

ANNUAL REPORT OF THE SURGEON GENERAL OF THE ARMY
FOR THE COMMANDING GENERAL, ARMY SERVICE FORCES [1944]¹

Health of the Army

During the fiscal year, about 1,350,000 men were inducted into the Army as compared with 3,675,000 during the previous 12-month period. Several million men were in the continental United States in various stages of training involving not only physical conditioning but also intensive preparation for fighting with specialized equipment. By the end of the fiscal year almost 4,000,000 had been sent overseas, to fight under widely varying climatic and environmental conditions; many of them had already seen considerable combat action in the Solomons, New Guinea, North Africa, Italy, and over Germany, while early in June 1944 even greater numbers were thrown into the crucial battle for Europe.

The Army has also been faced with one of the most complex problems of health protection that ever confronted a military force. Our troops have been exposed to wide variations of weather and climate. They have lived under primitive conditions in isolated areas. These and other health hazards inherent in a global war have made it necessary to protect our troops, not only from the diseases of our own country, but from the serious infections of other lands – particularly the exotic diseases of the tropics. Despite the magnitude and complexity of the problem, communicable diseases in the Army have been effectively controlled.

The Army of the United States

The health of the Army in the continental United States continued very satisfactory during the fiscal year 1944, with admissions on account of disease and injury at about 725

¹ This report was prepared during the war but not published, presumably because it was considered to have classified information. It also lacked the statistical information that was normally included, perhaps because data from ongoing overseas operations were hard to gather.

This document has had punctuation and capitalization silently standardized, and spelling silently corrected. Original pagination has been retained. Additions are in [brackets].

per year per 1,000 as compared with about 625 during 1943 and about 790 during 1942.²

The recent morbidity level was slightly higher than during the years immediately preceding the war in Europe. The excess, as compared with peacetime rates, is believed to reflect largely the special health problems of newly-inducted men and of troops in training. Thus, newly-inducted men appear initially to have been subject as usual to higher than average morbidity from both infectious disease and injury.

Despite a sharp outbreak of respiratory infections in December 1943, the annual admission rates from colds, influenza, and the like for the fiscal year 1944 was only about 190 per 1,000, as compared with 275 for the preceding 12-month period. Practically all of the decrease in morbidity from disease was accounted for by lower admissions from respiratory causes. Morbidity from pneumonia was about 30 percent lower, with atypical pneumonia comprising a higher proportion of the total pneumonia cases.

The incidence of measles, mumps, and scarlet fever was appreciably lower than in 1943. Thus the 1944 admission rates from measles was 3.0 per 1,000 or about 70 percent under that for 1943; from mumps it was 4.3, a decline of more than 50 percent; and from scarlet fever it was 2.1 or 25 percent lower. Morbidity from meningitis in 1944 was 0.7 per 1,000 or only about half that experienced during 1943.

Morbidity from venereal disease, excluding cases contracted prior to entry into active service, was at a slightly higher level during the fiscal year 1944 than in 1943, the respective annual admission rates being 28 and 26 per 1,000. Admissions from gonorrhea, which accounted for

² For data, see Lada J, Reister FA, eds. *Medical Department, United States Army, Medical Statistics in World War II*. Washington, DC: Office of The Surgeon General, Department of the Army; 1975 and the monthly *Health of the Army* (1942-1988).

about 75 percent of the total morbidity from these causes, were about 15 percent higher. There was little change in the admission rate from syphilis, which accounted for about 20 percent of all venereal disease cases. Because of the induction into the Army of increasingly large numbers of men with venereal disease, the admission rate for cases contracted prior to entry into active service rose from 29 per 1,000 during 1943 to 37 during 1944.

Among the more difficult problems confronting the Medical Department of the Army were the neuropsychiatric disorders. The admission rate from these causes increased from about 20 per 1,000 strength during 1943 to about 30 during 1944. This change reflects to some extent the more intensive efforts made to detect such disorders with the resulting increased admissions incident to reconsidering the fitness for induction of limited service and other enlisted men.

Morbidity from diarrhea and dysentery increased from 9 per 1,000 during 1943 to about 12 in 1944. The indications also are that morbidity from rheumatic fever was at a higher rate in 1944 than in 1943. The annual admission rate from malaria acquired in the United States remained at the low figure of 0.2 per 1,000. The number of malaria cases originally acquired overseas and reported in this country upon relapse has increased steadily as increasing numbers of men return to the United States from malarious areas overseas. Those cases account for practically all malaria patients in hospitals in the United States. Tuberculosis morbidity exhibited a slight downward trend and the rate was at about 1.0 per 1,000 in 1944.

Partly as a result of efforts to reduce accidents, the rate of admission from injury, which had shown a sharp decrease in 1942 from the high level prevailing in 1941, registered a further small decrease during the fiscal year 1944 as compared with 1943. The rate of about 75 per year per 1,000 strength reported for 1944 indicated the frequency of injuries for which time was lost. Since, however, the average duration of hospitalization of such cases is materially longer than that of disease admissions, the relative importance of injuries as a cause of non-effectiveness is not fully measured by their admission rate. The problem of injuries among military personnel was considered sufficiently serious to warrant the inauguration in the spring of 1944 of a new safety program, under which The Surgeon General has important advisory and reporting responsibilities.

The death rate from all causes for the fiscal year 1944 was estimated at about 2.8 per 1,000 strength or slightly higher than the corresponding rate of 2.5 in 1943. This rise was due to an increase in the mortality from injury from about 1.8 in 1943 to 2.3 in 1944. The increase was partially offset, however, by a decline in the death rate from disease from 0.7 per 1,000 in 1943 to 0.5 in 1944. The extremely low one from disease is without parallel in history and bespeaks the excellent medical care given men in the Army.

It is estimated that the non-effective rate for the Army in the continental United States has been somewhat lower during 1944 than in 1943. The non-effective rate reported, however, for 1944 (37.7 per 1,000) was higher than that for 1943 (33.5) because of the inclusion of time

lost by men evacuated from overseas. From 10 to 15 percent of the time reported lost during 1944 by patients in the United States can be attributed to patients evacuated from overseas. The lower non-effective rate is another indication of the satisfactory state of health of the Army in this country, especially when it is borne in mind that there has been a definite tendency to send only the most fit personnel overseas.

The Army Overseas

With the growing strength of our troops overseas and with the increase of combat activity in most theaters, their health problems increased in importance.³

On the basis of incomplete reports, it appears that the annual admission rate from disease, non-battle injury, and from battle casualty for our overseas troops during the fiscal year 1944 was approximately 925 per 1,000 or about 27 percent higher than the rate for our troops in the United States. Battle casualties accounted for about 3.7 percent of the total overseas admissions.

Morbidity from disease varied from the exceedingly low rate of about 330 per 1,000 in the Central Pacific to about 1,080 in the Middle East and about 1,150 in the South Pacific, and averaged close to 775 for all overseas troops. That was about 20 percent higher than morbidity rates in the continental United States. The North Africa, the Southwest Pacific, and the China-Burma-India Theaters all experienced admission rates of about 900 per 1,000. The European Theater reported a rate of about 650 per 1,000 or substantially the same as the one in the United States. The incidence of respiratory diseases was higher in Europe than in the United States.

Morbidity from non-battle injury varied from a low of about 80 per

³ For information medical support on campaign, see Wiltse CM. *United States Army in World War II, The Technical Services, The Medical Department: Medical Service in the Mediterranean and Minor Theaters*. Washington, DC: Center of Military History, United States Army; 1965, Cosmas GA, Cowdrey AE. *United States Army in World War II, The Technical Services, The Medical Department: Medical Service in the European Theater of Operations*. Washington, DC: Center of Military History, United States Army; 1992, and Condon-Rall ME, Cowdrey AE. *United States Army in World War II, The Technical Services, The Medical Department: Medical Service in the War Against Japan*. Washington, DC: Center of Military History, United States Army; 1998.

1,000 in the Central Pacific to about 180 in the South Pacific, and averaged about 120 for all overseas troops, or almost 60 percent higher than in the continental United States. In the Southwest Pacific the injury rate was almost as high as in the South Pacific. The rates for the North African and Middle East Theaters were estimated to be in the neighborhood of 130 per 1,000, while those for the European and the China-Burma-India Theaters were both under 100.

The admission rate from battle casualties (i.e., those wounded in action, excluding killed in action) reflects to a marked degree the proportion of total strength engaged in combat as well as the intensity and character of the fighting. In the North African Theater, where combat activity on a fairly large scale was more or less continuous throughout the fiscal year, the annual admission rate from battle casualties was estimated at 110 per 1,000 total strength; that rate, however, was only about 85 percent of that from non-battle injuries. In the South Pacific Theater, where combat activity was more sporadic, the battle casualty rate was estimated at 25 per 1,000, or equal to only about 15 percent of the admission rate from non-battle injuries. In the Southwest Pacific and the China-Burma-India Theaters the rate was estimated at about 10 per 1,000. Data are not available at this time regarding the battle casualty rate from the invasion of the Normandy Coast but excluding that operation the casualty rate for the European Theater, reflecting air operations only, was about 6 per 1,000. While it is difficult at this time to determine exact fatality rates, it seems reasonable to state that the current fatality experience is much more favorable than the rate in World War I.

It is apparent that high morbidity from disease in certain overseas theaters has presented, and will continue to present, serious problems. The high sick rate in the South Pacific Theater was due largely to the high malaria rate (over 275 per 1,000 per year) and from dengue (about 25). The morbidity from malaria in New Guinea was much lower than in the South Pacific but the rate from dengue considerably higher; for the entire Southwest Pacific Theater the rate from malaria was materially lower than in the South Pacific. The incidence of diarrhea and dysentery, however, was somewhat higher in the Southwest Pacific (about 60) than in the South Pacific. Both in the South Pacific and the Southwest, skin infections accounted for a substantial number of admissions. In certain areas of New Guinea mite-borne typhus, while not an important cause of morbidity, was responsible for a sizeable proportion of deaths.

Malaria admissions in excess of 100 per 1,000 per year were reported from the Middle East and the China-Burma-India Theaters. Both theaters also reported extremely high incidence of diarrhea and dysentery (about 150 per 1,000) and of sandfly fever. Dengue fever was especially prevalent in the China-Burma-India Theater.

Diarrhea and dysentery with an admission rate of about 70 per 1,000 and malaria with one of about 65 were both important causes of morbidity in the North African Theater. Venereal diseases, however, with a rate exceeding 30, was probably the most serious problem. The control of these diseases proved to be particularly hard in Italy. A number of outbreaks of infectious hepatitis also caused some concern, and trenchfoot was a troublesome problem in the front lines during the winter and spring months.⁴ Because of the effectiveness of the preventive measures taken,

⁴ On the Army's troubles with trenchfoot, see Coates JB, McFetridge EM, eds. *Medical Department, United States Army, Cold Injury, Ground Type*. Washington, DC: Office of The Surgeon General, Department of the Army; 1958.

however, only a few cases of typhus were reported among Army personnel in this theater, even though the disease was endemic in North Africa and occurred in epidemic form in Naples towards the end of 1943.

The death rate from all non-battle causes overseas is estimated at about 3.7 per 1,000 per year, which is about a third higher than for the Army in the United States. The overseas rate from disease of 0.5 per 1,000 was the same as the very low one recorded in the United States. The annual mortality rate, however, from non-battle injuries, estimated at 3.2 per 1,000, was markedly higher than in the United States, reflecting to a notable extent numerous aviation fatalities.

The non-effective rate in overseas theaters has tended to be relatively low for some time following the arrival of troops. This is because a certain amount of time usually had to elapse before climatic and environmental conditions made themselves felt in higher morbidity and until a hospital population was built up, as well as because of the practice of evacuating a large proportion of the patients in the opening stages of the theater. With the passage of time, however, the non-effective rate in overseas theaters has begun to reflect the prevailing levels of morbidity, the evacuation policy in effect, and the combat activities.

Preventive Medicine

Realizing the great importance of the prevention of disease in the protection of the health of the troops wherever stationed, even greater attention than heretofore was devoted to preventive medicine.⁵ In this important activity the War Department had the cordial assistance and cooperation of the medical profession and all health agencies.

⁵ The eight-volume history of preventive medicine is: Coates JB, Hoff EC, eds. *Medical Department, United States Army, Preventive Medicine in World War II, Volume 2, Environmental Hygiene*. Washington, DC: Office of The Surgeon General, Department of the Army; 1955; Coates JB, Hoff EC, Hoff PM, eds. *Volume 3, Personal Health Measures and Immunization*. 1955; Coates JB, Hoff EC, Hoff PM, eds. *Volume 4, Communicable Diseases Transmitted Chiefly Through the Respiratory and Alimentary Tracts*. 1958; Coates JB, Hoff EC, Hoff PM, eds. *Volume 5, Communicable Diseases Transmitted Through Contact or By Unknown Means*. 1960; Coates JB, Hoff EC, Hoff PM, eds. *Volume 6, Communicable Diseases: Malaria*. 1963; Coates JB, Hoff EC, Hoff PM, eds. *Volume 7, Communicable Diseases: Arthropodborne Diseases Other Than Malaria*. 1964; Lada J, Hoff EC, eds. *Volume 8, Civil Affairs/Military Government Public Health Activities*. 1976; Anderson RS, Hoff EC, Hoff PM, eds. *Volume 9, Special Fields*. 1969.

The Board for the Control of Epidemic Diseases in the Army (appointed by the Secretary of War in January 1941) made several notable advances in the prevention and treatment of diseases of military significance.⁶ Scrub typhus was studied in the Southwest Pacific Area. The disease occurs particularly among troops bivouacked in or near Kunai grass. The larval mite which carries the disease can be picked up directly from the grass. Methods of control, including the use of dimethyl phthalate to kill or repel the mites, were devised. Extensive investigations were also made on sandfly fever, hepatitis, dengue fever, and dysentery.

The Commission also made studies of some of the more common diseases occurring among troops in the Zone of the Interior including atypical pneumonia, influenza and other respiratory infections, poliomyelitis, rheumatic fever, meningococcal meningitis, coccidioidomycosis, and others.

A noteworthy advance was in the development of a promising vaccine against influenza. Procurement of a large supply of this vaccine for the Army has been approved. Extensive investigations of the bacteriology of the air in barracks and hospital wards was undertaken to combat air-borne infections. A successful method of oiling floors and bedding to reduce the number of bacteria was evolved. Human gamma globulin, a by-product obtained during the preparation of albumin from pooled blood plasma, was found to be capable of preventing or modifying measles. A skin test for determination of susceptibility to mumps was developed and progress was made on a vaccine for active immunization against this disease.

Significant advances were made in venereal disease control through

⁶ For more on what became the Armed Forces Epidemiological Board, see Woodward TE. *The Armed Forces Epidemiological Board: Its First Fifty Years*. Washington, DC: Borden Institute, Office of the Surgeon General, Department of the Army; 1990.

new methods of treatment, improved control measures, and a realistic educational program aimed at the individual soldier. As a result of large scale experimental studies, penicillin was found to be highly successful in the treatment of the three most prevalent venereal diseases: gonorrhea, syphilis, and chancroid.

The importance of malaria as a source of non-effectiveness is a matter of common knowledge. Vigorous attempts have been made to combat this problem including measures to strengthen “malaria discipline”, especially under combat conditions. A minimum of four hours basic instruction on malaria control is given everyone in the Army for the purpose of impressing upon the individual soldier the necessity of observing personal precautions against malaria. Malaria control organizations, staffed with specially trained personnel, are operating in all malarious overseas theaters. The beneficial results of control measures were reflected in a decline in incidence rates during the last few months.

A promising new weapon for the control of malaria is DDT, which is effective against both larval and adult mosquitoes. Experimental work in several theaters indicates that the control of malaria will be greatly facilitated through the use of DDT.⁷ Control work at permanent posts in the United States has resulted in the lowest malaria rates ever recorded among troops in this country.

The Army’s “crawling enemies” – lice, flies, bedbugs, and other insects – were successfully attacked by increasingly effective insecticidal materials. DDT has virtually revolutionized methods of insect control. This material will be of far-reaching importance in present and future campaigns, as well as during the post-war period. The application of DDT

⁷ For specifics, see Wiltse CM. *Medical Service in the Mediterranean and Minor Theaters*, 362-365.

powder within clothing, either by hand or by mechanical dusters, has proved a successful means of controlling louse infestation in large civilian populations. A single dusting of DDT is effective from one to six months and inasmuch as the powder is water resistant, its lethal effect persists through several launderings. Approximately 30 seconds are required to delouse an individual. These features of DDT make it of immense significance in combating the threat of typhus epidemics. Its value in this connection was conclusively proven by the work of the United States Typhus Commission during the Italian campaign. More than a million susceptible civilians of Naples were deloused with DDT and the threat of a typhus epidemic was stopped. DDT is a critical item of supply and highest priority has been given to all chemicals and materials entering into its manufacture. Production figures have been stepped up to meet requirements of the Army and our allies. The estimated output for June was 450,000 pounds.

In the 620 Army-operated industrial installations employing approximately 900,000 workers, industrial medical dispensaries and aid stations have been provided and staffed with trained personnel. Pre-placement physical examinations, general health and immunization programs, and accident-prevention campaigns have been carried out. Mass tuberculosis surveys have been undertaken at certain plants, resulting in the taking of over 176,000 x-ray plates. Six small Army hospitals for the care of industrial civilian employees and their dependents have been established in "remote" areas where no civilian medical services were available. This program has tended to decrease absenteeism and has had a marked effect on reducing occupational disease to a minimum. It has also increased production.

The Armored Medical Research Laboratory at Fort Knox, Kentucky, and the Army Industrial Hygiene Laboratory at Baltimore, Maryland, both Class IV installations⁸ under The Surgeon General, have performed research work relative to the control of occupational health hazards and medico-physiological and safety factors associated with the operation of armored vehicles.

The training and assignment of nutritional officers has continued. Overseas studies of nutrition requirements and the adequacy of rations have been made and recommendations for improvements submitted.

Sanitary engineering activities have insured pure drinking water, adequate bathing and swimming facilities, and proper disposal facilities for waste and garbage.

Penicillin

Penicillin is an especially important agent in military medicine.⁹ It deserves special mention in this report as knowledge of its therapeutic value was greatly accelerated during the fiscal year. Within this period of time, penicillin has grown from a little-known laboratory curiosity into a life-saving drug of great value in military medicine. Perhaps never before in the annals of medicine has the gap between clinical experiments and practical application of a drug been bridged in so short a time.

Although many agencies played a part in developing penicillin and establishing its clinical uses, none did more to confirm and to expand its range of usefulness than the Army Medical Department. The Army program of penicillin experimentation began at Bushnell General Hospital in April 1943. Later, in June 1943, studies commenced at Halloran General

⁸ i.e. organizations under The Surgeon General's control.

⁹ On penicillin, see Hare R. *The birth of penicillin and the disarming of microbes*. London, Allen and Unwin; 1970.

Hospital. Each of these installations functioned as “schools” in penicillin therapy where medical officers from 24 other general hospitals were trained to carry on penicillin studies at their own stations. While the two centers were operating, the supply of penicillin was so meager that the drug was doled out with the strictest economy in order to ascertain more exactly the usefulness of this new agent, to determine its indications and contra-indications, and to standardize therapeutic procedures associated with its use.

Among the diseases selected for early penicillin treatment were osteomyelitis and other wound and systemic infections, and sulfa-resistant gonorrhea. The latter disease was selected for penicillin therapy because of its importance as a cause of loss of time from duty. Former methods of treating sulfa-resistant gonorrhea were lengthy, time-consuming, and arduous. It was found that penicillin could achieve prompt cures in practically 100 percent of all cases. This use alone established penicillin as a therapeutic agent of immense value in the military service.

In spite of great technical difficulties, progress in the manufacture of penicillin was swift. As greater amounts of the drug became available, the Army’s program of penicillin therapy expanded. Twenty-eight general hospitals were engaged in the study of penicillin in surgical infections by 1 January 1944, while 16 centers were carrying forward studies on the treatment of sulfa-resistant gonorrhea.

As a result of the intensive studies undertaken in Army hospitals in the Zone of the Interior, it was felt that sufficient evidence had been obtained to justify the use of penicillin in overseas theaters. Many

cases treated in this country were evacuees with infected wounds that required prolonged hospitalization and were often life-endangering. It was realized that if penicillin could be administered early, i.e., as soon as possible after injury, infection might be more effectively controlled, complications prevented, and recovery hastened. Therefore large amounts of penicillin were sent to various theaters of combat where it was administered early under the supervision of trained medical officers. Since penicillin has been taken to the front lines, duration of hospitalization has decreased and a greater number of men have been returned to duty. At first the use of penicillin was greatly limited in combat zones by the need for refrigeration and by the very short effective period of the drug. The latter difficulty has been largely eliminated as the potency period has been extended from 3 to 6 months or longer.

As a therapeutic agent, penicillin is unique in many respects. It is derived from a new source of healing agents – the microorganisms of the earth. From a medical standpoint, however, its most attractive features are its enormous antibacterial power and its remarkable freedom from toxicity. It is not in any sense a cure-all, as Army experiments have shown. For example, penicillin is of no value in the treatment of malaria – one of the Army's leading health problems. But its range of effectiveness in conditions that occur relatively frequently among military personnel makes its value self-evident.

Case reports on all Army patients treated with penicillin have been carefully collected and analyzed by the Medical Department. A wealth of

authoritative information has been recorded, particularly in regard to the treatment of surgical infections. Current investigations of the value of penicillin in early syphilis, and in many acute infectious diseases, will go a long way toward advancing the proper use of this drug.

Contrary to a widespread misconception, the Army has neither controlled nor received the entire supply of penicillin. The War Production Board allocated penicillin and the Army's share has averaged about 50 percent of total production. The supply for civilian use was allocated by a civilian director. Thanks to the increasing output of penicillin, greater quantities are now available both for civilian and military medical needs.

The potentialities of penicillin have not been fully explored and in the year ahead even greater attainments may attend its use. One objective of current penicillin research is to synthesize the drug with known chemicals in the same way that vitamins have been synthesized. Progress is being made in this direction and another year may witness this achievement. Meanwhile, the advent of this life-saving drug affords a satisfying contrast to the destruction that is basic to all war.

Medicine

Medical care in Army installations has continually improved as a result of accumulated experience and the development of new methods of diagnosis and treatment.¹⁰ To insure the highest quality of professional care for the sick and wounded, the consultant system has been broadened and educational programs devised for the exchange of medical information.

In addition to the regularly assigned medical officers who serve as

¹⁰ Some 20 of the historical volumes published by the Office of The Surgeon General cover advances in professional medical matters, including surgery, medicine, and psychiatry.

consultants to Service Commands and to surgeons in overseas theaters, 19 outstanding physicians in selected internal medicine specialties were appointed as consultants to The Surgeon General. These civilian consultants are used from time to time in formulating policies regarding the management of specific diseases. Their work has been of great value in maintaining proper professional standards in Army hospitals.

Clinical work in military hospitals covered a wide range of diseases and their treatment. Special interest centered upon the use of penicillin in acute infectious diseases. Emphasis was placed upon proper dosage and spacing of administration to increase the drug's effectiveness, as well as to conserve the available supply.

Reports from overseas theaters have shown that, with the exception of malaria, tropical diseases cause relatively little embarrassment to military operations. Nevertheless, tropical diseases have been studied in anticipation of their introduction to this country by Army personnel from overseas. One general hospital has been designated for the specialized treatment of these diseases. It is expected that improved treatment at the Tropical Disease Center will diminish hospitalization and permit the retention in the service of a large proportion of individuals once infected.

As a result of careful research and overseas experience, directives on the treatment of malaria were revised and many important aspects of malaria therapy were clarified. It was demonstrated that atabrine possesses various advantages over quinine and that penicillin is useless in malaria treatment; that atabrine is as effective in the treatment of malaria as

quinine; and that suppressive doses of atabrine can be given to large organizations heavily infected with malaria so that the organizations can be held together, retrained, and returned to combat. Valuable data never before available on malaria, especially with reference to relapses, were acquired.

In the broad field of tuberculosis control, continued efforts have been made to prevent entrance of individuals with active tuberculosis into the Army and to dispose of cases discovered after entrance on active duty. Present policy calls for early discharge of tuberculosis cases to facilities of the Veterans Administration or, in certain cases, transfer to Fitzsimons General Hospital, where methods of treatment are well established.¹¹ Approximately 4,000 soldiers have been discharged because of tuberculosis during the past year. A fair picture of the efficacy of the Army tuberculosis program is afforded by comparing the hospital admission rate for tuberculosis in World War I, which averaged 13.0 per 1,000 men per year, with the World War II rate which has dropped from a peak of 3.0 admissions per 1,000 men per year to 0.9 in recent months. The average for 1943 was 1.2.

Neuropsychiatry

While neuropsychiatric disorders still constitute a major medical problem of the Army, marked strides have been made in lessening its magnitude.¹² A large percentage of combat casualties were returned to duty as a result of early treatment. Increasing emphasis on proper job assignment also enabled many individuals with neuropsychiatric difficulties to remain in the Army and render valuable services. Recognition of the importance of morale and motivation and the relationship

¹¹ This was before effective drug therapy for tuberculosis, and care and recovery were prolonged. The VA had substantial experience with TB patients, who were unlikely to return to duty.

¹² See Anderson RS, Glass AJ, Bernucci RJ, eds. *Medical Department, United States Army, Neuropsychiatry in World War II, Volume 1, Zone of Interior*. Washington, DC: Office of The Surgeon General, Department of the Army; 1966 and Mullins WS, Glass AJ, eds. *Medical Department, United States Army, Neuropsychiatry in World War II, Volume 2, Overseas Theaters*. Washington, DC: Office of The Surgeon General, Department of the Army; 1973.

of these factors to neuropsychiatric casualties likewise helped to salvage many men.

Earlier in the war, Army psychiatrists were primarily concerned with the disposal of psychiatric cases. Emphasis, however, has shifted from diagnosis and disposal to prevention of mental casualties. Consequently, study has been concentrated on the causes of mental breakdown and their elimination. This involved a searching analysis of the everyday problems of the soldier. length of combat, exhaustion, extremes of temperature, mental fatigue, misassignment, low morale, poor leadership, lack of personal conviction as to the necessity for fighting this war, and other factors were found to precipitate psychiatric breakdowns. To prevent them, control or modification of the causative factors was necessary.

Despite the acute shortage of psychiatrists, steps were taken to implement the preventive psychiatry program. The first was to place psychiatrists in each basic training center of the Army. Here they engaged in the triple function of screening, prevention, and treatment. Other psychiatrists were assigned to combat areas where they could detect signs of impending mental disorders and institute early treatment.

Preventive psychiatry has been undertaken primarily through an educational program. Attempts have been made to teach military personnel the principles of good mental hygiene based on knowledge of human behavior. It is believed that this knowledge can be used in maintaining individual mental health and in solving some of the problems of leadership and morale. Radio programs, films, posters, and other informational

material was used to impress upon troops the fact that the nation as a whole is threatened by the enemy and that every individual must fight for the country's survival. There has been close collaboration between the Office of The Surgeon General and the Morale Services Division in these educational activities.

Treatment of psychiatric casualties was based on several clearly defined premises. First, every case was regarded as salvageable until proved otherwise, and treatment priority was given to those expected to return to duty. Secondly, every case was regarded as a medical emergency as immediate treatment often prevents symptoms from becoming fixed. In combat areas and in division and replacement training centers, cases were seen early. A third principle of treatment was that of keeping psychiatric patients out of hospitals. It was well recognized that hospitalization has the effect of exaggerating the concept of illness in patients' minds. As a consequence, they were treated on an out-patient basis, but in a military atmosphere and under strict discipline. A fourth treatment principle was based on the fact that many psychiatric cases were caused by situational reactions. Every effort was made to modify or remove the situational factor believed to have precipitated the disorder. This applied particularly to the problem of job assignment. Attempts were made not only to assign individuals to jobs for which they were emotionally fitted, but also to train them for specific jobs as an integral part of treatment. Group psychotherapy was rapidly adopted and increasing use made of occupational therapy, recreation, athletics, and music. Two hospitals in this country were exclusively devoted to

the care of psychotic patients. In addition, 16 centers were established for the treatment of men returning from overseas.

Assignment of neuropsychiatrists to all divisions was authorized on 19 October 1943. Sixty-one neuropsychiatrists were assigned to divisions in November 1943, as members of the staff of the division surgeons. The functions of the division neuropsychiatrists embraced all matters pertaining to the mental health of the command. Special attention was devoted to preventive psychiatry, particularly its relation to discipline and morale. Primarily, psychiatrists sought to prevent indiscriminate evacuation and to administer prompt therapy. Thus they conserved manpower. It was demonstrated anew that appropriate treatment administered at the clearing station resulted in the return of more neuropsychiatric casualties to duty than when treatment was initiated in rear echelons.

The necessity for manpower conservation led to the study of means of using soldiers with psychoneurotic disorders. It was believed many were salvageable. Moreover, these soldiers when hospitalized occupied 10,000 to 12,000 beds. An experiment to determine salvageability among this group was authorized on 5 February 1944, and was conducted at ASF Training Centers located at Aberdeen Proving Ground, Maryland; Fort Belvoir, Virginia; and Camp Lee, Virginia. In the initial experiment, 1,253 patients were chosen for retraining. Results indicated that a total of 880 (70 percent) of the troops were retrainable to an assignable level.

A standard program for the reconditioning for neuropsychiatric

casualties was developed. It provided for treatment of patients in groups rather than on an individual basis and included full-time compulsory activities in physical reconditioning, group psycho-therapy, occupational-industrial therapy, and recreation. Patients were housed outside hospitals, thus freeing large numbers of beds for cases requiring hospital care.

Follow-up studies were undertaken on some 5,000 men discharged from the service because of psychoneuroses. An attempt was made to find out how many were working, the number needing psychiatric or medical care, and the number receiving such. Information was also secured as to how long it took these men to get back to work after discharge and whether or not difficulty was met in obtaining employment because of medical discharges.

Because of widespread public misunderstanding of psychiatry, and particularly of the term “psychoneurosis”, efforts were made through the press, radio, and lectures to correct the public’s false conceptions regarding mental illness. It is hoped that this educational campaign will help to remove the stigma attached to present-day psychiatric terminology and that this will pave the way for a more rapid adjustment and a more ready acceptance of men returning to civil life because of neurotic symptoms.

Surgery

Mortality among battle casualties in this war, in comparison with previous wars, has been materially reduced.¹³ Many factors have played a part in this accomplishment, including the efficient use of personnel. The proficient skill of the surgeons who are operating farther forward in combat areas than ever before has yielded high dividends in

¹³ In date order, the surgery series of official histories is: Bunnell S, ed. *Medical Department, United States Army, Surgery in World War II, Hand Surgery*. Washington, DC: Office of The Surgeon General, Department of the Army; 1955; Coates JB, DeBakey ME, Giddings WP, eds. *General Surgery, Volume 2*. 1955; Elkin DC, DeBakey ME, eds. *Vascular Surgery*. 1955; Coates JB, Cleveland M, McFetridge EM, eds. *Orthopedic Surgery in the European Theater of Operations*. 1956; Coates JB, Cleveland M, McFetridge EM, eds. *Orthopedic Surgery in the Mediterranean Theater of Operations*. 1957; Coates JB, Randolph ME, Canfield N, McFetridge EM, eds. *Ophthalmology and Otolaryngology*. 1957; Coates JB, Spurling RG, Woodhall B, McFetridge EM, eds. *Neurosurgery, Volume 1*. 1958; Coates JB, Spurling RG, Woodhall B, McFetridge EM, eds. *Neurosurgery, Volume 2*. 1959; Coates JB, Carter BN, McFetridge EM, eds. *Activities of Surgical Consultants, Volume 1*. 1962; Coates JB, Berry FB, McFetridge EM, eds. *Thoracic Surgery, Volume 1*. 1963; Coates JB, Carter BN, McFetridge EM, eds. *Activities of Surgical Consultants, Volume 2*. 1964; Ahnfeldt AL, Berry FB, McFetridge EM, eds. *Thoracic Surgery, Volume 2*. 1965; Mullins WS, Cleveland M, Shands AR, McFetridge EM, eds. *Orthopedic Surgery in the Zone of Interior*. 1970; Patton JF, ed. *Urology*. 1987.

terms of lives saved. Their work is a splendid reflection of the thoroughness of the American educational system which produced them. Of equal importance in mortality reduction are the therapeutic agents for the treatment of casualties – sulfa drugs to prevent infection, morphine to relieve pain, plasma to counteract shock, and penicillin to combat many formerly hopeless conditions. Other factors which have helped to hold mortality to a record low are the movement of hospital facilities, with Army nurses, as close as possible to the battle lines to insure prompt surgical treatment; provision of modern surgical equipment; greatly improved methods of resuscitation; and utilization of surgical consultants.

Improved facilities for the management of amputations were developed. Five amputation centers have been established and staffed with orthopedic surgeons and personnel skilled in making artificial limbs and in teaching their use. Between 1 January 1943 and 1 May 1944, a total of 1,670 major amputation cases were treated and provided with prostheses.

The separation of blood plasma into its various components led to the development of fibrinogen and thrombin which have been found to have practical uses in surgical conditions.¹⁴ Thrombin and fibrin have been of particular value as a hemostatic agent in brain surgery. Red blood cells, obtained as a residue from the processing of blood plasma, were found to be effective in restoring patients' hemoglobin level and red blood cell count. Accordingly, provisions were made with the American Red Cross Blood Donor Service to supply red cell solutions to all Army

¹⁴ See Coates JB, McFetridge EM, eds. *Medical Department, United States Army, Blood Program in World War II*. Washington, DC: Office of The Surgeon General, Department of the Army; 1964.

hospitals located near donor centers.

Experience has proven that whole blood, when available, is the agent of choice in treatment of the vast majority of battle casualties. As a result of reports from surgical consultants in overseas theaters indicating the great need for whole blood in addition to plasma, equipment and facilities for the procurement and administration of whole blood were perfected.

In cooperation with the Chemical Warfare Service, a head-wound gas mask and kits for the testing and treatment of water contaminated with chemical warfare agents were developed. New methods of treatment of casualties from chemical agents were introduced including an oxygen apparatus for the field treatment of 20 phosgene casualties at one time and the use of BAL¹⁵ ointment against lewisite. The gas casualty first aid and treatment kits were completely revised.

Studies of battle wounds showed that despite the great changes wrought in ordnance equipment, particularly in the development of high explosives, little change seems to have been effected in the distribution of wounds throughout the various regions of the body. Experience in the North African Theater revealed that about 80 percent of the wounds were caused by high explosives and only about 20 percent by bullets.

In the field of neurosurgery, advances were made in the repair of skull defects with tantalum plates and new methods developed in the management of peripheral nerve injuries. In the latter, tantalum foil and tantalum wire were especially useful.

Gas gangrene continued to be a serious problem and will probably increase as fighting progresses on the fertilized soil of Europe.

¹⁵ British anti-Lewisite, a paste of some therapeutic value against lewisite, mustard gas, and other blistering agents.

Penicillin offers real promise in both the prevention and treatment of gas gangrene.

Reconditioning

Establishment of a well-balanced program of physical education and occupation reconditioning for convalescent patients in all ASF hospitals was achieved during the fiscal year.¹⁶ The objectives of the program are: (1) to utilize the otherwise wasted time of recovery in profitable pursuits, (2) to return men to duty in the best possible state of physical and mental fitness, and (3) to return those unfit for duty to their homes better informed, better oriented, and better equipped to carry on their daily lives despite handicaps. Special programs and facilities for the blind and deaf have also been provided.

Throughout the reconditioning program emphasis is placed upon measures to hasten recovery. As soon as possible, bed-ridden patients participate in convalescent activities designed to restore morale and stimulate interest. Later, when patients no longer require hospitalization they are removed to barracks-type buildings, clothed in duty uniforms, and treated as soldiers. Physical fitness and military education are stressed at this stage of convalescence.

Educational reconditioning has been emphasized since physical reconditioning depends upon proper mental attitudes. Educational activities are designed to inculcate in soldiers the desire to return to duty. Therefore, military subjects – presented through reading, study, lectures, films, and discussions – are presented in an attempt to give patients a clear conception of the nature of the enemy and why we must fight this war. Subjects of historical and cultural interest are also presented.

¹⁶ On reconditioning (the contemporaneous Army term for rehabilitation), see Strickland BA, “Physical Medicine in the Army,” *Archives of Physical Medicine and Rehabilitation* April 1947:229–236; Special Exhibit Committee on Physical Medicine of the American Medical Association. “Exhibit on physical medicine: Physical therapy and rehabilitation,” *Archives of Physical Medicine*, August 1946:491–498; Shands AR and Cleveland M, “Physical therapy reconditioning and occupational therapy” in Mullins WS et al, *Medical Department, United States Army, Surgery in World War II, Orthopedic Surgery in the Zone of the Interior* (Washington, DC: Office of The Surgeon General, US Department of the Army; 1970), and chapters V, VIII, and IX of Anderson RS et al, eds., *Army Medical Specialist Corps* (Washington, DC: Office of The Surgeon General, US Department of the Army; 1968).

A thorough study of physical reconditioning has been made in relation to patients with varying degrees of disability. Gymnasias for certain general hospitals have been built and athletic equipment and supplies procured.

Occupational therapy has been carried out as an adjunct to medical treatment. In this connection, remedial occupational devices are provided to aid in the restoration of function to disabled joints and muscles. Work of prevocational value is stressed including printing and graphic arts, mechanical and blue print drawing, radio and electrical construction, photography, etc.

Special rehabilitation of the blind became the responsibility of the Medical Department on 8 January 1944, following a series of conferences of a special committee appointed by the President.¹⁷ Two general hospitals were designated for this purpose. A convalescent hospital also has been established for the personal, social, and prevocational training of the blind. About 119 blind cases have been treated.

In the three general hospitals for the treatment and rehabilitation of the deafened, special facilities have been provided, equipment procured, and outstanding teachers engaged. About 900 patients have been rehabilitated, more than half of whom were fitted with hearing aids. Men were returned to duty or discharged in an average of eight weeks, equipped in attitude and compensatory skill to carry on successfully despite deafness or impaired hearing.

Dental Service

The dental requirements for induction were lowered greatly on 15 October 1942.¹⁸ The Dental Corps then assumed the responsibility

¹⁷ See Coates JB, Randolph ME, Canfield N, McFetridge EM, eds. *Medical Department, United States Army, Surgery in World War II, Ophthalmology and Otolaryngology*. Washington, DC: Office of The Surgeon General, Department of the Army; 1957, chapter IX.

¹⁸ On dentistry, see Jeffcott GF. *Medical Department, United States Army, United States Army Dental Service in World War II*. Washington, DC: Office of The Surgeon General, Department of the Army; 1955.

of rehabilitating the men who would have been rejected as dentally disqualified.

Many of the inductees who had received little if any dental service required extractions and extensive dental treatment. Such work is important and it was essential that all that is necessary from a health and functional point of view be provided troops prior to their departure from home stations for overseas stations. This additional work with the large increase in the military personnel added greatly to the responsibility of the Dental Corps. It was able to meet this added responsibility since there were more personnel, supplies, equipment, and facilities available than previously. But even with the increased facilities it was often necessary for dental teams to use the same facilities for two or more 8-hour shifts per day. Fortunately the Dental Corps had available a sufficient number of qualified specialists to do all the special type of work required.

Since a large amount of laboratory work was required to construct the 1,300,000 dentures provided in addition to the other prosthetic appliances, laboratories were established in each camp of 10,000 men or over in addition to the central dental laboratories. When these facilities were not sufficient, work was authorized in civilian laboratories.

There were 3.6 fillings per man, or a total of 18,000,000, an increase over the year before of more than 40 percent; one tooth was replaced for each man, an increase of 250 percent; and an increase of 200 percent in dentures furnished.

An adequate number of dental officers and technicians are available

in all of the overseas theaters and satisfactory dental laboratories are operating in each one. Mobile dental laboratories and mobile dental operating units, each installed in a 2½-ton, 6x6 standard truck, are being developed for service in advanced areas.

Veterinary Service

The most important function of the Army Veterinary Service is the protection of the health of the troops by the inspection of meat, meat-food, and dairy products to insure that they are safe and wholesome for issue to troops and also that they meet specifications.¹⁹ Inspection at point of origin that was continued throughout the year has been proven to be advantageous to both the Army and contractors. Transportation is conserved and expenses and difficulties incident to replacement of unsuitable products is markedly reduced.

The Corps inspected over 7,000,000,000 pounds, of which over 500,000,000 pounds were for the Navy or Marine Corps and other agencies. This was approximately 100 percent more than in 1942. Of the total amount, 350,000,000 pounds were rejected for failure to meet specifications and 40,000,000 because of unsanitary or unsound conditions.

Specifications were developed covering many food items procured for overseas shipment to reduce losses and minimize deterioration incident to shipping, handling, and storage often under adverse climatic conditions, and also to conserve shipping space. In some of the overseas localities where the food supply problems are particularly difficult due to severe climatic and other adverse conditions, local supplies are utilized insofar as practicable. In such localities the Veterinary Corps by prescribing sanitary measures and enforcing them by complete inspection service, safeguards the health of the troops and at the same time conserves the supply.

¹⁹ On the veterinary service, see Miller EB, Coates JB, Caldwell GL, eds. *Medical Department, United States Army, United States Army Veterinary Service in World War II*. Washington, DC: Office of The Surgeon General, Department of the Army; 1961.

Eighteen veterinary officers and two enlisted technicians were assigned at the request of the War Food Administration to conduct inspection of establishments required to set aside for government purchase at least 50 percent of the products of high quality beef cattle.

Each soldier stationed in the United States during the year was furnished one-half pint per day of fresh or reconstituted milk. Where fresh milk can be made available the use of reconstituted milk is not encouraged. To provide suitable fresh milk to the camps located in areas where the supply was inadequate, pasteurized milk packaged in quart paper containers was shipped to them from localities where the supply was adequate.

The protection of the health of Army animals is a second important function of the Veterinary Corps. The importance of that function was enhanced since there was a material increase in the number of Army horses and mules, and in addition the Army had 13,223 dogs. Approximately 710,000,000 pounds of forage were inspected, medical equipment and supplies required for the treatment of dogs were procured, and a standard ration is being developed.

The health of all the Army animals was especially good. Vaccination with vaccines prepared in the Army Veterinary School prevented the occurrence of some of the more important infectious diseases. For the fifth year there was not a single case of infectious equine encephalomyelitis among the Army horses and mules although many of them were in areas where there was a high incidence of the disease among civilian animals. Also there was not a single case of rabies among the Army dogs, all of whom were vaccinated against that disease, despite the widespread incidence of it throughout the United States.

In addition to these vaccines, large quantities of other vaccines, diagnostic agents, and biological products required by the veterinary service are produced in the laboratory in the Army Veterinary School. Also much essential laboratory work is done, and a large amount of research work incident to veterinary activities is carried on. At the Remount Depot at Front Royal, Virginia, a research laboratory is maintained for the investigation of animal diseases of military importance.

Administrative Control

Studies were conducted by the Control Division that resulted in decentralization of activities from the Office of The Surgeon General that could be conducted as well in the field.²⁰ These included activities of the Supply Service and the Fiscal Division. The movements have reduced the personnel in the central office and at the same time have increased the efficiency of the organization.

At the suggestion of the Control Division, a qualified expert from private industry made a study of the electrical accounting machines in the office. His recommendation resulted in the saving of a considerable amount of money for rental of machines and a reduction in the operating personnel.

A review of hospital administration has enabled the Control Division to make recommendations that should result in increased efficiency and in lowering operating expenses.

Similar studies with like results were conducted of the operation of medical supply depots.

Hospital Service

During the war the construction phase of the Army hospital program in the Zone of the Interior neared completion.²¹ Emphasis could now be placed on securing the most efficient use of medical

²⁰ See Coates JB, Wiltse CM, eds. *Medical Department, United States Army, Organization and Administration in World War II*. Washington, DC: Office of The Surgeon General, Department of the Army; 1963.

²¹ See Smith CM. *United States Army in World War II, The Technical Services, The Medical Department: Hospitalization and Evacuation, Zone of Interior*. Washington, DC: Center of Military History, United States Army; 1956.

and hospital facilities.

The number of general hospitals increased from 39 on 30 June 1943 to 60 available or authorized 30 June 1944, and the beds from 51,280 to 112,547. Convalescent facilities in general hospitals were also increased. No additional general hospitals are contemplated. In addition, the number of station hospitals was increased from 431 to 478 and the beds from 218,166 to 258,811. New construction was, for the most part, the emergency cantonment type, but semi-permanent construction was used whenever practicable.

The Army Air Forces and the Army Service Forces each designated 30 station hospitals as regional hospitals, to provide more complete hospitalization within reach of all posts in continental United States. Facilities were provided in 44 general hospitals to furnish specialized medical and surgical diagnosis and treatment. Many of these hospitals handled several specialties. The number providing for each specialty follows: arthritis, 1; tuberculosis, 1; syphilis of the central nervous system, 12; neuropsychiatry, 19; neurosurgery, 18; histopathologic centers, 15; vascular, 3; surgery, 6; blind, 2; deaf, 3; deep x-ray therapy, 2; radium therapy, 3; prisoners of war general treatment, 12; prisoners of war specialized treatment, 4.

Facilities were made available for the hospitalization of the Women's Army Corps, and retraining and reconditioning of convalescents. Occupational therapy facilities were developed in general hospitals. Central medical service was established in all the larger hospitals. Air conditioning was provided in operating rooms, and

in certain clinics where required by climate. Nurses' call systems were installed to provide better service for patients. Selected books were made available for patients; hospital libraries began to grow in number and size. Plans were made for the development of pre-fabricated hospital buildings for overseas use; some were constructed.

Eighteen additional hospital ships were planned to bring the total to 24. Eight such vessels are now in service; twelve will soon be commissioned. These ships are designed or converted to meet Medical Department standards and requirements. The magnitude of the requirements is indicated by the fact that over 76,000 patients have been evacuated by water from overseas during the first eleven months of the year, almost 1/3 of the total were from the North African Theater. Rapid progress was made in air evacuation; 7,240 patients were evacuated to the United States; almost 175,000 casualties were evacuated by this means within the theaters. Efforts are being made to reduce the number of transfers of patients by rail in this country so that they may obtain definitive treatment with the least possible delay.

All activities relating to the medical care and welfare of women in or connected with the Army were centered and placed under the direction of a woman medical officer.²² The selection of physically qualified women for the Army has been studied; physical standards applicable to women outlined; and uniform examinations assured by directives. The selection of Women's Army Corps applicants included a careful study of social, educational, and psychiatric backgrounds. Emphasis has been placed upon maintaining physical fitness in the Women's Army Corps. The effect of the training program upon

²² Dr (Major) Margaret Craighill. See http://www.nlm.nih.gov/changingthefaceofmedicine/physicians/biography_72.html.

the health of enlisted personnel of that Corps has been watched carefully.

The Medical Department Prisoner Liaison Unit has assisted in clarifying the Articles of the Geneva Convention of 1929 pertaining to sick and wounded prisoners of war. It assists in the Liaison service of the Legation of Switzerland and the International Red Cross which present the complaints of prisoners of war of all forces, except Japan. The Unit has interviewed sick and wounded German and Italian prisoners to enable it to either refute or substantiate complaints made by them in hospitals. It has taken steps to provide that medical officers and other sanitary personnel of enemy powers detained may be of the most efficient use to their own nationals, also relieving United States medical personnel. Attempts are being made to establish a centralized pool of such enemy medical and sanitary personnel. The Unit assists in initiating steps for repatriation of such sanitary personnel and permanently disabled prisoners of war as may be possible by reciprocity.

The Medical Department placed approximately 20 laundries in operation in the Zone of the Interior; 50 laundries and 2 dry cleaning plants are now in operation. A plan was devised to use salt water for laundering on hospital ships; this procedure, it is believed, will reduce the use of fresh water 70 percent or more.

Personnel

During the last two years the Medical Department personnel increased as follows:²³

²³ See Coates JB, Wiltse CM, eds. *Medical Department, United States Army, Personnel in World War II*. Washington, DC: Office of The Surgeon General, Department of the Army; 1963.

	1942	1943	1944
Medical Corps	16,872	37,145	43,474
Dental Corps	4,500	12,046	15,271
Veterinary Corps	916	1,836	2,093
Pharmacy Corps	Nil	Nil	58
Medical Administrative Corps	1,900	11,623	15,262
Sanitary Corps	635	1,755	2,380
Army Nurse Corps	12,475	30,986	40,140
Dietitians	Nil	236	1,254
Physical Therapy Aides	Nil	356	675
Public Health Officers detailed with the Army	Nil	39	43
Contract Surgeons	41	250	204
Enlisted Men	187,801	513,924	532,771

It was difficult during the past year to secure the additional Medical Corps officers needed to meet the requirements of the increasing Army since there are not sufficient physicians available to meet both military and civilian medical needs. The Procurement and Assignment Service, War Manpower Commission, has the responsibility of insuring the equitable distribution of those available. Consequently all applications for commission must be cleared by that office. The Army has reduced its requirements of 8.5 medical officers per 1,000 soldiers for duty in theaters of operation and 6.5 for duty in the United States to 6.5 and 4.6 respectively. This deficiency has been met in part by the use of Medical Administrative Corps officers as assistant battalion surgeons, in addition to the nonprofessional positions to which they were assigned formerly. Early in 1944, 1,500 of them received special training as assistant battalion surgeons.²⁴

The over-all Medical Department procurement objective for the year was approximately 10,000 physicians including an estimated 3,000 interns and hospital residents. Of this number, 500 interns were placed on active duty in July 1943 and 2,000 in January 1944. The young medical officers,

²⁴ See Ginn, RVN. *The History of the U.S. Army Medical Service Corps*. Washington, DC: Office of The Surgeon General and U.S. Army Center of Military History; 1997, chapters 5 and 6.

who are called to duty upon completion of their internships, are especially desirable for duty with troop organizations in the theaters of operation.

The Army Specialized Training Program will provide additional officers as interns [to] complete their service of nine months in civilian hospitals with three additional months in Army hospitals. To 30 June, recent graduates appointed as first lieutenants in the AUS were approximately: Medical Corps, 2,850; Dental Corps, 1,180; and Veterinary Corps, 100. Most of the Medical Corps officers are still on duty as interns in civilian hospitals. Veterinary and pre-veterinary and dental training will be drastically cut. In addition, reservations of medical schools for 1945 have been reduced from 55 percent of the freshman class capacity in participating schools to 28 percent.

The applications of over 14,000 physicians and dentists who had previously been disqualified physically were reviewed; about 700 were tendered commissions.

The requirements for Medical Corps specialists, particularly for theater of operation hospitals, became more acute. Consequently very careful study was made of qualifications and assignments of all Medical Corps officers to locate the ones qualified for assignment as specialists. Following that study, the Army Air Corps was directed by the Secretary of War to release 700 Medical Corps specialists for reassignment.

In accordance with this an agreement of the Secretary of War and the Administrator of Veterans Affairs in December 1943, 984 physicians who were on duty with the Veterans Administration were commissioned in the Medical Corps of the Army in grades commensurate with their former civil service ratings and placed on duty with that organization.

During the year the War Department made strenuous efforts to assign to organizations for overseas service all physically qualified men under 36 with one year of Army experience and who had not served overseas. In the reassignment some trained Medical Department enlisted men were transferred to units for whose work they were not trained. Attempts have been made to prevent such mal-assignments and in addition to obtain qualified specialists for the Medical Department from other branches.

Limited service enlisted men, enlisted men returning from overseas, and members of the Women's Army Corps were assigned to Zone of Interior installations to replace enlisted men transferred to overseas units, and additional civilians were employed. Frequently the number available of the four groups were not sufficient to meet the requirements, and in addition many of the civilians were not suitable for the work. There were 84,791 enlisted men and 61,644 civilians on duty in ASF station and general hospitals in May 1944. This represented a decrease of 6.5 percent in the number of enlisted men and an increase of 34.8 percent in the number of civilians since December 1943.

Army Nurse Corps

There is an insufficient number of trained nurses to meet the requirements of the military service and civilian communities.²⁵ The Procurement and Assignment Service, War Manpower Commission, has the responsibility of insuring an equitable distribution of them. The American Red Cross continues to function as the official recruiting agency and evaluates the credentials of all applicants for appointment. In addition, the Red Cross has accepted the responsibility for clearing all application papers of nurses with the War Manpower Commission. The Bolton

²⁵ On nursing, see Coates JB, Wiltse CM, eds. *Medical Department, United States Army, Personnel in World War II*. Washington, DC: Office of The Surgeon General, Department of the Army; 1963 and Sarnecky MT. *A History of the U.S. Army Nurse Corps*. Philadelphia, PA: University of Pennsylvania Press; 1999.

Act provides for federal aid in training additional nurses.²⁶ The Medical Department has assumed the responsibility of accepting 1,500 senior cadets every six months for training in general and station hospitals. Thus far 442 senior cadets from 153 schools of nursing have been assigned to 19 Army hospitals. Further assignments will be made every two weeks.

To reduce the number of nurses required, the proportion to hospital beds has been reduced from one nurse to 10, to one to 12 beds. Nurses' aides are also used to do nurses' nonprofessional duties.

During the year 11,133 nurses were added to the Corps and on 30 June there 40,140 on duty. The authorization has been increased to 50,000.

In May 1944, 217 Negro nurses were on duty in the Army Nurse Corps. They were assigned to installations where there are a substantial number of Negro troops. An additional 200 are being appointed.

Basic military training is being provided for newly-appointed nurses in each Service Command. A 6-months course was established in general hospitals to train nurses as anesthetists of which there is a shortage in the Army. One hundred eight have completed the course.

All requisitions for nurses from theaters of operation have been filled and there are now over 20,000 serving in overseas theaters. This is a higher proportion than that of any other corps of the Medical Department. In the theaters the nurses are serving in hospitals nearer the front than ever before.²⁷ To meet the requirements for such work, a field uniform has been designed. Many reports have been received commending them for their efficiency and coolness in caring for the wounded under direct fire.

²⁶ This law created a Cadet Nurse Corps, administered by the Public Health Service, to train nurses. The last six months would be on-the-job training.

²⁷ This is something of an exaggeration. In WWI, Mobile Hospitals (the forerunner of Surgical Hospitals of WWII and Mobile Army Surgical Hospitals of Korea) operated as far forward as their successors.

Six nurses were killed on the Anzio beachhead. Ninety-two nurses have been decorated with the Purple Heart, the Soldier's Medal, the Legion of Merit, the Silver Star, the Bronze Star, or the Air Medal. The Gardiner General Hospital was named in honor of Lieutenant Ruth M. Gardiner, killed in a plane crash in Alaska, and two hospital ships have been named for members of the corps, Major Emily H.M. Weder and Lieutenant Blanche F. Sigman; the latter was killed at Anzio.

Increase in promotion, standardization of uniforms suitable for varying circumstances under which nurses work, and the basic training programs have contributed to the high morale of the nurses and aided in their procurement.

In every theater and under the most trying of circumstances Army nurses have fulfilled their mission with efficiency, dispatch, courage, and calm fortitude. Despite the many physical hardships they meet by serving with the forward echelon, the numbers of volunteers exceeds the number requested.

Physical Therapists and Dietitians

Female dietitians and physical therapists are an essential part of the personnel of a modern hospital.²⁸ The Congressional Act approved 22 December 1942 provided that during the period of the war and six months thereafter they should have relative rank and receive the pay and allowances of commissioned officers. Prior to that time a limited number served as civilian employees in the larger Army hospitals.

The dietitians do much to insure the economical use of food products, as well as to enhance the attractiveness and palatability of diets. They are responsible for each patient's receiving the diet prescribed

²⁸ See Anderson RS, Lee HS, and McDaniel ML eds, *Army Medical Specialist Corps*. Washington, DC: Office of The Surgeon General, Department of the Army, 1968, chapters I, V-IX.

by the medical officer, just as a trained nurse insures the correct administration of medicinal agents.

Physical therapists, by the skillful application of physical therapy measures prescribed by the attending medical officer, do much to relieve the discomfort of patients and to hasten their recovery. Such measures are particularly beneficial in the treatment of the residuals of war wounds.

There is an insufficient number of properly trained dietitians and physical therapy aides to meet the requirements for the military service and to continue the necessary work in civilian hospitals. Consequently, additional training programs have been instituted.

Training as physical therapists was provided in civilian institutions and Army hospitals for members of the Women's Army Corps and for qualified civilians. It is estimated that 120 graduates will be available for appointment each three months beginning in July 1944. Approximately 650 graduate physical therapists are now on duty.

Six-months' courses for dietitians were established in Army hospitals for qualified individuals. Students who successfully complete the course will be eligible for appointment as dietitians. There are now 1,300 graduate dietitians on duty in Army hospitals, more than half of whom are serving overseas in evacuation, station, or general hospitals.

Operations and Training

In July 1943 four medical replacement training centers were training basic trainees; eleven schools, five of them operating on a double eight-hour shift, were engaged in the training of Medical Department enlisted technicians; the Medical Administrative

Corps Officer Candidate School at Camp Barkeley had reached a capacity of 1,000 candidates per month; and the extensive training of commissioned personnel in military installations had been augmented by professional courses in 14 civilian institutions.²⁹

There was a general contraction in Medical Department training capacities throughout the greater part of the year. The troop requirements for 1944, however, made it apparent during the latter part of the fiscal year that capacities would have to be increased sharply to meet the demand for personnel. As the year closed, Medical Department training was again on the upward trend, and the peak capacity load of training facilities in July 1944 was greater than the apparent peak of 1943.

The trend from peak, through a general decline, to a new upswing, can be clearly seen in the various categories of training. In October 1943, the Medical Department Training Centers at Camps Pickett and Robinson were closed, and the capacities in the remaining two decreased to 18,000 trainees. This reduced flow of trainees continued until March when capacities were increased to meet new requirements. By 30 June 1944 the capacity had reached almost 75,000. Training facilities were expanded in Camps Barkeley and Grant. Camp Ellis, Illinois, used throughout the year as a Unit Training Center, was expanded and a new center was opened at Fort Lewis, Washington. During the year 93,000 men were trained in the Medical Department Replacement Training Centers.

MTP³⁰ 21-3, effective 1 May 1944, continued the basic training cycle of 17 weeks. The most radical change affecting medical trainees was the addition of 90 hours of basic military training with weapons, including rifle, bayonet, carbines, and grenades.

²⁹ See Coates JB, Wiltse CM, eds. *Medical Department, United States Army, Personnel in World War II*. Washington, DC: Office of The Surgeon General, Department of the Army; 1963.

³⁰ Mobilization Training Plan, an Army standard syllabi for training.

Capacities of Medical Department enlisted technician schools were reduced in the fall of 1943. On 1 April 1944 the capacities of these schools were restored to near their former level, and the two-shift schedule restored in five of the schools. Plans were approved for the establishment of auxiliary facilities in hospitals located near Medical Department enlisted technicians schools. These plans will increase the capacity of these schools to a peak greater than that of 1 July 1943. Approximately 15,000 men have been trained in the enlisted technicians schools since 1 July 1943.

The first step in the reduction of the capacity of the Medical Administrative Corps Officer Candidate School at Camp Barkeley extended the course from 12 to 17 weeks on 1 July 1943. It was then reduced gradually. By January 1944 a single class of 50 candidates was admitted every 17 weeks. As the need for these officers again became urgent, the expansion of the schools was approved. On 26 May 1944 a class of 250 entered the School at Camp Barkeley, and on 24 June 1944 the one at Carlisle Barracks, Pennsylvania, was reactivated with an entering class of 250. A minimum of 1,500 officer candidates must be trained prior to 31 December 1944.

Carlisle Barracks continued to offer the basic course for newly-commissioned medical officers with a continued capacity of 300 officers every two weeks. In January 1944, the large number of interns coming into the service overtaxed the capacity at Carlisle so that facilities had to be made available to train 812 in a single class at Camp Barkeley. It is contemplated that a similar course will be offered at Camp Berkeley in the fall.

Contracts with all but two civilian institutions for the training of commissioned personnel were terminated toward the close of 1943. Training facilities of service installations have been utilized instead. Because of the critical shortage of Medical Corps officers a six weeks' course was established at Camp Barkeley to train qualified Medical Administrative Corps officers as battalion surgeon's assistants. More than 1,500 graduates will relieve medical officers for professional assignments.

Other courses established included those in Equipment Maintenance and Optical Care for enlisted men, and a refresher course in Medical and Surgical Care of Battle Casualties for the Army Ground Forces Officers.

The Army School of Malariology in the Panama Canal Zone was opened in February 1944. It offers a four weeks' course in malariology to instruct selected officer and enlisted personnel in malaria control and malaria survey units.

In order to economize in Medical Department personnel and at the same time to enable the units to operate more efficiently, revised tables of organization and equipment, and, in addition, equipment lists, were prepared for numbered general hospitals, gas treatment battalions, and hospital ship complements. In addition, a table of organization and equipment for Medical Department Theater Service Organization was prepared. Functional checking lists were developed for overseas mobile hospitals and laboratories.

Many additional numbered medical units were placed in training under the Army Service Forces, and the rate of movement overseas increased rapidly. There was a change in the method of training the

numbered units activated. Preactivation training was inaugurated 15 April 1944. Briefly, this scheme provides that certain officers and all men be assigned to a given unit and then be trained specifically for that unit prior to its activation. The first medical units began preactivation training on 10 May 1944; to date 138 have been placed in this type of training. These include, among others, 8 Base Depot Companies, 19 Field Hospitals, 58 General Hospitals, 14 Hospital Trains, and 12 Malaria Control Units.

The units undergoing preactivation training represent, however, but a fraction of the units activated or trained during the year. The extent to which the Medical Department was preparing to carry out its primary mission of evacuation and treatment of the sick and wounded is indicated by the fact that the following units were activated and trained: 1 convalescent hospital, 1 convalescent camp, 1 hospital center, 1 auxiliary surgical group, 101 general hospitals, 45 station hospitals, 45 field hospitals, 39 hospital trains, 8 general dispensaries, 9 medical depot companies, 8 base depot companies, 92 malaria control and 39 malaria survey units, 2 medical general laboratories, 5 medical laboratories, 5 general hospital complement units, 3 dental clinics, and 15 other units were activated. Of these 421 new units, 116 were activated in May and June 1944. These figures do not include the 89 attached medical sections also activated. The aggregate strength of all organizations trained was over 205,000.

Four hundred twenty-four medical units completed training and were moved to theaters of operations. An aggregate strength of 170,000 Medical Department personnel were sent to serve with these units or as loss re-

-placements. The number of medical officers serving overseas increased almost 100 percent.

Hospital units for overseas duty were housed and given technical training at 22 general and 45 station hospitals in the Zone of the Interior, that is, the personnel were given the opportunity to work under operating conditions. Actual functional employment of medical units was provided when practicable. As many as eight station hospitals, three general hospitals, and one field hospital were thus employed in the California-Arizona Maneuver Area at one time. Also station hospitals were established in the West Virginia and A.P. Hill Maneuver Areas. Sanitary companies were employed at ports of embarkation and at numerous posts.

A Rotation Pool provides replacements for personnel returning from overseas under the War Department personnel rotation policy. The personnel for the pool was obtained from Zone of the Interior general and station hospitals.

The promulgation of training doctrine continued to meet a vital need. Four manuals were published; 15 training films, 29 film strips, and 6 miscellaneous films were released; an outstanding graphic portfolio on first aid was prepared and distributed.

The Medical Department tentative Demobilization Plan incorporates information required to solve the problems likely to confront the Medical Department during demobilization. Discharge procedures were studied and a report form for physical examination of enlisted personnel prior to separation or discharge was developed. Plans were developed for medical supplies and equipment required for the civilian population in each country

in Europe, under “scorch” and “no scorch” conditions.³¹ In addition, a program for medical and sanitary supplies for the Philippine Islands was prepared. Assistance has been given the Civil Public Health Division in estimating medical personnel requirements for civil affairs activities in Japan.³²

Research and Development

On 1 July 1943, 59 Medical Department research and development projects were active; 61 new projects were initiated, 1 was reopened, 4 were cancelled, 50 were completed, and 15 were assigned to Supply Service; on 1 June 1944, 52 projects remained active.

Expenditures were \$457,000 in 1943, \$787,000 in 1944, in addition to funds allocated to the Board for the Investigation and Control of Influenza and Other Epidemic Diseases. Furthermore, the research facilities of civilian and other governmental agencies including the Office of Scientific Research and Development, the National Research Council, and the National Inventors Council were available to The Surgeon General.³³

There were two major changes in Medical Department research facilities. The laboratory at Edgewood Arsenal was transferred to the Chemical Warfare Service 1 July 1943. It, however, continues to cooperate with the Medical Department in the development of preventive and therapeutic measures for casualties of chemical warfare. The Armored Force Research Laboratory, Fort Knox, was transferred from the Army Ground Forces to the Medical Department. This laboratory specializes in research of medical problems arising from armored warfare.

Research was continued at the Army Medical Center, the Army School of Roentgenology, and the Veterinary Research Laboratory. The Medical De-

³¹ Presumably alternatives if the Germans implemented ‘scorched earth’ policies as they were driven back across Western Europe.

³² See Lada J, Hoff EC, eds. *Volume 8, Civil Affairs/Military Government Public Health Activities*. Washington, DC: Office of The Surgeon General, Department of the Army; 1976.

³³ See Andrus, EC. *Office of Scientific Research and Development. Committee on Medical Research. Advances in military medicine, made by American investigators*. Boston: Little, Brown and Co.; 1948.

partment Equipment Laboratory at Carlisle Barracks continued to test and develop individual and field equipment.

Forty-five new Medical Department items were developed and 83 commercial ones were standardized. Improvements recommended by operating units were effected in 51 items. All such items were tested in specialized Army medical installations or other government agencies.

Outstanding items developed include mobile optical repair, dental, and medical laboratory units. Improvements were made in hospital trains; a self-sufficient hospital car was introduced. A sterile petrolatum field dressing was adopted as standard.

Supply

During the past fiscal year some of the principal medical supply problems were: assembling of equipment and supplies for overseas units; furnishing maintenance equipment for overseas theaters; improvement in packing overseas supplies; more effective control of procurement; increased international aid; and development of adequate supplies of new drugs, particularly penicillin.³⁴

In September 1943 the St. Louis Procurement Office was discontinued and its activities transferred to the New York Office. Practically all medical procurement activities, including price control and adjustment were concentrated in the New York office. The close association of these activities had facilitated the correlation of purchases with the desired stock level and distribution requirements.

Formerly computation of requirements was made every six months. Later this was reduced to three months and eventually to two weeks. This requires a careful study of each item of supply and equipment, industrial production, time lag for production, maintenance requirements at home and

³⁴ See Anderson RS, Wiltse CM, eds. *Medical Department, United States Army, Medical Supply in World War II*. Washington, DC: Office of The Surgeon General, Department of the Army; 1968.

abroad including the probable battle losses, and an adequate stock level for a 3-months' period. Purchases are made more frequently than formerly thus reducing the volume of supplies contracted for at one time. This spreads the load more evenly throughout the industries, reduces the period contracted for to a minimum, and facilitates the rapid cancellation of contracts. The unobligated commitments dropped from a high of \$72,165,000 to \$18,666,000.

From 1 July 1943 to 1 June 1944, 4,768 contracts were released by the New York and St. Louis Procurement Offices and 9,342 were modified. New contracts were entered into amounting to approximately \$146,000,000, and net obligations to \$73,986,000. Supplies delivered, 1 July 1943-26 May 1944, amounted to approximately \$193,000,000.

The production line inspection in contractors' plants, which does not replace final inspection at place of receipt, was continued. This prevented a waste of time, material, manpower, and transportation facilities by eliminating the production and shipment of unacceptable supplies. Approximately 1,000 plants were covered by these inspections at an expense of 0.157 percent of the cost of supplies delivered.

Constant efforts have been made to conserve transportation facilities by the delivery of supplies to the nearest depot.

Adequate quantities of controlled materials were made available to the Medical Department contractors, and substitute items have met the requirements for those formerly imported by not now available. Preference ratings were sufficient usually to enable contractors to deliver supplies on schedule. In some instances, however, contractors had difficulty in obtaining shipping and packing material, which caused delay

of delivery.

The policy of the Medical Department has been to prevent the development of labor problems by educational methods and by constant effort to maintain friendly relationship between the employers and the employees. Liaison was maintained with the Selective Service boards in relation to deferment of essential employees.

Only a few cases have been closed under the amended Renegotiation Act. The net assignments for the fiscal year 1942 were 426 and for 1943, 420; 98.1 percent of the former have been completed and 42.4 of the latter. The renegotiable sales assigned for the period prior to 30 June 1943 aggregated approximately \$205,000,000; of which \$12,000,000 or 5.6 percent were recovered. All funds recovered were from sales aggregating \$106,000,000 of which there was a profit of 18.87 percent, varying from 10.33 to 25.34 percent; after adjustment it was 8.5 percent. Generally the excessive profits occurred in industries where there had been considerable expansion to meet war needs, and where it was difficult for either the contractor or the government to determine in advance a fair price.

The original price of a 250 cc. blood plasma unit ranged from \$6.75 to \$7.50 including \$0.50 paid by the Red Cross to cover servicing of blood units. Since there was such a marked difference in the cost price, an industrial engineering firm was employed to make a survey. The report from June 1943 showed that the cost of prime manufacture varied from \$2.22 to \$4.03 per 250 cc. unit. One large firm voluntarily reduced its price greatly and refunded a considerable sum. During the first six

months of 1943, sales by other producers aggregated \$4,840,000. Refunds were recovered that reduced the profit from 37.3 to 6.9 percent. Contractors are now required to file a quarterly statement of income, cost, expenses, etc. No processor has been or will be permitted to retain excessive profits on the processing of human blood for war purposes.

Production cost data are required from bidders on all items valued in excess of \$10,000. These data are analyzed to determine the fairness of prices quoted prior to purchase and are also used for negotiating price reductions where the analysis indicates over-pricing. There have been 224 reports analyzed covering 256 items. A price reduction was recommended in 26 percent of the items with a total savings of \$718,329. This statement, however, does not cover the full saving to the government, since in many instances contractors reduced materially their price when cost data were requested.

From September 1943 to March 1944 approximately 38 percent of the total procurement was placed with concerns designated by the Small War Plants Corporation. In addition a number of contracts were placed with companies having less than 500 employees that were not listed by the Corporation.

From 1 September 1943 to 1 June 1944, 1,718 contracts were terminated. Claims of contractors for reimbursement of expenditures, costs, and liabilities resulting from contract terminations have been reviewed and adjusted. Of the total number, 1,038 were terminated without cost to the government, 476 involved payment to contractors, and final settlement is pending in 210. Arrangements are made for the sale or disposal of

supplies which remain in the hands of the contractor and sub-contractor. Many items were disposed of to other federal organizations, some formerly to foreign governments, and some to non-federal agencies. In April 1944 the policy was adopted of issuing termination notices only for incompleting items. The disposal of unfinished supplies is a difficult problem due to priorities, allocations, and other devices for the control of critical materials.

Prior to 1 January 1944, shipments made for the Office of the Lend-Lease Administrator for civilian needs were valued at approximately \$2,500,000. The 1944 program, as authorized by that office, was approximately \$56,000,000.

The dollar value of medical supplies and equipment shipped for the Lend-Lease military program for the calendar year 1942 was \$11,788,000, and for 1943, \$30,626,000. The program for 1944 was approximately \$40,000,000. For the period from 1 July 1934 through 31 May 1944 the amount shipped was \$30,857,490, of which \$13,991,452 were for the United Kingdom and \$10,696,288 for the Union of Soviet Socialist Republics. French Africa received \$2,560,888 and China \$1,848,000. The remaining supplies were distributed in small amounts to other countries.

In 1942, 84,000 tons of medical supplies were received from Great Britain in reverse Lend-Lease, and in 1943, 71,000 tons. That country has agreed to furnish in 1944 medical supplies valued at \$2,271,229. In addition, supplies were furnished by the British in the Middle East and by Australia in the Southwest Pacific.

The number of depots was reduced from 20 to 15, not including the one for Lend-Lease and the five holding and reconsignment points. The amount

of storage space was reduced from 12,760,000 square feet to 9,862,000, and the personnel from 14,101 to 9,096. The receipts totaled 439,000 tons, and shipments 419,000, a net increase of 20,000 tons. There was, thus, a 22.7 percent decrease of space requirements, a 35.5 percent decrease in personnel requirements, with an increased stockage of 20,000 tons. The economy of space and personnel was accomplished without delay in handling of material by increased efficiency in operation and the installation of better equipment.

A staff of officers, highly trained in depot operations, is available at the St. Louis Depot for consultation and inspection of other depots to improve their methods of operation. Newly assigned officers from Officer Candidate Schools receive a 3-months' course of intensive training in depot operations prior to active assignment to such duties.

An "export consciousness" has been developed in depots. Very favorable reports are now being received from overseas theaters in regard to the present method of packaging. Hospitals are packaged for immediate and actual operation, and may be reassembled in the same packing cases for subsequent moves. Surgical instruments are available for immediate use when received. They remain in perfect condition for an indefinite period.

The conservation of material and equipment requires adequate care and protection while in storage and in use, with expert repair and maintenance when needed. A shop at the St. Louis Depot is manned and equipped for the highest class repair work, where the facilities are used as a training school for Medical Department personnel. The Depot, moreover, has prepared a technical manual dealing with the subject.

During the year, surplus stock amounting to \$2,944,083 was disposed of to War Department components, \$4,909,183 to other federal agencies, and \$4,147,545 to other agencies including Lend-Lease, Russian War Relief, etc.

The manufacturing facilities to meet the requirements for atabrine began coming into production on a substantial basis about June 1943. By the end of the calendar year, it has reached 85 percent of the schedule. Production has now reached 100 percent of the required output. That amount is sufficient to meet both military and civilian needs in 1944 and also the Lend-Lease requirements; 350,000,000 tablets per month. With the increased output, the price declined from \$16.50 per pound on 30 December 1943 to \$11.00 on 30 May 1944.

There are approximately 22 producers of penicillin of which 14 are contracting with the Army. The Medical Department allocation has increased from 5,000 ampoules per month to over 700,000. The period of potency has been increased from three to six months, and two firms are now delivering penicillin with a potency of nine months. All penicillin is shipped to the Kansas City Medical Depot for immediate and automatic distribution to various theaters of operation and hospitals in the United States. The Army procurement program for the calendar year 1944 is 10,587,577 ampoules, and for 1945, 17,688,360 ampoules. Recently the production capacity has been adequate for both military and civilian requirements. Since, however, the use of the drug is increasing more rapidly than production, probably the actual requirements will exceed the production capacity for some months. The average price in January was \$6.92 per ampoule, in April \$5.14, and 1 June, \$2.59.

Large requirements for gas gangrene antitoxin necessitated a great expansion of production facilities. The total capacity has been contracted by the Medical Department to fill military and Lend-Lease needs. The efficiency of the product has been increased.

When the dental standards for induction were lowered greatly, the Dental Corps assumed the responsibility of putting the mouths of soldiers in a condition necessary to maintain health.³⁵ This service required a large increase in the number of artificial teeth. Four manufacturers have been developed in addition to the one that had been in production.

Since white dressings are too conspicuous for use in the Pacific area, it was found necessary to dye them "field brown." Instructions to that effect were issued in July 1943. The contracts were modified in September and by 30 November over 13,000,000 individual dyed dressings had been delivered to the depots.

During the fiscal year 1944, requirements for blood plasma for the Army and Navy were 1,228,865 large and small packages.³⁶ During this period the Red Cross Blood Donor Service supplied the necessary number of bleedings for the purpose of preparing both plasma and albumin. From the beginning of the blood plasma program to 30 June 1944, approximately 1,215,610 large packages (500 cc.) and 2,000,000 small packages (250 cc.) were supplied. Monthly delivery schedules have been maintained and often exceeded. In addition, 250,000 large units (500 cc.) of plasma were supplied to the Free French. The blood was obtained from professional donors and processed commercially without interfering with the volunteer donor program of our Army.

³⁵ See Anderson RS, Wiltse CM, eds. *Medical Department, United States Army, Physical Standards in World War II*. Washington, DC: Office of The Surgeon General, Department of the Army; 1967.

³⁶ See Coates JB, McFetridge EM, eds. *Medical Department, United States Army, Blood Program in World War II*. Washington, DC: Office of The Surgeon General, Department of the Army; 1964.

Initially the contracts for the supply of spectacles to the military personnel were with one company. Contracts have now been made with a number of additional ones. With suitable allocation of posts, camps, and stations to the manufacturers, there is now a more even distribution of the work. The present facilities are sufficient to supply 35,000 pairs per month. Delays have been eliminated and the prescription work in the Zone of the Interior is now on a current basis.

Twenty-four optical repair installations are in operation in overseas theaters with adequate quantities of ophthalmic supplies. Fifty portable optical repair units for use in advanced positions have been distributed for use in overseas theaters. A mobile optical repair unit housed in a special body on a standard 2½-ton, 6x6 chassis truck has been developed for use in advanced areas. The unit included grinding equipment, heat, light, and running water, and can complete 80 to 100 jobs during each 8-hour day. Eight are being distributed.

Optical technicians are trained in the use of standard medical and optical repair facilities at the St. Louis Medical Depot.

There were 2,308,938 packages of medical supplies shipped to overseas theaters between September 1943 and May 1944 inclusive. The tonnage between July 1943 and May 1944 including was 155,056. This total included, in addition to the nonassembled supplies, complete unit assemblies including Medical, Quartermaster, Ordnance, and Signal supplies and equipment for: 102 1000-bed general hospitals; 86 station hospitals from 50 to 750 bed capacity; 89 hospital expansion units varying from 25 to 500 bed capacity; 54 field hospitals; 32 semi-mobile 400-bed evacuation hospitals;

nine 750-bed evacuation hospitals; three 3000-bed convalescent hospitals; five 1000-bed convalescent camps; thirty-seven 25-bed portable surgical hospitals; and 22 miscellaneous medical units.

Demobilization plans are based on the assumption that the war in Europe will be won before the Pacific War. Therefore they provide for the shift of men and material to the Pacific, the termination of unnecessary contracts, and the gradual disposal of surplus supplies.

Fiscal

The operation of the fiscal service was simplified greatly by the decentralization of its many activities to the field. In addition, functions not strictly fiscal were transferred to other divisions of The Surgeon General's Office.³⁷

There was also a redistribution and reorganization of the field fiscal offices and their subsidiary ones. Directives were issued to insure uniformity of accounting and auditing technique. Proper vouchers are prepared and submitted covering accounts within an average of 72 hours after receipt. The officers and civilian personnel have been reduced 31 percent.

The estimate of funds required in the operation of the Medical Department for the fiscal years 1945, as approved by the Bureau of the Budget and submitted to Congress, was \$492,808,000. Since \$492,808,000 already appropriated probably will remain unobligated as of 30 June 1944, and it is assumed that patriotic individuals and organizations will donate about \$5,000, the new funds required from Congress were only \$100. The carry-over of the funds referred to is due mainly to the fact that the potential battle casualties and epidemics of disease have not demanded the maximum

³⁷ See Coates JB, Wiltse CM, eds. *Medical Department, United States Army, Organization and Administration in World War II*. Washington, DC: Office of The Surgeon General, Department of the Army; 1963.

use of Army medical supplies and material.

Legal

Contract termination, cutbacks in production schedules, and the disposal of surplus property have created enlarged legal problems in the Medical Department. These problems have been expeditiously handled, and the Legal Division has engaged in active participation in the formulation of over-all policies with other legal services of the War Department.

Enforcement of the Royalty Adjustment Act to eliminate excessive royalties on patents resulted in the recovery of approximately \$2,250,000 to the government on Medical Department contracts. The Legal Division has cooperated with the Renegotiation Division in participating in its review function. Preparation of contracts for supply, training, and for research and development required continuous legal service.

The revision of Army Regulations, and the need for new circulars and directives to carry out the growing and changing needs within the Medical Department have required increased legal services. Closely associated have been the legal problems pertaining to legislation and congressional inquiries. Interpretation of statutes, regulations, and directives have been the source of much legal activity. Interpretations of the Geneva Convention pertaining to the use of the Red Cross symbol, use of hospital ships, and activities within hospitals have been consistent with the humanitarian objectives. Many line of duty issues have been determined by the Legal Division. The wide scope of war activities concerning the Medical Department has given rise to many individual problems involving legal determinations. The Legal Division performs an

assistance function to expedite the work of the various services of the Medical Department consistent with law and regulation.

Washington, D.C.

10 July 1944