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THE MEDICAL CORPS IN RED ARMY OPERATIONS ITS TASKS AND THEIR FULFILMENT

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In the fighting against the German invaders the Medical Corps of the Red Army has played an important part. The enormous scope of the operations which began suddenly in June, 1941, along a front stretching from the Barents Sea to the Black Sea made large-scale organization in the Medical Corps essential: during the period of intensive fighting on the defence the necessary units—field, army base, and front hospitals, clearing stations, and anti-epidemic institutions—were formed and equipped; an extensive network of medical institutions was organized in the rear areas; and doctors—especially surgeons—were allotted posts in accordance with their specialties. The large number of medical workers who entered the Army had to be trained in the problems of war medicine, in the methods employed in dressing and clearing stations, and in anti-epidemic technique during the course of military operations.

The Objective

In this war the Red Army Medical Corps has been and still is faced with quite concrete tasks which entail the employment of the latest ideas in war medicine. These tasks are as follows: (1) To return the maximum number of wounded to the ranks. (2) To reduce to a minimum the cases of mortality among sick and wounded at all stages of evacuation. (3) To reduce to a minimum disablement among those wounded in battle; to ensure that the maximum number of wounded retain their ability to work when their injuries prevent further service in the Red Army. (4) To prevent the spread of epidemics among the troops.

The personnel establishment of the Medical Corps, the tactics adopted under various war conditions, and the equipment and training of the personnel were all directed towards fulfilling these tasks as efficiently as possible. Success in this respect has only been possible because the Red Army Medical Corps works in accordance with a simple doctrine of war medicine under field conditions. In the main this doctrine is based on the following principles: (a) A uniform conception of the origin, development, and progress of diseases, and of the principles of surgical and therapeutical work in the field. (b) Correct sequence in the treatment of sick and wounded at various stages during their evacuation. (c) The obligatory employment of brief, accurate, and consistent medical documents, enabling the sick and wounded to be classified in a thorough manner and their treatment to be uniform at all stages of evacuation. (d) A single school of thought, with uniformity in methods of prophylaxis and treatment of sick and wounded at the various stages of evacuation. This school must be based on all that is best in modern medical science, both in the theoretical and in the practical sphere.

In modern warfare the work of the surgeons and its organization are of the utmost importance in the fulfilment of the tasks with which the Medical Corps is faced. The experience gained in war medicine during the 20th century has shown that all gunshot wounds are primarily infected. Naturally the most reliable method of combating the infection of wounds is by early primary treatment. A large number of wounded

need early surgical measures, and the best results are obtained when wounds are treated within a few hours of their infliction. This fact to a very considerable extent determines the organization and tactics of the Medical Corps in the field under various war conditions.

To ensure that gunshot wounds are treated surgically as soon as possible we have organized our field units in such a way that the wounded are removed from the battlefield even under enemy small-arm and mortar fire and given skilled surgical treatment in the field medical units. This procedure is dictated by two considerations: first, mortality among wounded in the forward area is most often due to loss of blood; and, secondly, in the army and forward base zones gunshot wounds are complicated by gas gangrene, sepsis, and shock. The chief task of the forward medical units, therefore, is to combat serious loss of blood and to give prophylactic treatment against complication of wounds. For those categories of wounded who require specialized treatment (wounds of skull, eyes, jaws, thorax, the principal long bones, and the larger joints) the Red Army Medical Corps has arranged for this to be given in all institutions, beginning with the mobile field hospitals operating in the zone of the army base. The treatment and evacuation of the slightly wounded and of medical cases are dealt with separately, beginning with the forward units. Mobile therapeutic field hospitals and mobile field hospitals for the slightly wounded are a component part of the medical service of the army in the field.

Principles of Treatment and Evacuation of Wounded

In general, the treatment of wounded in the Red Army is based on a system which deals with each stage of evacuation to a definite destination. This system consists in dividing treatment into a number of stages, without the establishment of specialized hospitals and departments. At each stage the wounded are treated by specialists, and at the same time are evacuated into rear areas of the country. Evacuation is not carried out mechanically from stage to stage, but depends on the type of wound and the condition of the evacuee and also on conditions at the front. Treatment given at the stages of evacuation is consistent and consecutive, progressing in scope and method as the distance from the forward medical stations increases. It is very important to stress the fact that the scope and methods of treatment, the organization, and the speed of evacuation are determined more by the military situation than by purely medical considerations. The following points have therefore to be taken into consideration: the type of operation in which the troops are engaged; the number and the rate of arrival of sick and wounded; the number of qualified doctors, especially surgeons, available at a given stage in evacuation; the availability of transport and the presence, quality, and length of metalled roads; the availability of premises for the accommodation of sick and wounded; the supply of stores and special equipment (surgical instruments, plaster-of-Paris, x-ray outfits, etc.); the season of the year and the state of the weather.

To carry out this system of treatment by stages during evacuation to a known destination it is not only necessary to maintain sufficient medical personnel, to render first aid, to give regular treatment, and to evacuate the wounded, but also efficiently to organize and control medical service, especially in the field. The removal of the wounded from the battlefield, the application of first aid, and primary treatment by a doctor are carried out by the forward field units of the Medical Corps, while qualified surgical treatment begins at the casualty clearing stations of army formations in the mobile field hospitals. The evacuation of sick and wounded, starting with the divisional casualty clearing stations, takes place through the medical units of army formations, on warrants issued by them. The slightly wounded that can be treated at the army base go immediately to special local hospitals; wounded needing specialized treatment are dispatched to field surgical hospitals; the sick go to therapeutic hospitals. Patients suffering from infectious diseases are isolated as soon as the diseases become known, and measures are at once taken to prevent spread of the infection; the isolated patients are then evacuated to special mobile field isolation hospitals. The system of evacuation of sick and wounded to a definite destination for qualified specialized attention provides the best possible conditions for their treatment and all the prerequisites for a rapid and complete recovery; it is at the same time a reliable means of combating mortality at all stages of evacuation, and greatly reduces later incapacitation from wounds.

The treatment of wounded at the various stages of evacuation can be carried out only when the medical service is well organized and equipped. An important factor in this respect is the correct distribution of available beds among field, base, and rear hospitals, due attention of course being paid to specialization within each zone. Our war experience has taught us that the number of hospital beds in field, base, and rear-area hospitals depends directly on the nature of operations and the general situation at the front. During the first phase of the war, for example, when our troops were withdrawing under enemy pressure, the situation demanded that the minimum number of beds be retained in the field and base hospitals. When the Red Army assumed the offensive and the rate of advance to the west quickened, it became necessary not only to make a great increase in the number of beds in field and army base hospitals but also greatly to augment the number of hospital units in these areas.

In carrying out the treatment and evacuation of wounded there are four main points on which success or failure of the system depends. First, the correct diagnosis of wounds and the proper classification of wounded at all stages of evacuation; secondly, the presence of a network of specialized hospitals at army bases and their correct clearing in the general directions of evacuation; thirdly, precision work on the part of transport and the organization of clearing centres, which ensure the rapid dispatch of wounded to the next stage; fourthly, the manœuvring of available hospitals, transport, and reserves in accordance with changes in the military or medical situation.

Principles of Organization of Anti-epidemic Work

Experience has shown that in all wars infectious diseases are a serious danger to troops in the field. The Red Army Medical Corps therefore employs a carefully planned system of anti-epidemic measures. Among the prophylactic measures adopted the most important are: constant strict medical control regarding the observation of all rules of hygiene, including personal hygiene, feeding, water supply, and billeting of troops; the systematic inspection by sanitary personnel of the territory occupied by the troops, including bath-houses, sources of water supply, slaughterhouses, bakeries, etc., and the medical inspection of the civilian population; the constant and careful sanitary reconnaissance of new areas occupied by the troops in the course of battle; prophylactic treatment of troops against possible epidemics, and the search for, registration of, and systematic treatment of chronic sufferers and carriers; extensive sanitary instructional work as a means of educating the troops and bringing about their participation in active anti-epidemic measures. On the outbreak of infectious disease the anti-epidemic measures employed include the immediate segregation of the patient for his later admission to an isola-

tion hospital, and the disinfection of his quarters and all those who have had contact with him.

In the event of the discovery of a nidus or an outbreak of any epidemic disease it is most important that all the means of combating epidemics, including isolation hospitals, should be immediately transferred to the scene of the outbreak. In practice in the Red Army, when a nidus of infection is discovered the mobile isolation hospital and other anti-epidemic units are at once dispatched to the place where the patients are concentrated. The Medical Corps is specially equipped for the carrying out of extensive anti-epidemic measures. Depending on the general military situation and the nature of the epidemic, laundry and bath-house units, etc., are allotted to the troops in the forward positions; or in cases of necessity the existing sanitary units are strengthened by disinfection companies, mobile sanitary-epidemic units from the base, etc.

The freedom of troops from epidemic diseases depends to a considerable extent on the timely sanitary reconnaissance of the territory liberated and the medical inspection of its civilian population. The Red Army Medical Corps therefore undertakes anti-epidemic work among the civilians of liberated areas as well as among the troops. The collection and analysis of data on the health of the troops and the general state of the territory occupied by them and in which they will operate, and the carrying out of necessary prophylactic measures against infection and to eliminate nidi within the army area, are done under the direction of the Army Sanitary-Epidemic Unit, which has special sections attached to the various army formations.

The system of anti-epidemic work among the troops is effected through the following urgent measures. First, sanitary reconnaissance is carried out uninterruptedly, and includes not only the zone in which the troops are actually quartered at the moment but also the area in which it is assumed they will operate when they advance; secondly, a report is made at once to every branch of the medical service concerned, and first and foremost to the immediate superior, of the discovery of all foci of infection, or of anything which may affect the troops' freedom from infectious diseases. The timely reporting of such occurrences makes it possible to take into consideration the slightest change in the epidemic situation, to adopt the necessary prophylactic measures, and to mobilize rapidly all means for liquidating the epidemic danger that has been discovered.

Thirdly, we have the careful planning of anti-epidemic measures based on the tasks to be accomplished by the troops, the analysis of information provided by sanitary reconnaissance, and the general situation with regard to epidemic diseases. The plan must include the constant and strict control of all objects of significance from the standpoint of infectious diseases; the dispatch of anti-epidemic equipment in directions where concentrations and movements of troops are in progress and also to points where there is a danger of an epidemic outbreak; the maintenance of reserve equipment to strengthen forward sanitary units and neutralize the sudden outbreak of epidemics; and the working of the anti-epidemic service at definite stages of an engagement.

Fourthly, the constant readiness and perfect mobility of anti-epidemic units are always borne in mind, with the rapid manœuvring of all available personnel and equipment to suit changes in the military and the sanitary situation; and, fifthly, we carry out the careful simultaneous mass application of all forms and methods of prophylaxis and anti-epidemic measures.

The entire freedom of the Red Army from epidemic diseases has been achieved by the simultaneous and correlated activity of all units concerned, and is due to the fact that anti-epidemic measures among the troops are not carried out by individual specialists but by the Medical Corps as a whole. The absence of any serious or lengthy outbreaks of infectious diseases in the Red Army despite the extraordinarily unfavourable conditions which it meets with in its advance to the west leads us to assume with confidence that the anti-epidemic measures adopted are adequate and are fully abreast of the achievements of modern science.

In the course of the war fresh contingents of doctors and nurses have come into the Red Army, and extensive and valuable experience has been gained. The high level of medical service is ensured by the fact that the whole Red Army Medi-

cal Corps, from general to private, is being systematically trained to improve military and medical knowledge, and is studying the new experiences which have been gained. For this purpose all medical units in institutions run planned courses of instruction; short courses for medical personnel are arranged to improve their knowledge of special branches; and numerous conferences of surgeons, physicians, epidemiologists, and workers in other specialties are held at which the experiences of the most progressive specialists and institutions are studied, summarized, and popularized.

Conclusion

The organization of the Red Army medical service does not stand still, but by the correlation of war experiences and study of the latest achievements in war medicine, its personnel and their distribution, the forms and methods of work are constantly being perfected. This is a guarantee that the Red Army Medical Corps will in the future be able to cope with the tasks with which it is faced.

TREATMENT OF GUNSHOT FRACTURES OF THE EXTREMITIES IN EVACUATION HOSPITALS OF THE U.S.S.R.

BY

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In wartime the treatment of bone injuries has exceptional significance. According to data from Soviet hospitals fractures of the extremities constitute 38% of all wounds encountered during the present war. If fractures of the skull, face, spine, and ribs are added to this figure the total reaches 45 to 47%, or almost half of all wounds incurred at the front. Correct fracture treatment must involve not only restoration of lost function but restoration of fighting capacity as well and the return of an experienced and tried soldier to the Army.

Wartime gunshot fractures have these features:

1. They are open, compound, and complicated by infection.
2. Like closed fractures, they are accompanied by displacement of bone fragments.
3. They are associated with extensive destruction of soft tissue, not observed in closed fractures.
4. They are often encountered as comminuted fractures, with a large number of splinters scattered throughout the area surrounding the wound.
5. Wounded men with bone fractures are unavoidably subject to many-staged treatment in various stations and centres, beginning with field hospitals and ending in the deep rear.
6. Treatment is protracted and the results are less satisfactory than in treatment of closed fractures.

Principles of Treatment

Treatment of gunshot fractures in the U.S.S.R. is based upon the following principles: (1) First aid is administered on the battlefield at the spot where the wound is incurred, either by sanitary instructors or occasionally by other soldiers. (2) An aseptic dressing is applied to the wound and the limb is immobilized with splints made of plywood, bark, or wire netting. (3) Surgical débridement is performed at the first field medical stations.

Through-and-through wounds, with perforations of soft tissue at the sites of entry and exit, are always treated with antiseptics. The wound is always excised if there is extensive destruction of soft tissue. All devitalized and necrotic tissue is excised. Supplementary excision is performed in the presence of pockets or if an outpouring of lymph into spaces is likely. When the wounded man has not been treated for 24 hours after injury the wound is merely incised, and excision of devitalized tissue is carried out if necessary.

In treating the wound free bone splinters are removed and the periosteum is preserved; the wound is never sutured. Sulpha drugs and, more recently, penicillin are utilized. Reduction of the fracture is considered obligatory.

The following rules are observed in fracture reduction:

- (1) The fracture must be reduced at the earliest possible

moment. (2) Reduction must be performed under general or local anaesthesia. (3) Reduction must be by manipulation or with the help of special orthopaedic tables and traction apparatus. (4) After reduction the position of the fragments must be verified by radiographs or by comparative measurements of the extremities. Plaster cast, Cramer, and Thomas splints and the Dieterich wooden splint are used for fixation of the extremities after surgical treatment. Cramer splints are preferable for injuries of the upper extremities; plaster cast or Thomas splints for injuries of the lower extremities.

Plaster casts are most often used, and are applied without cotton inner padding. Practice has shown not only that they effectively immobilize the fracture but that they are very effective in draining wound seepage. They keep the wound undisturbed and prevent secondary infection. The patient wearing a plaster cast must receive careful attention. High temperature, complaints of illness, pains in the extremities, all stress the necessity for examination and observation of the wound either by means of cutting a window in the cast or, occasionally, by removing the cast completely. Closed plaster casts must not be used if the presence of gas infection is suspected or if there is a possibility of haemorrhage.

Blood transfusion is widely used in treating shock and loss of blood. All wounded men receive antitetanus serum, and anti-gas-gangrene serum is also given in the presence of extensive and severe injuries to the tissue. The wounded, if transportable, are evacuated to rear hospitals by ambulance, hospital train, and aeroplane.

A network of special hospitals has been established for treatment of gunshot bone fractures. Distribution of the wounded among these hospitals is based upon the severity and location of their wounds. For those with slight injuries of the fingers, wrist, forearm, and foot there is a special hospital where they can simultaneously receive surgical treatment, physiotherapy, gymnastics, and occupational therapy. A separate hospital also exists for patients with injuries of the thigh, lower leg, and upper arm. This system makes possible correct allocation of requisite apparatus to the various hospitals, and also facilitates the assignment of cadres of specialists. It enables doctors and nurses working with a uniform contingent of wounded men to master more speedily the correct methods and technique of treatment.

Treatment in Base Hospitals

Patients arriving in base hospitals are subject to careful observation, which includes x rays, laboratory analysis of blood and urine, and bacteriological examination if necessary. If phlegmon or inflammatory processes exist in the region of the injury, especially when primary débridement has for some reason been omitted, secondary excision of the wound is performed. A wide incision is made and foreign matter, free bone splinters, and necrotic tissue are removed. Reduction is carried out simultaneously if the condition of the patient permits, the fragments being brought into juxtaposition and occasionally even fixed by suturing. Such delayed reductions are performed as late as four and even five months after injury if there is extensive displacement of bone fragments and union has not been secured. The wound is not sutured after secondary surgical débridement and late reduction; it is tamponed and commonly treated with antiseptics (including sulpha drugs and penicillin). Our observations enable us to recommend delayed reduction to surgeons with sufficient experience. In most cases extremely good results have been noted after these operations. A flare-up of infection occurs as a rare complication in individual cases.

Two methods are used for the treatment of gunshot wounds in rear hospitals: (1) the plaster cast and (2) skeletal traction. The plaster cast is employed in treating fractures of the upper arm, forearm, foot, and lower leg, and in all cases in which complications occur during the course of illness. In most instances closed plaster casts, in which openings have been made as a precautionary measure, are employed. Skeletal traction is used in fractures of bones of the thigh, lower leg, and upper arm, in the presence of displacement, and when complications are absent or have already been overcome, as well as in closed fractures. Thus, plaster cast and skeletal traction are not mutually exclusive but, on the contrary, supple-