U.S. ARMY MEDICAL DEPARTMENT
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Major General Darrel R. Porr

AMEDD Center and School Welcomes MG Porr

Major General Darrel R. Porr is the new Commander, U.S. Army Medical Department Center and School, succeeding MG Kevin C. Kiley. He comes to the Home of Army Medicine from his position as Commanding General, Dwight D. Eisenhower Army Medical Center and Southeast Regional Medical Command, Fort Gordon, Georgia.

Following his initial Army tour of duty as an Infantry officer assigned to the 1st Special Forces Group, MG Porr returned to medical school and graduated in 1979 from the University of Cincinnati School of Medicine. He completed his residency training in Family Practice at Madigan Army Medical Center, Fort Lewis, Washington, where he also served as Battalion Surgeon in the 75th Ranger Regiment. His military career includes assignments at Womack Army Medical Department Activity, Fort Bragg, North Carolina, where he served as Chief of Primary Care and Family Practice Residency Program Director. He subsequently served as Command Surgeon, Joint Special Operations Command and Division Surgeon, 82nd Airborne Division at Fort Bragg. He then served as the Operational Medicine Consultant in the Office of the Surgeon General prior to commanding the 67th Combat Support Hospital and MEDDAC in Germany. He was selected to be Deputy Commander Clinical Services, Madigan Army Medical Center and following promotion to Brigadier General, was assigned as Commanding General, 44th Medical Brigade, Fort Bragg, North Carolina.

Major General Porr is a graduate of the Army Medical Department Officer Advanced Course, Armed Forces Staff College, and Army War College. His awards and decorations include the Defense Superior Service Medal, Legion of Merit with 3 Oak Leaf Clusters, Purple Heart, Defense Meritorious Service Medal, Meritorious Service Medal with 2 Oak Leaf Clusters and Army Commendation Medal with 3 Oak Leaf Clusters. During his military career, he has been awarded the Combat Medic Badge, Expert Field Medic Badge, Master Parachutist Badge with Bronze Combat Star, SCUBA Badge, and Ranger and Special Forces Tab.

A Survey of Visual Symptoms Reported by AH-64 Pilots

Clarence E. Rash†
Christie L. Suggs††

In the U.S. Army's AH-64 Apache attack helicopter, pilots fly using a helmet-mounted display (HMD) known as the integrated helmet and display sighting system (IHADSS). The IHADSS provides pilotage imagery from a forward-looking infrared (FLIR) sensor mounted on the nose of the aircraft and aircraft parameter symbology. The IHADSS is a monocular HMD, presenting imagery to the right eye only. A web-based study was conducted to determine the continuing presence and frequency of visual complaints reported by pilots using the monocular IHADSS HMD of the AH-64 Apache helicopter. A total of 216 pilots responded to the survey, which addressed areas of visual symptoms experienced during and/or after flight, helmet fit, and acoustics. Ninety-two percent of the pilots responding to the survey reported at least one visual symptom. The most frequently reported symptom for both during and after flight was visual discomfort. One out of four respondents reported having some difficulty in purposefully alternating between visual inputs to either eye.

Background

Aviators flying the U.S. Army's AH-64 Apache attack helicopter use a HMD known as the IHADSS. The IHADSS provides pilotage imagery from a FLIR sensor mounted on the nose of the aircraft and aircraft parameter symbology. The IHADSS is a monocular HMD, presenting imagery to the right eye only. When the IHADSS is used, the visual input to either eye differs greatly. This situation, referred to as dichoptic viewing, gives rise to binocular rivalry, a competition between the eyes for the information that gains attention. In the IHADSS, the left eye views the outside real world, while the right eye views the pilotage imagery and/or symbology. Rivalry between the two scenes can be resolved by suppressing visual input unilaterally, but attention may alternate involuntarily between the two scenes. Such dichoptic viewing, under extended periods of monocular viewing and suppression, places tremendous demands on the human visual system and can be expected to result in increased workload and stress levels.

Integrated Helmet and Display Sighting System

The AH-64 (A-model) Apache was fielded in the early 1980s. As aviators gained experience with the use of a novel monocular HMD, complaints of visual problems began to surface. In a very limited survey of AH-64 Apache aviators, Hale and Piccione reported that flying the IHADSS at night often led to physical fatigue and headaches.[1] Among the causes they identified were binocular rivalry, poor FLIR image quality, narrow field of view (FOV), poor depth perception, inadequate eye relief, and general system discomfort. In addition to this survey, anecdotal complaints were reported to flight surgeons and unit commanders at the Army's rotary wing training center at Fort Rucker, AL. In response to the above complaints, in early 1990, the U.S. Army Aeromedical Research Laboratory (USAARL), Fort Rucker, AL, conducted a study using the large training population of AH-64 Apache aviators located at Fort Rucker to address the visual medical concerns associated with flying this unusual visual imaging system (n=58).[2] In addition, in the fall of 1989,

Crowley distributed a questionnaire to the military helicopter community, the purpose of which was to investigate the breadth of visual illusions experienced by aviators flying with night vision devices (NVDs), to include the AH-64 Apache FLIR.[3] Of the 242 returned questionnaires, 21 were from AH-64 Apache aviators.

In the 1990 study, more than 80% of the aviators registered at least one visual complaint associated with periods of flying or following flight in the Apache aircraft.[2] Many of the comments indicated that symptoms occurred during long flights and/or while flying with poor quality or out-of-focus display symbology. The most common symptom experienced was that of visual discomfort while flying the aircraft. Fifty-one percent of the aviators indicated that they sometimes experienced visual discomfort *while* flying; only 28% reported a similar problem *after* flying. About one-third of the aviators reported suffering from occasional headaches, and approximately 20% reported that they sometimes experienced either blurred vision and/or disorientation while flying. The percentages of pilots reporting headache and blurred vision remained about the same after flight, while the percentage of those experiencing postflight disorientation decreased to five. About 20% of all aviators reported the presence of afterimages following flight.

To reinvestigate the visual issues associated with the IHADSS, USAARL conducted an expanded follow-up survey of current U.S. AH-64 Apache aviators. This newer study was determined desirable for the following reasons: (1) there is renewed interest in the presence of visual complaints with use of the monocular IHADSS, fueled by expanded fielding of the AH-64 Apache helicopter in the United Kingdom and other countries and (2) during this period, the flight track for AH-64 aviators has changed. During the early years of the AH-64 fielding, all AH-64 aviators were experienced aviators who had transitioned from other aircraft (primarily the AH-1 Cobra). Since 1986, AH-64 aviators began transitioning directly from initial entry-rotary wing (IERW) training into flying the AH-64 Apache. In addition to this change, the respondents in the 1990 study were all experienced instructor pilots.[2] The present (Year 2000) study included student aviators with as few as 20 AH-64 flight hours.

Survey Design

The year 2000 survey was a near complete duplication of the Behar et al survey and the Crowley visual illusion questionnaire combined, with added sections to inquire about helmet fitting and acoustic issues.[2,3] This duplication allowed direct comparison between aviator visual complaints and illusions across the 10-year period. The questionnaire consisted of six sections: (1) demographics; (2) visual history; (3) helmet fit; (4) aviation vision; (5) acoustical issues; and (6) an open-ended comment section. The demographics section addressed gender, age, total flight hours, AH-64 flight hours, and the distribution of AH-64 flight hours by front/back seat and day/night flight. The visual history section inquired about use of vision correction (spectacles and contact lenses), previous eye disease or injury, presence of visual symptoms (for example, headaches, eyestrain, etc, not associated with flight), and eye preference and motor laterality (handedness). In the helmet fit section, aviators were asked to provide information regarding history, quality and satisfaction of their IHADSS helmet fit. The most important section, aviation vision, asked questions about visual complaints, symptoms and illusions experienced either *during* or *after* flight using the IHADSS HMD. This section also addressed intentional and unintentional switching of attention between the left, unaided eye, and the right, sensor-fed eye. The acoustic issues section inquired about AH-64 aviator awareness of the communication earplug (CEP). The final section was an open-ended question asking aviators to identify additional (visual) problems not previously addressed in the questionnaire.

The survey was conducted exclusively via the Internet. The questionnaire was developed and placed at a dedicated Internet address, reachable only by knowing the direct Internet address. This address was advertised in *Flight fax*, a U.S. Army Safety Center, Fort Rucker, AL, publication distributed to all U.S. Army aviation units. The Internet survey was advertised further via e-mails to commanders of all AH-64 units worldwide.

There were 224 questionnaires submitted via the Internet. Eight double submissions were excluded from this analysis, producing a final sample size of n=216. The current estimated AH-64 pilot population is given as 1826 (active duty and Army National Guard). Therefore, the survey sample size of n=216 is approximately 12% of the population. The response rate for each question was in excess of 98%. The questionnaires were completed

anonymously, soliciting no identifying information other than gender and age. Since the data presented herein are the result of a voluntary survey rather than a random sample, readers are cautioned about inferring specific findings to the general population.

Demographics

Demographic data for the 216 aviators completing the Internet survey are presented in the table. Included in this table is a summary of age, overall flight hours, flight hours spent specifically in the AH-64, and approximate flight hours spent in the AH-64 during the 30 days prior to responding to the survey. All responses from the Internet survey were by male aviators.

	Mean	Median	Range	Standard Dev
Age (year)	36.5	36	23-53	6.7
Total flight hours	2131	1750	220-9500	1738.3
AH-64 flight hours	1116.4	1000	20-5000	823.3
Flight hours AH-64 "A" model	1056.5	950	20-5000	800.7
Flight hours AH-64 "D" model	227.2	200	10-1000	150.4
AH-64 hours in last 30 days	18.5	17	0-90	14.6
Percent of time (last 30 days) in pilot station	45.6	50	0-100	27.8
Percent of time (last 30 days) in copilot/gunner station	54.4	50	0-100	27.8
Percent of time in day flight	52.0	50	0-100	17.5
Percent of time night flight	48.0	50	0-100	17.5

I would keep: Age, total flight hours, AH-64 hours, AH-64 hours last 30 days.

Table. Year 2000 Study Demographics (n=216)

Results

Visual Correction. Of the 216 AH-64 aviators responding to the survey, 29.6% (n=64) reported wearing some type of vision correction. The type of correction took many forms. Of those wearing correction *during* flight (n=52), 59.6% (n=31) wore some type of spectacle correction, 17.3% (n=9) wore some type of contact lens correction, and 23.1% (n=12) reported wearing both (at different times). Single vision correction was the predominant mode for both spectacles and contact lenses. Those aviators who wear spectacles during nonflight activities tended to also wear them during flight. However, more aviators appeared to wear contact lenses for flight versus nonflight activities.

Visual Complaints and Symptoms. The most common visual symptom reported *during* flight was visual discomfort (n=176, 81.5%), followed by headache (n=131, 60.6%). Other complaints such as blurred vision and disorientation were reported by over one-third of the respondents. The most common complaint reported *after* flight, likewise, was visual discomfort (n=160, 74.1%). This was followed by reports of headache (n= 135, 62.5%), after-images (n=101, 46.8%), blurred vision (n=80, 37.0%), disorientation (n=21, 9.7%), and double vision (n=11, 5.1%).

Degraded Visual Cues. A high percentage of respondents reported experiencing multiple losses of visual cues. The most frequently reported degraded visual cue was decreased resolution (n=195, 90.3%). At least three-fourths of the respondents also reported experiencing impaired depth perception (n=183, 84.7%) and decreased FOV (n=175, 81.0%), loss of visual contact with horizon (n=164, 75.9%), whiteout/brownout (n=163, 75.5%), and blurring of image with head movement (n=163, 75.5%). The least reported degraded visual cue, but yet still reported by more than one-third (n=84, 38.9%) of the respondents, was Inadvertent Instrument Meteorological Condition.

Illusions. The most frequently reported static illusion

was faulty slope estimation (n=173, 80.1%). Over half of the respondents also reported static illusions of faulty height judgment (n=159, 73.6%), faulty altitude judgment (n=147, 68.1%), difficulty with lights (n=130, 60.2%), and faulty clearance judgment (n=130, 60.2%). The least reported static illusion was the perceived bending of straight lines (n=44, 20.4%). Aviator comments regarding static illusions frequently referenced the "poor" quality of FLIR imagery and the monocular design of the IHADSS.

The most frequently reported dynamic illusion was undetected drift (n=169, 78.2%), followed closely by faulty closure judgment (n=163, 75.5%) and illusory drift (n=154, 71.3%). More than half of the respondents also reported dynamic illusions of no sensation of movement (n=120, 55.6%) and illusory rearward flight (n=120, 55.6%). The FLIR image quality was the most frequently cited cause of the dynamic illusions. Several respondents commented on the use of symbology to reduce illusion effects and stated that the illusions were reduced with increased or recent flight experience.

Alternating Visual Input Between Aided and Unaided Eye. The IHADSS is a monocular system in which the right eye views the HMD imagery and the left (unaided) eye views the outside world. This requires the Apache aviator to switch his visual input between the two eyes, depending on the required task. Questions were asked as to their ability to purposefully alternate between the aided and unaided eye, whether any special methods are used to accomplish this alternation, and whether alternation ever occurs unintentionally.

Most pilots (n=161, 74.5%) reported it was easy to purposely alternate between left and right eyes during flight. However, almost one out of four respondents (n=51, 23.6%) reported having some difficulty, and a few (n=2, 0.9%) reported having great difficulty in purposefully alternating. Almost half of the respondents (n=97, 44.9%) have developed methods to assist in switching their visual inputs when required. Examples of these methods include closing one eye, glancing away, and blinking.

Approximately two-thirds of respondents (n=139, 64.4%) reported that during flight their visual input sometimes *unintentionally* alternated between the eyes. Frequently cited causes included the presence of bright lights, eye dominance, and fatigue after extended flight.

Helmet Fit. Helmet fit is critical for the AH-64 aviator. At night, the AH-64 is flown primarily using FLIR pilotage and symbology imagery provided through the IHADSS. The IHADSS has a 10 mm exit pupil, which must be centered at the eye to achieve full FOV. To maintain this exit pupil in the presence of the high vibration environment of rotary-wing aircraft, it is necessary to achieve a good, stable fit. The fitting process involves numerous steps including, but not limited to, adjustments to the suspension system, proper location and alignment of the helmet display unit (HDU), and final trimming of the helmet visor to accommodate the HDU when in an operating position. The objectives of this procedure are to: (1) obtain a comfortable, stable fit of the integrated helmet unit, which enables the aviator to achieve maximum FOV provided by the HDU when it is mounted on the helmet and (2) achieve boresight, which permits accurate engagement of weapons systems.[4]

A prior study on IHADSS fit indicated a need for subsequent adjustments to the helmet system after the initial fitting on the aviator.[4] Over 80% of the aviators surveyed in this study indicated a need for adjustments or refits to the original fit. How successfully aviators are able to have helmets refitted has been found to vary among the Army aviation community based on the availability of trained personnel in IHADSS fitting, command emphasis on the importance of quality fit, and availability of fitting kits in all units.

Questions placed on the current survey were intended to address this issue and gather additional information on the efficiency of the current helmet fit program. The survey requested information from pilots on the date of their last helmet fit/refit, and on overall satisfaction with current fit. In addition, the survey questioned pilots on whether their ability to view IHADSS imagery was impacted by their current fit.

Fit Satisfaction. Among the aviators responding to the survey, approximately two-thirds (n=147, 68.1%) were somewhat or completely satisfied with their helmet fit. However, 17.1% (n=37) were either somewhat or completely dissatisfied with their current fit.

Fitting Frequency. Respondents were asked for the date of their last helmet fitting. A wide disparity in time periods was reported. The provided dates were converted

into values representing the number of months since last fitting. The period since the last fitting ranged from zero (fitting within current month) to 171 months. The median period since last fitting was 27.96 months. Ninety percent of respondents had obtained a refitting within the last 75 months; however, 5% have gone 10 years or more since a complete refitting.

Aviator Comments

To ensure that issues pertinent to understanding flight with the AH-64 IHADSS HMD were fully investigated, the survey concluded with a free-field section that encouraged respondents to provide additional comments. One hundred (46.3%) of the respondents took the opportunity to expand on their survey responses. These additional comments were often extensive and forthright. Among the issues addressed by the comments were poor FLIR quality, vision changes, helmet fit, image quality, and the acoustical aspects of the CEP. A significant number are presented here, grouped by specific issue. Occasionally, user comments were edited slightly to improve fragmentary responses, verbal lacunae, or misspellings. Places where this occurred are indicated with square brackets [ ].

Vision Changes.

- "I feel that my right eye vision has gotten worse than my left due to the use of the IHADSS… Just wondering what effect the display will have over the long run. I will, of course, continue to fly as long as I can."

- "I have always had 20/20 vision in both eyes until recently. The vision in my right eye has degraded to 20/40."

- "I have noticed that the vision in my left eye has gotten worse over the past 2-3 years, while the vision remains a constant 20/20 in my right eye. I have attributed this to the use of the HMD for [night vision system (NVS)] flight. I tend to strain to see real world objects with the unaided eye. Have experienced headaches after NVS flight ever since transition into the Apache 11 years ago."

- "I feel that some of my right eye may have some acuity degradation. I cannot verify this scientifically. I still pass the annual eye exam. I would be interested in more specific day and night testing…"

- "I have noticed that after flying extended NVS, on the way home my left eye will shut down, while driving home I suddenly realize that I am not using my left eye to see. This has only happened when I have been extremely tired. Another curiosity is that as I have hit the big 40, my eyesight in my right eye has stayed better than 20/20 while my left eye has slowly degraded."

- "Visual acuity in my right eye is still good, but slower to focus than my left eye. This degradation was evident only after flying System in the AH-64. I did not notice this degradation during any of the 8 years of using Night Vision Goggles (NVGs) …"

- "Vision in my right eye has degraded to a greater degree than my left eye."

FLIR [Forward-Looking Infrared] Quality.

- "Visual illusions exist because of visual acuity. The better the vision, the less the chance of illusions. I fly several night systems. I have many hours with PVS 5s [NVGs], [aviator's night vision imaging system] 6 and the [pilot's night vision system (PNVS)]. I also train civilians to fly NVGs using Generation 3 OMNI 4 NVGs. The bottom line is that the AH-64 FLIR is unsatisfactory. I am currently on a rotation in Kuwait and the PNVS does a good job in the desert. Over the subtropical climate of Florida, where I am from, the performance is poor. The illusions with the IHADSS are more present because of the system the IHADSS has to work with. This was no different than when the SPH-4 [helmet] had to work with full-face goggles. A better IHADSS may slightly reduce the problems with illusions, but it will never approach the reduction of problems we will notice if we get a better FLIR."

- "In other words, if the AH-64 had a better FLIR system I am fairly certain there would be few[er], if any, visual issues with the IHADSS. The reason I bring up the FLIR is because this survey asks several questions concerning things such as 'degraded resolution/insufficient detail, slope estimation,' etc. These things are not really IHADSS issues as they are FLIR issues. In conclusion, I would estimate that probably 80% of all the visual issues are associated with the FLIR and not the IHADSS. The

IHADSS could use some minor refinement, the FLIR is old and needs some major help."

Helmet Fit.

• "While not directly impacting upon visual issues, the issue and turn-in of IHADSS as each aviator joins and leaves a unit does have a great impact upon fit. If we went back to the original method whereby an aviator was issued his helmet during the course and kept it through his Apache career, we would see a dramatic drop-off of fit-related problems after the first year or so post [aircraft qualification course]. The helmet should be issued by [CIF] and kept on an aviator's individual clothing records until he leaves the Army."

• "…The helmets should be issued to the aviators and then the aviator should keep the helmet until no longer required, getting out of the Army, retirement, no longer flying AH-64, etc. This would help greatly. Helmet fit and comfort directly affect visual issues. The better the fit and the more comfortable the helmet, the better the visual acuity is. I have found that eyestrain, headaches, etc. are reduced to minimal levels once the helmet is properly broken in. Every helmet is different and it usually requires the aviator to make adjustments to the helmet above and beyond what the [aviation life support equipment (ALSE)] personnel provide…"

• "The HDU works fine but the root of all problems is the 10 pounds of Velcro needed to fit each IHADSS. How can it be consistent?"

• "The IHADSS helmet is very uncomfortable. Rarely have I ever had a perfectly comfortable fit. Most of the time I have to deal with hot spots and headaches. This is a serious distracter and [a] nuisance during flight. With my head shape, I cannot wear a thermo plastic liner. I do use a skullcap, but that only helps to some extent. Because of this I feel that I have sacrificed some of the noise attenuating capabilities of the helmet…"

• "Because of the way the IHADSS is fitted, it is a problem to turn it in as you leave every unit. If we can't solve the accountability problem, if we could improve the fitting procedures, it would help. Suggestions would be a liner or some kind of form fitted insert. Suffering through your first flights at a new unit with less than full picture is not the best way to go…"

• "The IHADSS helmet is a terrible fitting helmet. For years I have tried to fit my helmet comfortably, but to no avail. I have had 'hot spots' so bad they were actually bleeding."

Image Quality.

• "Most problems that I have had are due to faulty equipment. Examples: The greyscale is not able to be properly adjusted. This leads to reduced resolution and the inability to 'break out' details. If the greyscale is overcompensated with contrast, (allowing the picture to be viewed when the system has insufficient brightness), then I will experience eye fatigue/strain. My personal preference for the greyscale is very dim, but still able to see all 10 shades of gray. The other problem I have noticed is an HDU that is blurry. The blur is uncorrectable through the focus setting on the display adjust panel or the infinity focus knob. A compromise is then required...leading to eye strain. The same applies to distortion. Distortion adds to illusions of [aircraft] movement."

• "Brightness, Contrast, Gain, Level, and Focus are all dynamic and interrelated. A change in level will, at times, appear to be a change in brightness. An improperly adjusted Contrast will affect adjustments in Gain and Level. Fatigue will affect Focus adjustments. Out of focus, ever so slightly, will induce extreme eye fatigue, headache and pain, but so will excessive brightness, which a pilot will use when the delta is low and the FLIR image is of poor quality. So what does a perfect picture look like? How do you teach that?…"

• "…The is a very poor system in every respect. It is heavy, sloppy, provides a poor quality picture and a narrow field of view, the monocular display is annoying and uncomfortable, and the thinner versions of the cord get wrapped around things in the cockpit. Getting a decent picture requires the combiner lens to be placed right next to the eye – anything interfering with that placement (such as NBC masks) makes it impossible to get a full field of view (and the 'full' field of view isn't sufficient anyway)…"

Monocular vs Binocular Design.

• "…After teaching PNVS and AH-64A flight for 6 years, I wear corrective glasses for my right eye only. My left eye is 20/20! With today's technology, [Cathode Ray Tubes] , in my opinion, is not the best answer. Binocular

rivalry can be trained away, as I, and many others, have done. I do not think that dual imagery is the full answer. With all the problems, and failures I have experienced with the HDU and its associated systems I cannot imagine what would have happened if I had both eyes obscured by a faulty system. Flying in a tight, multi-ship, formation, staggered right at night, and have the PNVS lock in the upper right quadrant because my upper transponder antennae was on. My ability to quickly adapt to 'naked left eye' flight because of a dual-eyed system averted certain disaster. I am well aware of transfer of controls, if that's your answer, you don't fly enough."

• "I definitely support a monocular display or at least the option of flying with a monocular display. I believe the ability to easily view the real world unaided is important."

• "I am a PNVS current instructor pilot. I prefer the IHADSS monocular system because I always have one dark-adapted eye and, on all but the darkest nights, I have some naked eye depth perception. When focused outside, the dark-adapted eye provides peripheral motion cues even when the IHADSS eye is focused foveal[ly] to read symbology. Transition from inside the cockpit [display] presentations to outside imagery works well with the monocular IHADSS. I use IHADSS night and day and consider it to be an indispensable aid to flying and fighting the AH-64D day or night."

• "...Recommend a lighter weight, binocular system with greater field of view that provides much greater distance between the eye and the combiner lens."

Spectacles.

• "I wear glasses. In order for me to use the HMD correctly, I have to bend the frames into a contortion that puts the lens in contact with my eyelashes. The lens then gets covered with skin oil and sweat. I also have to position the combiner lens so close to my glasses that the sliding clip has stress on it (this has led to breakage of sliding clips). This also pushes my glasses into my skin. I have come to realize that flying the system without glasses is safer than flying with them. Contacts? They would be nice if there were some kind of reasonable program available. I have an astigmatism and getting contacts is not only 'spendy,' it's next to impossible. Looking forward to [Army] Aviation medicine taking a serious look at the newer laser eye correction procedures."

• "It seems almost impossible to correctly fit the HDU so that you can attain a full field of view with laser glasses on."

• "...Contact lenses will help with the problem of eyeglass frames interfering with the IHADSS picture. Laser surgery may be a consideration. Looking through the system can produce three distinct images when viewing a lighted runway. Left eye runway, right eye FLIR runway, and orange lights thru the combiner lens. All three are different – just pick the center of one and land. The more natural any system is with respect to human senses the easier it will be to train and remain proficient..."

• "Use of bifocal glasses with the IHADSS is very difficult. Right lens adjustments usually result in incomplete imagery. I've checked with other bifocal users, and they remove their right lens and adjust the focus to view the imagery. For me, this creates eye strain, but seems to be an interim fix. Also, viewing cockpit instruments with bifocals through the left eye is sometimes difficult. Near view items such as kneeboards are also sometimes difficult with night lighting..."

• "...I find it hard to wear glasses while using the HDU. It would be great if the Army allowed Laser eye surgery for Aviators like the Navy and Air Force have just approved for their aviators."

Summary and Discussion

Before beginning the discussion of the findings of this survey, readers must be reminded that care must be taken in drawing conclusions from survey data. This is especially true when, as with this survey, the respondents are solicited by advertisement. One disadvantage of this method of data collection is that there is a possibility that only individuals having very positive or very negative opinions are sufficiently motivated to put forth the effort to fill out the survey questionnaire. However, having raised this caveat, the authors wish to call attention to two points. First, an examination of the demographics shows that the respondents were well distributed across age and flight experience, with respect to both total aviation experience and AH-64 experience. Second, Army aviators are a highly disciplined and motivated population. The authors'

ongoing exposure to the Army aviation community has resulted in recognizing that Army aviators take considerable interest in any opportunity to contribute to efforts that may improve aviation safety and performance.

The survey responses came from a group of relatively experienced aviators whose approximate age was comparable to those surveyed in previous years (1990 survey average was 35.8 years; 2000 survey average was 36.5 years). However, the ranges of age for the two surveys have two notable differences. First, the 2000 survey included younger aviators. The 2000 survey had 15 aviators (6.9%) 28 years of age or younger versus 1 (2%) aviator for the 1990 survey. Second, the 2000 survey also included older aviators than the 1990 survey. The maximum age for aviators who participated in the 1990 survey was 44 years. The 2000 survey had 14 aviators (6.5%) aviators whose age was 45 years or older. A comparison of demographics for the two surveys showed other differences. Based on total flight hours, aviators who participated in the current survey reported approximately one-third fewer mean total flight hours than those of the 1990 Behar et al surveys (2131 hours in 2000 vs 3330 mean in 1990).[2] Also, over one-fourth (27%) of the 2000 survey aviators had less total flight hours than the minimum reported in the 1990 survey. Overall, respondents for the 2000 survey were less experienced than those surveyed in 1990. However, when AH-64 total flight hours are compared, the newer survey respondents reported a mean of 1116 hours, a 68% increase over that of the 1990 respondents. But, the range of AH-64 flight hours for 2000 respondents exceeded that for 1990, including the minimum and maximum. And, finally, for reported AH-64 flight hours flown during the past 30 days, respondents for the 2000 survey flew significantly fewer hours, an average of 18.5 hours for the 2000 survey vs 32.3 hours for the 1990 survey. In summary, the 2000 survey respondents were more diverse in age, total flight hours, and AH-64 flight hours; less experienced on average in total flight hours; but, more experienced in AH-64 flight hours. It is also worth noting that in the 1990 Behar et al survey, all respondents were instructor pilots and experienced AH-1 Cobra attack helicopter aviators.[2] In the current survey, some respondents had transitioned directly into the AH-64 Apache from IERW training.

Visual Symptoms. The major focus of this study was to investigate aviator vision with the AH-64 Apache IHADSS monocular HMD. The approach used was to ask responding AH-64 aviators about the type and frequency of visual complaints and symptoms experienced both *during* and *after* flight in the AH-64. Approximately 92% of the aviators reported at least one complaint *during* or *after* flight; in the 1990 Behar et al survey this value was 80%.[2] The mean number of reported symptoms was 2.5 and 2.4 for *during* and *after* flight, respectively. The most common visual symptom reported *during* flight was visual discomfort (81.5%); this same symptom was the most frequently reported as having been experienced *after* flight (74.1%). Similarly, the second most reported symptom, headache, was the same for both *during* and *after* flight. The most disturbing of the reported symptoms was diplopia (double vision). While any occurrence should be of concern, the frequencies of this symptom in the 2000 survey were fairly low, 6.5% *during* flight and 5.1% *after* flight. One aviator reported as always having experienced this symptom *both during* and *after* flight. In the 1990 survey, the reported frequencies for double vision were 14% and 11% for *during* and *after*, respectively.

The frequencies of the various reported visual symptoms were fairly large. Given the changes in the AH-64 aviator population over the last 10 years, a comparison between the 1990 and 2000 surveys with regard to frequencies of reported symptoms seems useful, but cannot be assigned any statistical significance. For the five symptoms for which data were available for both surveys, the percentage of reports increased from the 1990 to the 2000 survey for all except one – double vision.

	2000 Survey (n=216)	**1990** VISAA Survey (n=58)
Visual discomfort	82%	51%
Headache	61%	35%
Double vision	7%	14%
Blurred vision	34%	21%
Disorientation	42%	19%
Afterimages	29%	NA

Note: Percentages are rounded to the nearest integer.

Comparison of during flight visual complaints for 1990 and 2000 surveys.

A similar comparison is made for symptoms reported *after* flight. As before, the percentages presented are based on the summation of "Sometimes" and "Always" responses.

	2000 Survey (n=216)	**1900** VISAA Survey (n=58)
Visual discomfort	74%	30%
Headache	63%	34%
Double vision	5%	11%
Blurred vision	37%	27%
Disorientation	10%	5%
Afterimages	47%	21%

Note: Percentages are rounded to the nearest integer

Comparison of after flight visual complaints for 1990 and 2000 surveys.

For the six *after* flight symptoms, the percentage of reports increased from the 1990 to the 2000 survey for all except – double vision; this was the same as found between the two surveys for symptoms reported *during* flight.

Eye Dominance. Eye dominance refers to the preference an individual exhibits to accepting visual input in one eye over the other. While eye dominance often is related to the task involved, the survey question asked for a general response of "preferred sighting eye." In the current survey, the distribution of eye preference was 84.3% for the right eye and 15.7% for the left eye. This preference distribution was somewhat different from that found in the 1990 survey – right eye (62%), left eye (22%) and either eye (5%). [There was a 5% no response rate in the 1990 survey.]

When eye preference was compared to the frequency of visual complaints, it was found that respondents reporting a right eye preference averaged 2.5 visual complaints *during* flight and 2.4 complaints *after* flight. The mean numbers of complaints for the left eye were identical. Based on these findings, there is no reason to assume eye preference played a role in the visual complaints.

Unintentional Visual Alternation. During flight, Apache aviators using the PNVS/[target acquisition and designation system (TADS)] sensor imagery to fly the aircraft are presented with two disparate views – sensor imagery in the one (right eye) via the HDU and view of the cockpit/outside scene via the other (left), unaided eye. In the 1990 survey, nearly 70% of the respondents used the affirmative (Always, Usually, Sometimes) when asked if their vision ever alternated unintentionally between the eyes during flight. In the current survey, 64.4% reported unintentional alternation during flight. This difference between surveys was not found to be statistically significant (P=.3339). Most aviators (74.5%) reported being able to switch their attention with ease. Slightly less than 1% reported having "great difficulty" in being able to switch visual inputs (between eyes) on demand. Almost half (44.9%) reported having developed a strategy to aid in switching. Such strategies included closing one eye, glancing away, or blinking both eyes.

Since the IHADSS is a monocular system presenting sensor imagery to the right eye only, it was interesting that fewer pilots preferring the right eye reported problems with unintentional switching (62.6%) than pilots preferring the left (76.5%). However, this difference was not found to be statistically significant (P=.1210). When this analysis was expanded to include the level of effort required to perform purposeful alternation, it was found that 24.7% of pilots preferring the right eye had some or great difficulty. This value was about the same for pilots preferring the left eye (23.5%). So, based on these data, there seems to be little association between eye preference and problems with alternating between the eyes.

Illusions. The 1989 NVD visual illusions study was very limited in its reports by Apache aviators; only 21 of the 243 respondents were reporting on AH-64 flight with PNVS/TADS sensors and the IHADSS HMD.[3,5] The most reported static illusion was faulty height judgment (19%); the most reported dynamic illusion was undetected aircraft drift and illusory aircraft drift, both at 24%. The current survey found considerably greater frequencies of reported illusions. Approximately 92% and 95% of the respondents reported at least one static or dynamic illusion, respectively. Of the seven types of static illusions reported, five were reported by more that half of the respondents. The most reported static illusion was faulty slope estimation (80.1%), followed by faulty height judgment (73.6%).

A high incidence of dynamic illusions also was reported. Of the eight symptoms, six were reported by more than half of the respondents, with undetected drift 78.2) and faulty closure judgment (75.5%) being the most

reported. It should be noted that undetected drift was the most reported dynamic illusion for both the 1990 and 2000 surveys. Illusory drift, the second most reported dynamic illusion in the earlier survey (24%), was the third highest reported in the current survey (71.3%).

Helmet Fit. The IHADSS helmet was the first Army helmet developed specially for an aircraft series, the AH-64 Apache. This helmet represented a tremendous transition in helmet sophistication.[6] In addition to performing the standard functions of a protective helmet, it must also serve as a platform for mounting the HDU. This additional function brings with it the added requirement for increased stability. In order to achieve and maintain the full field of view, the helmet must be fit such that the pilot's eye is located in the 10 mm exit pupil. This exit pupil position must be maintained, even in the presence of vibration, head movements, sweat, and normal wear and handling. To achieve this, the fitting system and technique must be customized to individual pilot head and face anatomy. The aviator himself normally does IHADSS fitting, with someone from ALSE assisting.

While 120-day ALSE inspections are required on all helmets, these inspections check only the condition of the helmet components; the fit and exit pupil alignment are not checked. In practice, most AH-64 units have a "local expert," who, through experience, has become the unit "fitter."

In spite of these fit issues, the 2000 survey showed that over two-thirds (68.1%) of the respondents were somewhat or completely satisfied with their current fit. With 14.4% indicating being neutral on their satisfaction with fit, that left 17.1% as either somewhat or completely dissatisfied. Complaints included helmet shifting, having to rotate or turn helmet to adjust field of view, "sloppy fit," and hot spots.

Another major fitting issue is the inability of aviators to carry their helmets with them when they change duty stations. Currently, aviators are required to turn in their helmets prior to leaving their present assignment for a new assignment. Once the helmet is turned in, the Velcro that is used to adjust the fit is removed and given to the aviator in an effort to help with fitting the new helmet. In spite of this effort, comments provided in the survey tend to imply that helmet fit is detrimentally affected by this policy. Proper helmet sizes may not be available at the new duty station, resulting in a helmet that is either too large or too small. In addition, faced with the need for a near complete refitting, the aviator may not have the availability of an experienced IHADSS fitter.

Additional Comments. While the responses to the structured questions in the survey were of great importance in addressing the purpose of the survey (to investigate the visual issues associated with the use of the IHADSS HMD), the information provided by the respondents to the last, open-ended, question, also was very informative. Almost half (46.3%) of the respondents took the opportunity to expand on previous responses or provide additional insight into HMD flight with the IHADSS.

Several aviators expressed the belief their right eye vision had "gotten worse...due to use of the IHADSS." However, an almost equal number expressed the opposite belief that vision in their left eye had "gotten worse over the past 2-3 years." The survey question that had asked aviators if their better (preferred) eye was the same [now] as prior to AH-64 training, had a response of almost two-thirds (63.4%) answering in the affirmative. However, the remaining third (35.6%), who felt vision in their better eye had changed, is still a significant proportion. This concern over possible changes in vision due to prolonged use of the monocular IHADSS is the subject of an ongoing (2000-2010) U.S./United Kingdom collaborative 10-year study in which the visual performance of British aviators using the IHADSS in the Westland WAH-64 Apache will be followed via a comprehensive battery of vision tests.[7]

One of the most frequent issues raised in the additional comments was that of helmet fit. In general, aviators commented strongly on the Army's current fitting program, the quality of fit, and the impact of the Army's requirement to turn IHADSS helmets in before each change of duty station. Aviators indicated that the impact of fit on IHADSS performance would be greatly enhanced if they were allowed to keep their assigned helmet throughout their Apache career.

While a few aviators expressed a desire for a "lighter-weight, binocular system with greater field-of-view," most of the comments in the category of monocular versus binocular design indicated a preference for a monocular display or at least the capability of using the

supplied HMD in a monocular mode. The most common argument for a monocular design was the frequent advantage of having one "dark-adapted eye" during night flights.

Conclusions

The AH-64 Apache, incorporating FLIR sensors and the IHADSS HMD, is an aircraft which lends tremendous capability to the Army's doctrine of night and foul weather operation. The success of the AH-64 over its near two-decade fielding provides evidence of its operational effectiveness. It's unique monocular HMD design has contributed to this success. However, the use of the IHADSS HMD has not been without issues. The most important of these issues has been the incidence of visual complaints/symptoms that manifest themselves both *during* and *after* flight. The study reported herein attempted to revisit the issue of these visual complaints, a first study having been conducted 10 years ago, in 1990.

The major conclusions that can be drawn from the new survey are:

- There are sufficient data to indicate that responding aviators flying with the IHADSS experience a relatively high frequency of a variety of visual symptoms; 92% of respondents report at least one visual complaint/symptom either *during* or *after* flight.

- A comparison between findings in this survey and a similar one performed in 1990 shows possible increases in the proportion of multiple visual symptoms to include visual discomfort and headaches both *during* and *after* flight with the IHADSS, for disorientation *during* flight, and for afterimages *after* flight.

- The frequency of complaints is not correlated to age or AH-64 flight experience.

- The data do not support any association between eye preference (dominant eye) and the number of complaints or the presence of unintentional alternation (switching) between the left, unaided eye and the right, aided eye viewing the IHADSS imagery.

- The two most reported static illusions are faulty slope estimation and faulty height judgment, reported by approximately three-quarters of the respondents. There is a high incidence of dynamic illusions reported, with six of the eight identified dynamic illusions reported by more than half of the respondents. The two most reported dynamic illusions are undetected drift and faulty closure judgment, reported by more than three-quarters of the respondents.

- While a large proportion of respondents express satisfaction with helmet fit, a significant number comment on having difficulty maintaining a full field of view due to helmet slippage.

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The Dental Assistant Internship Program: A Clinical Staffing Innovation

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Introduction

In today's era of declining budgets and dwindling resources, as well as the increased focus on the rising cost of health care, managers at all levels are seeking innovative means to expand their staffs. Staffing and personnel account for 83% of the U.S. Army Dental Command's programmed budget for delivery of dental care.[1] In order to maximize the efficient delivery of dental care, optimal staffing auxiliaries is paramount to successful dental practice.[2]

Recently, many U.S. Army Dental Activities (DENTACs) have instituted the Dental Care Reengineering Initiative (DCRI). This 21st century system is the operational model for accomplishing a key strategic objective of the Army Dental Care System; improving clinical efficiencies, business practices, and the quality and scope of clinical practice.[3] The major tenant of the DCRI concept is the development of primary care general dentistry teams. Each dental team is impaneled to a specific patient population and is totally responsible for the primary care of that population. Although the design of each team may be slightly unique, a ratio of 1 general dentist provider to 1,200 beneficiaries is generally the norm.[1]

Quality Dental Assistants are a vital component of the DCRI team. Assistants provide the first line direct contact with individual patients as well as unit First Sergeants and Commanders. They are the major conduits of focus customer service. Assistants supply oral hygiene instructions, verify medical histories, apply topical fluoride and make diagnostic models, in addition to assisting the dentist's direct delivery of patient care.[4]

In order to ensure the availability of these essential dental auxiliaries, The Pacific Regional Dental Command (PRDC), recently signed a cooperative agreement to establish an internship site for the Leeward Community College (LCC), of the University of Hawaii, at two if its Dental Treatment Facilities (DTF) located at the Tripler Army Medical Center Dental Clinic and the Schofield Barracks Dental Clinic (SBDC).

Development

This internship program was developed, in part, to promote the U.S. Army, the Army Medical Department and The Dental Corps, within the local community. This program also helps ensure a qualified and dedicated training base within the community for Dental Assistants. Graduates of the program become the future hiring base for not only civilian practitioners, but also provide a well-trained pool of applicants for government civil service, and temporary contract employees.

The LCC distributed a flier advertising their dental assisting program. A command family member passed the flier to the noncommissioned officer-in-charge of SBDC who initiated a call to the Director of Continuing Education and Training to discuss the possibility of establishing an internship site at Army DTFs. Upon discovering that the college did not have an established internship site, a call was placed to the PRDC and U.S. Army DENTAC-Hawaii Commander. These calls set in motion the preliminary discussions and meetings between the command and the community college.

The references for establishing an internship program are in AR 351-3 and section 3111 of Title 5, United States Code. These regulations outline the legal aspects that are to be covered by the establishing command. The command and the college also established guidelines for the students, and a joint agreement was signed on 01 December 1999.

The LCC provides didactic training for the students prior to initiation of the clinical internship. The didactic phase is organized as an integrated modular format dedicated to specific dental areas such as terminology, instrumentation, and materials. Each module lasts approximately 2 weeks, with a schedule of three classes per week.

The clinical internship is organized into a 4-week program totaling 160 hours. Students are provided with a clinic orientation. Safety, infection control, hazard communication, general clinic and command polices are all reviewed. Upon completion of clinic orientation, the students complete rotations through four main areas.

General Dentistry stresses instrumentation, dental materials, and four-handed dentistry. The students also learn the techniques of patient greeting, seating, and scheduling. Practical exercises with dental suction/high-speed evacuation, rubber dam placement, dental impression taking, and patient oral hygiene instructions are completed (figure). Weekly practical exams reinforce materials covered by didactic training modules.

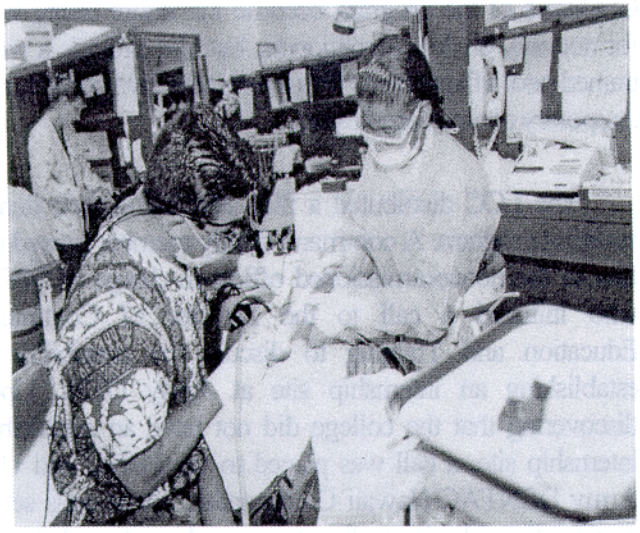

Fig. LCC student assists in direct patient care.

The DCRI Teams' use of four-handed dentistry provides the students with the skills required of busy multi-operatory dental practices. The emphasis is on dental team efficiency. Rapid and smooth instrument passing techniques are mastered. Students also learn multiple chair utilization. The emphasis is for students to develop the flexibility required in modern dental practices. The students also assist military and civilian dental therapy expanded function technicians (DTAs). Students experience firsthand the value of highly skilled DTAs, who ensure maximum efficiency of the DCRI teams by enabling dental officers to treat more patients with more procedures in less clinic time.

The oral surgery rotation is designed to provide the students experience in general dentistry exodontia. Following familiarization with oral surgical instrumentation, the students assist in "sick-call" and routine tooth extraction procedures. The students also learn to provide pre- and post-surgical instructions to the patient.

Finally, the x-ray and dental laboratory rotation provide the students techniques and skills in dental radiography and dental laboratory procedures. In the laboratory, students learn plaster and stone model pouring and trimming procedures, acrylic impression tray and sports mouth guard fabrication. The dental x-ray rotation allows the students to place x-ray films, position the x-ray tube head, and ensure all safety shielding has been placed on the patient. Actual student exposure of x-ray film is restricted to manikin heads. Training involves both conventional and digital radiography.

Results

With the completion of the 160-hour clinical internship, LCC students are prepared to enter a dental practice in an introductory position. This program provides a solid basis for further maturation and training by the individual students in either a military clinic or civilian private practice setting.

Ten students per quarter will complete this internship training. This provides for a total of 6,400 auxiliary hours per year. The cost savings for the DENTAC is approximately $60,000 per year based on an entry-level GS-4 pay scale. These additional hours significantly impact the PRDC's ability to provide the highest quality dental care while maintaining a high level of patient access to care. This program has been well received by students, the local community college, our clinic's staff, and area private practicioners. It also reinforces the Army's image as a good neighbor within the Hawaii community.

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AMEDD MTF-Level Executive Survey

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Background

The Army Medical Department (AMEDD) Activity Based Management (ABM) Initiative began in late 1999. The charter for this effort is thoroughly documented in the Spring 2001 "Performance Measures" edition of the Journal of Health Care Finance. This interdisciplinary team that also formulated the AMEDD ABM blueprint, placed primary importance upon identifying and meeting the perceived needs of the facility-level AMEDD clinician and manager. From the outset, addressing the AMEDD's change readiness posture was recognized as critical to project success. The workgroup espoused the following recommendation found in Everett M. Rogers' classic - *Diffusion of Innovations*:

> "One dimension of the compatibility of an innovation is the degree to which it meets a felt need. Change agents seek to determine the needs of their clients, then recommend innovations that fulfill these needs. (p 229)"

Using this framework, client needs were not assumed away, but instead targeted for two reasons. First, a pre-implementation survey was intended to establish a pre-implementation baseline. Second, specific assumptions regarding client readiness for change, perceptions by specialty, etc, could also be evaluated and baselined for post-implementation purposes.

Survey data was collected by the authors of this article from October through December 2000 in affiliation with the Center for Healthcare Education and Studies (CHES), AMEDD Center and School. The survey was developed in conjunction with the Olin School of Business, Washington University (St Louis), who at that time was participating with the AMEDD under a Cooperative Research and Development Agreement (CRADA). Surveys were sent to all MEDCOM military treatment facilities (MTFs) and clinics. The following individuals received surveys: Commander (CDR), Deputy Commander for Administration (DCA), Deputy Commander for Clinical Services (DCCS) and Deputy Commander for Nursing (DCN) or equivalent.

The survey intent was to obtain the following information:

- Solicit senior managers' perspective on 20 composite factors that may affect the AMEDD's operating/decision-making environment.
- Develop an understanding of how information is currently being used at the MTF-level.
- Examine survey responses from two perspectives: MTF-level senior leadership groups and region (Regional Medical Command [RMC]).
- Provide baseline input for the ongoing AMEDD ABM initiative.

At a minimum, once compiled and analyzed, this information would:

- Provide the ABM team with customer-based information to facilitate system design and implementation.
- Provide the organization with a candid, carefully-constructed analysis of executive sentiment regarding both current perceptions and existing needs.

The remainder of this paper is organized as follows:

Section 1: Survey development and administration.

Section 2: Assessment of the statistical reliability of each of 20 proposed composite factors.

Section 3: Survey results for each of the 20 factors.

Section 4: Summary of responses received for three open-ended questions.

Section 5: Conclusions and recommendations for future work that can expand upon initial findings.

Survey Development and Administration

The survey developed was based upon a review of current literature involving organizational factors affecting change initiatives and system implementations. Survey length (time required for completion) was balanced with the need for relevant content. The resulting survey included approximately 100 structured questions (7-point response scale), along with several open-ended questions designed to elicit more general insights (see appendix at end of article).

Survey administration consisted of two primary parts. First, a pre-test of the survey was conducted to assess question readability, measure the length of time required to complete the survey, and ascertain whether the intended electronic survey format was effective. The survey population was then defined, concentrating this initial survey on executive-level input (Note: Subsequent surveys may elicit input from different operational levels or from the same group at a later date). Electronic surveys (in Microsoft Excel point-and-click format) were then distributed via e-mail to all surveyed individuals holding one of the four defined executive positions at each AMEDD MTF-level facility. As shown in Table 1, 140 surveys were e-mailed and 87 survey responses were received with an overall response rate of 62%. This response rate is considered high, as survey response rates typically range from approximately 20-25%.

The 100 survey questions were associated with 20 multi-item composite factors related to the organizational environment at the MTF-level. One of the strengths of this survey is the attempt made to build these composite factors (or scales). Composite factors are designed to group individual survey questions into single factors that measure respondent's perceptions of overarching behavioral

No. of Facilities With

Region	4 Responses	3 Responses	2 Responses	1 Responses	0 Responses	Total Facilities
North Atlantic	2	4	6	0	0	12
Great Plains	4	2	3	0	0	9
Southeast	1	1	4	0	1	7
Other regional commands	0	3	1	1	2	7
Total facilities responding	7	10	14	1	3	35
Total surveys returned	28	30	28	1	0	87

Region	CDR	DCA	DCCS	DCN	Total	% Returns By Region
Surveys distributed	35	35	35	35	140	
Surveys returned:						
North Atlantic	8	9	6	9	32	66.67%
Great Plains	6	9	5	8	28	77.78%
Southeast	3	5	4	3	15	53.57%
Other regional CDRs	4	3	3	2	12	42.86%
Total responses	21	26	18	22	87	
% of possible responses by position	60.00%	74.29%	51.43%	62.86%	62.14%	

Table 1. Survey Responses

concepts. Statistically reliable factors provide managers with both an overall measure of performance relative to the broader concept and a direction for operational improvements, based upon the underlying survey questions. For example, one could ask patients a single question regarding patient satisfaction, ("Are you satisfied with the care you received?") In some cases, a single measure is appropriate, such as using the reading on a thermometer to measure temperature. However, patient satisfaction is a multi-dimensional construct that reflects items such as wait time, diagnosis, and outcome. Hospital employees need more specific measures of what constitutes patient satisfaction in order to direct their actions and activities. A management directive to improve patient satisfaction may leave subordinates with very little direction in terms of how to accomplish the stated goal. *Our goal was to provide composite factors that managers with different backgrounds could use with confidence to direct operational improvements at the MTF-level.* The assumption made in using this approach is that decision-makers would prefer composite measures (multi-item factors) to direct their attention. Once managers identify measures for improvement, the underlying items (questions) can be used to direct improvement initiatives and develop supporting decision support capabilities and systems such as ABM.

As shown in Table 2, the 20 composite factors proposed in this study were related to eight organizational themes regarding the MTF operating environment: (1) change readiness; (2) individual commitment; (3) decision-making; (4) use of information; (5) communication; (6) performance measurement; (7) rewards; and (8) ability to work together. Understanding MTF-level executives' perceptions of these themes provides insight into the potential strengths and weaknesses of the existing operational environment. When examining these results, readers must recognize that survey responses have no right or wrong answer. Instead, they merely provide a basis for soliciting targeted input from AMEDD health care executives in the hope of improving future operations. The success of subsequent initiatives can then be measured by monitoring changes in survey responses over time, such as after the introduction of subsequent large-scale programs or new performance reporting systems.

Factor Reliability

The statistical reliability of each of the 20 proposed composite factors was assessed using Cronbach's alpha (α). In exploratory studies like this one, α values greater than $\alpha = .60$ are considered statistically reliable. Further-

Themes	Corresponding Factors	
Change readiness	**Factor 1**	Need for change
	Factor 2	Strategic Focus
	Factor 3	Effectiveness of new initiatives
Individual commitment	**Factor 4**	Commitment to corps
	Factor 5	Commitment to facility
Decision- making	**Factor 6**	Organization-level decision-making
	Factor 7	Decision-making time horizon
Use of information	**Factor 8**	Use of Budget Information Standard Financials System (STANFINS)
	Factor 9	Use of the Economic Efficiency Factor (EFF)
	Factor 10	Use of Expense Information (MEPERS)
	Factor 11	Use of Productivity Information
	Factor 12	Use of Workload Information Composite Health Care System (CHCS)
Communication	**Factor 13**	Horizontal communication
	Factor 14	Vertical communication
Performance measurement	**Factor 15**	Perception of appropriate performance measures
	Factor 16	Performance measures used by supervisors
Rewards	**Factor 17**	Value of intrinsic rewards
	Factor 18	Value of extrinsic rewards
Ability to work together	**Factor 19**	Use of cross-functional teams
	Factor 20	Management of group conflict

Table 2. Relationship Between Organizational Themes and Survey Factors

more, α scores between 0.55 and 0.60 in exploratory studies are considered sufficiently reliable as a basis for the development of more comprehensive factors. As shown in Table 3, 14 of the 20 proposed factors resulted in statistically reliable composite factors. Because the remaining six factors were not statistically reliable, the underlying survey questions were examined individually. Evaluating these individual questions was intended to provide insight into how these questions might be developed into future composite factors.

Survey Results – Composite Factors

In this section, we will discuss each of the 20 composite factors with the context of the eight organizational themes. The discussion compares the average survey responses from each of the four categories of MTF executives: CDRs, DCAs, DCCSs, and DCNs. Furthermore, we compare the overall response averages to a neutral (no affect) response.

GRADING SCALE: On a 7-point scale where 7 = Strongly agree and 1 = Strongly disagree are the end points, a response of 4 represents a neutral or no affect response

Change Readiness. Three factors were selected and considered as part of the change readiness theme: (1) need for change; (2) strategic focus; and (3) effectiveness of new initiatives. Only the first two factors exhibited statistically significant reliability. Accordingly, we will discuss the response results for the **Factors 1** and **2**, and the individual question responses associated with **Factor 3**. As shown in Table 4, MTF executives recognize both a need for change (response average = 5.89) and the importance of a strategic focus (response average = 4.76).[1] Furthermore, the executives exhibited common responses as evidenced by the lack of statically significant differences between group averages.[2] Because Factor 3 lacked statistical reliability, we look for insight in responses to individual survey questions. Table 5 indicates MTF executives are consistent in their belief that MEDCOM initiatives often are considered passing fads (response average = 4.74) that fail to help at the facility level (response average = 4.56).

Individual Commitment. Two factors were considered as part of the individual commitment theme: (1) **Factor 4** – commitment to corps, and (2) **Factor 5** – commitment to facility. Both factors exhibited statistically significant reliability. As shown in Table 4, MTF executives exhibited a significant commitment to both their corps (response average = 6.17) and their facilities (response average = 6.10). Furthermore, the executives exhibited common responses as evidenced by the lack of statically significant differences between group averages. Also, using a paired sample *t* test, no difference was found between executives' commitment to corps and facility. This result indicates that executives operate in matrix-type organization structure with responsibilities to both organizational (RMC) and functional (corps) supervisors. Accordingly, care must be exercised when evaluating performance because the potential exists for executives to operate with conflicting objectives.

Decision-Making

Two factors were included as part of the decision-making theme: (1) **Factor 6** – organization-level decision-making, and (2) **Factor 7** – decision-making time horizon. Neither factor exhibited statistically significant reliability. Accordingly, we look for insight in responses to individual survey questions. Table 5 indicates MTF executives are consistent in their perceptions of questions involving organization-level decision-making. Executives believe that employee suggestions (response average = 5.61), and input (response average = 5.80) are included in the facility decision-making process. Furthermore, department managers are given the authority to run their departments with autonomy (response average = 5.37). Table 5 also indicates that MTF executives recognize that promotions and transfers disrupt the implementation of new initiatives (response average = 4.78). This result is supported by their neutral responses regarding sufficient time to affect change (average response 3.82), and the length of time required for changes to affect managers in the field (average response = 4.05).

[1] To determine whether responses differed significantly from a *no affects* hypothesis, the overall factor (or individual question) response average was compared to a no affects response value of four (neutral). Statistically significant differences indicate when respondents' perceptions of a factor (or individual question) reflect nonneutral perceptions of the factor (or individual question).

[2] Group means were compared across the four categories of MTF executives. The statistical test were designed to identify statistically significant differences in response means among the four groups. No statistically significant difference between groups indicates that each executive group perceives the factor (or individual question) in the same way.

Multi-Item Composite Factors		Cronbach's Alpha
Factor 15	Perception of appropriate performance measures.	.7908
Factor 16	Performance measures used by supervisors.	.7615
Factor 20	Management of group conflict.	.7438
Factor 13	Horizontal communication.	.7258
Factor 14	Vertical communication.	.7045
Factor 17	Value of intrinsic rewards.	.6695
Factor 10	Use of Expense Information.	.6689
Factor 9	Use of the EEF.	.6563
Factor 4	Commitment to corps.	.6399
Factor 1	Need for change.	.6079
Factor 2	Strategic focus.	.5946
Factor 19	Use of cross-functional teams.	.5877
Factor 11	Use of Productivity Information.	.5875
Factor 5	Commitment to facility.	.5793

Survey Questions that Failed to Form Reliable Factors[A]

Factor 3	**Effectiveness of New Initiatives**	ns
10. I am skeptical that new initiatives proposed by MEDCOM will help my facility.		
31. Initiatives proposed by MEDCOM are frequently passing fads.		
Factor 6	**Organization-Level Decision-Making**	ns
59. In my facility, supervisors use suggestions that their employees make at work.		
65. When an important decision has to be made, facility staff is given the opportunity to provide input.		
74. Department managers in my facility are given authority to run their departments as they see fit.		
Factor 7	**Decision-Making Time Horizon**	ns
2. I feel will have sufficient time in my current position to see the result of changes I initiate.		
16. By the time a new initiative will affect me, I am likely to have been relocated to another facility.		
44. Promotions and transfers frequently don't allow me to complete initiatives I begin.		
Factor 8	**Use of Budget Information**	ns
9. I regularly use budget information (STANFINS) in my job.		
38. The traditional budget information system provides adequate information for me to do my job.		
46a. My organization's performance is accurately measured by the use of budget information.		
47a. When making decisions about how to achieve strategic goals, I use budget information.		
Factor 12	**Use of Workload Information**	ns
26. I regularly use workload information (CHCS).		
40. The current workload information system provides adequate information for me to do my job.		

Table 3. Summary of Factor Reliability Scores

46c My organization's performance is accurately measured by the use of workload information.	
47c When making decisions about how to achieve strategic goals, I use workload information.	
Factor 18 Value of Extrinsic Rewards	ns
55. In my facility, superior job performance increases my chances for a raise, a bonus, or for promotion.	
63. In my organization, high performance is recognized and rewarded.	
68. The ability to reduce costs is rewarded in my organizations.	
75. In this facility, rewards are tied directly to performance.	

A These factors failed to combine the underlying survey questions into reliable multi-item factors ($\alpha > 0.55$). Accordingly, response results for the individual questions will be reported as a way of directing future measurement and factor development efforts.

Table 3. Summary of Factor Reliability Scores (cont)

		Senior MTF Leadership (Executive Committee) Average Responses (*Standard Deviation*)					
		CDR	**DCA**	**DCCS**	**DCN**	**Overall**	**Statistical Significance**
Change Readiness							
Factor 1	Need for change	5.92 *0.74*	5.91 *0.69*	5.78 *0.78*	5.94 *0.58*	5.89 *0.69*	ns[A] <0.001[B]
Factor 2	Strategic focus	4.83 *0.73*	4.64 *0.49*	4.80 *0.68*	4.78 *0.85*	4.76 *0.68*	ns <0.001
Factor 3	Effectiveness of new initiatives	Not a statistically significant multi-item factor					
Individual Commitment							
Factor 4	Commitment to corps	6.33 *0.47*	6.18 *0.66*	6.19 *0.71*	6.01 *0.77*	6.17 *0.66*	ns <0.001
Factor 5	Commitment to facility (FCOM)	6.12 *0.66*	5.95 *0.60*	6.17 *0.90*	6.20 *0.70*	6.10 *0.70*	ns <0.001
Decision-Making							
Factor 6	Organization-level decision-making	Not a statistically significant multi-item factor					
Factor 7	Decision-making time horizon						
Use of Information							
Factor 8	Use of Budget Information (STANFINS)	Not a statistically significant multi-item factor					
Factor 9	Use of the EEF	4.38 *0.84*	3.97 *1.15*	3.61 *1.19*	3.74 *1.10*	3.94 *1.10*	ns ns
Factor 10	Use of Expense Information (MEPERS)	4.43 *0.97*	4.27 *1.16*	4.39 *1.05*	4.40 *0.83*	4.37 *1.00*	ns <0.001
Factor 11	Use of Productivity Information	3.95 *0.78*	3.64 *0.97*	3.09 *1.31*	3.44 *1.33*	3.55 *1.13*	ns <0.001
Factor 12	Use of Workload Information (CHCS)	Not a statistically significant multi-item factor					

Table 4. Average Multi-Item Factor Scores Summarized by Senior MTF Leadership Group

	Senior MTF Leadership (Executive Committee) Average Responses (*Standard Deviation*)					
	CDR	**DCA**	**DCCS**	**DCN**	**Overall**	**Statistical Significance**
Communication						
Factor 13 Horizontal communication	5.20 *1.10*	5.51 *1.01*	5.30 *1.14*	5.33 *1.12*	5.35 *1.08*	ns[A] <0.001[B]
Factor 14 Vertical communication	5.19 *0.90*	5.13 *1.04*	5.05 *1.41*	4.83 *1.11*	5.05 *1.10*	ns <0.001
Performance Measurement						
Factor 15 Perception of appropriate performance measures	5.89 *0.99*	6.11 *0.48*	5.92 *0.80*	5.67 *0.96*	5.91 *0.82*	ns[A] <0.001[B]
Factor 16 Performance measures used by supervisors	5.64 *1.17*	6.00 *0.62*	5.69 *0.90*	5.80 *0.84*	5.80 *0.89*	ns <0.001
Rewards						
Factor 17 Value of intrinsic rewards	5.35 *0.82*	5.60 *0.64*	5.39 *1.18*	5.83 *0.72*	5.55 *0.85*	ns <0.001
Factor 18 Value of extrinsic rewards	Not a statistically significant multi-item factor					
Ability to Work Together						
Factor 19 Use of cross-functional teams (CFT)	5.54 *0.60*	5.67 *0.52*	5.78 *0.64*	5.24 *1.01*	5.55 *0.73*	ns <0.001
Factor 20 Management of group conflict (PGC)	5.64 *1.05*	5.82 *0.79*	5.96 *0.97*	5.84 *0.94*	5.81 *0.92*	ns <0.001

A Test for statistically significant differences among executive committee response groups (ns — no significant response differences).

B Test for statistically significant differences between overall response averages and a neutral response (= 4).

Table 4. Average Multi-Item Factor Scores Summarized by Senior MTF Leadership Group (cont)

	Senior MTF Leadership (Executive Committee) Average Responses (*Standard Deviation*)					
	CDR	**DCA**	**DCCS**	**DCN**	**Overall**	**Statistical Significance**
Factor 3 Effectiveness of new Initiatives						
10. I am skeptical that new initiatives proposed by MEDCOM will help my facility.	4.71 *1.31*	4.69 *1.64*	4.56 *1.29*	4.27 *1.58*	4.56 *1.47*	ns ns
31. Initiatives proposed by MEDCOM are frequently passing fads.	4.67 1.24	4.92 1.72	4.78 1.11	4.54 1.44	4.74 1.41	ns <0.001
Factor 6 Organization-level decision-making						
59. In my facility, supervisors use suggestions that their employees make at work.	5.62 *1.32*	5.50 *0.86*	5.67 *0.69*	5.68 *0.99*	5.61 *0.98*	ns[A] <0.001[B]
65. When an important decision has to be made, facility staff is given the opportunity to provide input.	5.57 *1.16*	5.85 *0.88*	6.00 *1.57*	5.82 *1.37*	5.80 *1.23*	ns <0.001

Table 5. Average Individual—Item Response Scores Summarized by Senior MTF Leadership Group

	Senior MTF Leadership (Executive Committee) Average Responses (*Standard Deviation*)					
	CDR	**DCA**	**DCCS**	**DCN**	**Overall**	**Statistical Significance**
74. Department managers in my facility are given authority to run their departments as they see fit.	4.95 *1.50*	5.38 *0.75*	5.55 *1.10*	5.59 *0.85*	5.37 *1.08*	ns <0.001
Factor 7 Decision-Making Time Horizon						
2. I feel I will have sufficient time in my current position to see the result of changes I initiate.	2.95 *1.88*	4.04 *1.75*	3.89 *1.91*	4.32 *1.73*	3.82 *1.85*	0.084 ns
16. By the time a new initiative will affect me, I am likely to have been relocated to another facility.	4.43 1.83	3.88 1.70	3.22 2.04	4.54 1.33	4.05 1.77	0.075
44. Promotions and transfers frequently don't allow me to complete initiatives I begin.	4.95 *1.69*	4.65 *1.60*	4.39 *1.81*	5.09 *1.27*	4.78 *1.59*	ns <0.001
Factor 8 Use of Budget Information						
9. I regularly use budget information (STANFINS) in my job.	4.95 *1.91*	4.85 *1.67*	5.72 *1.49*	5.00 *1.79*	5.09 *1.73*	ns[A] <0.001[B]
38. The traditional budget information system provides adequate information for me to do my job.	3.76 1.37	4.15 1.75	3.50 1.72	3.50 1.19	3.75 1.53	ns
46a. My organization's performance is accurately measured by the use of budget information.	3.86 *1.65*	4.23 *1.73*	3.61 *1.82*	3.95 *1.67*	3.94 *1.70*	ns
47a. When making decisions about how to achieve strategic goals, I use budget information.	4.86 *1.11*	4.58 *1.42*	5.44 *0.92*	5.36 *1.29*	5.02 *1.26*	0.061 <0.001
Factor 12 Use of Workload Information						
26. I regularly use workload information (CHCS).	6.00 *0.63*	5.52 *1.29*	5.89 *0.96*	5.54 *1.30*	5.72 *1.10*	ns <0.001
40. The current workload information system provides adequate information for me to do my job.	4.42 *1.40*	4.60 *1.22*	3.28 *1.60*	4.59 *1.37*	4.28 *1.46*	0.010 0.080
46c. My organization's performance is accurately measured by the use of workload information.	4.62 *1.36*	4.42 *1.39*	3.72 *1.78*	4.32 *1.84*	4.30 *1.59*	ns 0.084
47c. When making decisions about how to achieve strategic goals, I use workload information.	5.67 *0.80*	5.31 *1.23*	5.89 *0.58*	5.41 *1.59*	5.54 *1.15*	ns <0.001
Factor 18 Value of Extrinsic Rewards						
55. In my facility, superior job performance increases my chances for a raise, a bonus, or for promotion.	4.33 *1.88*	4.35 *1.83*	3.71 *2.02*	4.48 *1.66*	4.25 *1.83*	ns ns
63. In my organization, high performance is recognized and rewarded.	5.33 *1.59*	4.62 *2.16*	5.44 *1.69*	5.73 *1.08*	5.24 *1.73*	ns <0.001
68. The ability to reduce costs is rewarded in my organization.	4.86 *1.49*	5.04 *1.31*	4.94 *1.66*	4.32 *1.70*	4.79 *1.53*	Ns <0.001
75. In this facility, rewards are tied directly to performance.	4.62 *1.36*	4.73 *1.46*	4.61 *1.46*	4.77 *1.23*	4.69 *1.36*	ns <0.001

A Test for statistically significant differences among executive committee response groups (ns — no significant response differences).

B Test for statistically significant differences between overall response averages and a neutral response (=4).

Table 5. Average Individual—Item Response Scores Summarized by Senior MTF Leadership Group (cont)

Use of Information. Five factors were considered as part of the use of information theme: (1) **Factor 8** – use of budget information STANFINS, (2) **Factor 9** – use of the EEF, (3) **Factor 10** – use of expense information (MEPRS), (4) **Factor 11** – use of productivity information (as produced by MEDCOM Plans, Analysis, and Evaluation), and (5) **Factor 12** – use of workload information CHCS, Workload Management System for Nursing). Factors 9 – 11 exhibited statistically significant reliability. However, the lack of statistical reliability associated with Factors 8 and 12 will require us to consider the individual underlying survey questions.

As shown in Table 4, MTF executives again were consistent in their assessments of the efficiency, expense, and productivity information factors. They perceived the EEF as having no impact (neutral response) on their decision-making (response average = 3.94). Respondents indicated that expense information is marginally beneficial (response average = 4.37), and the productivity information is marginally nonbeneficial (response average = 3.55). Caution should be used when interpreting these results because the findings could indicate a lack executive familiarity and not a lack of information content.

Table 5 indicates MTF executives are consistent in their perceptions of the underlying survey questions regarding Factors 8 and 12, respectively. Respondents regularly use budget information in their job (response average = 5.09) and when making decisions involving strategic goals (response average = 5.02). However, managers provided neutral responses regarding the adequacy of budget information and whether the budget accurately reflects organizational performance. This result is consistent with the idea that manager success may be measured in terms of budget size. Operational improvements resulting in improved efficiency might reduce subsequent budgets indicating poor operational performance. Accordingly, AMEDD-level supervisors might want to consider the role budgeting plays in the implicit reward structure for MTF executives.

Communication. Communication consists of responses associated with two factors: (1) **Factor 13** – horizontal communication, and (2) **Factor 14** – vertical communication. Horizontal communication focuses on the communication among peers across the MTF-level. Vertical communication refers to the interaction MTF executives have with fellow executives at higher and lower levels of the overall AMEDD organizational structure. As shown in Table 4, respondents were consistent in recognizing the importance of both horizontal (response average = 5.35) and vertical (response average = 5.05) communication. However, a paired *t* test comparing these two communication paths indicated that managers prefer horizontal communication to vertical communication (P= 0.001).

Performance Measurement. Focuses on two factors: (1) **Factor 15** – perceptions of appropriate performance measures, and (2) **Factor 16** – performance measures used by supervisors. The former focuses on the performance measures MTF executives believe represent the best measures of organizational performance. The latter focuses on whether supervisors of MTF executive supervisors actually use the specified measures to assess facility performance. As shown in the appendix, the performance measures of interest included: (1) meeting the budget; (2) cost control; (3) employee satisfaction; (4) patient care; (5) success of new facility-based initiatives; and (6) success of new AMEDD-based directives.

The MTF executives consistently recognized the appropriateness of these performance measures (response average = 5.91), and the use of these measures by supervisors to assess performance (response average = 5. 80) (see Table 4). A paired *t* test indicated the respondents' perceptions of the appropriateness of performance measures were consistent with supervisors' use of those measures to assess facility-level performance.

Rewards. In any organization, individuals receive rewards that are either intrinsic (job satisfaction, respect) or extrinsic (compensation, promotion). Only **Factor 17**, intrinsic rewards, represents a statistically significant multi-item factor. Accordingly, the underlying survey questions associated with **Factor 18**, extrinsic rewards, will be examined on an individual basis. As shown in Table 4, responding executives consistently recognize the importance of intrinsic rewards associated with doing a good job (response average = 5.55). In terms of survey questions associated with Factor 18, Table 5 illustrates that managers believe that high performance is rewarded (response average = 5.24), cost reductions are rewarded (response average = 4.79), and rewards are tied to performance (response average = 4.69).

Ability to Work Together. The ability to work together within the MTF was evaluated from two perspectives: (1) **Factor 19** – use of cross-functional teams, and (2) **Factor 20** – management of group conflict. Respondents rated their facilities as being effective in both their use of teams (response average = 5.55) and management of group conflict (response average = 5.81). These results were consistent regardless of the executive group responding. A paired sample *t* test comparing these two factors, however, indicated that managers perceive their facilities as better conflict managers than team members (P=.025). This result could indicate the existence of significant conflicts within MTF facilities (executive responsibilities to facility and corps, or differing objectives among executive-level and department-level managers).

Survey Results – Open-Ended Questions

Three open-ended questions were included in the survey materials provided respondents. These questions focused on performance priorities, information required for decision-making, and performance measurement. Specifically, the three questions were as follows:

- What are the top priorities for maintaining or improving your unit's performance.

- What information not currently collected/reported would you find most helpful.

- What criteria would you use to measure success in delivering health care in the current MEDCOM operating environment.

For each of the three questions, responses were diverse. We were concerned that in trying to summarize question responses, we might lose the valuable insight provided by respondents.

Overall, however, responses to the three questions appeared to follow a pattern. For **Question 1**, respondents placed a high priority in matching appropriate resources, provider requirements, and patient care. Respondents also seemed to emphasize the importance of more efficient clinical and administrative processes and the need for improvements in the underlying data quality of available information. Regarding **Question 2**, respondents expressed some concern that the AMEDD was being overwhelmed by competing measures. Furthermore, they indicated a need for more descriptive, reliable, and understandable measures. This is consistent with our previous finding that responding executives are finding only limited value in the content of formal information systems. In terms of **Question 3**, respondents consistently mentioned the need for more reliable measures for patient satisfaction, employee satisfaction, and clinical outcomes. Responses also highlighted the potential value of benchmarking facility results against comparable facilities in the private sector (provider productivity and efficiency). We encourage the reader, however, to review the supporting attachments and draw their own conclusions about the comments provided by MTF executives.

Conclusions and Recommendations

We believe that the survey results offer three conclusions. First, MTF executives, regardless of position, were consistent in their survey responses. This outcome may result from a perceived consistency in mission and operating objectives. However, consideration should be given to two alternative possibilities: (1) executives are susceptible to group think (executives use horizontal communication to reach consensus regarding their actions) or (2) subordinate managers effectively isolate executives from operational activity through the use of formal *aggregate* information systems. Occurrence of the latter condition would also result in the proliferation of information systems and performance measures. Subordinate managers would have an incentive to over-report to supervisors using custom made measures that might overstate performance.

Second, MTF executives agree that changes are needed in the way in which health care is being delivered at the MTF-level. However, significant uncertainty exists regarding what changes should be considered and how will they be implemented. MTF executives appear to want to operate their facilities in a manner similar to that of facilities in the private sector. Accordingly, executives and their subordinate managers desire information they can use to make operating decisions that increase their facility's competitive position relative to contract providers. Executives recognize that Army medicine has become competitive and they believe that with direction their heath care system can compete with any health care system, governmental, or civilian.

Third, the reward structure within the AMEDD appears to conflict with decision-making. For example, executives consistently rely on intrinsic rewards for motivation. Alternatively, they see no real link between superior job performance and compensation and/or promotion (see Table 5, Factor 18 – Question 55). Furthermore, executives recognize that because of regular and frequent transfers their decision-making time horizon is short. As a result, executives may have an incentive to maximize short-term success without adequate consideration for the long-term success of their facility or system. The reward and decision-making structure leads executives to focus on quick fixes and immediate results. This result is not the fault of the executive or managers but the nature of the organizational environment in which they work.

These survey results provide insight into the operating environment of the AMEDD. The true value of the survey, however, can be enhanced if the AMEDD chooses to use these results to direct future improvements. For example, an additional survey could be administered at the department manager levels in an effort to compare and contrast managers' and executives' perceptions of the organization. Subsequently, the survey could provide a measure of how improvements are being made in both the operating environment and the use of information throughout the environment. Ultimately, the question becomes how should these survey result be used? Hopefully, the results provide some insight into MTF-level executives' perceptions of their environment and what systems these executives need in order to more effectively measure and improve performance.

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Appendix
Survey Questions Sorted by Organizational Factor

Item No.	Survey Question
Factor 1	**Need for Change**
	I would like to see changes in MEDCOM policies and procedures.
	There is no need to change the way we provide health care.
	Changes in the way the MEDCOM provides health care are needed.
Factor 2	**Strategic Focus**
	The executive group or committee at my facility (CDR and staff) acts in a manner consistent with MEDCOM strategy.
	Decision-makers at my level rely upon the MEDCOM strategy to provide guidance for decision-making.
	Recent local strategic planning initiatives have resulted in subsequent operational improvements.
	Recent strategic changes at my operational level are superior to previous initiatives.
	Recent strategic changes indicate MEDCOM's commitment to long-term operational improvement.
Factor 3	**Effectiveness of New Initiatives**
	I am skeptical that new initiatives proposed by MEDCOM will help my facility/organization.
	Initiatives proposed by MEDCOM are frequently passing fads.
Factor 4	**Commitment to Corps**
	I am proud to tell others that I am part of my corps.
	I am willing to put a great deal of effort beyond that normally expected in order to help make my corps successful.
	For me, this is the best of all corps to be a member.
	Being a member of my corps really inspires the best of me in the way of job performance.
	I really care about the future of my corps.
Factor 5	**Commitment to Facility**
	I am proud to tell others that I am part of this facility (or organization).
	I am willing to put a great deal of effort beyond that normally expected in order to help make my facility (or organization) successful.
	Being a member of this facility (or organization) really inspires the best of me in the way of job performance.
	For me, this is the best of all Facilities (or organizations) to be a member.
	I really care about the fate of this facility (or organization).
Factor 6	**Organization-Level Decision-Making**
	In my facility/organization, supervisors use suggestions that their employees make at work.
	When an important decision has to be made, facility/organizational staff are given the opportunity to provide input.
	Department managers at my facility are given authority to run their department as necessary.
Factor 7	**Decision-Making Time Horizon**
	I feel I will have sufficient time in my current position to see that result of changes I initiate.
	By the time a new initiative affects me, I am likely to have been relocated to another facility.
	Promotions and transfers frequently don't allow me to complete initiatives I begin.
Factor 8	**Use of Budget Information (STANFINS)**
	Budget information is not useful in performing my job.
	I regularly use budget information in my job.
	The traditional budget information system provides adequate information for me to do my job.
	My organization's performance is accurately measured by the use of budget information.
	When making decisions about how to achieve strategic goals, I use budget information.
Factor 9	**Use of the EFF**
	Mecum's economic EEF is not useful in performing my job.
	Economic efficiency is a good indicator of organizational performance.
	My organization's performance is accurately measured by the use of Mecum's EFF.
	When making decisions about how to achieve strategic goals, I use Mecum's EFF.
Factor 10	**Use of Expense Information (MEPERS)**
	The current expense information system provides adequate information for me to do my job.
	I regularly use current expense information in my job.
	The current expense information is not useful in performing my job.
	My organization's performance is accurately measured by the use of expense information.
	When making decisions about how to achieve strategic goals, I use expense information.

Factor 11 **Use of Productivity Information**

MEDCOM's productivity information provides adequate information for me to do my job.
My organization's performance is accurately measured by the use of MEDCOM's productivity information.
When making decisions about how to achieve strategic goals, I use MEDCOM's productivity information.

Factor 12 **Use of Workload Information (CHCS)**

Workload information data is not useful in performing my job.
I regularly use workload information in my job.
The current workload information system provides adequate information for me to do my job.
My organization's performance is accurately measured by the use of workload information.
When making decisions about how to achieve strategic goals, I use workload information.

Factor 13 **Horizontal Communication**

When making operating decisions, I regularly seek advice from peers at the next higher organizational level (MTF to RMC).
When making operating decisions, I regularly seek advise from peers at my organizational level in similar facilities (RMC to RMC).
When making operating decisions, I regularly seek advise from peers within my organization.
When making operating decisions, I regularly seek advice from peers at subordinate organizations (RMC to MTF).

Factor 14 **Vertical Communication**

When other individuals are making decisions, I am regularly contacted for advise by peers at the next higher organizational level (MTF to RMC).
When other individuals are making decisions, I am regularly contacted for advise by peers at my organizational level in similar facilities (RMC to RMC).
When other individuals are making decisions, I am regularly contacted for advice by peers within my organization.
When other individuals are making decisions, I am regularly contacted for advice from peers at subordinate organizations (RMC to MTF).

Factor 15 **Perception of Appropriate Performance Measures**

Meeting the budget is an important indicator of my job performance.
Keeping costs under control is an important indicator of my job performance.
Satisfied and productive personnel are an important indicator of my job performance.
High quality patient care is an important indicator of my job performance.
Successfully introducing new initiatives is an important indicator of my job performance.
Successfully executing directives is an important indicator of my job performance.

Factor 16 **Performance Measures Used by Supervisors**

Meeting the budget is used by supervisor as an important indicator when assessing my job performance.
Keeping costs under control is used by supervisor as an important indicator when assessing my job performance.
Satisfied and productive personnel is used by supervisor as an important indicator when assessing my job performance.
High quality patient care is used by supervisor as an important indicator when assessing my job performance.
Successfully introducing new initiatives is used by supervisor as an important indicator when assessing my job performance.
Successfully executing directives is used by supervisor as an important indicator when assessing my job performance.

Factor 17 **Value of Intrinsic Rewards**

Earning the respect of my peer through my performance is very important to me.
Being respected by the people who I work with is more important than earning more money.
Obtaining greater job satisfaction is more important to me than making more money.
Earning a promotion is more important to me than greater job satisfaction.

Factor 18 **Value of Extrinsic Rewards**

In this facility, superior job performance increases my chances for a raise, a bonus, or for promotion.
In my organization, high performance is recognized and rewarded.
The ability to reduce costs is rewarded in my organization.
In this facility, rewards are tied directly to performance.
In MEDCOM facilities, improving efficiency is sufficient award.

Factor 19 **Use of Cross-Functional Teams**

My facility CDR (or organization supervisor) effectively uses cross-functional teams (clinical, administrative, etc) to implement changes in strategy.
The Medical Corps is regularly included on cross-functional teams.
The Nurse Corps is regularly included on cross-functional teams.
The Medical Service Corps is regularly included on cross-functional teams.
In my facility (or organization), cross-functional teams responsible for implementing change initiatives are frequently ineffective.

Factor 20 **Management of Group Conflict**

The members of the different corps work together to improve the quality of care provided at this facility.
Conflict across corps prevents this facility from achieving maximum effectiveness.
I work with member of the other corps in making clinical process improvements.
Members of the corps show greater loyalty to their corps rather than supporting the overall mission of the facility.

Birth Outcomes: What Are They?

MAJ Petra Goodman, AN, USA†

Introduction

Women have experienced childbirth since the beginning of civilization.[1] Millions of births occur every day. In many hospitals, births account for the largest proportion of type of inpatient health care.[2] Outcomes related to these births play a major role in the health of infants and women and in the evaluation of health care. Although the majority of births outcomes are classified as "good," "poor" birth outcomes, commonly defined as preterm birth and low-birth weight infants, continue to represent the highest causes of perinatal morbidity and mortality.[3,4] These "poor" birth outcomes are a major health problem accounting for $6.8 billion in direct health care costs, supplemental services, and unmeasured amounts of family distress.[3] Because of its dramatic role in morbidity and mortality, prevention of "poor" birth outcomes is a national health priority in the U.S.[5,6]

Despite the consensus regarding the significance of the concept of birth outcomes and the proliferation of multidisciplinary professional literature, the concept has never been clearly defined or fully explicated and frequently implies a negative perspective. Although the literature predominantly refers to birth outcomes in terms of newborn weight and gestational age, the concept is vague and ambiguous due to its frequent interchange with a variety of surrogate terms. Historically, birth outcomes have also been referred to as perinatal losses, newborn deaths, maternal deaths, and specific physical diagnoses indicative of newborn or maternal morbidity.[7-10] In addition, birth outcomes are commonly referenced to in conjunction with a variety of modifiers, including good, poor, normal, abnormal, complicated, and problematic, which further obscure the meaning of the concept.

The purpose of this article is to examine the concept of birth outcomes. Currently, no conceptual analysis of the phenomenon of birth outcomes exists in the literature. Initially, a definition of the concept will be presented. Thereafter, the attributes, antecedents, related terms, model and contrary cases, and empirical referents of the concept of birth outcomes will be delineated.

Definition

According to Merriam Webster's Collegiate to Dictionary (1993), birth is defined as "the emergence of a new individual from the body of its parent; the act or process of bringing forth young from the womb; a state resulting from being born."[11] Outcome is defined as "something that follows as a result or consequence."[11] In addition, the newborn must have the following characterizations: (1) age > 20 weeks gestation; (2) weight > 500 g; and (3) length > 16.5 cm from crown to rump.[12] Therefore, birth outcomes could be defined as a state resulting from being born or as a consequence of the process of childbirth through direct experience. The definition of birth implies reference to the newborn as a result of "being born" and to the mother in the process "of bringing forth." Although the dictionary definition provides some information as to the nature of birth outcomes, this definition is too simplistic and not comprehensive of the conceptualization of this phenomenon.

Attributes

Although the literature "spoke to" birth outcomes but not "of" what this concept is, the description of birth outcomes provided substantiation for the most common attributes. The identification of these attributes resulted in the following definition of birth outcomes: Birth outcomes are diverse, two-dimensional, and interactive maternal and newborn responses to the state or direct experience of birth. Each attribute will be explicated.

Response. Birth outcomes are human responses to the state of birth or to the direct experience of the process of birth.[13] The newborn responds to the state of being born, and the mother responds to the direct experience of the process of birth. The birth constitutes a response, which is

equated to an outcome (for example, as a result or consequence of the birth, the mother and the newborn will have a response).

Diverse. In the literature, the concept of birth outcomes is referenced to as a dichotomous, nonlinear term (for example, birth outcomes are either good or poor). The classification of birth outcomes as good or poor, normal or abnormal is based on physical parameters of the newborn and the mother following birth. For the newborn, classification is based on gestational age (preterm, term, postterm), birth weight (small-for-gestational age, appropriate-for-gestational age, large-for-gestational age), and delivery complications (brachial plexus palsies, intracranial hemorrhage, asphyxia, skull fractures, cephalohematomas, facial palsies, hyperbililrubinemia).[8,10] A "term" and "appropriate-for-gestational age" is considered a good birth outcome; whereas, a "pre- and postterm" and "small/large-for-gestational age" newborn is considered a poor birth outcome. For the woman, classification is based on complications following birth. A woman who experiences no complications following birth is classified as a good birth outcome; whereas, a woman who experiences complications due to the birth process (for example, hemorrhage or infection is classified as a poor birth outcome). The dichotomous classification of birth outcomes in terms of physical factors identifies good versus poor outcomes.

The reference to birth outcomes as a dichotomous concept is problematic in that the classifications, in reality, are not so distinctive. In consideration of the major variables used for the classification of birth outcomes for newborns, excluding the delivery complications, gestational age and birth weight are continuous and not categorically fixed variables. If gestational age and birth weight are the primary variables for assessment of birth outcomes, then birth outcomes should also be viewed as occurring on a continuum and not arbitrarily separated based on a preponderance of empirical evidence. For example, a newborn born at <37 weeks gestational age is considered a preterm birth and thus has a poor birth outcome.[9] However, not all newborns born at <37 weeks gestational age have poor birth outcomes. The literature and personal observations are replete with evidence of newborns born prior to 37 weeks of gestation who thrived without complications. My personal experience, the birth of my son at 34 weeks gestation, further highlights this dilemma. Upon birth, he was healthy and required no further interventions. He was classified as a preterm birth without complications. Did he have a poor or good birth outcome? No documentation ever referred to the birth outcome as either, probably due to the paradoxical implications. These same paradoxical implications apply to birth weight.

The majority of poor birth outcomes classified as maternal morbidity are based on the following complications: hemorrhage, infection, pelvic hematomas, and vaginal, cervical, rectal, and bladder lacerations.[7,8] In reference to these identifiers of maternal morbidity, the woman either has or does not have this complication. Nonetheless, the severity of the complication may be a more accurate indicator of the birth outcome rather than a dichotomous classification. For example, hemorrhage is defined as a blood loss > 500 cc.[14] As a fixed outcome, a woman with > 500 cc blood loss is hemorrhaging and a woman with ≤ 500 cc blood loss is not hemorrhaging. However, this factor could also be viewed as a continuous variable. As health care providers, we know that the maternal response to bleeding will be individualized and that the amount of blood loss (unless of a significantly high level) may not be indicative of a poor birth outcome. A follow-up hemoglobin and hematocrit substantiates the variable maternal physiological responses to bleeding. Therefore, birth outcomes are variable.

Birth outcomes should be viewed on a continuum based on the newborn and maternal responses to birth. It is clearly evident in cases of infant and maternal mortality that the birth outcomes are poor. However, in reference to infant and maternal morbidity, the clarity is muddled. Gestational age, birth weight, and some of the newborn and maternal complications should be regarded as continuous variables, which may lead to a diversity of infant and maternal responses. Nonetheless, the classification of birth outcomes as poor or good based on definitive parameters has simplified the empirical referents of birth outcomes. These empirical referents have significantly contributed to the health of women and infants. Voluminous studies addressing poor outcomes have lead to numerous innovative and effective interventions, which have decreased the mortality and morbidity of women and infants. However, it is imperative that the classification of birth outcomes is not based on fixed parameters but on a combination of fixed and

continuous factors which may alter the final determination of the birth outcome.

Two-Dimensional. The majority of research studies delineate birth outcomes in terms of physical characteristics such as stillborn or fetal death (infant mortality) versus live birth, birth weight, gestational age, maternal death, and the presence or absence of maternal complications.[15-17] The diagnostic codes in the diagnostic related groups (DRG) refer to birth outcomes in terms of maternal and newborn physiological parameters.[18] The parameters are gestational age, type of delivery, and physiological signs and symptoms of the newborn and mother. Although the DRG's refer to problems and complications or complicating diagnoses, further investigation of these terms indicates reference to more specific physiological identifiers. Therefore, traditionally in research studies and the health care system, birth outcomes are characterized as comprised only of physiologic parameters.

Although birth outcomes are traditionally referred to in terms of physical entities, these physiological parameters discount other factors, which are equally important to consider as birth outcomes, and which may contribute significantly to the physiologic outcome. Could not birth outcomes also be specified in terms of psychological parameters? Birth was defined as not only a state of birth but also as a human experience. The perception of this human experience will be reflected in the beliefs and feelings of the mother.[19,20] Therefore, if a birth outcome is a result of the experience, then the mother's perception of the birth reflected in her beliefs and feelings is an outcome of the birth. In conclusion, the preferential focus would not only be on physiological birth outcomes but also on psychological birth outcomes.

Psychological attributes refer to maternal psychological responses to the birth. Positive perceptions of childbirth such as childbirth satisfaction, emotional well-being, and fulfillment have been examined as birth outcomes.[21-30] Conversely, negative perceptions of childbirth such as anxiety, disappointment, sadness, and dissatisfaction have also been identified as birth outcomes.[22,31] In two meta-analyses of birth outcomes conducted by the Cochrane Group, measures of perception (satisfaction with) of childbirth by the women were also considered as important birth outcomes.[32,33]

Interactive. Birth outcomes are an interactive concept that integrates physical and psychological factors and the interaction among the newborn, the mother, and the environment. Rarely, does the presence of one factor relate to the comprehensive conceptualization of birth outcomes. Usually, birth outcomes are related to several factors, which are identified simultaneously.

The core element in the definition of birth outcomes is the newborn and/or the mother. Each one (the newborn or the mother) is a complex, integrated, unitary phenomenon which interacts with the internal and external environment.[34,35] A unit inclusive of the internal and external environment of the newborn and the mother incurs birth outcomes. A threat to the health of the mother will often have an adverse effect, direct or indirect, on the newborn. In addition, some threats that arise within the newborn itself can threaten the mother. Therefore, a birth outcome is an integrative concept inclusive of the interaction among the newborn, the mother, and the environment.

In summary, birth outcomes are diverse, two-dimensional, and interactive maternal and newborn responses to the state or direct experience of birth. Conceptualization of birth outcomes on a continuum inclusive of diverse physical and psychological responses of the newborn and the mother and of the interaction among the newborn, mother, and environment will promote accuracy in the determination of birth outcomes.

Antecedents

As the attributes alluded to, the primary antecedent to a birth outcome is a pregnant mother giving birth to a newborn. The actual process of birth directly precedes the outcome. Since a pregnancy is required for the mother to give birth, the pregnancy itself is an antecedent. In order for a woman to give birth, she may need to progress through the process of labor. Therefore, one could argue that labor is an antecedent to the birth process. However, with the advent of the surgical cesarean section, the process of labor is not an absolute prerequisite. Some women give birth through elective or emergency cesarean sections and do not experience labor prior to such surgical interventions.

A significant male figure such as a father may be

considered as an antecedent to the birth outcome due to fertilization. Fertilization is the union of an egg from the woman and sperm from a man.[36] In order for a woman to be pregnant, she must conceive the pregnancy through fertilization. Therefore, one could argue that a male figure s an antecedent to the birth process. However, with the advances in reproductive technology and artificial insemination, the direct presence of a male in the conception of a pregnancy is not an absolute requirement.

Related Concepts

Various terms are used interchangeably for birth outcomes. Some of these terms refer to related concepts inclusive of birth outcomes. Perinatal health outcomes and perinatal loss encompass birth outcomes as well as pregnancy outcomes. Although perinatal health outcomes refer to outcomes due to the pregnancy and intrapartum time frame, these outcomes may be evident during the antepartum, intrapartum, and/or postpartum time period.[37] Perinatal loss is often referred to as a birth outcome. Although perinatal loss may occur following a birth of >20 weeks gestation, this term also refers to a miscarriage. It is important that this distinction in terminology is applied to the characterization of birth outcomes. There may be a difference in the outcome based on whether or not the outcome was related to a birth.

The paternal psychological response to the childbirth experience has been identified as an outcome of birth.[38] Becoming a father is an important event in the life of a man.[38] The quality of paternal role attainment has been related to the role of the father during childbirth and to the quality of the paternal childbirth experience.[38] Similar to mothers, fathers have perceptions of the birth experience characterized primarily by positive or negative feelings.[39] Although the father may be present and participatory in the birth process, he does not directly experience the birth. Furthermore, the birth is not dependent on the presence of the father. The birth will occur despite the presence or absence of the father. However, the significance of the father in the birth process should not be dismissed. Numerous studies document the significance of the father (or significant other) in the childbirth experience and on the maternal psychological response to the birth.[26,27,38,39] The paternal psychological response to the birth is related to the birth outcome, but in and of itself is not a birth outcome.

Model and Contrary Cases

To further clarify the concept of birth outcomes, a model case and a contrary case will be presented. This model case will comprise all the essential attributes of birth outcomes; whereas the contrary case will lack all the essential attributes.

Model Case. Judy is admitted in active labor at 35 weeks gestation. Assessment indicates that she has a history of preterm labor. Her pregnancy was diagnosed as high-risk. The labor and delivery is precipitous. Judy vaginally delivers a 6-pound healthy newborn. Although oxygen is ordered for the newborn post-delivery, the oxygen is discontinued 4 hours post-delivery due to stabilization of the newborn. Due to the precipitous delivery, Judy has a first-degree vaginal laceration, which is repaired. Although Judy's birth is a preterm delivery, the newborn and Judy experienced minimal complications and are physically healthy. Furthermore, Judy is extremely satisfied with the experience. All agree that this was a good birth outcome.

The model case includes all the defining attributes. The mother and the baby exhibit physical and psychological responses to the birth. The response is dependent on the interaction between the mother and the newborn. The determination of the birth outcome as good is based on the overall and individualized maternal and newborn responses.

Contrary Case. A full-term healthy newborn without complications is admitted to the nursery following an uneventful labor and delivery. The newborn is diagnosed with Tay-Sachs disease. Family history indicates that the mother and father of the newborn are both carriers of the Tay-Sachs trait.

The contrary case lacks all of the critical attributes. Tay-Sachs disease is a newborn response to the pregnancy based on the genetic interaction with the mother. The congenital abnormality is neither a maternal nor newborn response to the birth. Furthermore, the contrary case does not address the maternal psychological response to the birth.

Studies identified fetal/congenital abnormalities as birth outcomes.[15,40] However, fetal/congenital abnor-

malities are not related to birth. Fetal/congenital abnormalities are pregnancy outcomes since they are related to the genetic history and health status of the mother. Birth outcomes only refer to results or consequences that occurred due to the time of the birth or as a result of events during the birth.

Empirical Referents

Empirical referents are how the concept can be measured or determined to exist following the concept analysis. In the literature, empirical referents of birth outcomes are largely based on population parameters. The norms were largely derived from white populations which provide the basis for comparison to individuals and other groups.[41-43] The characteristic of "one-size-fits-all" for birth outcomes may result in invalid measurements and the misidentification of newborns and women in need of intervention services.[41] Although birth outcomes are based on empirical knowledge, measurement of the outcome should incorporate individual variation and be based not on dichotomous classifications but on the overall maternal and newborn physiological responses to birth.

The maternal psychological response has largely been measured through the concept of childbirth satisfaction.[22-29] Examination of childbirth satisfaction has been conducted by both quantitative and qualitative analysis. Quantitative measures included the Perception of Birth Scale, the Labor Delivery Evaluation Scale, a scale of emotional adjectives for rating the childbirth experience, and a questionnaire assessing different aspects of the birth experience.[28,29,44,45] It is not within the scope of this article to address the validity of these measures, but rather to emphasize that any empirical measurement of childbirth satisfaction as a birth outcome must conceptualize childbirth satisfaction as the maternal psychological response to the birth experience.

Summary

In summary, birth outcomes are diverse, two-dimensional, and interactive maternal and newborn responses to the state or direct experience of birth. Caution needs to be exercised in the conceptualization of birth outcomes only in terms of standardized, segregated, and fixed physiologic parameters of poor birth outcomes. Birth outcomes are variable inclusive of physical and psychological factors. In addition, these factors are interrelated yet diverse. This broadened conceptualization of birth outcomes would assist in the identification of causal or associated factors related to birth outcomes and in the evaluation of the impact of health interventions on birth outcomes.

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A Case Report: CSD Presenting as a Sudden Neck Mass

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Cat Scratch Disease (CSD) was originally reported in the literature over 50 years ago but was initially recognized in 1931 by the French Professor Debre, who followed a series of patients who had the disorder.[1,6] The definitive causative agents, *Bartonella* (*B*) henselae, *B* quintana, *B* clarridgeiae, and Afipia felis were not identified until the mid 1980's. The causative organism was isolated and cultured in 1988. Since 1992, with indirect fluorescence antibody (IFA), enzyme-linked immunosorbent assay or positive polymerase chain reaction of tissue fluids, *B* species have been able to be identified.[1,6] Furthermore, since 1992, Regnery et al were able to isolate *B* henselae from the blood of healthy cats. This supported the hypothesis that cats were the reservoir for the disease in humans.[1]

A recent report of CSD in Hawaii demonstrated the disease is due to *B* henselae and the infection is directly linked to the scratch or bite of a kitten.[2] Furthermore, the study demonstrated that older cats seldom have bacteremia but often have serologic evidence of past infection.[2] The report also showed the *B* henselae IFA test is both highly sensitive and specific for the detection of infection caused by *B* henselae.

Due to the possible presentation of CSD as a neck mass and the frequent triage of these patients in the Oral and Maxillofacial Surgeons office, we present a case report and review of the literature of CSD in order to enlighten Military Health Care Providers of the pathophysiology, clinical presentation, diagnosis, and management of this condition.

Report of Case

A 21-year-old active duty male presented to the department of oral and maxillofacial surgery in January 2001 with a 1 week history of a painful, slowly enlarging left neck mass. The neck mass was tender to touch, slightly erythematous. The patient indicated that he had two cats and recently had been scratched on the face and neck multiple times (Figure 1).

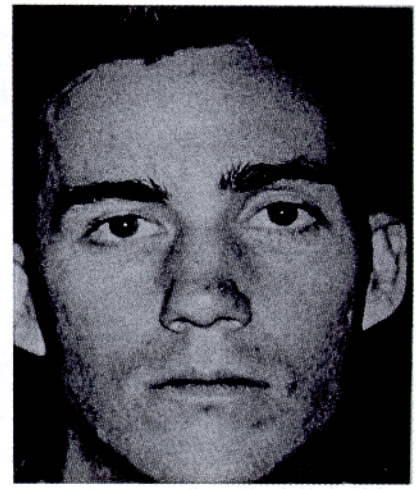

Fig 1. Facial view dorsal nasal scratch from cat.

Physical examination showed a healthy male with a 2.0 cm x 2.0 cm firm mass located on the lateral surface of the neck at the inferior border of the mandible. The lesion was tender to palpation, firm, mobile, and erythematous. The patient also had several small, linear abrasions on his neck, arms, and torso caused by his cat. The remainder of the clinical examination was normal with no evidence of organomegally or systemic lymphadenopathy. The hematological and radiographic studies were still pending at the time of the examination (Figure 2).

The differential diagnosis presented to the patient included: isolated lympadenopathy, branchial cleft cyst, thyroid goiter/nodule, CSD, and tuberculosis. In light of the clinical presentation, a preliminary diagnosis of CSD was made. Serology, including Immuoglobulin (Ig) IgG and IgM for detection of an antibody level to *B* was

ordered and demonstrated an unequivocal level of IgM antibody to *B*. A computed tomography scan with contrast demonstrated four mildly enhancing lymph nodes measuring 13 mm to 19 mm in the least diameter, all within the left submandibular region. There was no evidence of a cystic lesion, carotid tumor, or thyroid-associated pathology. The patient was managed palliatively with antipyretics and analgesics. The Infectious Disease Service (IDS) recommended the soldier avoid contact with the cat for the near future, but disposal of the cat was not recommended, since it carries the bacilli for only a short time. The patient was also treated with azithromycin and followed for the next 6 months with resolution of the lymphadenopathy and no recurrence of the lesion (Figure 3).

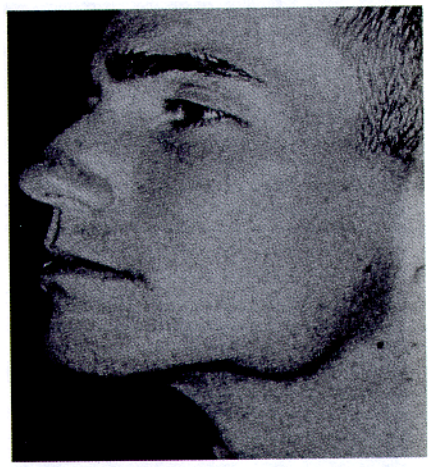

Fig 2. Patient profile view of submandibular lymphadenopathy.

Fig 3. Computer tomography scan of left submandibular lympadenopathy.

Discussion

The CSD is generally a benign, self-limiting infectious disease that is characterized by edema and pain in the lymph nodes. The causative agent is *B* henselae, a small gram-negative, argyrophilic, nonacid fast, pleomorphic bacillus.[3] Domestic cats, especially kittens, serve as the reservoir for *B* henselae in 90% of the cases.[3] Other cases involve exposure to squirrels, dogs, goats, crab claws, and barbed wire. Approximately 75% of the patients report a bite or scratch to the head, neck or upper limb. Often a red-brown, nontender papule develops at the region of the inoculation within 3 to 10 days and may persist for several weeks.[4,6] These nodes gradually enlarge over a period of 1 to 2 weeks and can persist for 2 to 3 months. Approximately 10% of the patients will have nodes with overlying erythema and fluctuation that can suppurate if they are not incised and drained. Five percent to 10% of the cases of CSD may have an atypical presentation including Parinaud oculoglandular syndrome, encephalopathy, erythema nodosum, thrombocytopenic purpura, arthritis, synovitis, and pneumomia.[4,5,8]

In the U.S., approximately 22,000 cases are diagnosed annually, although many more cases may go unrecognized. Approximately 2,000 hospital admissions are reported per year.[4] Prevalence is approximately 6.6 cases per 100,000 persons. There is a 3:2 male-to-female ratio, with 80-90% of the cases in patients younger than 21 years of age.[4]

The diagnosis of CSD, until recently, was based on the fulfillment of clinical criteria. However, with the recent development of serological testing, the diagnostic procedures have changed for this disease.[6,7] The IFA for *B* has greatly enhanced the diagnosis of CSD.[7] The IFA is between 84 and 88% sensitive and 94 and 96% specific. Specifically, the IFA demonstrates cross-reactivity between *B* henselae and *B* quintana, which is the primary etiology of bacillary angiomatosis and bacillary peliosis hepatitis in patients who are human immunodeficiency virus positive.[4] A low positive result suggests past exposure or infection. A high positive result may indicate a recent or current infection. Seroconversion between acute and convalescent sera is considered strong support of a recent infection. The gold standard for an infection is a significant change on two specimens drawn at different times but tested simultaneously in the same lab at the same

time. The IgG and IgM is also helpful in determining a recent or present infection based upon serum titers. The Brown-Hopp tissue Gram stain and Warthin-Starry silver stain will show small, curved, gram-negative bacilli. Polymerase chain reaction, the test with the greatest sensitivity, has been developed that differentiates *B* henselae from *B* quintana.[4]

Other diagnostic tests that could prove helpful include a lymph node biopsy, which reveals necrotizing granulomas ringed by lymphocytic infiltrates in the affected lymph nodes.[9] Multinucleated giant cells in the affected node may also be noted. Cerebrospinal fluid finds are usually normal, however, they may show minimal pleoocytosis or an elevated protein.

Management of CSD is generally bracketed into two broad categories of patients: the immunocompromised and the immunocompetent.[9] Those patients who are systemically ill or immunocompromised usually respond to many antibiotic regimens including erythromycin, doxycycline, cephalosporins, fluoroquinolones, and trimethoprim-sulfamethoxazole. The CSD patients generally do not respond to penicillin, amoxicillin, or nafcillin regimens. [1,4]

Those patients who are immunocompetent are usually managed with supportive care, to include antipyretics and analgesics, local heat, aspiration of nodes with suppuration, and isolation of the cat/kitten for a short amount of time. Due to the self-limiting nature of the condition, patients often recover within a 4-6 month period. Careful follow-up is mandatory to insure resolution of the lymphadenopathy.

The patient in this case report was treated with azithromycin for 5 days following the recommendations of the IDS. According to the infectious disease literature, azithromycin is the only antibiotic that has been shown by double-blinded, placebo controlled, randomized trials to have benefit in 50% of the cases to resolve the lymphadenopathy in CSD.[10] The patient's lymphadenopathy resolved and he demonstrated no residual deficits.

Conclusion

Cat Scratch Disease is encountered periodically by health care practitioners and can mimic many other conditions. By obtaining a careful history and clinical exam, a practioner is directed toward the diagnosis of CSD, which can be verified by IFA/Ig and treated if necessary. Azithromycin is used to minimize the recovery period and facilitate the return to duty of the service member.

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Strengthening Officer Development through Mentoring

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Introduction

Ask any new Medical Service Corps (MSC) officer fresh out of the Army Medical Department Officer Basic Course (OBC) what a medical platoon leader does and you'd likely get a quick, concise answer on the duties and responsibilities of someone in that position. Question the same officer on the role of a Charlie Company, Forward Support Battalion, table of organization and equipment (TOE), medical company commander and the response would most likely be as quick and concise. But what if you asked that same young officer about the duties and responsibilities of a medical treatment facility (MTF) administrator? Would the answer come as quickly? Probably not, because OBC teaches young lieutenants many of the essentials of life in a TOE environment (how to provide medical support to the combat units), not that of an MTF environment. And, while there are certainly practical reasons for this approach, it leaves young officers at a disadvantage when they transfer from their first assignment with the 3d Infantry Division to Winn Army Community Hospital.

This is not to say that OBC provides a complete training program that gives young officers all the components required to ensure success in a field unit. Like many training programs, the OBC provides officers with some basic information needed to function in a traditional, field-oriented, military organization. Additional knowledge and experience is gained while serving on the job. This knowledge and experience comes from a variety of sources. Field manuals, trial and error, or following someone else's example are among the viable sources that junior officers use in the early stages of their careers. Another component that senior leaders can add to this formula is one of the most essential, most accessible, and unfortunately, one of the most neglected, is mentoring. This article will examine the concept of mentoring, some areas of emphasis at the MTF-level where junior officers may need mentoring or development when they arrive, and suggest some programs that junior administrative MSC officers may find beneficial when transitioning from the TOE realm to the MTF environment.

The Concept of Mentoring

The concept of mentoring is fairly simple: a senior leader shares information and experiences with a less experienced leader in an effort to help that junior leader succeed in his or her current position and in the future. Mentoring is also used to help someone adjust to the new organization and feel more comfortable in new surroundings. This can be accomplished through discussion, assignments, role modeling, or by creating a teacher and student relationship. Mentoring relationships may be intentionally arranged or develop naturally as part of a professional relationship. Regardless of the way the relationship is developed, mentoring has proven to be a successful tool in developing junior leaders in civilian and military settings. A review of the literature found studies in military settings that showed strong correlations between mentoring and overall job satisfaction for the mentoree or protégé. Results of these studies showed that effective mentoring was a factor in increased satisfaction and desire to continue military service.[1-3]

The paucity of effective mentoring has been a source of contention in military ranks for several years. Survey results of company grade officers leaving the military after their initial service obligation often list the lack of adequate mentoring as one of the top reasons for their departure. In a recent study, 18% of the company grade officers surveyed stated that they did not have a mentor. Others in the same survey listed personnel outside of their chain-of-command, to include senior enlisted, as their mentor.[4] Further, the lack of mentoring has been a significant factor in the rise of

micromanagement throughout the Army, another factor often cited as a reason for young officers' dissatisfaction and departure from military service.[2,5,6] Lastly, results from the Army Training and Leader Development Panel Officer Study Report conveyed that junior officers felt they were not receiving adequate development experiences, and that direct contact between seniors and subordinates has diminished in the recent past.[6] Recommendations from this panel included developing doctrine for mentoring in FM 6-22 to ensure that junior officers know what mentoring is and how to get it, and that senior officers better understand how to mentor their subordinate leaders.

But lack of mentoring is not a military-specific problem. Mentoring programs in the civilian health care industry, once seen as essential components of executive leadership, have also become less common.[7] The propensity for senior leaders to provide mentoring may have diminished, but the need for mentoring has not. In fact, several senior MSC leaders have cited the importance of mentoring and developing junior officers.[8-11]

"There is confusion in the literature concerning the definition of 'mentoring.' In her article Mentoring: A Concept Analysis, MAJ Linda Yoder describes that mentoring has been confused with 'role modeling, sponsorship,...and precepting.' " She points out that the conceptual framework of the term "mentoring" from the literature can be sorted into one of three major categories. Major Yoder concludes that these conceptual framework categories are: structural role, organizational phenomenon, and a type of interpersonal relationship. The structural role conceptual framework centers on the development of "novice" personnel within an organization through role clarification, rehearsal, and modeling. The conceptual framework of organizational phenomenon focused on the introduction of talented employees into the culture and operation of the organization. Career advancement, key contacts, and organizational stability and continuity are elements of this conceptual framework. The final conceptual framework is an interpersonal relationship. This conceptual framework is primarily structured around an intimate relationship that has been described as emotional, exclusionary, and eventually, transitional. Regardless of which conceptual framework a senior leader wishes to classify a mentor-mentoree relationship, Yoder cites two dimensions within the mentoring relationship. First, there are career or instrumental functions. This may consist of coaching, tough assignments or tasks, protection, and visibility. Second, there are psychosocial functions, which may include, the development of a sense of competence and clarity of role. This can occur through counseling, role modeling, and friendship.

Perhaps there is a request (or plea) for mentoring or mentorship by junior officers to help guide them within an organization undergoing tremendous change. Clearly, the U.S. Army is facing enormous financial pressure, force structure pressure, and questions of relevance in the new and highly complex combat environment.[13]

Career or Instrumental Functions

Assignments to TOE units are essential to the development of a young officer's career. These assignments are the venues in which junior leaders put into practice the leadership theory they have learned from their commissioning sources up through the OBC. Senior leaders understand that these assignments form a solid foundation for junior leaders to build on. Understanding the importance of having young officers start their careers in a TOE environment, Brigadier General Richard Ursone, MSC Chief, directed an initiative where all Second Lieutenants will have their initial assignment in a TOE unit.[11]

During their tour in a TOE assignment, a junior officer will focus their attention on duties in three main categories: accountability, training of personnel, and maintenance of equipment. Platoon leaders must know where their soldiers and equipment are on a regular basis. They must ensure that they and their soldiers are trained and tactically prepared for a possible deployment or training exercise by being physically, mentally, and spiritually ready. Lastly, platoon leaders must ensure that all assigned equipment, such as vehicles, weapons, and sets, kits, and outfits are in serviceable condition and are properly maintained as prescribed by technical manuals. The Platoon Leader is being developed to understand the foundation (tactical-level support) of combat health support. Only with that solid foundation can they fully appreciate combat health support at the operational and strategic levels later in their career.

What Type of Development is Needed at the MTF?

The aforementioned duties: accountability, training of

personnel, and maintenance of equipment, are also applicable in the tables of distribution and allowances (TDA) setting. Administrative officers need to account for personnel, both military and civilian. Military and professional training, while not to the same degree as the TOE structure, is still an integral part of life in the MTF. Additionally, maintenance of equipment within the facility is easily as important as maintenance in a TOE unit. To illustrate this point, consider that using a broken or improperly maintained defibrillator could be just as costly to human life as allowing an improperly repaired vehicle to leave the motor pool. Again, the basic areas of focus learned in the TOE environment are also applicable in the TDA environment. The difference is in the application of that focus. Senior leaders in the MTF can develop the junior administrators by showing them these differences. For instance, accountability of soldiers in a TOE unit is typically accomplished by a formation. Accountability of staff in an MTF, however, is accomplished by accounting for man-hours in the Uniform Chart of Accounts for Personnel (UCAPERS). Additionally, as the percent of MTF personnel who are assigned under the professional filler system (PROFIS) to TOE units increases, administrative officers will be responsible for tracking PROFIS soldiers and officers and managing the impact caused by these added requirements to their department or service. Just as a Platoon Leader operates at the tactical level in a TOE environment, the junior administrator must master the basic tenants of how an MTF functions in order to fully understand health care at the operational and strategic levels.

As mentioned before, there are subtle differences between TOE and MTF assignments. However, there are some stark differences that deserve mention. The main difference is the shift from a long range, wartime, mission-oriented focus, to a business-oriented focus that often more closely mirrors the civilian health care sector than the military environment. The military health system has undergone significant changes in the last 10-15 years, with the transition from the Civilian Health and Medical Program of the Uniformed Services to the TRICARE system in place today. This transition marked a shift from traditional health care to a wellness-based, managed care model of care similar to the private sector. At the same time, federal budget constraints have made the provision of health care much more challenging.[14-18]

Taking these differences into account, the following points are offered to assist the leader and the junior officer in preparing for the transition between these two organization styles.

- An initial training program, prior to beginning duties as an administrative officer, to familiarize the new officer with some of the functions and responsibilities of key administrative services in the facility. The DA 67-9-1 (OER Support Form) is a required document that junior officers must provide to their rater within 30 days after assuming a duty position. This is an excellent opportunity for the rater to articulate a training program as part of the performance objectives for the rating period. A training program should provide the junior officer with the basic skills necessary to handle the duties that they are about to inherit.

This training program would include rotations through all of the administrative areas. This facilitates the junior officer learning about cost accounting, hiring procedures, civilian performance appraisals and how to set performance objectives, medical records management, information systems training, and PROFIS/military unique training requirements. This allows the new administrator to meet the key individuals in those respective areas and to gain a basic understanding of the functions and responsibilities of these departments. This program must be a well thought-out plan that includes practical exercises to ensure proper exposure on the part of the junior officer. Because the training period is short, it is important to avoid "hip pocket" or "shadowing" type programs, as these may not provide the junior officer with a full understanding of the various administrative areas.

- Encourage professional affiliation. Professional organizations such as the American College of Healthcare Executives, the American Academy of Medical Administrators, and the Medical Group Management Association provide a wealth of knowledge on current health care issues through local groups, newsletters, and annual conferences and provide an opportunity to be certified as health care administrators through credentialing examinations. Officers that belong to these organizations could "sponsor" a junior officer in their department or facility and encourage him to attend the annual conference or local chapter meetings of one of these organizations to gain a better grasp of health care issues in the private sector.

• Encourage participation in the Long-Term Health Education and Training (LTHET) program. This is vital to MSC officers in today's health care arena. With the advent of increased partnering with the civilian community, today's MSC officers must be on par with their civilian counterparts. Long-term health education training, to include the U.S. Army-Baylor Graduate Program in Healthcare Administration, is an excellent program for officers to gain graduate level education. Many officers don't take advantage of this program because they aren't informed of the requirements or the application procedures. Senior officers, especially those who have participated in LTHET, can promote these excellent programs and reduce the junior leaders' anxiety by sharing personal experiences (both positive and negative) with these programs.

• Last, and perhaps most important, are the fundamentals of a well-developed mentoring program: open communication and development through assignments, professional interaction, and sharing experiences. For a mentoring relationship to be effective, communication must occur early and often. Assignments such as presenting briefings, writing requirements (internal to the organization and for publication), and projects that foster the junior leader's creativity are effective tools in a productive mentoring relationship.

What is Needed Prior to their Initial MTF Assignment?

"A management skills course for junior administrators leaving TOE assignments and moving to their first TDA assignment could be very useful in providing a basic level of information on functioning in an MTF. This course could be taught at the AMEDD Center and School or through distance learning." Many areas of concentration (AOC) found in the TDA environment, such as 70D (Information Management), 70E (Patient Administration), and 70K (Medical Logistics) have courses that teach the basics of their particular specialties. Currently, no course exists to teach the skills essential for 70B (Field Medical Assistant) officers who are placed in Healthcare Administration positions in an MTF other than participation in the Army-Baylor Graduate Program in Healthcare Administration. However, it is difficult to meet the criteria for LTHET early enough to get the schooling prior to an initial MTF assignment. Two AOC courses (70E and 70K) have TOE applications but provide limited overview of MTF operations and, therefore, offer limited value for junior administrators. Some type of transition course to fill this gap may be beneficial to officers pending their first assignment in an MTF. This course would focus on common operating systems in an MTF, such as the paperless Ambulatory Data System, the Composite Health Care System, and an overview of the UCAPERS system and how these data systems are reviewed at strategic levels. Explaining the differences in operational structures would also be beneficial for the junior officer who has been accustomed to the typical TOE chain of command.

Conclusion

Investing the time in developing junior officers can pay exponential dividends in the future, through job satisfaction for the junior officer which may lead to an increased sense of loyalty and a desire to remain in the service past the rank of captain. Surprisingly, that investment does not have to be an extraordinary amount of time. A few minutes occasionally spent talking with junior officers to generate ideas or to ask them about their family, their future plans or career goals, can go a long way in fostering the communication process.

One of the most important things that a professional Army officer should remember is to apply the principles of effective leadership and counseling. Remember, although a young officer is working in a fixed facility, the leadership principles they learned in the TOE environment are the same in the TDA environment.

Finally, leaders at all levels must remember that mentoring is a continual process. It never stops. Talking to your subordinates, discussing their career options, sharing experiences and challenges with junior leaders are not tasks accomplished in a day and "checked off" like weapons qualification or a physical training test. These are items that must be continually accomplished over the days and weeks of a tour to be effective for the junior leader, the organization, and the Army. Whether they work in a fixed facility or in a field unit, a good mentor can ensure that qualified officers are leading the military in the future.

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Retention and the Social Work Officer

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One of the important challenges facing the Army Medical Department (AMEDD) today is the recruitment and retention of qualified junior officers. This article presents the findings of a study of junior social work officers by examining their satisfaction with the military and their intentions regarding retention. The findings suggest that there may be opportunities for small specializations such as social work to retain more junior officers. A mentoring program is suggested as one method to foster improved communications between junior and senior officers as well as provide timely support to junior social work officers in an effort to increase their choice to remain on active duty.

Introduction

Junior officer attrition has been a concern for the military in general and the Army in particular. Retention becomes problematic for relatively small specializations that are required to support the mission of the AMEDD. No small specialty retention studies were identified in the literature. The cost of recruiting and training junior officers is considerable in terms of time and resources. Most recently, a study published by the War College suggested that officer attrition resulted from a lack of communication between junior officers and their immediate supervisors.[1]

On a larger scale, the Secretary of Defense is in process of conducting a morale and quality of life study that involves personnel issues. The results of these studies will address issues of the Army's Well-Being Program, recruiting and retaining soldiers. The backdrop for these studies is the changing requirements for the future Army. Despite the fact that the Army needs fewer people than it did 20 years ago, for the most part it needs a higher quality and a more technologically oriented force. Therefore, it is anticipated that the Army will need to recruit and retain members that meet the requirements of our national strategy, force composition, etc. As the military competes with the marketplace for quality personnel, more directed effort would be needed to retain these individuals once they are recruited and trained. This is especially important for the small specializations such as social work within the AMEDD.

Johnson examined junior officer attrition while a senior military fellow with the Joint Center on Political and Economic Studies.[1] Among his findings are: (1) Captains are departing because they are frustrated with their senior leaders; (2) leaders are not considering the impact of families in decisions; (3) middle grade and senior officers, major and lieutenant colonels are not developing junior officers; (4) the expectations of junior officers could be met within their local battalion-sized organizations; (5) the new Officer Evaluation Report (OER) is not a contributor to officer attrition; and (6) lack of communication leads to a lack of trust that creates discontent and feeds on itself.

The Army Training and Leader Development Panel established by the Chief Staff in February 2000 studied issues relating to retention. Among its conclusions is that excessive operational pace left little time for quality training and leader development.[2] This, in turn, leads to a zero defects mentality or an unwillingness to recognize and learn from mistakes. A zero defects mentality fuels micromanagement techniques that creates the conditions for officer attrition.[3]

There is little doubt that retention for many personnel involves systemic issues such as compensation, working conditions, deployment, etc. However, those macro issues do not necessarily have a negative influence on the retention attitudes of junior officers. This study was undertaken to determine the issues that influence the attitudes of junior social work officers. More specifically, what factors may affect a junior social work officer's intention to leave or remain on active duty. If these factors can be identified, retention strategies may be developed to retain quality junior social work officers.

Methodology

Respondents. Junior social work officers were defined as those officers in the grades of Captain and

below during the sampling time frame. Using descriptive, self-administered survey methodology, all junior Army social work officers (87) were contacted by mail and requested to complete an anonymous exploratory instrument. No attempt was made in any way to identify respondent responses. The overall response rate was 56% (N=49). A response rate of 50% is considered acceptable.[4]

Instrument. The instrument consisted of five sections: (1) *Demographic Information*, including the nature of past and current assignments; (2) *Job Satisfaction*, their job, their supervisors at all levels, and training/education opportunities; (3) *Quality of Life*, including family separations and programs available for families; (4) *Leadership/Communication*, including quality of mentorship and attitudes toward social work leadership at all levels; (5) *Army Social Work Strengths and Limitations*, including attitudes toward Army social work, the honesty and integrity of social work leadership, and junior social work officer's open comments. Most responses were made on a 5-point Likert-type summated rating scales. The resulting data using these ratings were considered to be internally scaled for purposes of data analysis.

The instrument was piloted using five middle grade officers to assess clarity and increase face validity. On average, the instrument took approximately 15-20 minutes to complete. Limiting this study is its reliance on a small number of junior social officers. One needs to be cautious in generalizing the findings beyond the group studied. The question may be raised, are junior social work officer's concerns reflective of other junior officers within the Behavioral Science functional area, and the AMEDD as a whole. As with all self-report, anonymous studies, the investigators could not determine if there were any significant differences between responders and nonresponders.

Data Analysis Procedures. Data analysis consisted of descriptive statistical analysis, frequency distribution tables, and cross tabulations. Tests of mean differences using *t* test and Mann-Whitney *U*, chi-square tests, and analysis of variances (ANOVA) tests were used to compare responses across demographic variables.

Findings

Sociodemograhpic Characteristics. There has been very little reported in the literature about the experience and attitudes of company grade officers in the AMEDD regarding satisfaction with military life and, specifically, retention intentions.

Table 1 is a summary of sociodemographic characteristics of the survey respondents. Categories showing the highest rate of response are in bold type. A summary of Table 1 data shows that there were 17% more males than female respondents. The majority of the respondents (68%) were between the ages 31 and 40. Approximately three-fourths (73%) were Captains and nearly two-thirds (64%) were married. Almost half (45%) had over 10 years of military service, however, about one-third (34%) had less than 4 years of military experience. The preponderance of the officers was white and African American (58 and 33% respectively). A large majority (90%) of respondents were licensed with approximately 85% of those responding indicating that their specialty was clinical practice. Almost all (94%) reported having both table distribution and allowance (TDA) and table of organization and equipment (TOE) assignments.

Differences by Gender. On the basis of gender there were four items where significant differences were found: (1) significantly more men (63%) than women (30%) were married in this junior social work officer population (P=.007); (2) more men (67%) than women (30%) reported having TOE assignments (P=.012); (3) men reported significantly longer duty related absences from their family for 45 days to 1 year (P=.021). Forty-four percent of the women reported no family separations while only 11% of men reported no family separations; (4) all the men reported that their spouse or significant other agreed with their retention intentions while women reported only 75% agreement (P=.014). More men than women reported thinking about or deciding to leave the Army (54% vs 46%), however, the difference was not statistically significant.

Differences by Rank. The chi-square test revealed that there are significantly more male Captains (29 men vs 9 women) than would be expected in a normal population (P=.018). Male Captains account for over half (55%) of the respondents in this study. The ANOVA revealed four other items where significant differences were found based on rank: (1) Of the 23 respondents reporting having had a TOE assignment, nearly three fourths (72%) were

Characteristics	Frequency	Valid Percent*
Gender		
Female	20	41.7
Male	28	58.3
Age		
Under 25	1	2.1
25-30	5	10.6
36-40	17	36.2
Over 40	17	36.2
Missing	2	
Rank		
LT	11	26.8
CPT	30	73.2
Missing	8	
Marital Status		
Married	30	63.8
Single	12	25.5
Divorced	5	10.6
Missing	2	
Years of Military Service		
Under 2	6	12.8
2-4	10	21.3
5-6	5	10.6
7-9	5	10.6
Over 10	21	44.7
Missing	2	
Race/Ethnicity		
African American	15	33.3
Multi-racial	1	2.2
Native American	1	2.2
Hispanic/Latino	2	4.4
White	26	57.8
Missing	4	
Do You Hold a License		
Yes	45	91.8
No	4	8.2
Level of Licensure		
Intermediate	6	15.0
Clinical	34	85.0
Missing	9	
Have TDA & TOE Assignment		
Yes (Both)	44	93.6
No (TOE only)	3	6.4
How Long in Current Assignment		
Less Than 6 Months	2	4.2
6 Months - 2 Years	28	58.3
2-3 Years	16	33.3
3-4 Years	1	2.1
Over 4 Years	1	2.1
Missing	1	

*N = 49 for the survey Valid Percent reflects only the actual number of respondents to a particular variable.

Table 1. Socio-Demographics of Junior Social Work Officers

Captains (*P*=.001); (2) Captains report significantly more often than Lieutenants that officer's concerns are fairly considered in the Army social work program (*P*=.017); (3) Captains significantly more often experienced extended separation from their families of 60 days to 1 year; (4) Captains reported with great consistency (88%) that they would like to be better informed about what other junior social work officers are doing (*P*=.002). In almost all areas under study, Captains reported more positively than Lieutenants on the questions asked even though the differences were not statistically significant.

Differences by Race. Because of the small numbers of respondents in the groups other than African American and white (Hispanic/Latino two, Native American one, and Multi Racial one) only the two most prominent groups were compared (see Table 2). Of the 68 items for comparison on the questionnaire, 10 statistically significant differences were found when compared by race. In almost all areas under study, white officers reported more positively than African American officers on the questions asked even though the differences were not statistically significant.

Eighty-four percent of white junior social work officers' reports enjoy being in the military and 40% of African American responded similarly (*P*=.003). When asked how much they enjoy their current assignment, 53% of African American officers and 88% of white officers responded somewhat or very much (*P*=.013). Eighty-six percent of white officers report that they believe opportunities for training and education are good and 60% of African Americans agree (*P*=. 027).

When asked about opportunities for post masters fellowships being good, 56% of white officers and 20% of African American officers agreed or strongly agreed (*P*=.025). Both groups had a large percentage of officers that responded "I don't know" (47% African American and 32% white).

On the question to what extent they felt their families are prepared for an extended separation, African Americans officers reported they were significantly more prepared overall on the 5 point scale (*P* = .047). African American officers felt significantly stronger that the demands of military life interfere with their family life and 80% reported they strongly agree or agree. White officers reported 41% agreement (*P*=. 017).

Several questions were asked about mentoring and communication. Ten items showed statistical significance on the 1-way ANOVA comparing mentoring and communication of junior officers by race. Table 2 summarizes the findings on the four items considered by the authors to be most relevant.

Junior officers were asked whether senior social work officers effectively mentor them; whether communication between them and their Chief of Social Work Service and the Regional Medical Command was good; also whether the relationships between junior and senior social work officers in the Army was good.

Responses to the four questions in Table 2 were consistent, with African American officers responding resoundingly less positively than white officers. Statistically significant differences based on race were found on each item and always in the same direction. white officers feel more positively about the quality of mentoring and communication between junior and senior officers than do African American officers.

Two items regarding communication between junior and senior social work officers were found not to be significantly different based on race. Those two items were: (1) Communication from your immediate chief/ supervisor is good and (2) Communication from the Army Social Work Consultant is good. These two items were uncharacteristically similar and positive for both African American and white junior social work officers.

Differences by Retention Intention. One of the primary objectives of this research was to determine the attitudes of junior social work officers regarding their intention to remain in or leave the Army and to identify variables that may affect that decision. When asked specifically, "What are your intentions?" Seventeen percent of all junior officers indicated that they have decided to leave the Army and another 44% indicate they are thinking about leaving the Army. A little over 60% of the junior officers have decided to or are thinking about leaving the Army. The remaining 39%, including two of the four non-African American minority officers, reported they plan to make Army social work a career. Cross tabulations and ANOVA comparisons were conducted on

Item	African American Social Work Officers	Percent Response	White Social Work Officers	Percent Response	ANOVA Sig
Senior social work officers effectively mentor Jr social work officers	Very great Extent	6.7	Very great Extent	16.0	
	Great Extent	6.7	Great Extent	32.0	
	Moderate Extent	46.7	Moderate Extent	36.0	
	Slight Extent	26.7	Slight Extent	12.0	.029
	Not at all	13.3	Not at all	4.0	
Communication from RMC chief of SW is good	Strongly agree	20.0	Strongly agree	30.4	
	Agree	13.3	Agree	34.8	
	Don't know	26.7	Don't know	34.8	.006
	Disagree	13.3	Disagree	0.0	
	Strongly disagree	26.7	Strongly disagree	0.0	
Communication from our chief, SW Service is good	Strongly agree	40.0	Strongly agree	45.0	
	Agree	0.0	Agree	45.0	
	Don't know	13.3	Don't know	0.0	.018
	Disagree	26.7	Disagree	5.0	
	Strongly disagree	20.0	Strongly disagree	5.0	
The relationship Between Jr and Senior SW officers is congenial	Strongly agree	13.3	Strongly agree	20.0	
	Agree	26.7	Agree	56.0	
	Don't know	20.0	Don't know	16.0	
	Disagree	20.0	Disagree	8.0	.010
	Strongly agree	20.0	Strongly disagree	0.0	

Table 2. Mentoring and Communication Responses by Race

demographic variables verses retention intention.

Gender vs Retention Intentions. Nearly one-half of female respondents (46.4%) indicated they were planning to or thinking about leaving the Army. Compared to the 53.6% of men responding similarly, the difference was not statistically significant. No statistically significant differences regarding leaving the Army were found on the basis of gender.

Race vs Retention Intentions. Among all minority respondents, over half (51.8%) indicated they were planning to or thinking about leaving the Army. Compared to the 48.1% of white officers responding similarly, the difference was not statistically significant. No statistically significant differences regarding leaving the Army were found based on race.

Table 3 summarizes the significant findings from the 1-way ANOVA on items related to job satisfaction and quality of life in the Army compared with retention intention.

The 7 items presented in Table 3 suggest that those junior social work officers who plan to or are thinking about leaving the Army are strongly dissatisfied with what they do in the military and many quality of life issues related to Army life. These areas of dissatisfaction included security in their Army social work job; level of enjoyment of their current assignment; how much they enjoy being in the military; their rating of the overall quality of Army life; whether they have "lots of friends" or "few friends" with whom they are assigned; and stress levels associated with their Army duty that make it difficult to fulfill family responsibilities. In every instance, those who plan a career in the Army responded more positively. Significance levels were well above the P=. 05 level.

The last item reported in Table 2 asks to what extent their marriage had an effect on their retention intentions. Those who plan an Army career reported significantly more often that their marriage did have an effect on their retention decision (75.5%). Among those who have decided to leave the Army or are thinking about leaving reported (60.8%) that their family had slight or no effect on their decision (P=.045).

Significance of Leadership and Organizational Items by Retention Intention. Continuing with items showing

Item	I want to make Army SW a Career	Percent Response	I have decided to or I am thinking about leaving	Percent Response	ANOVA Sig
How secure do you feel your ASW job is?	Very Secure	15.8%	Very Secure	10.3	
	Somewhat Secure	47.4	Somewhat Secure	13.8	
	Not Secure	26.3	Not Secure	31.0	
	Somewhat Insecure	10.5	Somewhat Insecure	31.0	.005
	Very Insecure	00.0	Very Insecure	13.8	
How much do you enjoy your current assignment?	Very Much	83.3	Very Much	31.0	
	Somewhat	16.7	Somewhat	31.0	
	Neutral	00.0	Neutral	6.9	
	Somewhat	00.0	Somewhat	20.7	
	Unpredictable	00.0	Unpredictable		.000
	Very Unpredictable		Very Unpredictable	10.3	
How much do you enjoy being in the military	Very Much	78.9	Very Much	17.2	
	Somewhat	21.1	Somewhat	31.0	
	Neutral	00.0	Neutral	27.6	.00000
	Somewhat unenjoyable	00.0	Somewhat unenjoyable	17.2	
	Very unenjoyable	00.0	Very unenjoyable	6.9	
How would your rate the overall quality of life in the Army	Excellent	36.8	Excellent	10.3	
	Very Good	36.8	Very Good	17.2	
	Good	21.1	Good	41.4	.000
	Fair	8.3	Fair	31.0	
Are you friends with people with whom you are assignment	Yes, lots of friends	36.8	Yes, lots of friends	13.8	
	Yes, some friends	42.1	Yes, some friends	41.4	
	Very few friends	21.1	Very few friends	44.8	
					.035
My Army duty produces stress that makes it difficult to fulfill my family responsibilities	Strongly agree	5.6	Strongly agree	3.7	
	Agree	5.6	Agree	51.9	
	Don't know	11.1	Don't know	3.7	.012
	Disagree	72.2	Disagree	37.0	
	Strongly disagree	5.6	Strongly disagree	3.7	
To what extent has your marriages had an affect on your retention intention	Very Great Extent	41.2	Very Great Extent	25.0	
	Great Extent	11.8	Great Extent	3.6	
	Moderate Extent	23.5	Moderate Extent	10.7	.045
	Slight Extent	5.9	Slight Extent	17.9	
	Not at all	17.6	Not at all	42.9	

Table 3. Significance on Job Satisfaction and Quality of Life Items by Retention Intention

statistical significance when compared by retention intention, Table 4 summarizes the statistically significant findings on those items related to Army organization and structure compared with retention intention.

The 6 items presented in Table 4 once again suggest that those junior social work officers who plan to or are thinking about leaving the Army consistently view their military experience around these issues significantly less positively than their peers who plan to make Army social work a career. Both groups agree that Army social work continues to be downsized even though it is already too small. However, 96.5% of those thinking about leaving responded strongly agree or agree while 78.9% of those planning an Army career reported similarly (P=.025).

The items, "There is not much to be gained for me and my family by staying in the Army indefinitely" and "I talk up Army social work as a great professional career," represent the opposing attitudes of the two groups on most

Item	I want to make Army SW a Career	Percent Response	I have decided to or I am thinking about leaving	Percent Response	ANOVA Sig
Army social work continues to be downsized even though it is already too small	Strongly agree	52.6	Strongly agree	79.3	
	Agree	26.3	Agree	17.2	
	Don't know	21.1	Don't know	3.4	
	Disagree	00.0	Disagree	00.0	.025
	Strongly disagree	00.0	Strongly disagree	00.0	
There is not much to be gained for me and my family by staying in the Army indefinitely	Strongly agree	00.0	Strongly agree	17.2	
	Agree	10.5	Agree	34.5	
	Don't know	31.6	Don't know	34.5	.000
	Disagree	31.6	Disagree	3.4	
	Strongly disagree	26.3	Strongly disagree	10.3	
I talk up Army Social Work as a great professional career	Strongly agree	47.4	Strongly agree	7.1	
	Agree	42.1	Agree	53.6	
	Don't know	00.0	Don't know	10.7	.004
	Disagree	10.5	Disagree	21.4	
	Strongly disagree	00.0	Strongly disagree	7.1	
Army SW leaders can be counted on make honest and truthful reports	Strongly agree	31.6	Strongly agree	6.9	
	Agree	52.6	Agree	27.6	
	Don't know	5.3	Don't know	31.0	.002
	Disagree	5.3	Disagree	24.1	
	Strongly disagree	5.3	Strongly disagree	10.3	
What effect has pay and allowances had on you retention intention	Very Great Extent	36.8	Very Great Extent	17.2	
	Great Extent	31.6	Great Extent	17.2	
	Moderate Extent	10.5	Moderate Extent	20.7	
	Slight Extent	5.3	Slight Extent	3.4	.028
	Not at all	15.8	Not a all	41.4	
The Army leadership in general supports the SW mission	Strongly agree	5.3	Strongly agree	00.0	
	Agree	38.8	Agree	24.1	
	Don't know	31.6	Don't know	10.3	
	Disagree	21.1	Disagree	58.6	
	Strongly disagree	5.3	Strongly disagree	6.9	

Table 4. Significance on Leadership and Organizational Items by Retention Intention

of the items. Among those planning an Army career, only 10.5% strongly agree or agree with the first item while 51.7% of those thinking about leaving responded similarly (P=.000). On the second item, 89.9% of those planning an Army career responded strongly agree or agree and 59% thinking about leaving the Army responded the same (P=.004).

Pay and allowances influenced the retention intention of those planning an Army career for 68.4% of respondent and among those thinking about leaving the Army 34.4% reported similarly (P =.028).

Two items regarding Army leadership, "Army social work leaders can be counted on to make honest and truthful reports" and "The Army leadership in general supports the social work mission," tend to show the dramatic difference of opinion between these two groups based on retention intention. As in the other statistically significant differences in Table 4, those thinking about leaving the Army were more negative on both items (P=.031 and .002 respectively). These findings are similar to those of Johnson who found that lack of communication breeds lack of trust and ultimately is a factor in leaving the Army.[1]

It is important to note here that several questions were asked about moral ethical issues and leadership climate.

Only where there were significant differences between the groups studied were findings reported here. Although those junior social work officers thinking about leaving the Army reported more negatively across the spectrum of this survey, no respondent reported the morality of leadership or inappropriate leadership conduct as a retention issue.

Implications

Based on the findings of this study, one strategy to increase retention is to develop a formal junior social work officer mentor program. The broad outline of such a program will be presented in this section. The Social Work Consultant to the Surgeon General or his designee may manage this program. It is acknowledged that not infrequently, junior officers are assigned to locations without senior social work officers in their professional chain of command. There may be other junior social work officers and/or civilian social workers at their duty location. Therefore, the mentor program takes on increased importance in professional development and retention. As junior social work officers are assessed and enter active duty, each junior officer will be asked to complete an inventory of professional interests as well as career objectives and based on the results, each junior officer will be matched with a senior officer with similar professional interests. Special emphasis will be made to identify senior African American mentors

It is suggested that guidelines be developed that would outline the role and responsibilities of senior social work officers in their mentor role. This role may be conceptualized as an advisor regarding assignment options based on professional interests and Army needs, continuing and long-term education options, and family support resources. Historically, opportunities for long-term education have been an incentive for junior officer to remain on active duty. A large percentage of junior officers reported that they didn't know about post masters educational opportunities. Based on the findings of this and previous junior officer studies, communication is an important link to retention. Therefore, senior officers may be encouraged to use a variety of modes of communication to include but not limited to telephone contacts, e-mail correspondence, and meeting with junior officers at conferences and continuing education forums. Contacts should be frequent and yet relevant to the mentoring process. Meaningful contact, on at least a monthly basis, will be necessary to elevate this program to the level of personal involvement necessary to make a meaningful difference in the junior officer's professional life. Both the mentor and the junior officer should not construe communication in this mentoring process as a form of supervision. Rather, the mentorship should be a vehicle for professional support growing out of a personal relationship, concern for the junior officer's family, and career and mutual respect.

At times, the mentor may serve as an advocate on behalf of the junior officer with the larger social work program. The intent of the advocacy should be to empower the junior officer to function effectively within the military community, to meet their professional goals, and to meet legitimate personal needs within the context of the Army social work mission.

Accountability is important to all programs, especially programs involving retention of junior social work officers. One means of building in accountability may be to include it as an item of interest in the OER. The Social Work Consultant to the Surgeon General or his designee my provide input to the senior social work officer's OER. Additionally, it would be the senior social work officer's responsibility to bring to the senior leadership concerns of junior social work officers. The mechanism for this might be the Behavior Science Short Course or other forums that are regularly scheduled.

Screening and incentives for effective mentorship should be considered before the program is implemented. For the program to be effective, it would need to be voluntary on the part of the senior and junior officer. Incentives may include conference travel for either or both of the participants to enhance knowledge and skills. There may be recognition awards to promote the benefits and accomplishments of the program.

Junior social work officers reported that they would like to be better informed about what other junior social work officers are doing (P=.002). To address this important need, it is suggested that at various educational forums and conferences such as the Behavioral Science Short Course that a portion of the program be routinely devoted to junior social work officer issues. This portion of the program could be planned and conducted by junior officers. "Additionally, establishing electronic

communication between Junior Social Work Officers such as e-mail lists, discussion boards, and real time computer chat rooms may enhance communication, minimize feelings of isolation, and provide timely feedback between junior social work officers."

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AMEDD Dateline

Wayne R. Austerman, PhD†

2 Jul — Doctor Theodore Tate, surgeon of the 3d Pennsylvania Cavalry, guided a division of Union troops along a shortcut from Hanover to Gettysburg as the Union Army of the Potomac was locked in battle with the Confederates in Pennsylvania. A native of Gettysburg, Dr Tate narrowly escaped capture during a skirmish with enemy cavalry later that day. **(1863)**

10 Jul — The stage was set for a domestic mass casualty situation when a bolt of lightning struck a powder magazine at Picatinny Arsenal/Denmark Naval Ammunition Depot, Dover, NJ, detonating over one million tons of TNT in the equivalent of a nuclear blast, which hurled wreckage for 3½ miles. Only the fact that the accident occurred on a Saturday prevented massive loss of life and injuries to the staff. **(1926)**

12 Jul — William S. Murphy, U.S. minister to the Republic of Texas, died of yellow fever in Galveston. The diplomatic posting was widely regarded as a death sentence in the State Department because all of Murphy's predecessors had died of disease in the fever-ridden embassy during the past 4 years. **(1844)**

13 Jul — The staff of William Beaumont Army Hospital in El Paso went on alert for the reception of civilian casualties after a flight of B-24 bombers departed neighboring Biggs Army Air Field on a practice bombing mission. A navigation error caused them to mistake the Hudspeth County town of Sierra Blanca for the bombing range in the desert, 110 miles east of El Paso, and 10 bombs were dropped on the community. Five of them struck the railroad line which ran through town and a sixth landed in the driveway of a service station. Despite initial fear and confusion among the citizens, no one was injured and the AMEDD facility returned to routine operations. **(1944)**

17 Jul — Rancher George Reynolds, a beef contractor serving Fort Griffin, TX, entered a Kansas City, KS, hospital to have an arrowhead surgically extracted from his body. Fifteen years before, in April 1867, he had been wounded in a fight with hostile Indians and had carried the flint arrowhead in his body, suffering chronic pain as it slowly worked its way from front to back, finally coming to rest just under the skin near his spine. The stone splinter was removed and Reynolds recuperated without complications. **(1882)**

19 Jul — Four residents of Carizozo, NM, were air-evacuated to William Beaumont Army Hospital for treatment of burns and lacerations after an F-80 jet fighter crashed into a gas station while attempting to take off from a state highway. The jet had made a forced landing on the highway on the preceding day due to bad weather and a fuel shortage. The pilot, Captain Floyd G. Soule, died upon impact when the aircraft lost altitude and struck the service station. **(1947)**

21 Jul — Mrs Judith C. Henry, widow of a U.S. Navy surgeon, was the first woman to become a casualty during the Civil War. A bedridden invalid, she was caught in the cross fire of the Battle of First Bull Run, as Union and Confederate armies clashed near Mannassas, VA. A Union artillery shell severed one of her legs, leaving her to die a painful death several hours later. **(1861)**

25 Jul — Daredevil Robert Leach went over Niagra Falls in an 8-foot long steel barrel. He survived the 180-foot drop with a broken jaw and two broken kneecaps. On 25 April 1929 Leach slipped on an orange peel and fell, fracturing his leg. The broken limb was amputated, Infection followed, and Leach died of gangrene soon afterward. **(1911)**

29 Jul Colonel Joseph B. Dorr of the 8th Iowa Cavalry suffered a bullet wound in his right side during a skirmish with Confederate cavalry near Lovejoy's Station, GA. Hospital Steward Hiram T. Bird, called "Little Medicine" by the regiment, bathed the injury with water and then stitched closed both the entrance and exit wounds with a needle and thread. Dorr then remounted his horse and returned to leading his unit in action. **(1864)**

A yellow fever epidemic erupted in Jacksonville, FL, and persisted until 7 December infecting over 4,500 people and killing over 400. **(1888)**

An electric respirator, the first "Iron Lung," was installed at Bellvue Hospital, New York City. Devised by Drs Philips Drinker and Louis A. Shaw of Harvard University, the new device was useful in overcoming many kinds of respiratory failure. **(1927)**

31 Jul Austrian paratrooper Bernhard Trammer survived a 7000-foot fall when both his main and reserve parachutes deployed and became entangled with each other. His first words when he awakened in a hospital were, "When can I jump again?" **(1999)**

1 Aug Former medic Phillip Conner of the Austin Police Department distinguished himself during the notorious University of Texas "Tower Sniper" incident by entering the observation deck of the tower to administer first aid to several of gunman Charles Whitman's initial victims before joining in the assault which ended his reign of terror. Whitman left 14 dead and 31 wounded within 45 minutes of his opening fire from the structure. **(1966)**

The earliest recorded yellow fever epidemic in North America struck Charleston, SC, killing 150 residents within 6 days. **(1699)**

Four thousand two hundred disease cases burdened American forces in Cuba at the close of hostilities in the Spanish-American War. Fewer than 400 American soldiers were killed in action or died of wounds, while fully 90% of all U.S. casualties were caused by disease. **(1898)**

2 Aug Surgeon Samuel P. Horton of Fort Phil Kearny, WY, arrived on the scene of the celebrated "Wagonbox Fight," where 53 men of Company C, 27th Infantry had stood off an attack by over a thousand Sioux and Cheyenne warriors, inflicting heavy casualties upon them at the cost of seven soldiers killed and two wounded. Surgeon Horton carried a keg of whiskey and issued each man a cup full of medicinal liquor as a stress-reliever. **(1867)**

6 Aug Major General Phillip Schuyler hired Dr Samuel Stringer of Albany, NY, as the U.S. Army's first recorded contract surgeon. **(1775)**

8 Aug A surgical team led by Dr Michael DeBakey installed the first successful artificial heart pump, a left ventricle bypass, in a patient at Methodist Hospital in Houston, TX. It was removed 10 days later. **(1966)**

12 Aug Doctor Joseph Lister successfully administered carbolic acid solution as a surgical disinfectant while treating a fractured tibia. **(1865)**

15 Aug The Panama Canal opened for operations, linking the Atlantic and Pacific Oceans via a series of locks and massive land cuts. When construction began in 1904, the death from disease for workers was 14.1 per thousand. By the time of its completion, the efforts of Dr William Gorgas in disease prevention had reduced the death rate to six per thousand. **(1914)**

A yellow fever epidemic erupted in Memphis, TN. Twenty-five thousand citizens fled the city in panic. Of the 20,000 who remained, 17,000 contracted the disease, and 5,000 died of it by October. **(1878)**

Poor quality rations caused an epidemic of diarrhea among American troops, contributing to their defeat at the hands of Lord Cornwallis at Camden, SC. **(1780)**

26 Aug The Battle of Long Island commenced at 2200 hours this night when British troops, foraging in a watermelon patch, became engaged in a firefight with elements of COL (Dr) Edward Hand's Pennsylvania Regiment. Malnourished and threatened by scurvy after a long sea voyage during which they had subsisted on brackish water, weevil-ridden hardtack, and wormy salt pork, the British soldiers put up a spirited fight to retain control of the watermelon patch, which was located at the site of the present-day intersection of 39th Street and Fifth Avenue in Brooklyn. Three days later, Dr Hand's troops acted as rearguard as the defeated American Army evacuated Long Island by sea and fled to Manhattan in General Washington's narrowest escape of the war. **(1776)**

Surgeon General Lawson approved a standard pattern of iron bed frame to be procured from contractors at a cost of $15 per unit for general issue to medical facilities. **(1837)**

Doctor Frederick Cook of Brooklyn, NY, claimed to have reached the North Pole on 21 April 1908, nearly a full year before Robert E. Peary's accomplishment of the same feat. The claim sparked a bitter debate, which continued even after Congress and the scientific community at large recognized Peary's claim. **(1909)**

Doctor Isaac Senter departed Fort Western, ME, as chief surgeon of Colonel Benedict Arnold's Canadian expeditionary force. Arnold's 10-month long invasion of British Canada and subsequent unsuccessful siege of Quebec was the first offensive operation conducted by the U.S. Army on foreign soil. **(1775)**

5 Sep General U.S. Grant was hospitalized in New Orleans, LA, after his horse fell on him. Grant was returning from a review of troops when an approaching locomotive's steam whistle startled his mount, which bolted, collided with a passing carriage, and then lost its balance while rearing and fell upon Grant. The frightened animal narrowly missed falling directly into the train's path when it collapsed. **(1863)**

7 Sep Doctor Isaac M. Cline, physician and U.S. Signal Corps-trained meteorologist, headed the U.S. Weather Bureau's station at Galveston, TX. He assured the city's residents that a tropical storm reported to be traversing the Gulf of Mexico posed no threat to them. The next day a hurricane sent a tidal wave ashore, propelled by 200 mile per hour winds, destroying Galveston and flooding the coastline for 6 miles Inland. An estimated 6,000 to 10,000 people died in the greatest natural disaster ever to strike the United States. **(1900)**

8 Sep Outbreaks of bubonic plague were reported in the seaport cities of London, England, and Glasgow, Scotland, prompting memories of the devastating 17th century visitation of the plague across Europe. Improved public sanitation measures prevented a similar outbreak in the 20th century. **(1900)**

11 Sep Doctor Shields Booker was pleading his lawsuit for the amount of 50 pesos allegedly owed to him by the town of San Antonio, TX, when General Adrian Woll and an invading Mexican Army captured the settlement in a surprise attack. General Woll ordered that Dr Booker, Judge Hutchinson, and the opposing attorney be sent southward to Mexico, where they were imprisoned. Seven months later, a drunken guard shot and mortally wounded Dr Booker. His lawsuit remained pending on the municipal court docket for another 2 years, when it was finally dismissed because "the plaintiff had failed to appear." **(1842)**

13 Sep New York City realtor Henry H. Bliss became the first casualty of vehicular trauma in American medical history when he was struck by a physician's chauffeur-driven automobile as he stepped down from a streetcar at 74th Street and Central Park West. The physician assisted at the scene of the accident, but Bliss later died of his injuries at a local hospital. No legal action resulted from the incident. **(1899)**

15 Sep Alexander Fleming discovered penicillin. **(1928)**

17 Sep The U.S. Army suffered its first aviation casualty when Orville Wright's aircraft crashed during a demonstration flight at Fort Meyer, MD, killing its passenger, LT Thomas E. Selfridge. Captain H.H. Bailey, MC, conducted the autopsy on Selfridge's body, which revealed that he suffered a compound, comminuted fracture of the base of the skull in the crash. **(1908)**

30 Sep Assistant Surgeon Benjamin King reported from the post at St Marks, FL, that "my hospital is very bad, and more or less wet at every rain; on the 16th of September, the tide rose uncommonly high, which nearly inundated this place and the adjacent country; the water was a foot deep in the hospital; in fact, I visited my sick and went through it in a canoe. The bunks were sufficiently high to keep the sick out of the water." **(1821)**

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4. The American Medical Association Manual of Style should be followed in preparation of text and references. Abbreviations should be limited as much as possible. A list identifying abbreviations and acronyms ***must*** *be included with the manuscript or materials will be returned to the author.*

5. Photos submitted with manuscripts can be black and white or color. Color is recommended for best print reproduction quality. Space limitations allow no more than eight photos per manuscript. Photo prints are preferred, but we will accept electronic graphic (i.e., BMP, JPG, or GIF) and photo files in Microsoft Word or PowerPoint. Avoid excessive use of color and shading. Please do not send photos embedded in PowerPoint. Slides, negatives, or X-ray copies will not be published. To avoid possible confusion, the top of photos should be marked on the reverse and their position within the article should be clearly indicated in the manuscript. Photo captions should be taped to the back of photos or submitted on a separate sheet.

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7. Drugs should be listed by their generic designations. Trade names, enclosed in brackets, can follow.

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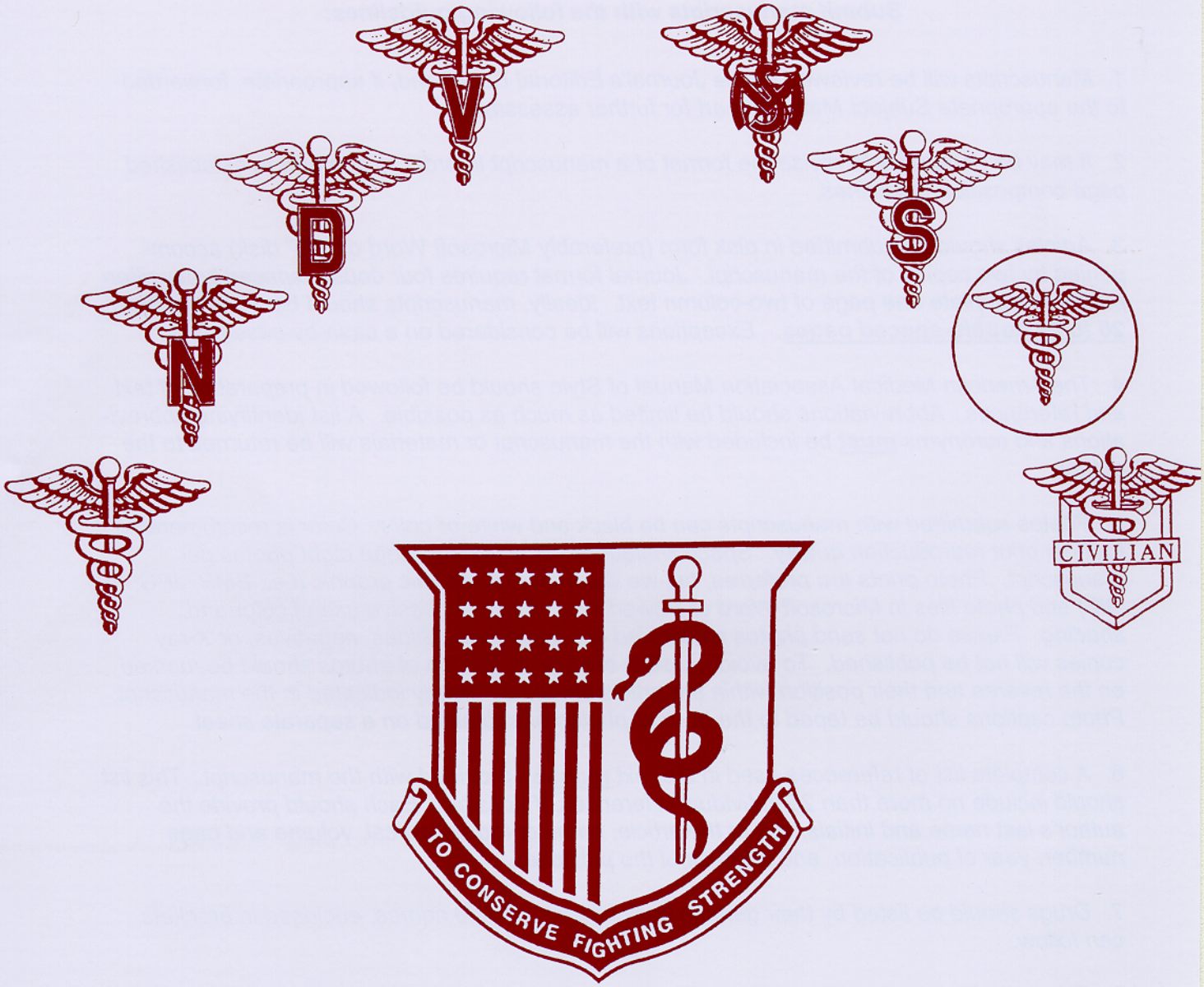

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