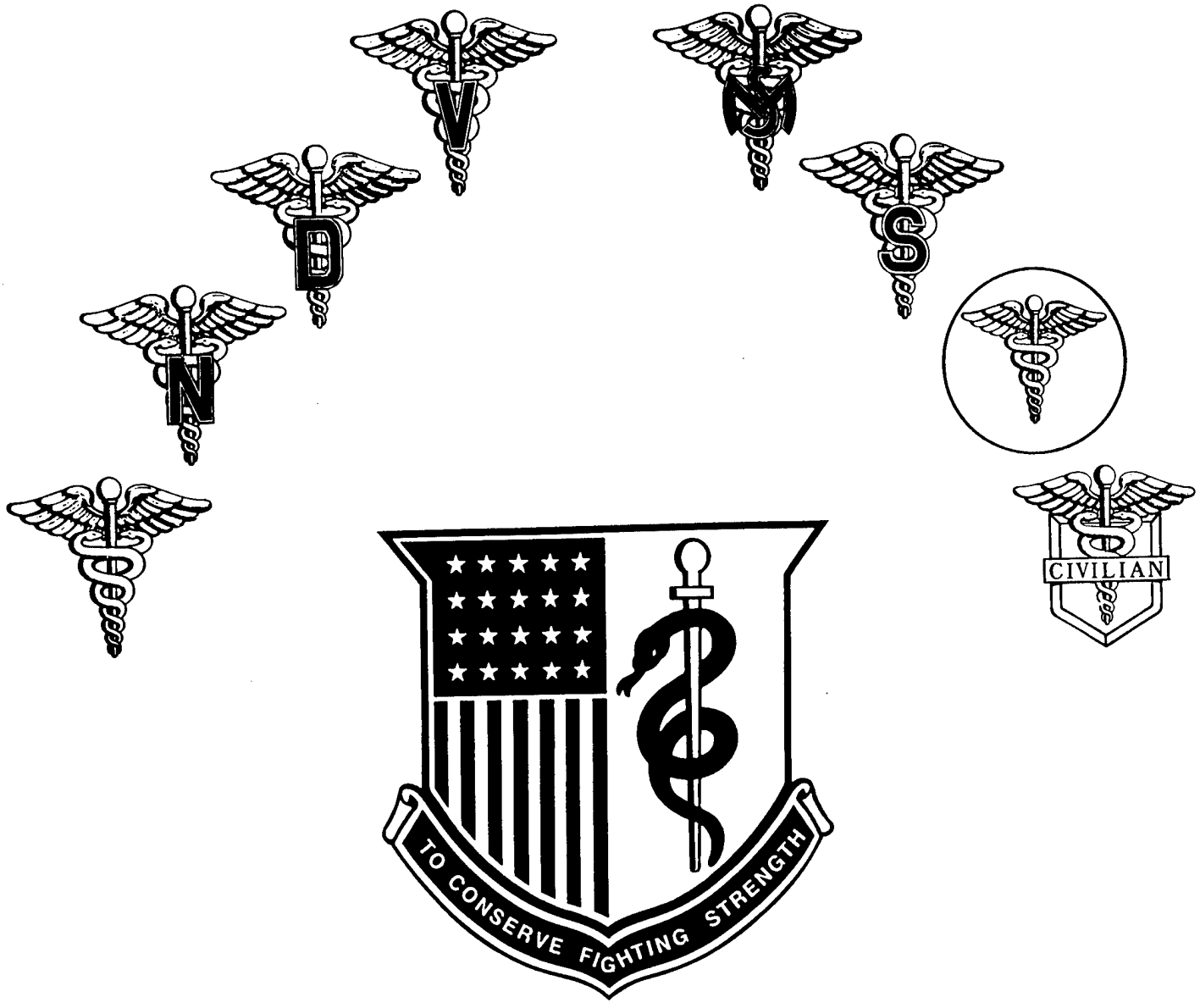

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