The AMEDD Historian

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Welcome to Issue #43 of *The AMEDD Historian*! This edition begins with the in-depth study of casualties and outcomes for Soldier health during the North African and Sicilian campaigns. As important early steps during World War II, the learning curve was very steep, but Army medical planners were able to utilize the data effectively for placement of hospitals, disease control, and evacuation systems for follow-on battles and campaigns. Read about the amazing Army career of Arnold Tuttle. He joined the Army during the Spanish-American War and advanced from Private to Sergeant First Class in four years. Later during World War I, while serving as a physician, he rose through the ranks from Captain to Colonel. Tuttle also benefitted from an Army medical scholarship before the program really existed and worked in amphibious and aviation medicine. Are medics targeted during wartime for wearing the red cross? The subject has been debated in several conflicts and is further explored in the article "Identifying Medics." How far does your personal knowledge and use of computers reach back? Did you use floppy disks, magnetic tape, or an earlier system? The management of AMEDD information through computer means starts with punch cards and greatly advances during the 1960s and 1970s. Although computer use is now ubiquitous, trace initial efforts in "Computers and Healthcare: Early Efforts," by Dr. Sanders Marble.

Please let us know your thoughts. We would like to hear your comments and are always seeking new articles for publication.

Learning as we go: a WWII lessons-learned report

After the Sicilian Campaign (9 July – 17 August 1943) there was a short lull for Allied ground forces in the Mediterranean. The obvious next target was mainland Italy, and plans were progressing for two invasions: British 8th Army would cross into the 'toe' while U.S. 5th Army would land around Salerno, about 250 miles north. While those plans were being worked out, the medical section in the U.S. theater headquarters was assessing successes and shortfalls.

They started with medical care, because disease was the main problem, not for deaths but for having troops out of action. Regular Army doctors of the era had deeply imbibed the idea that the AMEDD saved the lives it could, but the main goal was "conserving the fighting strength". Sick or injured troops were not fighting, and the best way the AMEDD could help win the war was to reduce troops time away from their units. Prevention was part of that, treatment was part. But keeping troops in action was the main goal.

They also looked at how effective surgical support had been. That had been a problem in the previous campaign, and for Sicily there were adjustments to try and improve it. To see if those were effective (or needed further adjustment) they looked at data. The data said the new methods worked, so they were kept. But they also asked if surgical support should be pushed still further forward, trying to save all the lives they could – without ridiculous risk to the scarce surgical assets.

Psychiatric casualties were a third main topic. In the 20s and 30s the Army had

expected to be able to screen out all soldiers at risk of psychological breakdown, so there was no provision for forward psychiatric care. The concept was flawed, and failed badly in the North African campaign. Again, new methods were introduced and they wanted to know if these were effective and how to adjust them.

Next, the review looked at evacuation. The Sicilian campaign was the first one to plan for large-scale air evacuation. AMEDD planners elsewhere around the Army would benefit from hearing about this experience, and they provided some hints. They probably did not have all the data because some would have been from 7th Army (on Sicily), some from 9th Air Force (handling the flights), and some from the area headquarters back in North Africa that oversaw the hospitals.

Finally, they reminded readers that the Army does not fight in a vacuum. Navy and Air Force medical planners don't have to deal so much with civilian patients, but the Army had to make some provision for military government or civil affairs medical support.

The Sicilian Campaign ended on 17 August. The report was published Army-wide in October, so producing this report was a high priority since it had to be completed and transmitted to the U.S. for inclusion in the October edition of *Health of the Army*. 80 years ago the AMEDD was learning, and sharing the learning.

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MEDICAL PROBLEMS IN THE RECENT SICILIAN CAMPAIGN

Recent medical reports from the North African Theater indicate that the great bulk of the admissions during the Sicilian Campaign resulted from disease rather than from battle injury. During the first 30 days of the campaign, 60 percent of the admissions among troops comprising the 7th Army were for disease, 14 percent for nonbattle injury, and 26 percent for battle injury. For the 2nd Corps, which was most continuously and actively engaged, the relative proportions were, however, quite different during the initial stages of the invasion. These observations suggest how important a cause of admission disease can be even during a rapidly moving campaign once the operation has progressed beyond its initial stage. For the month of August the 7th Army had a rate of 1,864 admissions per thousand men per year.

During the campaign the chief medical causes of admission were malaria, diarrhea and dysentery, sand fly fever, neuropsychiatric disorders, superficial skin infections, and disturbances of the feet. The precise importance of malaria during the campaign is obscured by the frequency with which a diagnosis of "fever of unknown origin" was necessarily made. Although many of these patients probably had malaria, sand fly fever was also prevalent and some patients originally thought to have had malaria may well have been suffering from sand fly fever, a disease similar to dengue. Also, some of the malaria which first appeared in Sicily was contracted in North Africa prior to the invasion. On the other hand, many of the wounded who were returned to North Africa developed malaria of Sicilian origin and thus were not included in the statistical reports from Sicily. During the campaign, the Seventh and Eighth Armies are said to have lost, from malaria alone, the equivalent of the fighting effectiveness of two infantry divisions, which is more than they lost from battle casualties. For the month of August the reported admission rate for malaria among troops in the Seventh Army was 385, in comparison with 176 for the entire theater, and was about one-fifth of the admission rate for all disease. For the entire campaign the average rates for diagnosed malaria were 227 for the Seventh Army and 321 for the British Eighth Army. The frequency with which troops developed clinical symptoms of malaria may be attributed to two general causes: (1) operations were being conducted in one of the most highly malarious areas of Europe, and during the season when the risk of infection was greatest; and (2) combat activity in connection with night operations are said to have made it difficult for troops to employ effective individual measures against the bite of infected mosquitoes. However, the high rate of infection suggests that malaria discipline could have been improved. In addition it is reported from the theater that the full suppressive value of atabrine was not achieved. Of course, atabrine will not prevent infection but it will delay the appearance of the clinical symptoms which render the soldier noneffective. The reasons for not realizing the full suppressive value of atabrine are given as: (1) it was not made available for at least some of the troops taken aboard the invasion craft; (2) it did not go forward readily to the components of units which were subdivided after the initial landing; and (3) the command did not enforce atabrine discipline until the losses from malaria became important. A report from one evacuation hospital for the period 12 August to 30 September, when it was being used as a fixed hospital, reveals that 28 percent of the medical cases discharged during the interval carried a diagnosis of malaria. Malaria contracted in Sicily made its appearance in Italy and resulted in high sick rates during the early days of the campaign there.
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Diarrheal disease was also an important factor causing a loss of manpower during the campaign. There had been a fairly high incidence of diarrhea and dysentery in the staging areas prior to the invasion of Sicily, and for the entire theater the admission rate was 196 during August. The corresponding rate for the 7th Army was, however, somewhat less at 153 admissions per thousand men per year. The evacuation hospital report mentioned above, and covering 4,500 discharges among medical patients alone, gives an incidence of 11 percent for diarrhea and dysentery combined, about 1.5 percent being for dysentery. Diarrheal disease was about three times as frequent as common respiratory disease in this experience as well as in that of the 7th Army as a whole during August. Only rigorous field sanitation enforced by the command can achieve a satisfactory control over this disease hazard. Fortunately the clinical course of these infections was relatively mild and good results were obtained with sulfonamide therapy.

The relatively unfamiliar sand fly fever was frequently not recognized as such and the initial statistical reports undoubtedly underestimated its relative importance as a cause of admission. It is a non-fatal disease of short duration and is in many ways similar to dengue fever. Superficial skin infections were common during the Sicilian campaign, and resulted chiefly from an inability to keep the skin clean. For the most part such infections responded promptly to sulfonamide therapy.

Preliminary medical reports on the Sicilian action list 957 men killed in action and 4,023 seen alive after having been wounded. The latter number excludes men whose wounds were not sufficiently serious to warrant hospitalization. Among these 170, or 4.2 percent, died. Twenty-two died before they could be admitted to a battalion clearing station equipped for emergency surgery, another 92 died before admission to evacuation and field hospitals, and 56 died after reaching such hospitals. The chances of dying, taken in relation to the men reaching each echelon of medical care, and excluding the lightly wounded, are 19 percent on the battlefield, 0.5 percent enroute to a clearing station, 2.3 percent in clearing stations, and 1.4 percent after reaching hospitals. The mortality rate of 1.4 percent among casualties reaching field or evacuation hospitals parallels that of 1.5 percent reported for the final phase of the Tunisian campaign, although there was reason to anticipate that proportionately more casualties would be lost in the overwater assault and invasion upon Sicily. The casualties of the land fighting in northeastern Sicily had a distinctly lower fatality rate than was experienced in Tunisia.

Only 10.6 percent of the 1,071 deaths which occurred forward of the hospitals were seen alive by an aid man. Study of the types of injury which proved fatal and of the injury-to-death interval, which was three hours or less in approximately half the cases, gives further evidence of the severity of the fatal wounds and of the unlikelihood of successful surgical intervention. Very few lives might be saved, therefore, by moving more elaborate surgical facilities further forward, even if this were feasible. It is apparent that the small surgical hospital for emergency cases cannot be expected to operate much more effectively any closer to the line of combat than its present location in the proximity of the divisional clearing station.

Like the Tunisian campaign, the Sicilian experience also testifies to the importance of neuropsychiatric disability, about 15 percent of the non-fatal battle casualties being of this type. Especially unfavorable is the report for one division which had a rate of admission of 200 or more per thousand men per year during the period 16 July to 6 August. Admissions were especially frequent during periods when the division

PFC Harvey White, a medic of the 7th Infantry Regiment, 3d Infantry Division, administers plasma to PVT Roy Humphrey, 8 August 1943, in Sant' Agata, Sicily. Humphrey had been wounded by shrapnel.

U.S. Army photo.

was engaged and subjected to intensive mortar and 88 millimeter rifle fire. The experience of this and another "veteran" division runs counter to the notion that psychiatric disability is necessarily less frequent among seasoned than among unseasoned troops. In these two divisions roughly 65 and 90 percent of the neuropsychiatric admissions were on the part of veterans of the Tunisian campaign with no previous hospitalization for neuropsychiatric disability. Allowance for the factor of replacement reveals that the proportionate incidence was actually higher for the seasoned components. Study of the individual histories shows that such disorders are occurring among men previously regarded as of average stability. They have "cracked" under prolonged or exceptionally intensive exposure to the rigors of modem combat. A morale problem of some dimensions is suggested by the psychiatric reports from the field. After the evacuation system became stabilized 50 percent of the neuropsychiatric casualties were returned to duty within four days, but the average for the entire campaign is about 40 percent. The lessons of the Tunisian experience were used to good advantage and additional evidence was obtained in support of the program of early treatment in the evacuation hospitals.

Air evacuation proved to be of great assistance in the evacuation of casualties from the mobile hospitals in Sicily to fixed hospitals in base sections. During the period 16 July to 27 August, 3,200 casualties were evacuated by air from Sicily to North Africa, 1,200 being litter cases. As many as 216 litter cases were evacuated in one flight. Hospital ships have also continued to evacuate patients promptly from Sicily to North Africa. The ports of embarkation to the Zone of Interior are being shifted from the Atlantic Coast to the Mediterranean area to facilitate the concentration of fixed hospital facilities and minimize intra-theater transfer. From there, casualties requiring prolonged hospitalization will be evacuated to the United States on returning troop ships. Studies are under way whereby convalescent facilities may be established in Army areas in order to reduce their losses by evacuation to the rear. Study of the Sicilian campaign shows that about 15 percent of the casualties arriving in base sections had only four to ten days of expected hospitalization.

An outstanding medical problem encountered during the Sicilian operations was the necessity for caring for the wounded, the injured, and the sick among enemy civilians. This difficulty had been present on a lesser scale during the landings at Oran and subsequently during the battle for Tunisia. In Sicily, however, the concentrated bombing, artillery and mortar fire, the liberal use of mines by the enemy, and the general shortage of civilian physicians, forced enemy civilians to appear at collecting and clearing stations and at the evacuation hospitals in search of medical attention. It was the unofficial policy of the Army in Sicily to render medical services to the civilians at all times.

Source:
Health of the Army, October 1943. Available online at Digital Collections - National Library of Medicine (nih.gov)

2d Platoon, 11th Field Hospital near Nicosia, Sicily, August 1943. One adjustment tried in Sicily was using platoons from field hospitals, fully mobile but low-acuity hospitals, with augmentation teams. This provided proximate hospital support for medical, psychiatric, and surgical patients. It turned out to be good enough that it was continued throughout WWII where terrain allowed.

Col. Arnold Tuttle, MC

Sanders Marble, PhD, ACHH

Long before there was official doctrine about joint operations, there were doctors thinking about medical support between services. In the 1920s and 30s Arnold Tuttle worked on medical support for land, sea, and air forces.

He was born outside Sturgis, SD, on 26 February 1881, the oldest of eventually seven children. His father, Dwight Tuttle, was a trooper in the 7th Cavalry, and was stationed at Ft Meade, SD. (Ft Meade in Maryland was established in 1917.) Dwight became a career soldier, moving when the Army chose, and the family went along. By 1898 he was at Plattsburgh Barracks, NY, on the shores of Lake Champlain.

Arnold found the excitement of the 1898 Spanish-American War irresistible, and he enlisted. His initial service was at Plattsburgh Barracks. It is not clear why he chose the Hospital Corps. Initial training then was done at posts, and Arnold trained at the small hospital. He was still living with his parents, with his father being the Quartermaster Sergeant for the post, something like a supply officer today. Dwight actually fell ill while Arnold was still working there, and given the small hospital staff it's likely Arnold tended his father.

Fairly soon Tuttle was assigned to the 9th Infantry Regiment, which was sent to the Philippines, which had been a Spanish colony. Over the next few years, Tuttle served with the troops, and at the base hospital in Manila, broadening his experience. Around that time, Chinese rebels attacked foreign embassies in Peking and Western powers sent relief forces; the U.S. called it the China Relief Expedition. Army forces were pulled from the Philippines, including the 9th Infantry, and thus young Arnold Tuttle went to China. The AMEDD detachment was small, and Tuttle drew the attention of the force surgeon who reported: "The work of the hospital corps detachment was satisfactory, and that of Acting Hosp. Steward Arnold D. Tuttle was specially efficient, and he deserves and has earned promotion to the grade of hospital steward." This was not just in an internal report, it was published in the Surgeon General's annual report. Unsurprisingly, Tuttle was promoted, and within another year he was Sergeant First Class in the Hospital Corps, its highest enlisted rank. Having enlisted in the summer of 1898, his promotions had been meteoric, and he faced decades without promotion before he could retire.

Except the rules were bent. Tuttle's next duty station was Ft McHenry, which required almost no actual duties. That was good, because Tuttle was instead attending the University of Maryland, first getting an undergraduate pharmacy degree and then a medical degree. Tuttle was essentially getting an Army scholarship (although he did go to summer maneuvers at least one year) for medical school. Even his living expenses were covered, because his father was working (now retired from the Army) at Ft McHenry, and he lodged at home.

Arnold Tuttle in 1949. Courtesy National Library of Medicine.

Tuttle received his MD in 1906 and interned at St. Luke's Hospital in Jacksonville, FL. Once he competed that, he was discharged from the Hospital Corps. He spent most of 1907 as a Contract Surgeon, a half-way status for men who wanted to be Army doctors that allowed them to see if they liked it and the Army to see if they liked the applicant. He attended the Army Medical School, graduating second in his class (by only a few thousands of a point) but still an honor graduate. As was usual then, he was first offered a reserve commission, accepting on 17 July 1908. The summer of 1908 he was sent to support some National Guard training camps and small maneuvers in the Midwest.

Unsurprisingly, he was offered a Regular Army commission, and accepted on 4 July 1909. He was stationed back in the Philip-

pines, where he had a mix of service with troops, service in a hospital, and administrative/medical logistics work at the medical supply depot. He networked, becoming Secretary-Treasurer of the Manila Medical Society. And when he was posted home, he took a month's leave and toured through China and Japan *en route* to San Francisco.

San Francisco was his next duty station, briefly getting some clinical refresher experience before his promotion examinations. Once he was cleared for promotion to captain, he was stationed at the Soldiers' Home in Washington, DC. Again this was close to his parents, but it was again not time-consuming and Tuttle was assigned to a special board that was considering the equipment for hospital corpsmen. Tuttle was likely the only medical officer who had been a corpsman, so his experience would be extremely relevant. He again drew extra praise, this time for developing an iodine applicator that would be protected against breakage in normal circumstances, but would quickly break when the corpsman needed to apply it as an antiseptic.

By then WWI had started, and the U.S. was getting drawn in. On 6 April 1917 the U.S. declared war, and within a month Tuttle was being deployed, attached to the first unit embarking – Base Hospital No.4 from the reserves. Not only did the AMEDD have the readiest unit in the whole Army, it was a reserve unit that only needed a few regulars to be fully ready. The reserve commander was moved to being "director" (something like the deputy commander for clinical services) with a RA commander appointed; a RA adjutant (more like an XO) was appointed; and a senior enlisted man was appointed. As a young captain, Tuttle became the adjutant, getting accelerated promotion to major – although with the proviso that he would eventually have to sit that promotion exam. (During WWI the Army would drop promotion exams.) As the first Army unit in the war, the hospital was a celebrity, and the officers visited Buckingham Palace and were received by King George V.

Officers and nurses of Base Hospital No.4 meeting King George V and Queen Mary, 18 May 1917. They had received mobilization orders twenty days earlier, and one week later they were operating a hospital in France. Image 06052, Case Western Reserve University Archives.

General Pershing and his headquarters arrived shortly after Base Hospital No. 4 was operational. No headquarters has ever felt it had enough staff to do the work, and Pershing's staff was no different. Tuttle was pulled from Base Hospital No.4 and put to work in Headquarters, American Expeditionary Forces. (It doubtless helped that he knew the chief surgeon, COL Alfred Bradley, from their service in Manila and membership in the Manila Medical Society.) He worked at different times in the medical supplies section and the hos-

pitalization division, which was the term for the operations division, where he worked with the French to build or lease buildings as hospitals. In a year he was a full colonel, commensurate with his responsibilities as the AEF had well over 100,000 hospital beds in hundreds of buildings. He had gone from private to sergeant first class in four years, and during WWI he went from captain to colonel in one year. While the fighting ended on November 11, 1918, hospitalization continued, and Tuttle stayed at HQ, AEF until mid-1919.

He apparently traveled back with a colleague, COL Sanford Wadhams. They wrote an article for *JAMA* on how the AMEDD should rebuild its reserves, and another reviewing the AMEDD's early problems in the AEF. Tuttle was assigned to the Surgeon General's Office for several years. He was first in the Training Division, then the Organization Division that oversaw tables of organization and equipment, war plans, and mobilization plans. But there were plans afoot for a training handbook, and Tuttle was the project officer for that. Possibly to allow him to focus on that, possibly so he could test it out, in 1924 he was assigned to the 1st Medical Regiment at Carlisle Barracks. The Medical Field Service School was there, and the regiment were the demonstration troops who showed officer trainees what field medical service looked like. In 1927 Tuttle's Handbook for the medical soldiers of the Regular Army, National Guard, Organized Reserves and Enlisted Reserve Corps of the Army of the United States was published. Given low military budgets, it was privately published, but considered an official training textbook for over a decade.

Not busy enough with a 691-page book, Tuttle was also working with Navy surgeon W.L. Mann writing a lengthy article on "Medical Tactics of Joint Army and Navy Operations" that was also published in 1927. (Mann had written numerous other articles on the topic to Navy/Marine audiences, and the brand-new Navy manual, and was probably getting the ideas to an Army audience, aided by Tuttle's reputation.) Otherwise, he spent most of the 1920s at the Surgeon General's Office. In mid-1929 he was assigned to the New York General Dispensary, the outpatient clinic supporting Army personnel assigned in the New York area. Being in New York brought him other opportunities, including meeting Adrianne Moore, whom he married in 1931.

Tuttle never pursued a clinical specialization, but did attend the Army School of Aviation Medicine in 1934. That prepared him for his final assignment, heading the school. It's not clear if he wanted to move into aviation medicine or was selected to be the chief because he was an experienced administrator at a time when the school would be moving from Long Island to San Antonio, where there were more days with good flying conditions. Regardless, Tuttle threw himself into his work, and while commandant of the school was invited to become president of the Aero Medical Association. He thought carefully about that, and declined, because he would be expected to testify to Congress, and lobbying would be unethical for a serving officer. However, after retiring from the Army in 1937 he took up a position as medical director of United Airlines, and at that point did become an officer of the association. He stayed active in the Association of Military Surgeons of the United States, giving a talk in 1939 (alongside a future Air Force surgeon general) that was good enough that the Germans translated it for their flight surgeons in 1940.

Tuttle consulted for the Army during WWII, although details are sparse. He continued working for United, dying suddenly in 1951 during his tenure as president of the Aero Medical Association. The Aerospace Medical Association annually presents the Arnold Tuttle Award for outstanding contributions to aviation medicine. The clinic at Hunter Army Airfield is memorialized for him.

Tuttle had a highly unusual career. Not only did the Army allow him to go to medical school long before scholarship programs, he engaged with both amphibious and aviation medicine, becoming a "joint" surgeon long before there was joint medicine.

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Identifying Medics

Were medics deliberately targeted? That has been hotly contested, partly because it is almost impossible to tell enemy intent. Shells on a hospital that's beside a crossroads might have been aimed at the hospital, or at the road, or at something else. Bullets fired at a medic might have been fired towards motion, or used the Red Cross brassard as a target, or not been aimed at all.

From WWI, a brassard was standard. But would more identification mean less shooting at medics? In 1944 that question went up from individual medics to the highest levels: Supreme Headquarters, Allied Expeditionary Forces. On 18 August 1944, U.S. First Army requested authority from SHAEF to paint the Red Cross on medics' helmets. Like a good coalition headquarters, SHAEF asked for opinions from subordinate units: should a 4-inch white band go around the helmet with a 4-inch Red Cross on four sides? Ten days later the British replied in the negative – their helmet was not suitable for that size band. They didn't say it was a bad idea, but that solution would not work for them. On 11 September, U.S. 12th Army Group thought it was not a good idea, that Germans would see the medics' helmets better, and thus be able to target combat troops even if they were not targeting medics. It flipped the idea of aiming at medics around, so that medics would draw attention to combat troops, even if they were not deliberately targeted. That was good enough for SHAEF: on 14 September they told First Army it was not approved.

But on 18 November, 12th Army Group changed their mind and strongly endorsed the idea. Medics would be bolder in going forward if they thought they were better protected from German fire. Now that the combat troops wanted it, SHAEF approved it. (Apparently the British could implement their own solution, if they chose to.) On 22 November, the two U.S. army groups were told they could paint medics' helmets. They were supposed to paint the 4-inch band, with four Red Crosses, and paint "Medical Department U.S. Army" on the top with the medics' individual ID number, presumably to show that only medics were using the Red Cross for whatever protection it offered.

Did it help? In the chaos of combat, there's no way to be sure. We can be sure that medics did this, although not necessarily in exactly the prescribed way. (Was there really space on top for all the information the eager staff officers wanted?) And British medics painted Red Crosses on their helmets, even though the American-suggested method wasn't exactly suitable.

Source

SHAEF correspondence, National Archives Record Group 331

British stretcher bearers with Red Crosses painted on their helmets, 1943. The front soldier has one red cross, the second one has his whole helmet painted white with a red cross on it.

Courtesy Museum of Military Medicine, Aldershot, England.

Two examples , neither of them quite matching SHAEF's idea. Certainly there are Red Crosses, and both had the ID number (CPT John W. Whitten's is still clearly visible, CPT Spurgeon Neel's is badly worn). But neither has the four-inch band of paint, nor the words "Medical Department U.S. Army". Both officers included their rank, and Neel included the 69th Division's shoulder patch. It's likely the authorization to paint the helmets arrived (or else why would they have included their ID numbers) but they also used their own judgment on exactly how to meet the intent.

Computers and Healthcare: Early Efforts

Sanders Marble, PhD, ACHH

The AMEDD used computers for data analysis from the punch-card era. For instance, during WWI punch-card machines tabulated information weekly. As computers could do more, the Army (and AMEDD) used them for more. By the 1960s computers were handling math-heavy functions such as payroll, accounting, and supply reports in fixed-facility hospitals.

In 1965 a Data Management Office was established within the Office of The Surgeon General to support the Professional Services Division, where clinical decisions were made. The idea was to gather data and analyze it to support patient care: data-driven medicine. The modern computers would speed up data analysis, and be able to do more data analysis than the existing people and computers. At the same time a Data Management Working Group was started to develop a "uniform medical information system" between the three services. In 1968 an Automated Military Outpatient System was added to the plans. This would use computers to store patient records electronically, in a format that doctors could access. The vision was that doctors could enter data immediately and communicate around the hospital, for instance ordering laboratory tests or entering a prescription. This should speed up intra-hospital communication and reduce paperwork. In many ways, this seems the outline of a modern electronic health record, but the problem was 1960s technology made the vision a fantasy. The first stumbling block was how would each doctor enter the data? Would each one have to learn computer coding in FORTRAN, BASIC, or whatever language was developed next? That was hastily rejected, and instead hopes were pinned on a brand new computer technology, the cathode ray tube light pen, which would "allow physicians to communicate directly with the computer without need for extensive training in programming." The light-pen idea earned a patent, but was not effective in the real world, and that part of AMOS was a dead end.

Instead, the AMOS term was applied to two completely different projects. By the early 70s the Army was planning for an end to the draft, and thus an end to the doctor draft. The AMEDD would need to work smarter, and part of that was finding ways to handle patients without physicians. Nurse Practitioners and Physician Assistants were parts of the answer, but AMOS was also supposed to help. There was a computerized form of AMOS, with patients answering questions from the computer, which applied a flow-chart type logic tree in MUMPS (the computer language **M**assachusetts General Hospital **U**tility **M**ulti-**P**rogramming **S**ystem, in use for decades) and receiving feedback from a printer. But buying computers for every hospital and clinic would be too expensive, so that also turned into a human system, using selected enlisted personnel (AMOSists) trained in following essentially the same flowcharts as

STEP ONE: Step one is volunteers in Central Records.

STEP TWO: Screeners take step two through listening to symptoms.

STEP THREE: Checking-in at the clinic is step three for the majority of patients.

STEP FOUR: 'Say, aah' is often step four with the AMOSIST doing all the talking.

STEP FIVE: A brief wait can be step five for both the AMOSIST, who waits to consult with the physician, and the patient, who waits for the verdict.

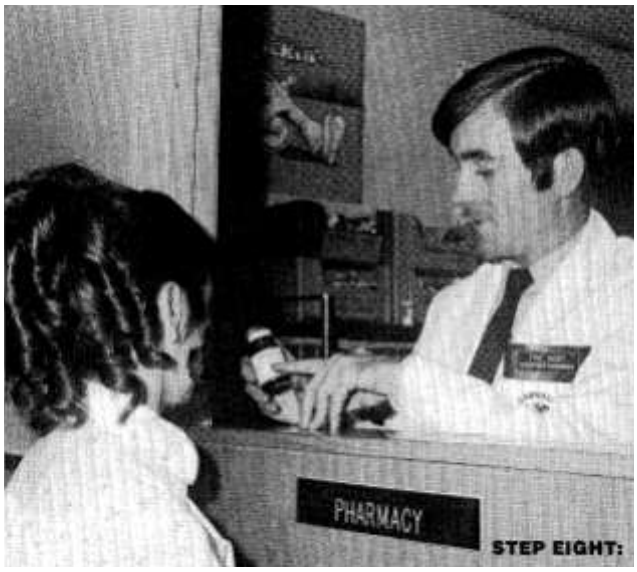
the computers would have used. The programs would document themselves as they went, with the AMOSists noting vital signs on the 'Data Collection Sheet,' looking through a binder of flowcharts, and diagnosing the patient – or referring them to another provider if the indications were of something more serious. Checking the data sheets would allow individual and system errors to be found. The key point was an Acute Minor Illness Clinic, although others were contemplated. Ft Belvoir was picked as a pilot site.

As a way to save time, AMOS mostly worked. AMOSists were seeing up to twenty patients per day, with five or six AMOSists per supervising physician. And they only needed twelve weeks to train, far less than a nurse or PA, let alone a doctor. Per patient, AMOSists were indeed less expensive than physicians, especially if they only ordered laboratory tests called for by the algorithms. By 1983, AMOSists were treating around 500,000 patients per year. However, real flaws developed. AMOSists disliked using the binder because they felt it undermined them in front of patients; they were supposed to look up almost everything, and they would seem like someone painting by numbers, with no knowledge of their own. Instead, AMOSists used their own experience and judgement, but they were not trained for that. Moreover, they were not adequately documenting patient encounters on the data sheets, so it was hard to catch mistakes or improve the algorithms. Lower-level supervisors were not enforcing use of the algorithms or data sheets (perhaps because they tended to trust their subordinates) while hospital commanders were unaware of the lack of enforcement. Several studies in the 1970s uncovered these problems. Risks were found to be higher, although outcomes were not notably worse.

STEP SIX OR SEVEN: The AMOSIST with the microscope, while the patient waits, can sometimes be step six, which is then followed by step seven – consultation with the physician. Or, step six, may be the consultation, depending upon the patient's problem.

The Army soon shut down AMOS. Changes to personnel rules made it easier to hire civilian physicians, and the numbers of trained Medical Corps officers had risen so that physician extenders could be retracted. By the end, AMOS seems to have been little more than pre-screening sick call patients, so doctors would not have to deal with some obviously minor and self-limiting problems such as upper respiratory infections.

In 2019 a similar program was tested, again at Ft Belvoir. Once more, enlisted personnel would be guided through a flowchart, now on a tablet computer instead with clipboard and binder. This would expand access to primary care, and be supervised. As one of the proponents noted, "AMOS' DNA is there." As the COVID pandemic hit, DOD priorities changed and the experiment was ended.



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Images by Specialist Bobby Bolden, from *Health Service Command Mercury*, 1/1, October 1973.

Dr. Nelson Miles Black A Tale of two Wars

Paula Ussery and Chuck Franson, AMEDD Museum

Nelson Miles Black (named after his father's Civil War commanding officer, Nelson A. Miles) served overseas in two very different conflicts; the Spanish-American War and World War I.

Black graduated with his MD from the University of Pennsylvania in June 1894, then served an internship at St. Barnabas Hospital in Minneapolis and began practicing in Otology. Following in his father's footsteps, Black volunteered for the Army. From 1894-1895 Dr. Black was commissioned as an Assistant Surgeon in the North Dakota National Guard, transferring to the 1st Regiment of the Minnesota National Guard in 1895. When the U.S. went to war with Spain in 1898, Dr. Black volunteered for service, and was appointed Captain/Assistant Surgeon for the 1st Regiment of North Dakota Volunteer Infantry, serving in the Philippine Islands until appointed Acting Brigade Surgeon.

From 13-16 May 1898, the 1st Regiment, North Dakota Volunteer Infantry mustered in 685 men at Fargo, North Dakota. The regiment departed Fargo for San Francisco only ten days later. Sailing from San Francisco the unit arrived in the Philippine Islands on 31 July 1898 after a thirty-seven day voyage. Medical staff for the regiment was fifteen, two officers, thirteen enlisted men and one female American Red Cross nurse. On 13 August they went into battle against the Spanish. At two o'clock the same afternoon the Spanish flag was pulled down and the Stars and Stripes raised.

A senior NCO, Alexander H. Louden, recalled:
"We surrounded the walled city (Manila) on the night of August 13 to keep Aguinaldo and his insurgent army out so they would not kill foreigners and the Spanish remaining there. From then until February 4, we did outpost duty. On February 4, the insurgent army attacked us. From that time until next August we campaigned in nine different provinces after the insurgent army. About half of us had intermittent malaria, dysentery, dolor itch, (a disease of the skin contracted from wading in the tropical jungles). There was no rear to go to. We were front, rear, and everything else. There was small pox and black plague [bubonic plague] among the Philippine native population. When the [Philippine] natives died we burned their houses and bodies. No American had bubonic plague..."

(Above) CPT Nelson Miles Black wearing his Spanish-American War 8th Corps Badge.
Courtesy National Library of Medicine.
(Below left) Army Regulations of 1898 authorized the wearing of Corps Badges, which had also been worn during the American Civil War. CPT Black's corps badge had his name engraved on the back. (AMEDD Museum)
(Below right) Miles' Spanish Campaign Medal, authorized by Congress in 1905 and issued to soldiers who fought against the Spanish in Cuba, Puerto Rico, or the Philippines. The obverse of the medal has a central design of a castle with "War With Spain" above. (AMEDD Museum)

Physicians with the unit also faced the problem of malaria and troops' resistance to taking bitter-tasting quinine. According to Louden, "the doctors finally lined the men up in the company formation, and gave each man his dose off a spoon seeing that each man swallowed it."

Black served with the unit in the Philippine Islands eventually being appointed Acting Brigade Surgeon for the 2nd Brigade, 1st Division of the 8th Army Corps. He later served as the Attending Surgeon, 1st Reserve Hospital, 8th Army Corps in Manila returning 31 July 1899.

Declining a regular army appointment at the end of the Spanish-American War, Black continued his medical education in Europe in England, France, Austria and Switzerland. Returning to Milwaukee, he was a staff physician at the Milwaukee County hospital and Milwaukee Children's hospital as well as a physician at the Old Soldiers Home (essentially a nursing home for Civil War veterans) until the clouds of war gathered again.

World War I, the first of two World Wars in the 20th Century, unleashed the advances in weaponry created by the industrial revolution. Attacks now came not only from soldiers mounted on horseback or on foot, but also via aircraft and massed machineguns with interlocking fields of fire. Additionally, a new terror weapon, poison gas, floated through the air and pooled in fox holes. America responded slowly to the outbreak of WWI. Hearings were held by the House Committee on Military Affairs in early 1916 and included testimony by Surgeon General William Gorgas. Gorgas noted that the size of the Medical Department was the same as it had been in 1908 even though the size of the Army had increased by 50 percent. Gorgas testified about the time and manpower needed to transform a civilian physician into a military surgeon as the two required very different skill sets. The National Defense Act of 1916 passed that June. Although historian John P. Finnegan has described this act as a bill "far more intelligible when looked upon as an implementation of the Army's peacetime demands than as a response to [a] world war," it none the less started the process of mobilization, expanding the Army and National Guard and creating Reserve Officers' Training Camps. It also created the Council of National Defense.

The Council began coordinating industries, labor, and resources for national security and welfare. The Council consisted of six cabinet members, including the Secretary of War, plus civilian members. One of the civilian Commissioners chosen was Dr. Franklin H. Martin, secretary-general of the American College of Surgeons. A General Medical Board was formed and in May 1917, a subcommittee on ophthalmology was authorized. One of the six members of this committee was Dr. Nelson M. Black. The ophthalmology committee began by canvassing their fellow professionals. From this survey over 1,400 were found who were willing and able to serve in the Army. A similar committee was established for Otolaryngology as well.

In July 1917 the Surgeon General decided to establish a Division of Surgery of the Head in his office. Under the command of Major T. C. Lyster, Nelson Miles Black was commissioned in July 1917 as a member of the Officers' Reserve Corps and became a member of the headquarters staff.

The Division of Head Surgery studied the Army Surgeon General's plans for hospitals and made recommendations for staff and equipment necessary for eye work. They investigated the potential of domestic production of glass for artificial eyes, selected the equipment for optical units, standardized spectacle frames and sizes of lenses, mobilized one central optical unit and 14 auxiliary units for overseas duty and produced a small book, Ophthalmic Military Surgery. Major Black conducted extensive inspections of the hospitals at mobilization bases in the United States. He also studied the effects of trachoma on the army and the methods of treatment employed by the Public Health Service.

In 1917 Black was commissioned in the Officers' Reserve Corps, which replaced the Medical Reserve Corps created in 1908. He was also promoted in the National Army, a wartime category that provided temporary rank for the war, but did not affect seniority afterwards. He had U.S.N.A. collar brass, but (based on wear) apparently wore this "United States Reserves" instead. (AMEDD Museum)

In August 1917 the Surgeon General authorized the creation of a specialized Head Hospital to accompany troops of the American Expeditionary Forces. Designated Base Hospital No. 115, it was to have a capacity of 1000 beds. The Division worked on the plans, instrument and equipment supply lists, plus personnel needed to construct and operate this hospital.

In June 1918 Major Black was ordered to prepare for "extended field service overseas." Sailing on the S.S. *Orduna* on 31 July 1918 he reported to

Major Allen Greenwood, Senior Consultant in Ophthalmology in the A.E.F. The headquarters was at Neufchateau, France. The professional consultants were to "supervise the clinical work of the A.E.F. They will be assigned to hospital centers, districts, armies, Army corps, and divisions as the necessity demands…" A consultants was to "make frequent visits to the hospitals or other medical organizations in his territory [and] spend as much time in each hospital as in his judgment may be necessary…" He was appointed Assistant Consultant in Ophthalmology on 3 September and Senior Consultant in Ophthalmology and Otolaryngology on 9 January 1919. On 8 March 1919, Black was ordered back to the Surgeon General's Office, where he was made Chief of the Section of Head Surgery under the Division of Surgery in accordance with a re-organization of the Surgeon General's Office. COL Black returned to civilian life in 1920.

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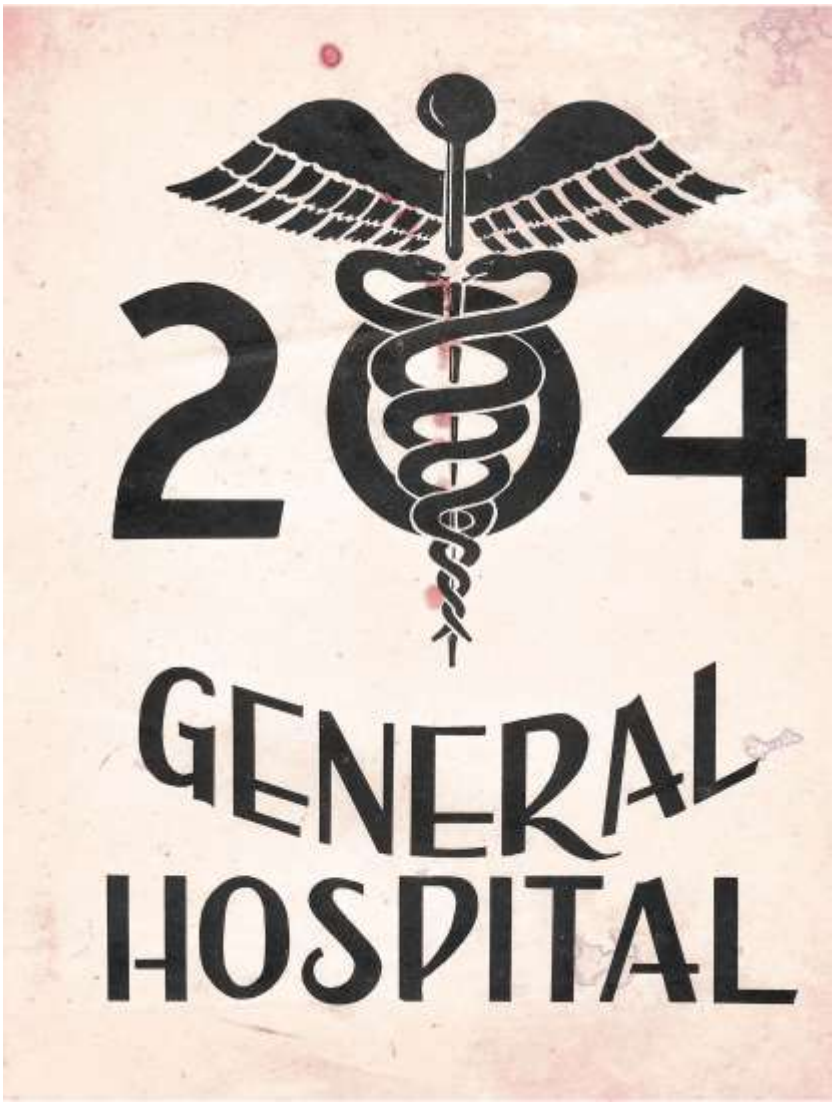
Brooke Army Medical Center is named for Brigadier General Roger Brooke. Brooke was appointed Assistant Surgeon in 1901. He was awarded the Distinguished Service Medal for his "untiring efforts, devotion to duty and brilliant professional ability in the successful training of 80,000 men while serving as senior medical instructor at Camp Greenleaf, Georgia" during World War I. COL Brooke was commander of the Station Hospital, Fort Sam Houston, 1929-1933. He served as Chief of Professional Service for the Surgeon-General of the Army, 1935-1938, and as commander of the Medical Field Service School at Carlisle Barracks, 1937-1940.
U.S. Army photo.



Cover from the 1945 report of the 204th General Hospital

New ACHH Archival Donations:

Panoramic photograph of the ANC Officer Basic Course, August 1966
Two binders of 129th Evacuation Hospital organization history files and press clippings
Photographs and a WWII history of the 204th General Hospital, 1945
Two panoramic photographs of Company No. 1 C.M.T.C. (Citizens' Military Training Center), Fort Sam Houston, Texas, 31 July 1923
One 8"x10" black and white and four panoramic photographs taken at Carlisle Barracks during the 1930s and 1940s

New to the Research Library:

Schiele, Howard P. *Regulars, By God!: The Diary of a Battalion Surgeon with the 1/22 Infantry in Vietnam*. Self-published, Lulu Publishing Services, 2014.
Jones, Susan D. and Peter A. Koolmees. *A Concise History of Veterinary Medicine*. Cambridge: Cambridge University Press, 2022.
Dunlap, Robert H. and David J. Williams. *Veterinary Medicine: An Illustrated History*. St. Louis: Mosby—Year Book, Inc., 1996.
Barber, Charles. *In the Blood: How Two Outsiders Solved a Centuries-old Medical Mystery and took on the US Army*. New York: Grand Central Publishing, 2023.

Evans Theater or **Evans Auditorium**, (building 1396 on Fort Sam Houston) is memorialized for Medal of Honor recipient Specialist Fourth Class Donald W. Evans Jr., who served as a combat medic during Vietnam. He graduated from the U.S. Army Medical Training Center at Fort Sam Houston in 1966. While serving with the 2d Battalion 12th Infantry, 4th Infantry Division on 27 January 1967, Evans left his position of relative safety to answer calls for medical aid. Crossing one hundred meters through a hail of fire and grenades, he administered lifesaving treatment to one casualty and continued to expose himself to enemy fire as he moved to treat other casualties. Evans dragged one seriously wounded casualty back across the fire swept area from which he could be evacuated. When he returned to the forward location and began treating casualties, he was wounded by grenade fragments. He evacuated another casualty and returned to treating casualties despite his wounds. As he evacuated a third casualty across the fire swept area, he was severely wounded. Refusing medical attention, Evans managed with his waning strength to remove another wounded soldier to safety. Despite his wounds, he continued to his lifesaving medical aid and was killed while treating a wounded comrade. U.S. Army photo.

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