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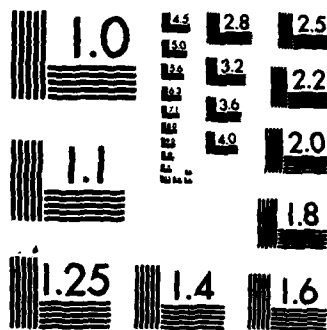
THE SOVIET CIVIL DEFENSE MEDICAL PREPAREDNESS PROGRAM
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This report describes and analyzes, on the basis of Soviet open source materials, the mission, organization, plans, training, operations, capabilities, and shortcomings of the Soviet Civil Defense Medical Service and its readiness to deal with mass casualties in the event of a nuclear war. The Civil Defense Medical Service incorporates the entire Soviet medical and public health system and all of its personnel and is reinforced by a large number of Volunteer First Aid Squads recruited from the working		

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population and students, elements of the armed forces' medical service, and the compulsory instruction of the entire population in first aid. Civil defense instruction is compulsory for all medical students as well as for physicians and middle-level medical personnel. Soviet plans call for the pre-attack relocation of all medical and public health institutions and their personnel from high-risk urban areas to rural areas and the rapid expansion of medical facilities in small towns and rural areas. Soviet plans call for a two-stage medical evacuation system. The first stage will include first aid to casualties by First Aid Squads and the evacuation of the injured to Mobile First Medical Assistance Detachments which will operate in the areas of destruction and provide triage and emergency medical treatment. The second stage will include a system of hospitals in safe areas which will treat evacuated casualties. The effectiveness of the system will depend in a large measure on the successful pre-attack evacuation of medical personnel and institutions from high risk areas, and on the availability of necessary stocks of medical and other supplies. In principle, the Soviet Civil Defense Medical Service has the capability to deal with the number of possible casualties which may result in situations other than a worst-case attack scenario. The effectiveness of medical assistance may be constrained, however, by the low quality of Soviet medicine, shortages of transportation and uncertainties about the availability of emergency stocks of medical equipment and supplies. The Civil Defense Medical Service constitutes a major element of the total Soviet civil defense forces and may receive as much as 30 percent of Soviet annual investments in civil defense.



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DETACHABLE SUMMARY

**THE SOVIET CIVIL DEFENSE
MEDICAL PREPAREDNESS PROGRAM**

Dr. Leon Goure

March 1984

Prepared for:

**FEDERAL EMERGENCY MANAGEMENT AGENCY
Washington, DC 20472**

Contract No. EMW-C-0571

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**SCIENCE APPLICATIONS, INC.
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DETACHABLE SUMMARY

The Soviet Civil Defense Medical Preparedness Program is an integral and very important part of USSR Civil Defense and its measures to mitigate losses among the population in peacetime disasters or in a nuclear war. The program is intended to provide medical assistance and treatment to mass casualties. The Soviets have no illusions about the magnitude of the medical problem which may confront the Civil Defense Medical Service (CDMS) in the event of a nuclear attack, but appear to be reasonably optimistic about prospects for accomplishing this. Soviet publications claim that CDMS preparations and plans are based on the assumption of a worst-case attack scenario. They admit, however, that it would be significantly more difficult for the CDMS to provide timely and effective medical assistance to the injured in the event of enemy strikes on large cities with little warning than if the population, medical institutions, and personnel are evacuated from high-risk areas prior to an attack and with only a duty-shift of essential workers in the targeted cities.

The Soviet Civil Defense Medical Preparedness Program is based on the principle of compulsory inclusion of all medical-public health institutions and personnel in the CDMS, regardless of their peacetime affiliations. It includes the organization of these institutions and personnel into various CDMS formations and facilities, and the obligatory participation of all medical personnel--including medical students--in the general civil defense instruction program for the population and in special civil defense medical instruction courses designed for the various professional levels of the medical personnel. Supplementing the medical-public health personnel in the CDMS is a mass of trained first aid squads (sanitarnyye druzhiny or SDs) and detachments established at economic enterprises, administrative organizations, educational institutions, collective and state farms, and so on. These are composed primarily of younger women and are intended to provide first aid to the injured in the areas of destruction and to assist the medical personnel in the mobile CDMS detachments and in hospitals. Furthermore, the entire population receives instruction in simple first aid techniques as a part of the compulsory civil defense training program for it.

In peacetime the CDMS is engaged in the instruction, training, and exercising of its formations and personnel; the planning of and preparation for the rapid evacuation of medical-public health institutions and personnel from high-risk areas; and in stockpiling medical supplies and equipment. The CDMS also stands ready to implement emergency medical measures to assist the population in the event of

peacetime disasters. In the event of a threat of enemy attack, the CDMS will evacuate medical-public health institutions from high-risk areas to pre-designated host areas and dedicated facilities in the exurban areas, expand the capacities of hospitals in the latter areas, and provide medical assistance to the population during its evacuation.

In order to deal with mass casualties, the CDMS had adopted a two-stage triage-treatment-evacuation system for the injured and sick. The first stage consists of first aid and emergency medical assistance in the areas of destruction. This will be provided by the SDs working with civil defense rescue forces and by mobile First Medical Assistance Detachments (OPMs) organized on a compulsory basis already in peacetime by all sizeable hospitals and clinics. Each OPM is said to have the capability to receive, sort, provide emergency and lifesaving medical treatment, and evacuate to exurban hospitals or briefly hospitalize at the OPM up to one thousand injured persons per day. The SDs and OPMs may be reinforced by military medical companies.

The second stage of the casualty evacuation system consists of the CDMS hospital system in exurban areas. It includes Hospital Bases established in the oblasts and subordinate Collector Hospitals based on rayons (counties). The latter includes Triage-Evacuation Hospitals (SEGs) to treat arriving cases requiring immediate attention and specialized hospitals to treat various types of injuries or communicable diseases. Transportation from the OPMs to Collector Hospitals will be by motor vehicles and hospital trains, as well as river and ocean-going ships and also by air. In order to make the most efficient use of specialized medical personnel, i.e., specialist physicians, they are organized into mobile Brigades of Specialized Medical Assistance, which will work in the specialized hospitals or reinforce, where needed, the physicians in the hospital system. The CDMS hospital organization appears to facilitate an efficient system of allocation and distribution of medical assets and supplies. The danger of epidemics among the surviving population and the outbreak of dangerous communicable diseases will be dealt with by special hygiene, sanitation, and medical anti-epidemic detachments and, where needed, by mobile and fixed hospitals for communicable diseases.

In terms of numbers of physicians, middle-level medical personnel, and hospital beds, the Soviet medical-public health system is significantly larger than that of the United States (in 1981 the USSR had 1,033,900 physicians, 2,880,000 middle-level

medical personnel, 23,100 hospitals with 3,384,000 beds, and 36,500 polyclinics). There is no official information on the size of the SD force and the number of OPMs--it appears possible that the former has some 1.5 to 3 million members, and that there may be some 30,000 OPMs. In principle, therefore, the CDMS has the number of personnel and organizations required to deal with mass casualties, even in the numbers which may be generated by a worst-case attack scenario. However, in such a scenario, the CDMS may suffer significant losses of facilities and personnel, while other elements in the targeted area may be pinned down in shelters, thus requiring a redeployment to the disaster areas of SDs and OPMs from more distant rural areas and surviving towns. Furthermore, in the worst-case scenario, there may be insufficient time prior to the attack to greatly expand the capacities of hospitals in the exurban areas. However, in the event of a pre-attack evacuation of the population, medical institutions, and personnel from high-risk areas, the number of casualties would be markedly fewer and the CDMS forces would be largely intact. While there is a maldistribution in the USSR of physicians, middle-level medical personnel, and hospital beds among the republics and oblasts and between cities and rural areas, the concentration of such personnel in the larger cities could also ensure that following their evacuation these cities would have relatively large numbers of CDMS personnel and formations nearby ready to assist the injured in the event of an attack. Thus, in the event of a pre-attack evacuation of high-risk areas, the CDMS appears likely to have the capabilities to effectively deal with the large number of injured resulting from enemy nuclear strikes on those areas.

The effectiveness of the CDMS in dealing with mass casualties will be constrained, however, by the relatively low quality of Soviet medicine, shortages of medical specialists, the prevalence of obsolete medical equipment, and possibly also shortages of medical supplies and equipment, which occur even in peacetime. Soviet open sources make no mention of the size and content of the stocks of medical supplies and equipment being created and stored in the exurban areas beyond citing a requirement for them. It is possible that peacetime shortages of such supplies in the civilian sector may reflect a deliberate Soviet program for creating such stocks reserved solely for emergency/wartime use, as is the case with food and various other consumer goods. It is also possible that being more used to working in relatively primitive conditions, Soviet physicians may be better prepared than Western physicians for carrying on their activities under post-strike conditions.

Of course, a major uncertainty in the operations of the CDMS will be the character of the post-attack environment in which the SDs, OPMs, and hospitals may have to carry out their various missions. Soviet publications suggest that rescue and first medical assistance operations will initially focus on survivors in the zones of light and moderate damage and only progressively extend such activities to the zones of severe damage and total destruction where it is expected only personnel in undamaged blast shelters will survive. However, timely rescue and medical assistance efforts may be disrupted or prevented by radioactive fallout and damage to roads, rail lines and bridges, as well as by various secondary effects of nuclear detonations.

The CDMS forces may make up some 20-25 percent of the total Soviet civil defense forces. While the peacetime cost of full time personnel serving in the CDMS appears to be low, the cost of equipping the force—and especially of building up and maintaining the necessary stocks of medical supplies and equipment for a wartime emergency—may be quite high. If, as is assumed in this study, the Soviet total yearly investment in civil defense expressed in the dollar cost of an equivalent U.S. effort may be on the order of \$6 billion, the cost of the Soviet Medical Preparedness Program could well be on the order of 30 percent or even more of that investment.

Even though due allowance must be made for the differences in the U.S. and Soviet medical-public health systems, the Soviet Civil Defense Medical Preparedness Program appears to offer a number of potentially useful lessons for a similar U.S. program. The most obvious ones are that the credibility of a civil defense medical preparedness program depends in a large measure on the credibility of the civil defense program as a whole and vice versa, and that to provide effective medical assistance to mass casualties in the event of a nuclear war will require the mobilization, organization, and effective utilization of all available medical resources and personnel and the creation in peacetime of sufficient stocks in non-risk areas of medical supplies and equipment to support such an effort and also to sustain the surviving population after an attack for a protracted period of time. As in the Soviet Union, the pre-attack evacuation of medical institutions and personnel from high-risk areas in the United States to designated host areas and dedicated facilities in the exurban zone and plans and preparations for the rapid expansion of medical hospital facilities in this latter zone can play a crucial role in ensuring the existence of effective medical capabilities for dealing with mass casualties. The Soviet need to evacuate the population, medical institutions, and personnel from high-risk areas prior

attack could be viewed as lending essential realism to similar U.S. civil defense plans.

It is evident that despite various shortcomings discussed in Soviet publications, the Soviets take the Civil Defense Medical Preparedness Program very seriously and invest considerable resources in it. Indeed, it could be said that this program is a measure of the Soviet commitment to the development of an effective civil defense capability.

FINAL REPORT

**THE SOVIET CIVIL DEFENSE
MEDICAL PREPAREDNESS PROGRAM**

Dr. Leon Goure

March 1984

Prepared for:

**FEDERAL EMERGENCY MANAGEMENT AGENCY
Washington, DC 20472**

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PREFACE

The following report was prepared for the Federal Emergency Management Agency under Contract No. EMW-C-0571 as a part of an ongoing research program of Soviet Civil Defense undertaken by Science Applications, Inc.

The objective of this study is to describe, analyze, and assess, on the basis of Soviet open-source materials, the Soviet Civil Defense Medical Preparedness Program and its assumptions, plans, organization, and capabilities for providing medical assistance to mass casualties in the event of peacetime disasters or a nuclear attack. In addition, the study attempts to identify potentially useful lessons which can be derived from the Soviet program for a similar U.S. program.

Relevant to this study are several earlier studies prepared by the author. These include: War Survival in Soviet Strategy: USSR Civil Defense, (Washington, DC: Advanced International Studies Institute, 1976); Soviet Post-Strike Civil Defense Rescue, Damage-Limiting, Repair and Restoration Operations, (Science Applications, Inc., Final Report, August 1982), undertaken for the Federal Emergency Management Agency under Contract No. EMW-C-0571, and The Soviet Crisis Relocation Program, (Science Applications, Inc., Final Report, May 1983), undertaken for the Federal Emergency Management Agency under Contract No. EMW-C-0571.

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GLOSSARY OF RUSSIAN ABBREVIATIONS USED IN THIS REPORT

BB	- Hospital Base
BK	- Collector Hospital
BSK	- Hospital for Pelvic and Large Joint Injuries
BSMP	- Specialized Medical Assistance Brigade
CDMS	- Civil Defense Medical Service
DSP	- Hygiene Education Center
EP	- Casualty Evacuation Reception Point
GB	- Head Hospital
I	- Hospital for Infectious Diseases
IPG	- Mobile Hospital for Infectious Diseases
MRP	- Casualty Distribution Point
NKh	- Neurosurgical Hospital
O	- Hospital for Burn Cases
OPM	- First Medical Assistance Detachment
OSD	- Volunteer First Aid Detachment
OSMP	- Specialized Medical Assistance Detachment
PEP	- Evacuation Reception Point
PN	- Psychiatric and Nervous Disorders Hospital
PPE	- Intermediate Evacuation Point
PPEO	- Mobile Anti-Epidemic Detachment
PSLP	- Collection Point for Lightly Injured
RP	- Casualty Distribution Point of First Medical Assistance Detachment (OPM)
SD	- Volunteer First Aid Squad
SEG	- Triage-Evacuation Hospital
SEP	- Evacuation Assembly Point
SES	- Hygiene-Epidemiological Station
SP	- First Aid Post
SPEB	- Specialized Anti-Epidemic Brigade
T	- Therapeutic Hospital
TA	- Hospital for Thoraxo-Abdominal Injuries
TR	- Traumatological Hospital
UBB	- Hospital Base Administration

Section 1
INTRODUCTION

In the United States a frequently voiced criticism of civil defense is the argument that in the event of a nuclear war the surviving medical capabilities will be unable to deal with the enormous number of injured cases among the population or with outbreaks of mass epidemics of communicable diseases and illnesses among the survivors. It is asserted, therefore, that a large percentage of the population which may survive the immediate effects of a nuclear attack will be doomed to early death because of, among other adverse factors, a lack of effective medical assistance.

Underlying these assertions is a war scenario which assumes a massive enemy surprise attack targeted not only against military and economic installations but also against all major cities per se, whose unprotected population is assumed to be in its normal peacetime posture. This attack, it is said, would cause in excess of a hundred million fatalities and tens of millions of injured, among whom would be a high percentage of members of the medical profession, and would also result in the destruction of a major portion of existing medical facilities. This scenario also assumes that no effective measures would be taken to organize the surviving medical capabilities and to ensure adequate stocks of medical equipment and supplies in exurban areas to meet the survivors' medical needs. In essence, therefore, the critics' worst-case scenario posits a maximum number of civilian casualties deliberately generated by the attacker and ineffectual civil defense measures to protect the population and provide it with medical assistance. In accordance with the mutual assured destruction thesis, it is also assumed that U.S. retaliatory strikes would subject the Soviet Union to a similar scenario, and that it would therefore suffer a similar fate.

In recent years, Soviet propaganda aimed at Western audiences has sought to reinforce Western beliefs in the impossibility of survival in a nuclear war and to give the impression that Soviet scientists and physicians, and ultimately the Soviet leadership itself, share this view. As a part of this propaganda campaign, Soviet spokesmen, when traveling abroad, have attempted to mislead the West about the significance the Soviet Union attributes to its civil defense program and the level of

effort and investments devoted to its implementation. One Soviet technique has been for officials of the USSR Ministry of Public Health, members of the USSR Academy of Sciences, and the USSR Academy of Medical Services--when attending professional conferences abroad and also in their appeals to the West--to simply repeat and reproduce Western "anti-war" slogans and worst-case scenarios and their projections of the consequences of a nuclear war. At the same time these spokesmen carefully avoid any mention of Soviet war scenarios, projections of potential Soviet population losses, and the significance of USSR Civil Defense measures for mitigating these losses. They also avoid any mention of the extent of participation of the Soviet medical system and personnel in the Soviet civil defense program.

Aside from the fact that there are many persuasive reasons for questioning the realism of the worst-case scenario, the a priori assumptions by critics that civil defense measures could not significantly mitigate casualties among the population or create favorable conditions for dealing with the medical problems resulting from an attack are highly misleading. It is true that at present, in the absence of a fully developed and adequately funded comprehensive U.S. civil defense program, the public may not fully understand its potential benefits and capabilities. However, the Soviet civil defense program offers an example of what can be done by civil defense to organize and prepare for dealing with mass casualties in a nuclear war and for providing the surviving population with essential medical assistance.

According to official Soviet statements, the primary objective of USSR Civil Defense is to protect the population against possible enemy attacks with nuclear, chemical, bacteriological or conventional weapons and also against peacetime natural or man-made disasters. The Soviet civil defense program seeks to protect the population against wartime threats by a complex of measures, i.e., sheltering, pre-attack evacuation and dispersal, post-strike rescue, chemical defense, etc., as part of an active-passive strategic defense strategy and posture intended to mitigate the consequences of enemy attacks. According to Soviet public statements, an important objective of the Soviet civil defense program is to instill in the population "confidence in the effectiveness of the protective measures being carried out." At the same time, however, it is recognized that these protective measures cannot entirely prevent significant numbers of casualties among the population in the event of an attack. Consequently, USSR Civil Defense sees a requirement for organizing and preparing the

necessary medical forces and capabilities for assisting and treating large numbers of injured persons, as well as for providing essential medical assistance to the surviving population following an attack and for preventing and controlling possible epidemics among it. This is primarily, but not exclusively, the responsibility of the USSR Civil Defense Medical Service, which is an integral part of the Soviet civil defense system and constitutes a large element of its multi-million force.

The objective of the present study is to examine Soviet civil defense concepts, plans, organization, and preparations for providing medical assistance to the population in wartime and in peacetime disasters. The study is based entirely on open Soviet source materials. This material is made up of a large body of civil defense manuals, books and pamphlets, as well as newspaper and journal articles and radio and television broadcasts. Much of this material was prepared by Soviet physicians and published by the main Soviet medical publishing house. While the material is highly informative about Soviet concepts, plans, organization, and training pertaining to the Civil Defense Medical Service, there are also areas where the Soviet Union maintains considerable secrecy or provides only incomplete information. This applies in particular to Soviet assumptions about the magnitude of the medical and health problems which it anticipates may confront USSR Civil Defense, the actual capabilities of the Civil Defense Medical Service to implement the medical assistance plans and its current levels of readiness to carry out its mission, and the size of stocks of medical supplies or the capability of the Soviet medical-pharmaceutical industry to create necessary stocks of such supplies.

The study of Soviet medical civil defense concepts, plans, organization, capabilities, and modus operandi has implications for U.S. security interests and may also provide useful ideas and lessons for U.S. civil defense planning.

Section 2

SOVIET VIEWS ON THE CHARACTER AND MAGNITUDE OF THE MEDICAL ASSISTANCE PROBLEM FOR CIVIL DEFENSE

Despite the existence of a large body of published Soviet materials discussing the consequences of a possible nuclear war and the medical problems which may result from the employment of "weapons of mass destruction," there is a notable dearth of information on actual Soviet views on the magnitude of the medical problems which USSR Civil Defense may have to deal with in the event of a war. Unlike the U.S., where various war scenarios and their potential consequences for the U.S. population are widely discussed and debated, there are no similar public discussions in the Soviet Union. While undoubtedly there are official Soviet projections of the consequences for the Soviet Union of various attack scenarios and, therefore, USSR Civil Defense is in possession of various estimates of probable magnitudes of the medical problem it may have to deal with in different circumstances, this information is held in strict secrecy. Consequently, Soviet public discussions of this problem are based on foreign scenarios and projections or on estimates derived from official studies of Hiroshima and Nagasaki. Soviet propagandists cite various Western projections of world-wide casualties (fatalities, injured, and cases of radiation sickness) but do not indicate what portion of these casualties may be suffered by the Soviet Union. The closest Soviet authors come to discussing potential population losses is in their discussion of the hypothetical consequences of the detonation of a one megaton nuclear weapon on a city with one million inhabitants. Even then, their description of these consequences and estimates of casualty figures among the residents are usually acknowledged to be derived from foreign sources.

2.1 THE IMPLICATIONS OF SOVIET WAR SCENARIOS FOR CIVILIAN CASUALTIES

A basic and often repeated thesis of Soviet strategic doctrine is that a war between the two opposing social-political systems, i.e., the West and the Communist bloc, will be characterized by an "uncompromising" pursuit by both sides of "decisive" political and strategic objectives. Furthermore, whether or not the war begins with the use of nuclear weapons, it will most likely escalate into a massive nuclear

exchange.¹ The war may be the outgrowth of a protracted crisis or of a limited war, but, the Soviets warn, it may also begin with a surprise attack. Such an attack is said to pose a particular threat under present conditions and must be especially guarded against.²

Soviet military writings generally emphasize that the primary targets of nuclear strikes would be counterforce targets and other military and defense related assets, as well as command, control, and communications (C³), which constitute the essential elements of the opponent's warfighting capabilities. Above all, the priority mission and main effort of strategic forces must be the destruction of the enemy's strategic capabilities in order to limit damage to one's own homeland and achieve superiority in warfighting capabilities. Thus, speaking of the priority targets of the Soviet Strategic Missile Forces, it is said that:

They are intended to annihilate the enemy's means of nuclear attack, the large grouping of his troops and military bases, to destroy military-industrial installations and disorganize the aggressor's state and military command and control, the operations of his rear and transportation.³

In the Soviet view, targeting the population or the economy--i.e., the economic "recovery potential" per se--would not affect the opponent's immediate warfighting capabilities and therefore would most likely be a waste of valuable nuclear assets and an unnecessary provocation of retaliation in kind.⁴ Despite various U.S. declaratory deterrence threats to the contrary, the Soviets appear to believe that on the whole the U.S. entertains similar strategic views. Indeed, Soviet public comments on current U.S. strategic weapons programs and the so-called U.S. "countervailing strategy" suggest that the U.S. has or is in the process of adopting the main elements of Soviet warfighting doctrine and is improving its capabilities to implement an attack strategy which essentially parallels that of the Soviet Union.⁵

Even so, the Soviets do not exclude the possibility of selective strikes on targets located in urban areas. One reason for this is that the Soviet target list includes major political-administrative centers, as well as significant industrial war support installations and important communications and transportation facilities whose destruction may contribute to the disruption and weakening of the opponent's ability to conduct effective military operations. USSR Civil Defense, therefore, believes it to

be prudent as well as reasonable to base its plans on the assumption that the residents of urban areas, especially those of important political-administrative and economic centers, may be at risk. Given that the largest cities tend to contain a high concentration of such targets, it may be prudent to assume, as one Soviet civil defense manual puts it, that "the larger the city, the greater the probability that the enemy will select it as a target for nuclear strikes."⁶

Strikes on targets which may cause major collateral damage to cities could inflict "enormous losses" on an unprotected population. It is, therefore, the objective of USSR Civil Defense to provide the population with the necessary protection even under conditions of an enemy surprise attack.⁷ It should be noted, however, that while Soviet spokesmen and publications frequently claim to perceive a growing threat of a U.S. surprise attack on the Soviet Union, they also persistently deny that it would catch them unawares. Indeed, it is asserted that given modern surveillance and early warning systems and the careful continuous monitoring by the Soviet political and military leadership of all threat indicators, a surprise attack would be detected and allow the Soviet Union to launch a timely pre-emptive strike.⁸

Despite the alleged threat of a surprise attack, USSR Civil Defense by no means excludes the possibility of protracted warning of an attack. This possibility underlies Soviet civil defense plans for a large-scale pre-attack evacuation and dispersal of urban residents believed to be at risk.⁹ Indeed, at the present time, despite the Soviet shelter construction program in urban areas, pre-attack relocation still constitutes the primary Soviet method for protecting the mass of urban residents. There is also a clear Soviet preference for the pre-attack relocation of leadership elements, urban civil defense forces, and essential workers regardless of the availability of shelters for them in order to enhance their ability to carry out their critical activities in the immediate post-strike period. Even so, USSR Civil Defense does take into account the possibility that the warning time may be too short to permit the implementation or completion of the relocation of the urban population prior to the attack. As a result, since the early 1970s greater emphasis is placed on a program for creating sufficient ready shelters to protect in-place first the most valuable elements of the population in risk areas and eventually all of it.¹⁰

Inevitably, therefore, Soviet casualty estimates are scenario dependent. They depend not only on the anticipated magnitude of a possible enemy attack, its targets, the yields of the warheads used and the modes of their detonation, but they are also very sensitive to assumptions about the extent to which civil defense measures would be implemented at the moment of attack. In principle, the scenarios may range from a total surprise which would catch the majority of the population in its normal day-to-day posture, or one which allows for only short warning, which would force the population to use best available shelters, to more protracted warnings which would permit the implementation to varying degrees of the evacuation and dispersal of the population at risk, combined with its protection in shelters. Soviet civil defense points out, therefore, that while a surprise strike on a city whose population is totally unprotected may result in 50 to 60 percent or more fatalities among its inhabitants, casualties would be significantly fewer if the residents take cover in best available shelters, and, according to one estimate, may not exceed 5 to 8 percent of the city's population if the majority of the residents have been relocated to exurban areas prior to the attack.¹¹ If blast shelters were available to the residents, casualties would also be greatly reduced even in the event of little warning of an attack. Of course, the effectiveness of protection provided by the shelters would depend on various factors, among them the hardiness of the shelters, their life support systems, the length of time the occupants can remain in them, and the degree of protection they provide against fires, fire storms, toxic gases, and so on.

2.2 SOVIET VIEWS ON THE POSSIBLE MAGNITUDES AND CHARACTER OF CASUALTIES

The authors of Soviet civil defense manuals--and specifically of medical manuals--face major difficulties in their public discussions of the possible magnitude of the medical problems which may confront the Civil Defense Medical Service (CDMS) in the event of a nuclear attack. As a matter of Soviet policy, they are precluded from discussing detailed scenarios or estimating possible numbers of Soviet casualties. As was noted, therefore, the authors tend to fall back on the lessons of Hiroshima or make uncritical use, at least for illustrative purposes, of Western scenarios. However, the Hiroshima and Nagasaki cases and most of the Western scenarios deal with the consequences of a surprise attack on an unprotected popula-

tion. This approach lends itself to worst-case projections of the possible magnitude of the potential medical problem. Indeed, one Soviet manual asserts that the conditions arising from an enemy surprise attack "are used as a basis for planning and organizing medical assistance and for preparing the formations and installations of CDMS."¹² As was noted above, however, the Soviets appear to mean by "surprise" short warning rather than no warning of an attack. Furthermore, this scenario does not take into account the implication of various civil defense protection measures for projecting the magnitude of the medical problem. Reliance on worst-case scenarios may also be misleading about the nature of the injuries which the CDMS must prepare to deal with in the case that the population is in shelters or evacuated. The result is that the authors of the Soviet civil defense medical manuals display a good deal of confusion in their discussion of this problem.

A common statement in the manuals is that a nuclear attack would cause a "large" or "enormous" number of injured persons requiring medical assistance.¹³ In support of this projection, the manuals' authors cite the cases of Hiroshima and Nagasaki, whose population had some 133,000 injured persons on the first day of the strikes, of whom 97,000 survived.¹⁴ They also quote "foreign sources" according to which a surprise strike with a one megaton warhead on a city with one million inhabitants is estimated to result in 350,000 to 380,000 persons being injured.¹⁵ Others cite "foreign" estimates that a surprise attack on a city with seven million inhabitants may cause five million casualties (fatalities and injured), or that nuclear strikes on 60 large U.S. cities may result in 20,250,000 casualties, and so on.¹⁶ It is also mentioned that according to some "foreign sources" it is expected that on the average at least 33 percent of residents of a city struck by nuclear weapons will be injured and require medical assistance.¹⁷

Reliance on the lessons of Hiroshima and Nagasaki and on Western projections of the consequences of a nuclear attack has led various Soviet authors of civil defense manuals to predict the nature of the injuries which the population may suffer on the basis of the effects of a strike against an unprotected population. Consequently, these authors predict that the majority of the injured will suffer burns and multiple injuries, i.e., various combinations of open wounds, contusions, broken bones, burns, radiation sickness, and exposure to toxic chemicals.¹⁸ According to these projections, 60 to 85 percent of the injured can be expected to sustain burns and 45 to

60 percent, multiple injuries.¹⁹ Among the injured, more than half can be expected to sustain moderate to severe injuries. It is noted that the lessons of Hiroshima and Nagasaki indicate that most open wounds are caused by flying debris.²⁰ Again, drawing on the lessons of Hiroshima and Nagasaki, it is anticipated that in the targeted areas pure radiation casualties will constitute approximately 15-20 percent of the total number of injured persons.²¹

Some Soviet manuals, however, suggest a somewhat different approach to estimating the post-strike medical problem. This approach is based on the Soviet practice of dividing the area affected by the nuclear detonation into four zones according to blast overpressures and expected levels of damage. The usual projections are based on the effects of a surface burst of a one megaton weapon on a perfectly flat city. This allows taking some account of civil defense protection measures. This approach or model posits the following zones and levels of blast and collateral damage:²²

- o Zone of Total Destruction: This is the area subjected to blast overpressures in excess of 7.1 psi, resulting in the complete destruction of residential and commercial structures, simple fallout shelters, and blast shelters which are near the point of detonation. There will be fires in the debris, ruptured gas and water mains, and so on. It is assumed that in this zone, 90 percent or more of the unprotected population would be casualties, with 80 percent or more of them being fatalities. It is claimed, however, that up to 75 percent of the blast shelters could be expected to survive, although many would be buried under debris. The main threat to the survival of the occupants of those shelters would come from the possible blocking of their ventilation air intakes by debris. To some extent, therefore, the survival of the shelter occupants in this zone may depend on timely rescue by the civil defense forces from outside the area of nuclear destruction.
- o Zone of Severe Damage: This zone is said to include areas exposed to 4.2 to 7.1 psi blast overpressures. Buildings will suffer severe damage and there will be mass fires or possibly also fire storms. It is assumed that in this zone, up to 50 percent of the unprotected population may

become casualties, with 35 percent being fatalities and 15 percent injured. All shelters and anti-radiation shelters in basements would survive, but a significant portion of them may have their entrances and ventilation air intakes blocked by debris.

- o Zone of Moderate Damage: This consists of areas subjected to 2.8 to 4.2 psi blast overpressures, which would cause moderate to severe damage to 30 to 50 percent of aboveground structures. There will be mass fires. It is anticipated that in this zone, 40 percent of the unprotected population may become casualties--15 percent of them would be fatalities and 25 percent injured. All shelters and anti-radiation shelters would survive and no casualties among their occupants would be expected.
- o Zone of Light Damage: This includes areas subjected to 1.4 to 2.8 psi blast overpressure. There will be light to moderate damage to surface structures and numerous individual fires. It is estimated that in this zone, 15 percent of the unprotected population would become casualties, but few of them would be fatalities.

This model underscores the importance of blast protection for the residents of targeted cities. In terms of the potential medical problem, the model suggests the following: In the case of the 25 percent of the shelters destroyed in the Zone of Total Destruction, all their occupants would presumably be fatalities; occupants of seriously damaged shelters in this zone would probably also die from the effects of the fires, toxic gases, radiation, and so on. In the case of shelters with blocked ventilation air intakes in the Zones of Total Destruction and Severe Damage, the survival of the occupants will depend on the availability of air regeneration equipment in the shelters and the timely arrival of rescue forces. In the Zones of Severe and Moderate Damage, occupants of shelters lacking carbon monoxide filters and air regeneration equipment may become casualties. Also in the Zone of Moderate Damage, occupants of shelters lacking power generators to operate their filter ventilation systems and depending on manually operated fans may become casualties as a result of carbon dioxide poisoning and heat prostration, or they may be forced to leave the shelters before it is safe to do so.²³

It is, nevertheless, evident that if the population in targeted cities is in shelters it will suffer far fewer casualties than if it is unprotected. Furthermore, in this case, the nature of the injuries and the medical problems they will pose for the CDMS will be significantly different from those projected in the Soviet manuals based on the assumption of an attack on an unprotected population. Thus, burn cases and trauma caused by flying debris--the two main causes of injuries in an unprotected population--would probably constitute minor categories of injuries in the case of a sheltered population. There also would be fewer cases of severe radiation sickness. However, it seems likely that among the sheltered population injuries will consist primarily of contusions and broken bones as a result of ground shocks to the shelters, asphyxiation, carbon monoxide and carbon dioxide poisoning, and heat prostration. Furthermore, it is likely that in the case of a sheltered population, multiple injuries will not constitute the major form of all injuries as in the case of an unprotected population.

Soviet manuals note that in the event a pre-attack evacuation of the population of risk cities is carried out, the number of casualties in these cities will be reduced "eight to ten fold" or more.²⁴ That it is not reduced to zero is due to Soviet plans to maintain essential industries and installations in operation even in the face of a threat of a nuclear attack. Consequently, duty workshifts of essential workers will be present at these enterprises and installations in the risk areas.²⁵ While it is anticipated that these workers will be provided with blast shelters where they will take cover in the event of an attack, some casualties among them are expected because they may find themselves in Zones of Total Destruction or Severe Damage. Soviet publications, however, give no indication of the number of workers who may be at risk and make no estimates of the number of potential casualties among them.

According to Soviet manuals, it is anticipated that the percentage of survivors in the targeted areas whose only injury would be exposure to dangerous levels of radiation will be relatively low. It is anticipated, however, that in the event of an attack on an unprotected population, a high percentage of casualties with multiple injuries may also receive dangerous doses of radiation. Soviet manuals warn that in addition to causing the death of a portion of the initial survivors in the months following the attack, radiation sickness will greatly complicate the treatment of other injuries and significantly delay recovery from them.

Aside from radiation casualties in the area of nuclear destruction, radioactive fallout will pose a threat of causing such casualties among the population outside these areas. Soviet manuals, therefore, pay attention to the problems of radiation sickness and the radiation doses associated with various levels of severity of this sickness. In general, the Soviets identify four levels of severity of radiation sickness.²⁶ According to the manuals, whole body doses of up to 50 rads of gamma radiation received during a period of one to four days and of 100 rads over a period of ten days are considered to be safe. Doses of 50 to 100 rads received during a period of one to four days have adverse effects on blood cells. Acute radiation sickness Level I, which is also characterized as "light," is said by some Soviet authors to occur in the case of whole body radiation doses of 100 to 200 rads in a period of one to four days²⁷ and by others with doses of 150 to 250 rads.²⁸ No fatalities appear to be expected as a result of these doses; at most only five percent of these casualties may require significant medical assistance.²⁹ Radiation sickness Level II, called "moderate," is variously associated with whole body radiation doses in a period of one to four days of 200 to 300 rads, 200 to 400 rads, 250 to 400 rads, and 250 to 450 rads. Radiation sickness Level III, called "severe," is variously associated with whole body radiation doses in a period of one to four days of 300 to 500 rads, 300 to 600 rads, 400 to 600 rads, 450 to 600 rads, and 400 to 1,000 rads. Radiation sickness Level IV, called "dangerous," is variously associated with whole body radiation doses in excess of 500 rads, 600 rads, and 1,000 rads. According to one manual, the mortality rate will be 5 percent with a dose of 270 rads; 10 percent with 320 rads; 20 percent with 370 rads; 50 percent with 450 rads; and 100 percent with 750 rads and larger doses.³⁰ It is also acknowledged that without medical attention all persons who receive a dose of 600 rads must be expected to die.³¹

Soviet publications give no indication of the size of the population which in various attack scenarios may be subjected to radioactive fallout. Of course such projections are sensitive to a number of variables and assumptions. Nevertheless, many maps have been published in the United States by government agencies and private groups showing the possible fallout patterns which may occur in the United States as a result of various attack scenarios and assumptions about prevailing winds. Such maps serve to estimate the size and locations of the population which may be threatened by fallout as well as possible radiation casualties depending on different protection factors assigned to the population.

No such maps, however, are published in the Soviet Union. Soviet publications also avoid any discussion of possible fallout tracks and contours and the population which may be at risk as a result of a single strike on any specific single Soviet military or civilian target. Instead, discussion of this problem is limited to a theoretical examination of the contour of a hypothetical fallout track and to the characterization of the three zones of radiation intensity and dose distribution into which the contaminated area along the track is divided.³² Zone A, called "moderate contamination," is defined as the contaminated area whose outer boundary is marked by a free-in-air infinite dose of 40 rads and a rate of radiation one hour after the detonation of 8 rads per hour. Zone B, called "severe contamination," has an outer boundary marked by a free-in-air infinite dose of 400 rads and a rate of radiation one hour after the detonation of 80 rads per hour. Zone C, called "dangerous contamination," has an outer boundary characterized by a free-in-air infinite dose of 1200 rads and a radiation rate one hour after the detonation of 240 rads per hour.

On the basis of this model, Soviet manuals³³ note that in Zone A, individuals who remain in the open could receive an effective radiation dose of 20 to 200 rads. However, if they remain indoors, they may receive a dose of 13 to 133 rads if they stay in rural structures and 4 to 40 rads if they remain in urban structures which are assumed to have a higher coefficient of radiation protection than those in rural areas. Given that Soviet instructions require the population to remain under cover at least for the first days after the start of the fallout, it can be anticipated that in Zone A only some of the population in the rural areas may receive doses which would cause Level I radiation sickness. In Zone B, the population may receive an effective dose of 200 to 600 rads if it remains in the open, but only 133 to 400 rads if it stays in rural buildings and 40 to 120 rads in the case of individuals remaining in urban buildings. Consequently, while individuals who remain in the open will come down with Levels II and III radiation sickness, those who stay in rural buildings will come down with Levels I and II radiation sickness. In the case of the individuals who remain in urban buildings, only those near the outer boundary of Zone C will come down with Level I radiation sickness. In Zone C the effective dose will depend on the intensity of the radiation in excess of the free-in-air infinite dose of 1200 rads which marks its outer boundary. It must be anticipated that the majority of the unsheltered population in this zone will come down with Levels III and IV radiation sickness. According to Soviet projections,

persons with Level I radiation sickness will not require hospitalization. Those with Levels II and III radiation sickness will have to be hospitalized and given extensive medical treatment, while those with Level IV radiation sickness are considered beyond medical help and, therefore, should not be hospitalized.³⁴

According to one Soviet medical civil defense manual, it is suggested that for planning purposes, assuming that the population will use normally available cover in the fallout zone, the following breakdown of radiation casualties can be anticipated: 20 percent with Level I radiation sickness, 20 percent with Level II, 30 percent with Level III, and 30 percent with Level IV.³⁵ From this it is inferred that only 40 to 50 percent of all radiation casualties in the fallout zone would need to be hospitalized -- that is, all cases with Levels II and III radiation sickness.³⁶ No such projection is made for the case where the population in the fallout zone makes use of anti-radiation shelters, as is prescribed in Soviet civil defense plans. If such shelters have a radiation protection factor (PF) of 40 and greater, there would be relatively few radiation casualties, and most of them would probably suffer from Level I radiation sickness.

From the viewpoint of the magnitude of the medical problems confronting CDMS, the most significant fact about radiation casualties is the latent phase of the radiation sickness during which the individual has few, if any, symptoms of the sickness. Depending on the radiation dose received, the latent phase may last from several days to several weeks. According to Soviet manuals, the latent phase in the cases of Levels II and III radiation sickness may be of one to five weeks' duration.³⁷ Consequently, it is anticipated that the majority of these cases will not require immediate hospitalization or significant early medical assistance beyond the alleviation of some of the initial symptoms, i.e., nausea and vomiting. This would allow the CDMS to initially concentrate its resources and efforts on providing urgent medical assistance to those suffering from other types of injuries.³⁸ It is also anticipated that this will initially ease the demand for hospital beds because the main element of persons with Levels II and III radiation sickness will not begin to enter the hospitals until several weeks after the attack.³⁹ Presumably, this would be so because during the latent phase, the victims will not realize that they are suffering from acute radiation sickness. Of course, it is also possible that during this phase they would be denied admission to the hospitals.

U.S. projections of the possible magnitude of Soviet casualties vary with attack scenarios and assumptions about the extent of implementation of Soviet civil defense measures and their effectiveness. Thus, one such projection is based on what may be characterized as a "worst-case scenario," that is, it assumes a massive U.S. retaliatory attack designed to maximize damage to Soviet industry and military targets and, therefore, includes strikes on major Soviet cities. According to this projection, in the case of only a few hours warning, during which presumably the population would seek protection in the best available shelters it can reach, prompt effects and fallout from the attack may cause approximately 100 million casualties, half of which may be fatalities.⁴⁰ With the same attack scenario, it is projected that if the Soviets are able to fully implement their sheltering and evacuation programs, casualties may be reduced "to about 50 million, two-thirds of which would be fatalities."⁴¹ Some Soviet manuals suggest that in the event of the successful implementation of pre-attack evacuation of the population at risk, there would be only some 10 percent of this population, i.e., essential workers, in the risk areas at the time of the enemy attack, or some 10 to 12 million if residents of all cities with 100,000 inhabitants and greater and some significant smaller cities are included.⁴² Given that the essential workers will take cover in blast shelters, which may be hardened to withstand 100 to 150 psi blast overpressure, casualties among this element are likely to be well below 10 million. Of course, additional casualties may result from the fallout, especially if a portion of the fallout shelter occupants leave their shelters before it is safe to do so. However, especially in the light of the current U.S. "countervailing strategy," other scenarios are possible which may pose a significantly lesser threat to the Soviet population. For example, the United States may avoid attacks on Soviet cities, it may exercise great restraint in inflicting collateral damage on urban areas, it may be very selective and restrained in targeting Soviet industry, and so on. In brief, most alternate attack scenarios to the case assumed in the above U.S. estimates would be likely to result in significantly fewer Soviet civilian casualties.

Although it is probably sensible for USSR Civil Defense and the CDMS to plan and prepare for some sort of worst-case attack scenario, this scenario may be quite different from the massive surprise counter-city attacks assumed by some elements of the public in the United States. Even though the Soviets do not publish their scenarios,

at least one Soviet manual makes it obvious that such scenarios exist. This recently published medical civil defense manual was approved by the Main Administration of Educational Institutions of the USSR Ministry of Public Health for use in instructing medical students. According to the manual's authors:

As is known, the plans of the CDMS for the eventuality that the enemy may use weapons of mass destruction are developed already in peacetime. The possibilities of identifying sufficiently accurately the probable targets of an enemy missile nuclear strike allows the CDMS to forecast in advance the magnitude and character of medical losses i.e., injured and injuries and to select the optimal option of utilizing its forces and means to provide the population with medical assistance.⁴³

The authors note, however, that it is "difficult to fully foresee the possible course of events" and that "the situation may change to such an extent that it will be impossible to implement the adopted plan." Thus, adjustment or changes in the plan may be necessary in accordance with actual events.⁴⁴ Furthermore, even though the above manual claims that the CDMS plan anticipates the probable targets of an enemy nuclear strike, it remains unclear what sort of warning of an attack and civil defense measures to protect the population are assumed in it.

There is no doubt that Soviet CDMS expects to be confronted with a mass of injured civilians requiring medical assistance. Obviously there are upper limits to the capability of any medical service, no matter how well organized and prepared, to provide effective and timely medical assistance to mass casualties--all the more so in the difficult conditions resulting from a nuclear attack. What these limits might be, the Soviets do not say. Publicly, they do say that the medical problems which may result from a nuclear attack can be dealt with, that the Soviet population can expect to receive medical assistance, and that the organization, plans, and preparations of CDMS are designed to mobilize all Soviet medical resources and to maximize capabilities and readiness to provide this assistance.

2.3 SOVIET VIEWS ON CONDITIONS IN WHICH MEDICAL ASSISTANCE MAY HAVE TO BE RENDERED

According to Soviet medical civil defense manuals, the rendering of medical assistance to the population during a nuclear war and its aftermath, especially in areas of nuclear damage, will be fraught with great difficulties. These difficulties will be of various kinds. In particular, they relate to questions of the capabilities of CDMS to meet the demands of providing medical assistance to large numbers of casualties, the post-strike environment in which the CDMS will have to operate, and, related to this, the timeliness of assistance to the injured.

It is obvious that the sudden, nearly simultaneous appearance in many parts of the country of very large numbers of injured individuals requiring medical assistance poses a major problem for the CDMS. The CDMS must expect to be confronted with a maximum demand on its forces and means from the start of a nuclear war involving a strategic exchange. Some Soviet manuals, therefore, mention the possibility that the capabilities of CDMS may not be sufficient to deal with the demand for its services.⁴⁵ This problem would be compounded by casualties among medical personnel and the destruction of many medical institutions and facilities before they can be evacuated to exurban areas in the event of little prior warning of an enemy attack.⁴⁶ Reference is made to the heavy casualties suffered by medical personnel in Hiroshima and Nagasaki.⁴⁷ Thus, it is acknowledged that at least in some localities struck by nuclear weapons the local CDMS may be left with insufficient forces and means to meet the demands for medical assistance.⁴⁸ At least one manual asserts that the discrepancy between the number of injured persons requiring surgery and the "limited capabilities of the medical service remain a rule in wartime."⁴⁹ This discrepancy may be larger or smaller, temporary or protracted, localized or general, but "it will inevitably occur."⁵⁰ Shortages of local medical capabilities may be compensated for by assigning medical formations from rural areas and unharmed towns to assist the cities or areas which suffered nuclear strikes.⁵¹ However, at least some of the medical forces outside the stricken areas may be pinned down by fallout.

CDMS operations in the zones of nuclear damage, in order to provide initial assistance to casualties, will face particular difficulties. Soviet manuals generally

note that such operations will have to be carried out in conditions of disruption of transportation, blocked roads and streets, fires, damage to water and gas mains and sewers, radioactive and also possibly chemical contamination, absence of electric power and water for use by the medical aid units, etc.⁵² As will be discussed in greater detail in a subsequent section, medical activities by CDMS in the actual zones of nuclear damage will be carried out in conjunction with rescue operations conducted by other civil defense formations.⁵³

Actually, conditions in the zones of nuclear damage where rescue operations of the surviving population will be conducted will differ. According to one manual, in the Zone of Total Destruction by blast, work conditions for CDMS formations will be "extremely unfavorable;" the value of rescue work which can be done in this zone for purposes of the timely rescue of survivors will be "minimal."⁵⁴ This view is also reflected in Soviet manuals dealing with post-attack rescue and engineering operations.⁵⁵

As was noted above, in this zone it is anticipated that the unprotected elements of the population will suffer 90 percent or more fatalities, and that 25 percent or more of the blast shelters will be destroyed. Search for survivors among the rubble, therefore, would be essentially fruitless. As to the surviving sheltered population, no early rescue is likely given the difficulties of reaching the shelters, a high percentage of which may be buried under masses of debris. In the Zone of Severe Damage, conditions for the deployment and operations of CDMS units will also be very unfavorable (masses of rubble blocking roads and streets, mass fires and possible fire storms, radiation, etc.). Here again it is assumed that it will be very difficult for the rescue and CDMS formations to penetrate this zone. At least 50 percent of personnel on the surface in this zone at the time of the detonation will be casualties; 35 percent of them fatalities. Only personnel in blast shelters may survive if the air intakes are not blocked by debris or the shelters are equipped with air regenerators. It is noted that in this zone, rescue work will consist mainly of opening passages through the rubble (or building routes over it), firefighting, and efforts to provide air to shelters with blocked ventilation air intakes. Because of the height of the rubble and fires, penetration of this zone by civil defense rescue and medical formations will be slow. In the Zone of Moderate Damage, however, conditions for the operations of rescue and medical formations will be more favorable. The amount of destruction will be

significantly less, and all shelters will survive, as well as most underground utility lines. However, the formations may have to contend with radioactive and chemical contamination and mass fires. As was noted, it is estimated that among an unprotected population in this zone, a total of 40 percent would be casualties; however, of these, 15 percent would be fatalities, while 25 percent would be injured, with no significant losses among the sheltered population.⁵⁶ At least one Soviet manual concludes from this that, given that the largest percentage of injured persons among the unprotected population will be in this zone, it will be the focus of the main effort of rescue operations and, therefore, also the focus of the activities of CDMS formations.⁵⁷

A major problem for effective medical assistance to injured persons as a result of a nuclear strike is that of the timeliness of this assistance. It is noted that medical assistance is most effective if it can be rendered in 30 minutes after the injury occurs, or again that the mortality rate among the injured will double if essential surgery is delayed by 12 to 24 hours after the injuries are incurred.⁵⁸ It is hoped that, the radiation environment permitting, it will be possible for the civil defense forces deployed in the exurban areas to initiate rescue operations in the zones of nuclear damage in a few hours after the strike.⁵⁹ Even so, it is recognized that the penetration of the zones of nuclear damage and the search for survivors will be slowed by rubble, fires, destroyed bridges, and other obstacles, especially in areas of moderate and severe damage. Consequently, a persistent theme in Soviet civil defense publications is the importance of initial medical self and mutual help by the survivors themselves while waiting for rescue and medical assistance.⁶⁰ The Soviet Civil Defense Program, therefore, provides for instruction of the population in first aid as a part of its compulsory civil defense training program. The program also includes a discussion of the contents and use of a special individual first aid kit for civil defense personnel and the general population. However, there is no information on the extent of availability of these kits.

Section 2
FOOTNOTES

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3. "The Armed Forces of the USSR in the Post-War Period," Kommunist Vooruzhennykh Sil, No. 13, July 1979, p. 72. See also, Marshal of Aviation G.V. Zimin, editor, Razvitiye Protivovozdushnoy Oborony (Development of Anti-Air Defense), (Moscow: Voenizdat, 1976), p. 87; Grechko, op. cit., p. 92; Major General R. Simonyan, "In Search of a 'New Strategy'," Pravda, March 19, 1979; Colonel M. Ponomarev, "The United States: A Strategy of Confrontation," Krasnaya Zvezda (Red Star), February 7, 1982.
4. See L. Goure, Civil Defense in Soviet Strategic Perceptions, Final Report, (Washington, D.C.: Advanced International Studies Institute, 1980), prepared for the Defense Nuclear Agency under Contract DNA 5174F, pp. 53-63; B.S. Lambeth and K.N. Lewis, "Economic Targeting in Nuclear War: U.S. and Soviet Approaches," Orbis, Spring 1983, pp. 127-149.
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Section 3

CIVIL DEFENSE INSTRUCTION PROGRAM FOR MEDICAL PERSONNEL AND MEDICAL INSTRUCTION OF OTHER PERSONNEL

In the Soviet Union, civil defense instruction is compulsory for the entire population. Subject to this instruction are students in secondary, vocational and middle-level schools, and institutions of higher learning (VUZ), as well as all working adults and the physically able non-working adult element of the population. Soviet authorities regard the citizens' participation in this program as a duty. In support of this, they cite Article 32 of the 1977 USSR Constitution, which states that it is the duty of citizens to participate in "strengthening the defense capability of the country," and also Article 62, according to which "defense of the socialist fatherland is a sacred duty of every citizen of the USSR."¹ The persistent Soviet official line is that civil defense helps to strengthen the defense capabilities of the Soviet Union and that citizens serving in civil defense forces are an important part of the country's defense and warfighting capabilities. Furthermore, in addition to universal compulsory military service, the Soviet Union has a long-standing program of compulsory military instruction of students in secondary and middle-level schools and institutions of higher learning. In the latter case, most male graduates become commissioned officers in the reserve. Given the important role medical personnel play in the USSR Civil Defense program and in the Soviet Armed Forces, it is not surprising that not only medical students but also medical personnel in general are given instruction in civil defense.

3.1 CIVIL DEFENSE INSTRUCTION PROGRAM FOR STUDENTS IN MEDICAL SCHOOLS

The Soviet Union has a very large medical education program. There are 92 medical schools attended by in excess of 300,000 students, and some 649 schools for middle-level medical personnel with over 400,000 students.² Students in medical schools undergo a six-year instruction program, and those in middle-level schools receive two to three years of instruction. Students in the first group become physicians, while those in the second group become "fel'dshers" (doctor's assistants), nurses, midwives, dental assistants, pharmacists, opticians, laboratory technicians, hygienists, and so on.³

All Soviet medical schools include a military department whose faculty is charged with the instruction of students in military subjects--in particular, military medicine, and in the organization and tactics of the armed forces' medical services. One objective of the program is to prepare graduates for officer commissions in the reserve or for active duty in the medical services of the armed forces.⁴ This program also includes instruction in civil defense. The medical students are given military-civil defense instruction throughout all or most of their six-year study program. This instruction program is mandated and approved by the USSR Ministry of Public Health and specifically by its Main Administration of Educational Institutions.

Civil defense instruction for medical students includes a basic course on civil defense and specific courses aimed at preparing students for service in the Civil Defense Medical Service (CDMS).⁵ It appears that the basic course is similar in content to the one given the general population which deals with weapon effects, civil defense warning signals, individual means of protection, shelters, evacuation, decontamination, protection of food and water, and so on. Along with this, however, the civil defense program for medical institutions is said to "differ significantly from the programs of other types of institutions of higher learning."⁶ This is so because medical students are prepared for active service in civil defense medical formations, especially the First Medical Assistance Detachments (OPMs), which will be deployed in or near areas of nuclear destruction (see Sections 4 and 5). Among the subjects studied by the students are: "The organization of the Civil Defense Medical Service and its tasks;" characteristics of different centers of mass destruction [i.e., nuclear, chemical, bacteriological, conventional, large natural or technical disasters, etc.] and the tactics to be employed in them by the civil defense medical formations; the types of medical assistance to be given the population during evacuations; and the composition of civil defense forces in the exurban zone."⁷ The instruction program ends with an examination-exercise which, according to one Soviet source, requires up to eight hours to complete and is primarily focused on the theme, "The Operations of the OPM in a Center of Mass Destruction."⁸ It is further emphasized that in addition to theoretical studies, the main "emphasis in the [civil defense] instruction of medical students is on practice."⁹ The students are given specific training in diagnoses of injuries, emergency medical assistance, evacuation of casualties, and treatment of injuries in the course of their medical instruction and as part of the military-medical instruction program.

The content of the civil defense instruction program for medical students is reflected in a handbook published in 1981, which is said to be "approved by the Main Administration of Educational Institutions of the USSR Ministry of Public Health for use as an instruction manual by students of medical institutes."¹⁰ Furthermore, it is stated that "the instruction manual is prepared in accordance with the civil defense instruction program for students of higher educational institutions, which has been approved by the USSR Ministry of Higher and Middle-Level Education, the Chief of USSR Civil Defense, and Deputy USSR Minister of Defense."¹¹ The topics dealt with in this handbook are as follows:

1. Organization of CDMS, its formations and institutions.
2. The medical-tactical character of centers of destruction; nuclear weapon effects; projections of percentages of casualties among the population and types of injuries; fallout zone and characteristics of various levels of radiation sickness; types of possible chemical contamination and medical characteristics of casualties; problems of operations of medical formations in zones contaminated by bacteriological weapons, and in areas of epidemics of contagious diseases.
3. Medical assistance to the population during: the implementation of civil defense measures in peacetime and natural disasters, a threat of enemy attack, the evacuation of the population and medical institutions from risk areas, and also during post-strike rescue operations in the zones of destruction.
4. The post-strike system of evacuation and treatment of injured persons, including the question of the magnitude and types of medical assistance that may be required, triage of casualties, and methods and organization of the evacuation of injured persons.
5. Work of CDMS formations during post-nuclear strike rescue operations, operations of first aid units, first medical assistance detachments and their various sections, and the same for post-chemical strikes.
6. Organization of specialized medical assistance in the exurban zone, types of hospitals, their mission and operations.

7. Post-strike hygienic and epidemic prevention assistance to the population and the injured, special hygienic and epidemic prevention measures during the evacuation of the population, and measures taken by the CDMS forces to liquidate centers of epidemics and of enemy strikes with bacteriological weapons.
8. Equipment and supplies of CDMS formations, the organization of the supply system, and procedures for resupply.
9. Civil defense planning by public health institutions, the character and content of such plans, their coordination and approval, and the preparation of the medical portion of civil defense plans of installations of the national economy.

In the light of this instruction program, the final examination-exercise assesses the students' knowledge of such subjects as: The deployment of mobile medical formations in the exurban zone following the evacuation of medical institutions and personnel from the cities; the organization of the movement of medical formations to the zones of destruction; the correct selection of sites for the deployment of OPMs; use of radiation measuring instruments and assessments of the radiation environment; estimates of equipment, personnel, and numbers of dressing and surgical teams required for given situations; triage procedures at OPMs; and correct medical tagging of casualties.¹² The latter exercise may be conducted in an actual OPM deployed at the medical institute. Some portion of the examination may also be conducted at special training sites simulating a zone of nuclear destruction where the students demonstrate their skills in rendering first aid to and evacuating casualties.¹³

Students in middle-level medical schools also receive instruction in civil defense. According to one Soviet source, they receive at least 20 hours of special instruction in civil defense as a part of their military instruction program. This program is said to allocate one hour to the study of "civil defense of installations of the national economy (or at educational institutions)," four hours to the study of "characteristics of weapons of mass destruction of foreign armies," three hours to the study of "civil defense warning signals," and 12 hours on medical subjects dealing with first aid, hygiene in disaster situations, and other medical subjects depending on the specific speciality of the students and schools.¹⁴ This instruction is in addition to the regular medical training program.

3.2 CIVIL DEFENSE MEDICAL INSTRUCTION PROGRAM FOR STUDENTS IN HUMANITIES STUDIES

Civil defense medical instruction is also given to students in humanities study programs at institutions of higher learning (VUZs). The objective of this instruction is to prepare the students to function as members of first aid squads, medical nurses, or nurses assistants in OPMs and civil defense hospitals in the event of an enemy attack.¹⁵ The students receive 40 hours of instruction, 24 hours of which deal with the care of hospitalized patients.¹⁶ The program devotes four hours to "practical" training in the subject of "actions of the first aid teams in areas of destruction," and the final examination includes first aid work in an OPM.¹⁷

A medical civil defense manual for students in humanities VUZs, published in 1980 in Kiev with the approval of the Ukrainian Ministry of Higher and Middle-Special Education, deals with the following topics: Mission and organization of civil defense; basic principles of protection of the population; organization of CDMS; types of medical assistance; hygiene and epidemic prevention work; character, uses, and organization of first aid and first medical assistance in zones of destruction; actions of first aid teams and operations of OPMs; the functions and responsibilities of nurses in an OPM; the organization of the hospital system in the exurban zones; and the responsibilities of nurses for patient care.¹⁸

It should be noted that in addition to instruction in medical civil defense given to students of humanities VUZs, it is general practice to organize a portion of the students into civil defense first aid squads and detachments for immediate duty in the event of an enemy attack.

3.3 INSTRUCTION PROGRAM FOR PHYSICIANS AND MIDDLE-LEVEL MEDICAL/HEALTH PERSONNEL

Civil defense instruction of medical and public health personnel does not end with their graduation from basic courses at professional schools. The instruction continues along several tracks. One such track is the compulsory military and civil defense instruction of physicians while they attend post-graduate medical studies programs to upgrade their professional qualifications and specializations. Another

track is the civil defense instruction program for working medical and public health personnel given at their places of employment. Still another is the instruction program for this personnel assigned to CDMS formations.

Post-graduate courses for physicians are given in special medical institutes and also by special faculties of medical and pharmacology schools. In 1973, there were 26 such schools and faculties which were attended by some 75,000 physicians and pharmacists.¹⁹ Such courses can be of several years' duration, during which military and civil defense instruction programs are continued.²⁰ Although available Soviet publications provide no precise information on these programs, some of the civil defense medical manuals intended for use in these courses describe the content of the civil defense instruction program for these physicians.

For example, one manual, prepared by a group of professors of and PhD's in medicine and edited by a member of the USSR Academy of Medical Sciences, was published in 1975.²¹ The manual, which is 332 pages long, is divided into four sections, each made up of three to five chapters. The first section is devoted to a discussion and description of the effects of nuclear, chemical, and biological weapons, and the toxicology of radioactive materials. The second section deals with the organization and tactics of the CDMS in providing initial and subsequent medical assistance to injured persons and also discusses the operation of medical civil defense formations in zones of radioactive contamination. The third section deals with the character of medical assistance and therapy for persons injured by nuclear and chemical weapons. It discusses the basic principles of surgical assistance at the various stages of the evacuation of injured persons, clinical assessment and treatment of radiation sickness, and medical assistance to be given to persons exposed to various toxic chemical agents. The fourth section discusses other areas of civil defense medical assistance to the population, such as assistance to it during its evacuation from the cities, dosimetric control and individual anti-chemical defense, hygiene programs in the nuclear war environment, and anti-epidemic protection of the population.

Other examples are various medical civil defense manuals--prepared for the use of physicians with various specialties--providing specific instructions on the treatment, including surgical, of various injuries which may be caused by the effects of nuclear and chemical weapons.²² These manuals are also used for the instruction of physicians assigned to the CDMS.

Working medical and public health personnel are subject to compulsory civil defense instruction at their places of employment. At a minimum, all personnel are required to undergo annually 16 hours of the 20-hour basic compulsory civil defense instruction program for the working population.²³ However, as Soviet publications note, in principle, the CDMS encompasses "the entire public health organization" of the USSR.²⁴ Consequently, not only do all medical and public health institutions and organizations have civil defense staffs headed by the directors of these institutions and organizations and their chief physicians, but they are also required to organize various civil defense medical formations which may include a majority or all of the personnel employed by these institutions and organizations. For example, hospitals and polyclinics organize OPM detachments, Brigades of Specialized Medical Assistance (BSMP), triage posts, shelter services, evacuation commissions, and so on, while hygiene and epidemiological institutions organize mobile anti-epidemic detachments and brigades.²⁵ All these formations are supposed to be exercised according to an established program, and large hospitals periodically hold large-scale comprehensive exercises, which also include training exercises in the evacuation of the hospitals and their patients to exurban areas.²⁶

As outlined in Soviet civil defense manuals, civil defense instruction of the personnel of medical and public health institutions is organized as follows: The technical personnel and some elements of the junior medical personnel "must be trained in how to conduct rescue work in centers of destruction or in the event of natural disasters as a part of general purpose rescue formations, which are organized by large public health institutions for the purpose of carrying out rescue and emergency repair and restoration work on the territory of the hospitals (institutions)."²⁷ Along with this, "the medical personnel serving in the formations organized at their institutions are trained in accordance with specific programs designed for each type of formation."²⁸ Furthermore,

The tactical-special training of the personnel of institutions (head hospitals, specialized hospitals, blood transfusion stations, pharmacies, etc.) provides for the instruction of each institutions' personnel for actions within the institution during its preparation for readiness to operate in wartime conditions and during its deployment and functioning in the exurban zone.²⁹

In effect, therefore, all personnel who will remain assigned to the medical and public health institutions and organizations in wartime are expected to perform various civil defense tasks associated with the continuing functioning of their institutions. Consequently, it is stressed that "all medical personnel regardless of whether or not they are serving in some sort of [civil defense] formation, must undergo special instruction in subjects of the [civil defense] medical service."³⁰

The length of the civil defense instruction program for various medical and public health personnel and for personnel assigned to civil defense medical formations varies.³¹ For example, in the case of physicians assigned to Mobile Anti-Epidemic Detachments (PPEO), which are organized by Hygiene-Epidemic Control Stations, they receive 88 hours of civil defense instruction, including 32 hours of lectures, 26 hours of practice, and 30 hours of exercises.³² The physicians assigned to Specialized Anti-Epidemic Brigades (SPEB) which deal with dangerous infectious diseases, are given 98 hours of instruction, including 32 hours of theory, 18 hours of practice, and 48 hours of exercises.³³ At medical therapeutic institutions, preparation of personnel for comprehensive exercises may require from "several days to several weeks," while the duration of the actual exercises is usually on the order of six to eight hours.³⁴

Figure 3.1 offers a schematic overview of the system of civil defense training of medical and public health personnel and members of CDMS formations.

3.4 INSTRUCTION PROGRAM FOR CIVIL DEFENSE FIRST AID PERSONNEL

In the Soviet civil defense medical system, an important role is played by non-professional "volunteer" first aid squads (sanitarnyye druzhiny) and also by first aid posts (sanitarnyye posty). They constitute the mass element of the CDMS.³⁶ These squads or detachments and posts are made up primarily of female workers and students and are organized not only at medical and public health institutions but also at factories, economic installations, transportation, educational institutions, large administrative organizations, collective and state farms, and so on. Their function is to provide first aid to injured persons in conjunction with the operations of civil defense rescue formations in areas of nuclear damage and of peacetime disasters, to assist the OPMs, and also to function as nurse-aids and give other assistance in CDMS hospitals in the exurban areas.

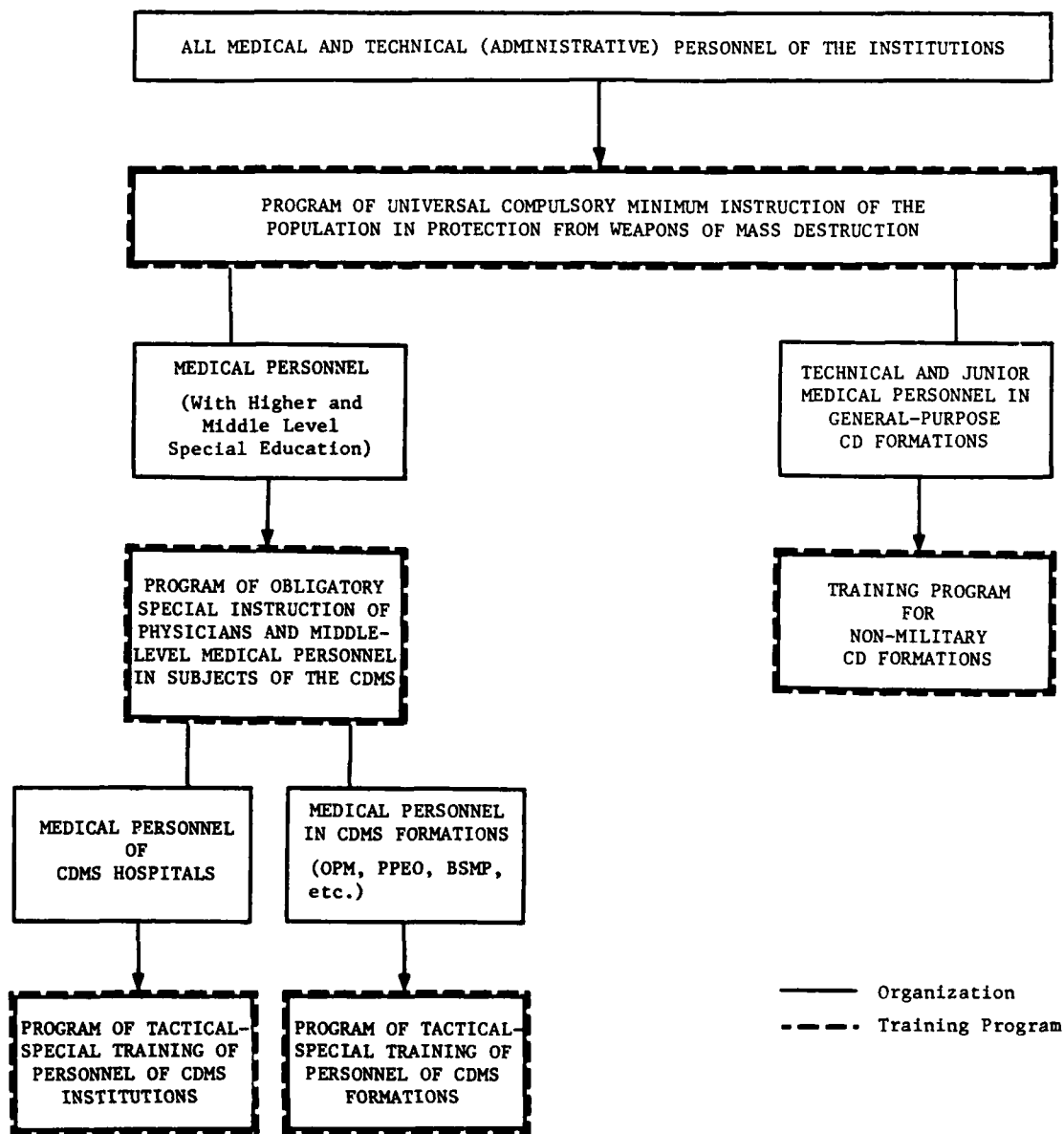


Figure 3.1 Training System for Medical and Public Health Personnel and CDMS Formations³⁵

Medical instruction of the personnel of these posts and squads is by the Red Cross and Red Crescent Organization, and by professional medical personnel. It should be noted that officially the All-Union Red Cross and Red Crescent Organization had 109 million members in 1982, and that among its functions is the education of the population in first aid and mutual medical help, hygiene, and as noted above, the instruction of the first aid squads and posts.³⁷ The participation of medical and other public health personnel as instructors in this training program is mandated by an order of the USSR Ministry of Public Health of July 11, 1979.³⁸

In addition to the basic civil defense instruction program for the working population, members of the first aid squads and posts receive 40 hours of special instruction with emphasis on practical knowledge and exercises (34 hours).³⁹ This instruction program deals with such topics as: The organization and mission of CDMS and the role and mission of first aid squads and posts; the equipment and supplies of first aid personnel and their uses; operation of first aid squads in zones of nuclear destruction and chemical contamination; first aid for various injuries (open wounds and bleeding, bruises, internal injuries, bone fractures, injuries to extremities, radiation sickness, multiple injuries, cardiopulmonary resuscitation); transportation and evacuation of casualties; actions in zones of epidemics of infectious diseases; activities of first aid squads in CDMS hospitals and care of patients; and activities of first aid squads in zones of natural disasters.⁴⁰ Commanders of first aid squads undergo special instruction every three years at rayon (i.e., city, district or county) civil defense courses.⁴¹ In addition to the formal instruction program, the personnel of first aid teams and posts participate in civil defense exercises at their work places or with the public health institutions to which they are assigned for emergency duty. There is also a program of local, regional, and national competitions for the first aid squads and posts.⁴² These may be preceded by several days of refresher instruction for the squad's personnel.⁴³

First aid instruction is also given to middle-level medical technicians, personnel of public order and firefighting services, and to utilities workers.⁴⁴

3.5 FIRST AID INSTRUCTION FOR THE GENERAL POPULATION

Soviet civil defense believes in the utility of instructing the citizenry in medical first aid. Aside from its peacetime uses, the requirement for such instruction is based on two considerations. The first is that in a war environment, given the possibility of the simultaneous injury of large numbers of persons and of considerable delays in the arrival of rescue and medical personnel, the survival of the injured may depend in a large measure on medical self-help and mutual help by the citizens themselves.⁴⁵ The other is that in an emergency all able-bodied citizens may be drafted to perform rescue work and to assist in rendering first aid to the injured.⁴⁶

Basic instruction in first aid is given in secondary schools and vocational schools as a part of their regular civil defense and pre-conscription military training programs and also is included in the basic 20-hour compulsory civil defense instruction program for the working population, as well as in the instruction program for non-working adults. The time allocated to this instruction is relatively short, from two hours for students in the fifth grade in the ten-year secondary schools, to four to five hours in the basic program for working adults.⁴⁷ However, female students in the ninth and tenth grades in secondary schools are given 35 hours of instruction in first aid to prepare them to work in wartime in the capacity of junior medical personnel in hospitals in the exurban zones.⁴⁸ School children receive additional practice in first aid in the course of annual para-military war games ("Zarnitsa" and "Orlenok").⁴⁹ In the case of the adults, it is important to keep in mind that the basic 20-hour civil defense instruction program is repeated yearly, with increased emphasis being given to practical knowledge and skills.

Formal first aid instruction is supplemented by special publications and radio and television programs. Thus, the basic civil defense pamphlet distributed to the general population contains a section on first aid dealing with: dressing of wounds, methods of halting bleeding and the use of tourniquets; application of emergency splints to fractured limbs; pulmonary resuscitation; how to carry injured persons; and assistance to persons in zones of chemical contamination.⁵⁰ Radio and television programs are used to discuss first aid for various types of injuries, such as: bleeding, bone fractures, crushing, burns, frostbite, electric shock, poisoning, radiation exposure, etc.⁵¹

In addition, first aid and hygiene knowledge for war and disaster situations is disseminated by the public lecture society "Znaniye" (Knowledge), physical culture and sports committees, and Hygiene Education Centers (DSP). There are in excess of 500 DSPs whose function is to instruct the population in hygiene and sanitation.⁵² Finally, the national and republic civil defense organizations distribute posters as well as slide shows and films dealing with first aid.

Although the implementation of the various instruction programs is uneven, it can be said, nevertheless, that all medical and public health personnel receive instruction in civil defense, while the great majority of the population is given instruction on various levels in medical first aid.

Section 3

FOOTNOTES

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Section 4

THE ORGANIZATION OF THE SOVIET CIVIL DEFENSE MEDICAL SERVICE

In the Soviet Union, the citizens receive free medical care. The Soviet medical or health service is entirely state owned and operated; there is no legal private medical practice. All physicians and medical personnel are affiliated with and work for the state health system. Obviously, this greatly facilitates not only the implementation of compulsory civil defense training programs at medical and other public health institutions and organizations, but also the compulsory incorporation of these institutions and organizations into the Civil Defense Medical Service (CDMS). This in turn allows the CDMS to mandate the creation at these institutions and organizations of various types of medical civil defense formations for use in disaster situations and wartime. It also makes it possible for the Soviet government to plan to mobilize the health system and most of its personnel, except for those called up for military service, to provide medical assistance to mass casualties which may occur in a nuclear war.

4.1 THE SOVIET HEALTH SYSTEM

In principle, The Soviet Union has a unified health system which is managed by the USSR Ministry of Public Health and the Ministries of Public Health of the member republics of the Soviet Federation. In practice, there are several medical subsystems organized to provide health services to different elements of the population with different degrees of control over them by the Ministries of Public Health. Of the six legal subsystems, five are administratively subordinated to the USSR Ministry of Public Health, i.e., elite, capital cities, provincial cities, industry, and rural.¹ The sixth consists of the Departmental Subsystem, which is operated by various USSR ministries and departments not under the control of the USSR Ministry of Public Health (see Figure 4.1, The Subsystems of Medical Care in the USSR).

A significant portion of the health facilities are accessible only to select elements of the population. This is the case of the elite subsystem called the Fourth Main Administration, operated by the USSR Ministry of Public Health, which provides health services for the Soviet party and government elite and their families at the

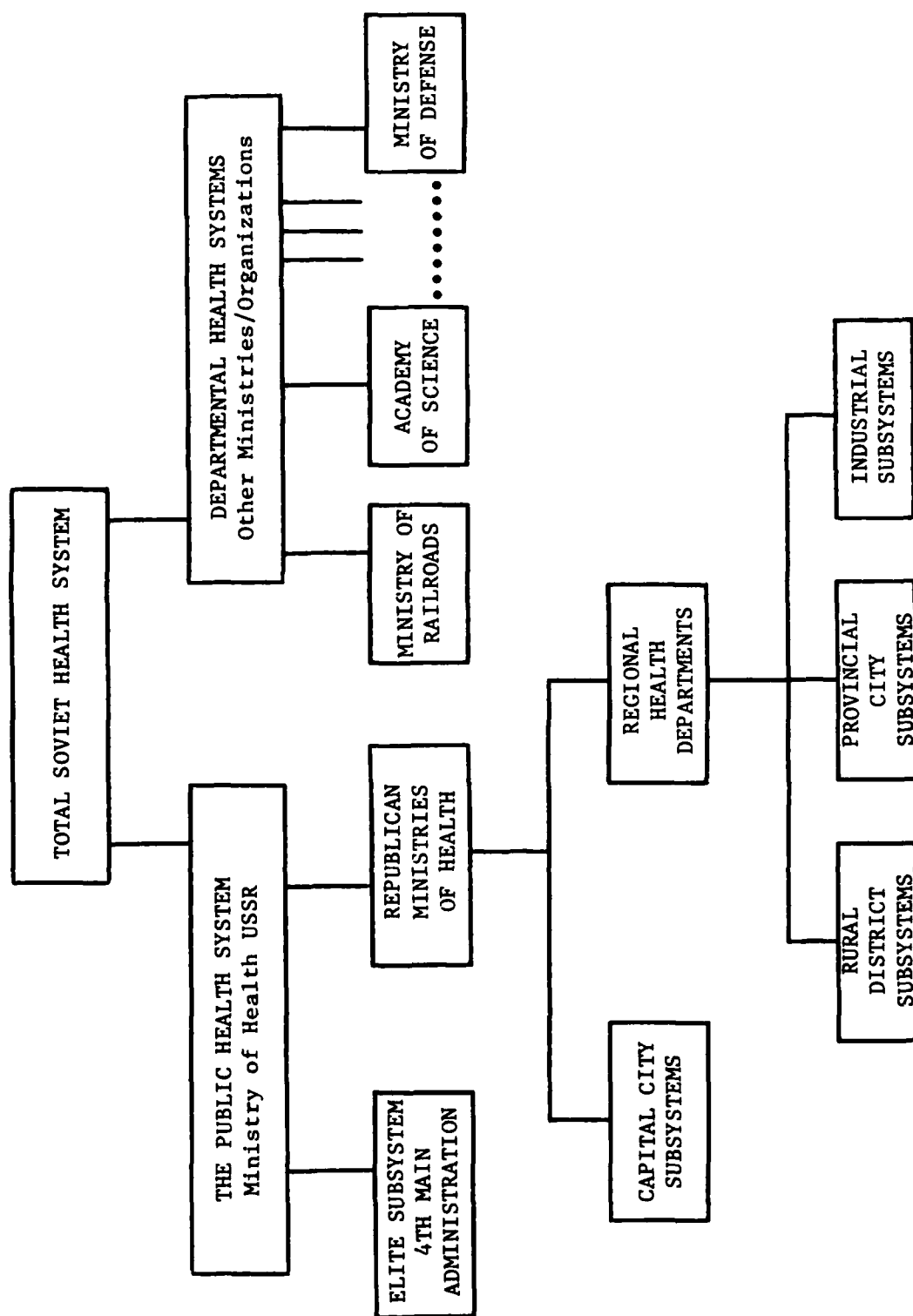


Figure 4.1 The Subsystems of Medical Care in the USSR

national and republic levels. This also applies to the departmental subsystem, made up of various USSR ministries such as Foreign Trade, Defense, Finance, Higher and Intermediate Education, Railroads, Internal Waterways, Merchant Marine, Civil Aviation, Aviation Industry, Security (MVD), and KGB, as well as some departments such as the USSR Academy of Sciences, which operate their own clinics and hospitals for their employees and their families. Finally, large industrial enterprises operate their own polyclinics and convalescent and rest homes for their employees and their families.²

Even so, the health services open to the general public are by far the largest. Not surprisingly, qualitatively the best subsystem is the one operated in the capital cities of the republics and directly administered by their ministries of public health. The health systems of other cities are generally subordinated to the regional province (oblast) public health departments. Large cities are divided into districts or boroughs (rayons) which have their own public health departments. These in turn are divided into microdistricts (uchastok) of roughly 2,500 adults, with each uchastok having an assigned polyclinic and an assigned hospital in the urban rayon.³ There is also an urban emergency ambulance service staffed by physicians. In addition, there is a network of hygiene-epidemiological stations with their own physicians. In the rural areas, there are rayon (county) hospitals at the administrative rayon centers and sometimes in the microdistricts, as well as polyclinics, aid stations, and midwife services at the villages and collective and state farms.⁴ Consequently, the great majority of Soviet physicians and medical personnel work in these subsystems. The quality of medical care varies not only with the subsystems but also by republics and oblasts where there are significant differences between them in the per capita number of physicians and medical personnel.

4.2 THE ELEMENTS OF THE CIVIL DEFENSE MEDICAL SERVICE AND THEIR FUNCTIONS

Medical care in general, and all the more so in a large-scale disaster situation such as a nuclear war, requires not only large medical capabilities to provide the necessary assistance to the population, but also a complex of various types of medical formations and facilities to ensure effective medical assistance.

4.2.1 The Scope and Structure of the Civil Defense Medical Service

"The Medical Service of Civil Defense is one of the leading services in the [USSR] civil defense system."⁵ The CDMS is based on "all existing medical-prophylactic and medical anti-epidemic organizations of the organs of public health and other ministries and departments," regardless of their administrative affiliation in peacetime.⁶ All ministries, departments, and agencies which have their own medical institution participate in the organization of medical civil defense formations and in the creation of a network of hospitals and dedicated health facilities for the deployment of CDMS hospitals in the exurban zones.⁷ It can be said, therefore, that in war conditions, the CDMS will include "the entire system of public health" in the Soviet Union, whose activities will be "subordinated to the interests of the country's defense."⁸

The CDMS system is organized on the territorial-administrative and production principle and, therefore, is essentially similar to the organization system of USSR Civil Defense as a whole. The ministries of public health of the USSR, republics and autonomous republics, and the chiefs of the public health departments of the regions (Kray or oblast), cities and urban rayons are the designated chiefs of the CDMS in the areas of their jurisdiction. In rural areas, the chief physicians of the central rural rayon hospitals are the chiefs of the CDMS for their rayon, and at economic installations, the chiefs are their senior physicians.⁹ At each level the chiefs of the CDMS are subordinated to the corresponding chief of Civil Defense and for "special questions," to the next higher chief of the CDMS. Each chief of CDMS has under his control CDMS formations and organizations or institutions. The practical work of organizing and training the CDMS forces in peacetime and operational control over them and CDMS hospital bases in the exurban zones in wartime is carried out by CDMS staffs organized at the various levels.¹⁰ In a disaster situation, the oblast or city CDMS staff can establish special Medical Sections for the operation sectors, i.e., for controlling medical operations in a given disaster area.¹¹

The command and control system in an oblast is shown in Figure 4.2 on the following page.

In a city, the CDMS chief is the chief of the city's Public Health Department. He is directly subordinated to the City's Chief of Civil Defense, who is the chairman of the Executive Committee of the City's Soviet (elected council). In the special cases

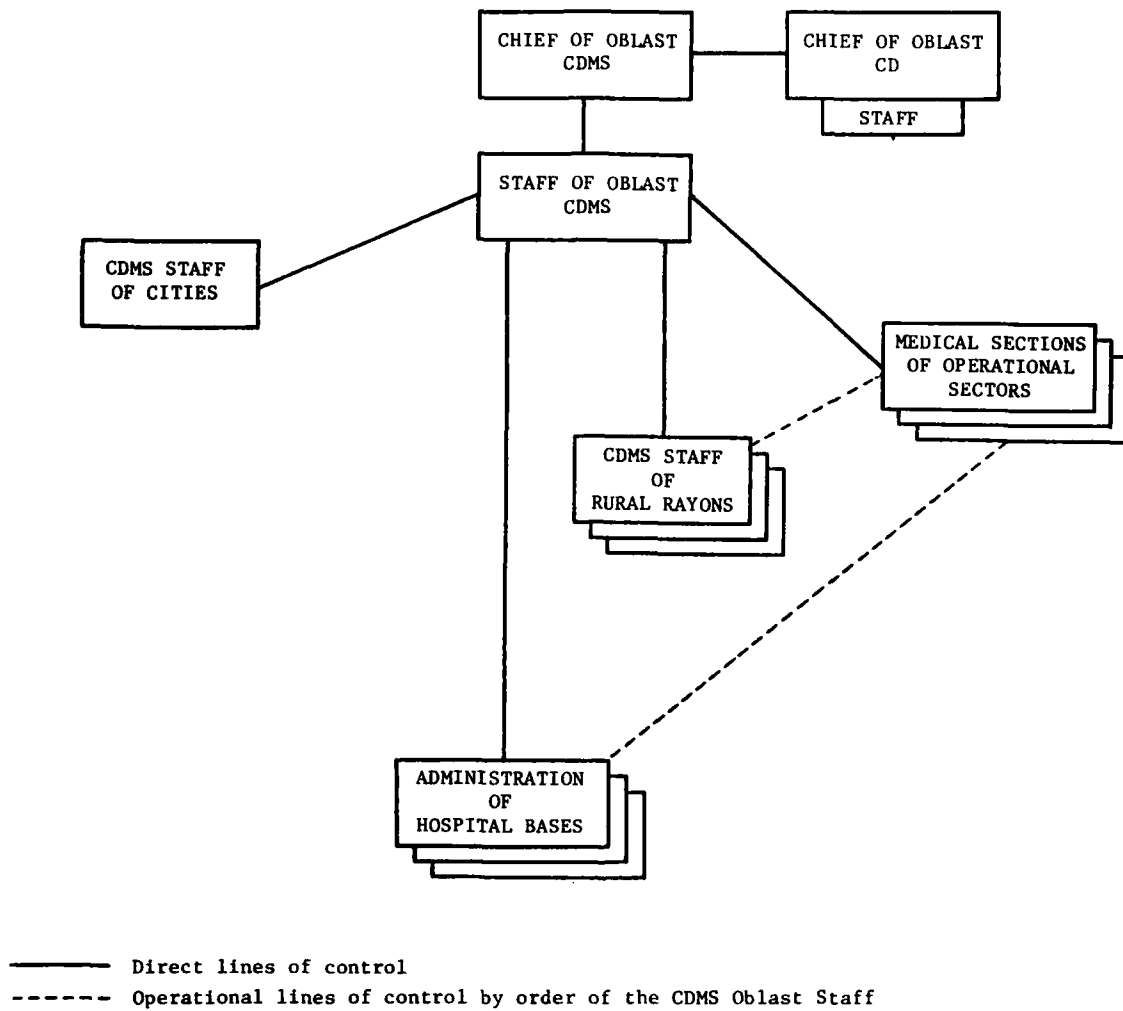


Figure 4.2 Schematic of Organs of Command and Control of the CDMS in an Oblast¹²

of Moscow, Leningrad, and the Moscow oblast, the chiefs of CDMS are the heads of Main Administrations of Public Health. The city and urban rayon chiefs of the CDMS have staffs, each composed of a chief of staff, a deputy for therapeutic-prophylactic work, an assistant for hygienic/anti-epidemic work, an assistant for evacuation of medical institutions and personnel, an assistant for medical supplies, assistants for mass medical formations, and a chief of the blood bank service (see Figure 4.3, Organization Chart of City, City Rayon, and Industrial Installation CDMS).

In the case of rural rayons, the organization of CDMS is largely similar to that of urban rayons. However, there is also a difference due to the fact that in the event of a threat of war, it is planned to deploy various urban hospital systems in rural rayons. Furthermore, the CDMS formations and institutions of rural rayons are usually considered to be the reserves of the chief of that oblast CDMS, and can be used by the latter to deal with disaster situations outside their own rayons.¹³ At large industrial installations, the chiefs of the medical service are the chief physicians who head up the enterprises' medical-hygiene divisions or the medical institutions attached to the enterprises.¹⁴

4.2.2 Mobile Medical Formations

Medical assistance to the population in disaster situations is based on a two-stage medical evacuation system. The first stage provides emergency assistance, the second, specialized therapy. To implement this system, CDMS has mobile formations and hospitals. Except for first aid squads, all mobile medical formations are organized on a compulsory basis at and by existing medical, hygiene, and epidemic control organizations and institutions of the Soviet health system.

The mission of mobile CDMS formations is:

1. To provide emergency medical assistance in centers of destruction.
2. To provide expert specialized medical assistance to supplement, where needed, the medical staffs of CDMS hospitals in the exurban zones.
3. To implement hygiene-sanitation and anti-epidemic measures in centers of epidemic diseases, as well as in zones of nuclear damage and contamination by bacteriological weapons.

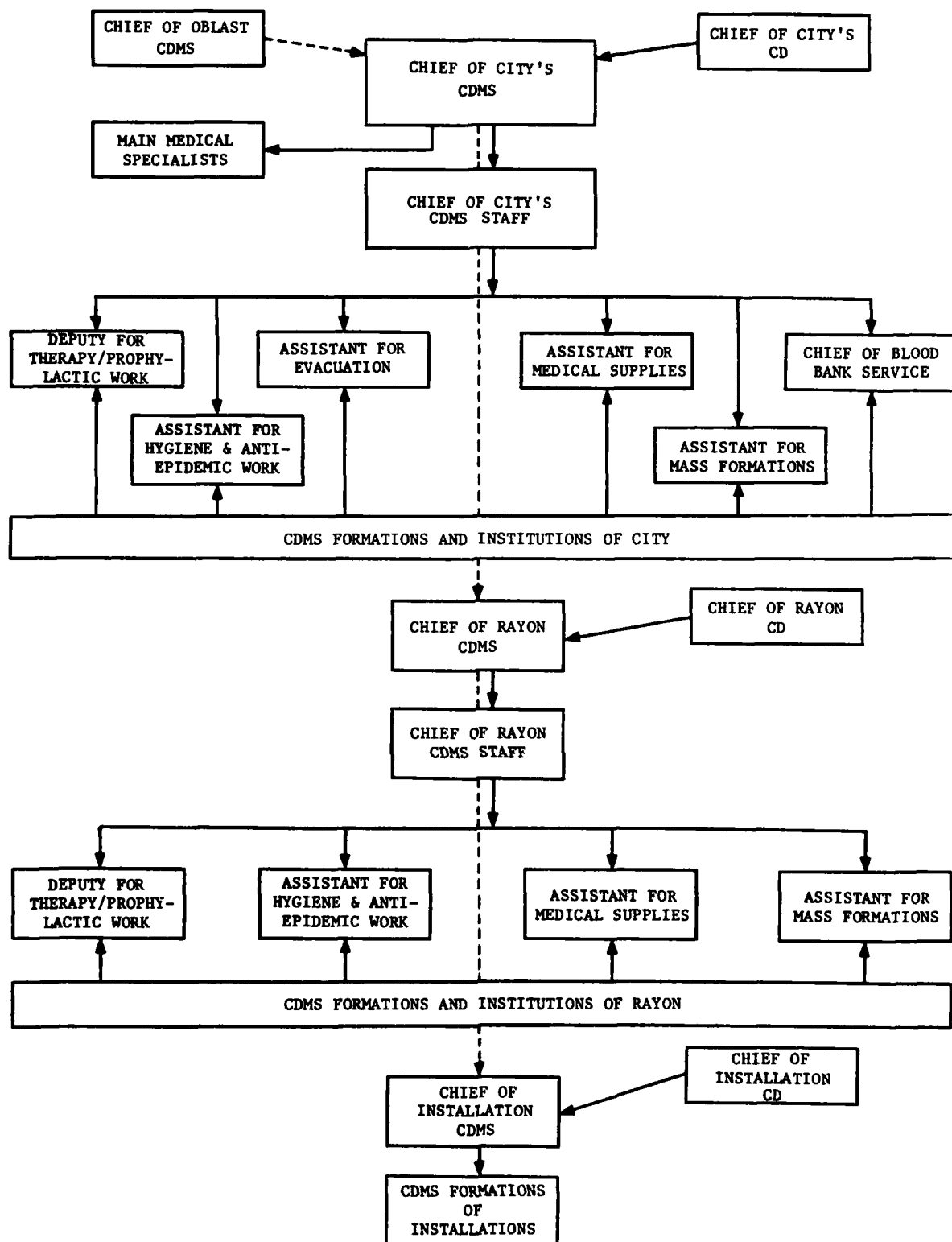


Figure 4.3 Organizational Chart of City, City Rayon, and Industrial Installation CDMS¹⁵

Mobile CDMS formations include:

First Aid Posts, Squads and Detachments

First Aid Posts (sanitarnyye posty or SPs), Volunteer First Aid Squads (sanitarnyye druzhiny or SDs), and Detachments (sanitarnyye otryady or OSDs) are composed primarily of non-professional medical personnel, mostly women. They are organized at industrial enterprises, utilities, transportation organizations, collective and state farms, educational institutions, and housing administrations. As their name indicates, their primary mission is to give first aid to victims of accidents and disasters. They constitute the mass element of the CDMS. In disaster situations, they have various assignments:

1. They will work in conjunction with rescue and other civil defense formations or independently in the disaster zone to provide immediate first aid to the injured and ensure their evacuation to the First Medical Assistance Detachment.
2. They will work at the CDMS hospitals in the exurban zone and at points of unloading of casualties.
3. They will assist the mobile anti-epidemic detachments.
4. They may be used at various stages of the evacuation of the urban population.

First Aid Posts (SPs) consist of four to five persons, trained by the Red Cross in first aid and supplemented by several stretcher-bearer teams.¹⁶ In wartime, SP personnel may also be used to man the aid stations in large shelters.

The First Aid Squads (SDs) consist of five teams, each of four persons, as well as of a squad commander, her political deputy, an orderly, and sometimes--but not always--a driver.¹⁷ The squad, therefore, has a total of 23 to 24 members. A First Aid Detachment (OSD) is composed of four or five SDs (usually the latter) and of a command team made up of a detachment commander, a deputy for political matters, and a three-person communications team.¹⁸ Consequently, an OSD has between 97 and 125 members.

The members of the SDs are equipped with individual means of chemical defense (i.e., gas masks, protective coveralls, hoods, gloves, and boots), work coveralls, decontamination packets, personal medication kits, canteens, and flashlights. Each member has a medical satchel, and each team of four has a stretcher. In addition, the teams may have dosimeters or the members are provided with individual pocket dosimeters. Each medical satchel is said to contain sufficient medical supplies for first aid to 15 to 20 injured persons.¹⁹

First Medical Assistance Detachment

The First Medical Assistance Detachment (otryad pervoy meditsinskoy pomoshchi or OPM) is intended to provide the first professional medical assistance to the injured and, therefore, is deployed in or close to a disaster area. The OPMs are organized at urban and rural hospitals, polyclinics, dispensaries, medical schools, and medical departments of large economic enterprises. Usually an OPM is based on and staffed by a single institution. The number of personnel in an OPM varies between 100 and 180, the recommended size being 144.²⁰ The command team of an OPM consists of the chief physician, his deputy for political matters, and his deputy for mass formations, i.e., SDs, a communications team, and a driver. The OPM will be staffed by five to twelve physicians--eight being the recommended number, some 38 nurses and other middle-level medical personnel, some 26 other technical and support personnel, and two attached SDs.²¹

The mission of the OPM is to render only emergency medical assistance to the injured and evacuate the latter as quickly as possible to hospitals in the exurban areas. To carry out its mission, the OPMs consist of several sections: casualty reception and triage, surgery and dressing, evacuation of patients, hospital for non-transportable patients, laboratory, medical supplies and pharmacy, decontamination, and materiel (see Figure 4.4, Organization of an OPM). In support of its operations, the OPM is provided with dedicated motor vehicles for its transportation, tents, mobile electric power generators, mobile water supply, radios, dosimeters and chemical detection kits, heating units, medical supplies and equipment, stretchers, etc., while its personnel is provided with individual means of chemical defense, work clothes, canteens, flashlights, and so on.²² The SDs attached to the OPMs will work primarily in the reception-triage, hospital, and the casualty-evacuation sections.²³ The latter include



wards for the temporary hospitalization of patients unfit to be transported to exurban hospitals and the dying, and there will also be isolation wards for the temporary holding of mentally disturbed patients and for patients with dangerous communicable diseases.

Depending on the situation, an OPM may be reinforced by various medical specialists in order to provide specialized treatment to the injured. They may be used to make more of the patients hospitalized at the OPM fit to be transported to hospitals in the exurban zone.

Brigades and Detachments of Specialized Medical Assistance

Brigades of Specialized Medical Assistance (brigady spetsializirovannoy meditsinskoy pomoshchi or BSMPs) are organized according to medical specialties: neurosurgical, thoraxo-abdominal, "traumatological," ophthalmological, otolaryngological, facial, burns, general surgical, gynecological, infectious diseases, psychiatric, radiological, toxicological, urological, anesthesiological, blood transfusion, etc.²⁵ Their mission is to supplement, where needed, the capabilities of the medical staffs of CDMS hospitals in the exurban zone and provide patients with specialized medical treatment. In special cases, they may reinforce the First Medical Assistance Detachments (OPMs). A BSMP is made up of two physician-specialists, a senior nurse and a fel'dsher (physician's assistant) or two fel'dshers, and a driver. The BSMPs are organized at medical research institutes, institutes and faculties for post-graduate medical education, specialized hospitals and clinics, and large urban hospitals and polyclinics.²⁶

A Detachment of Specialized Medical Assistance (otryad spetsializirovannoy meditsinskoy pomoshchi or OSMP) is usually made up of eight or more BSMPs of different specialties.²⁷ An OSMP is usually assigned to a specific CDMS hospital base.

Mobile Anti-Epidemic Detachments

Mobile Anti-Epidemic Detachments (podvizhnyye protivoepidemicheskiye otryady or PPEOs) are organized on the basis of Hygiene-Epidemiological Stations (SES) at republic, oblast, and city levels and also at institutes of epidemiology, microbiology, and hygiene. The mission of these detachments is to carry out sanitation-hygiene and epidemiological investigations and control measures in zones of destruction and in host areas for urban evacuees. Specifically, a PPEO carries out bacteriological surveillance and epidemiological investigations, prophylactic measures to protect civil

defense personnel and the population from infectious diseases, control over early detection of infectious diseases, disinfection and decontamination measures, and control over the implementation of anti-epidemic measures.²⁸ A PPEO has a command team and three departments or sections: sanitation-epidemiology; laboratory with teams for bacteriological, sanitation-chemical, and radiological analysis; and a disinfection detachment. One or two first aid squads (SD) are attached to the PPEO to search for the sick and to carry out disinfection and decontamination measures. According to one Soviet medical civil defense manual, a PPEO is composed of 9 physicians or 7 physicians and 2 physician's assistants, 2 chemical and radiation specialists, 37 support personnel--i.e., laboratory workers, disinfection and decontamination personnel, drivers, etc., and 24-48 SD members.²⁹ (See Figure 4.5) A PPEO is said to have its own vehicles, medical supplies--including vaccines and antibiotics, a mobile laboratory, a mobile shower, supplies of disinfectants, individual protection gear for the personnel, etc.

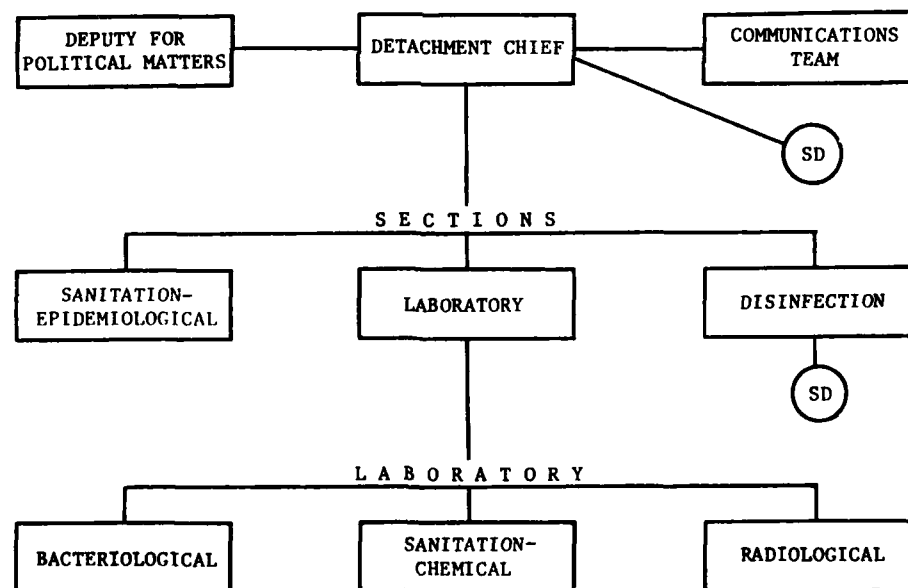


Figure 4.5 Organization of a Mobile Anti-Epidemic Detachment³⁰

Specialized Anti-Epidemic Brigades

Specialized Anti-Epidemic Brigades (spetsializirovannyye protivoepidemicheskiye brigady or SPEBs) are organized on the basis of specialized anti-epidemic institutions, especially anti-plague institutes and stations and institutes dealing with dangerous communicable diseases.³¹ The SPEBs will work in centers of especially dangerous epidemics, where they will operate laboratories and carry out a variety of epidemic control measures.

Mobile Hospital for Infectious Diseases

Mobile Hospitals for Infectious Diseases (infektsionnyye podvizhnyye gosptali or IPGs) are organized by institutes for dangerous communicable diseases and other medical institutes dealing with communicable diseases for the purpose of setting up special temporary hospitals in areas of outbreaks of dangerous communicable diseases. An IPG is said to have the capacity to hospitalize and treat 200 patients for a period of one month.³² It also provides specialized medical consultation and support for other civil defense formations and CDMS hospitals operating in areas with outbreaks of dangerous communicable diseases.

4.2.3 Mobile Military Medical Aid Units

An important role in the Soviet civil defense system is played by the Military Districts of the USSR Armed Forces (The USSR is divided into 16 military districts), which support the operations of the civilian civil defense forces with military civil defense units and other military units, especially during post-strike rescue, damage-limiting, repair, and restoration operations.³³ In the case of the CDMS, a general officer of the USSR Armed Forces' Medical Service asserts that "A point of no little importance . . . is the close interaction between the civil defense medical services of republics, krays, and oblasts and the military medical service of military districts."³⁴

One form of military medical assistance to the CDMS is the use of military medical companies and platoons to provide first aid and first medical assistance in the areas of destruction in support of the activities of First Aid and First Medical Aid Detachments.³⁵ Most likely these mobile military medical units would operate in conjunction with the units of military civil defense troops which will participate in post-strike rescue and damage-limiting operations in the areas of destruction. Given

that these troops will have armed personnel carriers at their disposal, they may also be in a better position to evacuate casualties from difficult to reach locations or areas threatened by spreading fires. There are also indications that if space is available, military hospitals may be used to receive and treat some of the civilian casualties.³⁶

4.2.4 CDMS Hospitals

In accordance with the two-stage casualty evacuation system of CDMS, the latter will deploy a network of hospitals in the exurban zone where the injured and sick will receive complete medical help. The CDMS hospital system is based on the medical and public health facilities in the exurban zone and small towns and on medical and other public health institutions and personnel evacuated prior to the attack from the cities to exurban areas.³⁷ As a 1982 Soviet medical civil defense manual notes, "Special attention is given to the evacuation of urban medical institutions and the organization by them of medical [CDMS] formations in the exurban zone."³⁸ The CDMS hospital system consists of Hospital Bases and of various hospitals subordinated to them.

Hospital Base

A Hospital Base (bol'nichnaya baza or BB) is essentially an administrative-control organization made up of a command and control organization (upravleniye bol'nichnoy bazy or UBB) which supervises, coordinates, directs, and supports the work of hospitals subordinated to it and the allocation of personnel and supplies to them.³⁹ (See Figure 4.6, Organization of a Hospital Base.) The capabilities of the BBs, the number and uses of hospital beds assigned to them, and the allocation of medical personnel is determined by the CDMS chiefs and staffs of the oblasts or republics. As a rule, each BB is organized in the area of a single oblast. The UBB will have under its control various BSMPs which it will allocate to the hospitals according to priority needs. The UBB will direct the work of Collector Hospitals and their Triage-Evacuation or Head Hospitals. It will also be in communication with Casualty Evacuation Reception Points (EPs) and Casualty Distribution Points (MRPs). The EPs will be established by the Triage-Evacuation Hospitals at unloading points of casualties transported from zones of destruction by railroad, river boats, or by air. In most cases the arriving casualties will be transported to the hospitals by motor vehicles. The EPs will perform triage of

the arriving casualties and provide them with emergency medical assistance to enable the patients to be transported to the hospitals. EPs will vary in size depending on the number of casualties destined to specific off-loading points. On the average, an EP may have one to three physicians, three to five nurses or fel'dshers, stretcher bearers and orderlies, and possibly an attached First Aid Squad (SD).⁴⁰ MRPs are deployed on the roads leading to the Collector Hospitals. Their mission is to control the incoming flow of casualties, determine the emergency cases requiring immediate attention, and, on the basis of the casualties' med-tags, direct the vehicles to specific hospitals. The MRPs will be informed through the UBB about available spaces in the hospitals and direct the flow of arriving casualties accordingly.⁴¹ An MRP may have one or two physicians, one or two nurses, dosimetric control personnel, and several SD teams.⁴²

Collector Hospital

A Collector Hospital (bol'nichnyy kollektor or BK) designates an administrative grouping of hospitals. The BK is usually deployed in the area of a single rural rayon or in a town and is organized to provide casualties with many different types of specialized medical assistance. A BK includes a Main Hospital (either a Triage-Evacuation Hospital or a Head Hospital) and a number of specialized hospitals, as well as a hospital and polyclinic for treating persons with light injuries.⁴³ The hospitals comprising a BK may have space for from a few thousand to up to 8,000 to 10,000 patients.⁴⁴

Triage-Evacuation and Head Hospitals

Triage-Evacuation Hospitals (sortirovachnaya-evakuatsionnaya gosptal' or SEG) and the Head Hospital (golovnaya bol'nitsa or GB) of the BKs are usually deployed on the basis of central rayon hospitals in the rural areas or of main hospitals in towns not believed to be at risk from an enemy strike.⁴⁵ The SEGs are usually deployed in BKs located nearest to the zones of destruction or the most forward in the direction of such zones in terms of main access routes. The main mission of the SEGs and GBs is to receive the main flow of arriving casualties, perform decontamination and triage, provide immediate assistance to patients who are unfit for further transportation, and send on the others to specialized subordinate hospitals according to the nature of their injuries. A SEG or GB will have a decontamination area and facility for cleaning up the casualties; a reception-triage department; surgeries; dressing stations; anaerobic,

shock, and maternity sections; a psychiatric isolation ward; an isolation ward for patients with communicable diseases; wards for other patients, and various support organizations (for example: laboratories, pharmacy, X-ray department, physiotherapy, blood bank and transfusion department, etc.).⁴⁶ It will have at its disposal Specialized Medical Assistance Brigades and Detachments as well as First Aid Squads. Furthermore, as was noted, the SEGs, but not the GBs, will deploy Casualty Evacuation Reception and Distribution Points, i.e., EPs and MRPs (see Figure 4.7, Organization of a Triage-Evacuation Hospital).

The SEG or BG will have 6 to 9 surgical and 12 to 20 dressing tables, and, if possible, an anesthesiology room. It is suggested that 10 percent of available beds be assigned to the shock wards, 60 percent to surgical cases, and 20 percent to therapy wards.⁴⁸

Specialized Hospitals

Specialized hospitals (profilirovannyye bol'nitsy) provide specialized treatment and are organized according to areas of medical specialties. In addition to reception, diagnostic-sorting, surgical and treatment sections, they will have hospital wards for the patients and various support facilities and personnel. Depending on conditions and the number of available medical specialists and medical personnel, the specialized hospitals may have from 200 to 1,000 or more beds.⁴⁹ The following types of specialized hospitals may be organized in a SEG or GB: neurosurgical (NKh); thoraxo-abdominal (TA); traumatological (TR), pelvis and large joints (BKS); burns (O); radiation sickness and toxicological; infectious diseases (I); psychiatric (PN); therapeutic (T); etc.⁵⁰ The neurosurgical hospital will have departments for eye surgery, facial and jaw surgery, and ear and throat surgery.⁵¹ The hospital for radiation sickness and toxicology will have surgical and dressing sections, isolation wards, separate hospital wards for patients with Level II and Level III radiation sickness, and also wards for patients with combined injuries.⁵² The specialized hospitals will be staffed primarily by physicians of the Brigades of Specialized Medical Assistance (BSMPs).

Collection Point for the Lightly Injured

Each Collector Hospital (BK) will organize a Collection Point for the Lightly Injured (punkt sbora legkoporazhennykh or PSLP). The PSLP will have attached to it a

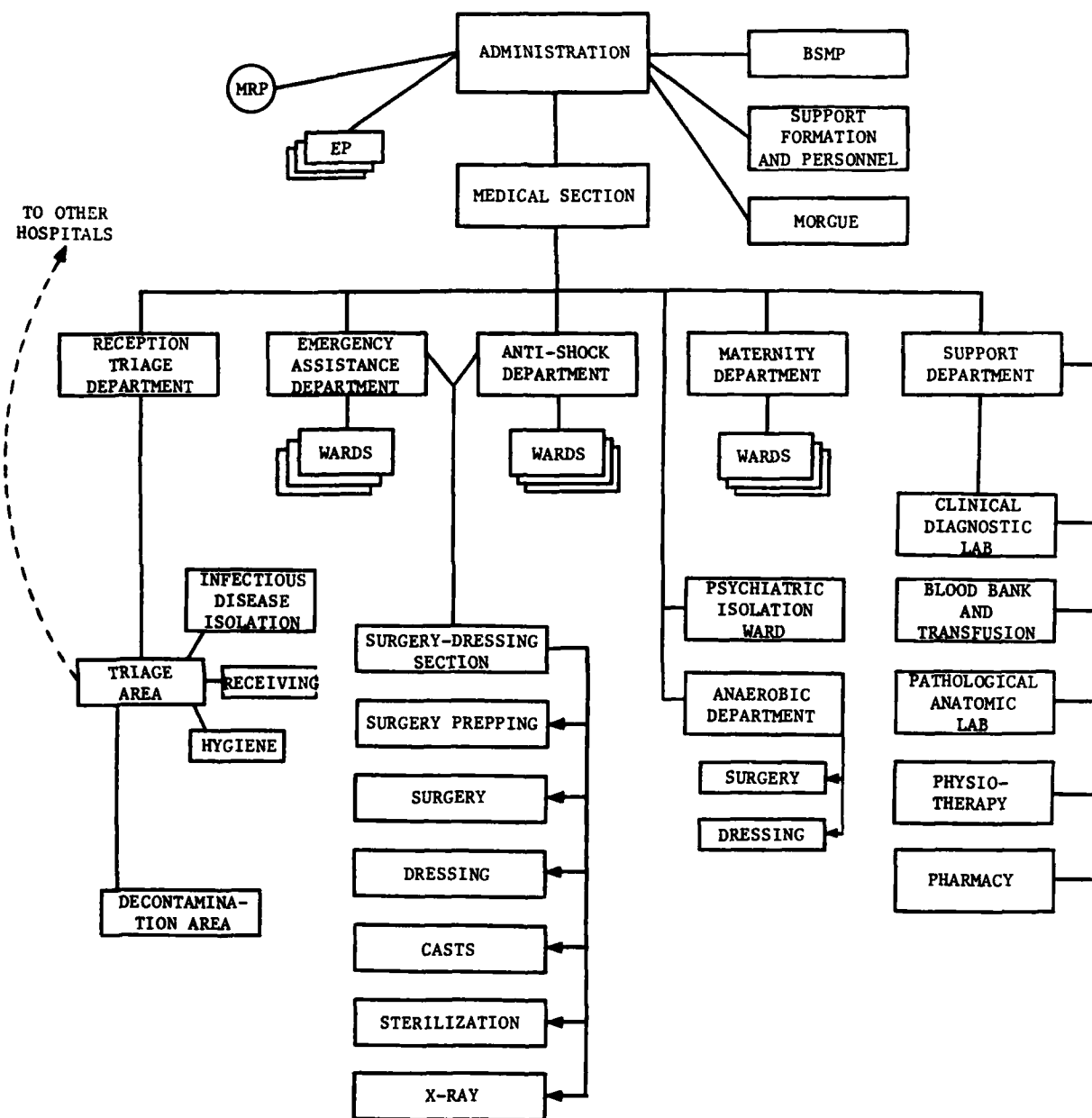


Figure 4.7 Organization of a Triage-Evacuation Hospital (SEG)⁴⁷

polyclinic and a hospital for the treatment of the lightly injured.⁵³ While the hospital will be used to temporarily hospitalize those lightly injured persons who require special care, the polyclinic will treat the ambulatory patients not requiring hospitalization. According to one Soviet manual, a Hospital for the Lightly Injured may have 50 beds, while the polyclinic may have the capacity to treat 700 to 800 ambulatory patients per day.⁵⁴ However, another manual suggests that it may be necessary to plan for the hospitalization of up to five percent of the lightly injured assembled at a PSLP.⁵⁵ One or more SDs may be assigned to the PSLPs to assist in the treatment and care of the injured.

Overall, therefore, it appears that the CDMS has a comprehensive organization for providing medical assistance to the population in peacetime disasters and in a nuclear war. It is designed to make the best possible use of existing medical and other public health resources in dealing with mass casualties and also to use trained medical personnel where they can be most effective without exposing them to unnecessary risks.

Section 4

FOOTNOTES

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Section 5

OPERATIONS AND TACTICS OF THE SOVIET CIVIL DEFENSE MEDICAL SERVICE

The Soviet Civil Defense Medical Service (CDMS), like USSR Civil Defense as a whole, is assigned a variety of missions in peacetime as well as in disaster and war situations. The actual operations and tactics of CDMS and its formations naturally depend on the character of the disaster, the magnitude of casualties, and the environment in which medical formations will have to operate. The actions of CDMS are planned, therefore, for a range of situations: peacetime; peacetime natural or industrial disasters; a threat of war and the evacuation of urban residents believed to be at risk; post-strike operations in zones of enemy strikes with nuclear, chemical, or bacteriological weapons; and finally, the protection of the population's health and control of epidemics in a war environment.

5.1 THE PEACETIME MISSION OF CDMS

The basic mission of CDMS in peacetime is the preparation of capabilities and the planning of actions of CDMS forces in the event of peacetime disasters or a nuclear war. This includes:¹

- o The planning of measures of medical assistance to be given the population in various phases of readiness of civil defense and also in the event of natural disasters and industrial accidents.
- o Organizing, equipping, and training of CDMS forces.
- o Training of leaders of CDMS command, formations, and institutions for actions in war conditions.
- o Planning and organization of cooperation and mutual support of CDMS organs in disaster situations.
- o Cooperation and interaction of CDMS with the medical service of the Armed Forces and its formations.
- o Development of effective medical means for the population and its instruction in their use.
- o Creation and safekeeping of stocks of medical supplies and equipment.

- o Planning, organization, and development of means to provide medical assistance to the population during its evacuation and in host areas for evacuees.
- o Preparation of forces and means to carry out hygiene and epidemiological control in host areas and in shelters.
- o Planning for and preparation of the evacuation of urban CDMS formations and health institutions, their personnel, equipment, and supplies to exurban areas and their protection in those areas.
- o Instruction of the population in first aid.
- o Instruction of CDMS First Aid Squads (SDs) and recruitment and organization of blood donors among the population.

5.2 CDMS ACTIONS IN PEACETIME DISASTERS

The CDMS is organized to deal with any disaster situation, be it in peacetime or in a war. The basic organization of CDMS and its tactics for dealing with both types of disaster situations are essentially the same.² However, these two situations and their implications for CDMS operations will differ in some important respects. This arises from the fact that, in contrast with a nuclear war situation, peacetime disasters will be geographically localized and usually single rather than multiple events at a given time; the number of casualties among the population are likely to be fewer and the character of injuries less complex; and, in most cases, the disasters will not be preceded by an evacuation of urban civil defense and CDMS formations and installations. Soviet manuals note that the consequences of large, powerful earthquakes will create conditions most akin to nuclear destruction, especially if they result in the devastation of cities. In this case, the population may receive combined injuries, i.e., crushing, broken bones, burns, poisoning by toxic gases, frostbite, shock, and psychological trauma. In other situations, specific types of injuries, such as burns in the case of large fires, may predominate.

The mission of CDMS in natural disasters and large industrial accidents is to render timely initial medical assistance to the injured, evacuate them to medical facilities for further treatment, and carry out hygiene-sanitation and epidemic control

measures in the devastated areas and among survivors in temporary shelters.³ Medical assistance will be provided primarily by the ready CDMS formations, i.e., First Aid Squads (SDs), First Medical Assistance Detachments (OPMs), Brigades of Specialized Medical Assistance (BSMPs), and Mobile Anti-Epidemic Detachments (PPEOs), present in the disaster area or brought from nearby unscathed rayons and cities.⁴

The deployment of SDs and OPMs in the devastated area may be preceded by medical reconnaissance. This is carried out by Medical Reconnaissance Groups (MRGs) dispatched by the staffs of the city or rayon CDMS and/or by the OPMs for the purpose of assessing the magnitude of the medical problem and the forces required to deal with it, as well as to identify appropriate locations for casualty collection points and the deployment of OPMs. The MRGs may operate together with the reconnaissance units of the civil defense rescue and engineering detachments or independently of them. Usually a MRG will be made up of one or two physicians, one to three middle-level medical personnel, and one or two SD teams.⁵

While the two-stage medical assistance and casualty-evacuation system applies in peacetime disasters as it does in a war situation, there is less likely to be a requirement in peacetime disasters to set up special CDMS hospitals. Instead the rescued casualties are evacuated either to surviving medical institutions and auxiliary facilities in the disaster area or to institutions outside of it.⁶

First aid will be rendered by the surviving population and the SDs attached to road-clearing detachments and rescue units and also by military units which may be brought in to participate in rescue and damage-limiting operations.⁷ If necessary, SDs are brought in from neighboring rayons and oblasts.⁸ While the OPMs--if necessary, reinforced by teams of surgeons--will be deployed in the area of destruction, hospitals in an earthquake zone may be evacuated to safer areas.⁹ At least this was done in the case of the city of Bukhara in 1976.¹⁰ In other types of disasters--for example, in advance of a hurricane--the OPMs may be divided up into small brigades of physicians, nurses, and support personnel and scattered in various locations throughout a threatened city.¹¹

Following a disaster the evacuation of the injured from the OPMs to hospitals in safe areas is carried out by special hospital trains or ambulance convoys. The seriously injured will be accompanied during the trip by medical personnel from Casualty Escort Brigades organized for this purpose.¹²

Great attention will be paid in disaster areas to hygiene-sanitation and disease control. In part this will be implemented jointly by the appropriate CDMS formations and civil defense rescue and engineering formations. This will include the recovery and burial of the dead ("with the obligatory participation of members of the militia [i.e., police] for the identification and registration of the dead"¹³); continuous monitoring of the health of survivors and evacuees and watching for cases of communicable diseases; vaccination of the population; rodent control measures; the setting up of mobile showers, laundries, and clothing decontamination facilities; ensuring water purification and food safety control; etc.

5.3 CDMS ACTIONS DURING PRE-ATTACK EVACUATION

Soviet civil defense plans specifically identify a pre-attack period of a threat of possible enemy attack which is announced by the Soviet government. During this period, the authorities will implement many of the military and civil defense measures to prepare the country, its armed forces, and the population for war. Among these measures will be the bringing of civil defense forces to a state of full readiness, the evacuation of the urban population, the construction of rapidly erectable blast and fallout shelters, industrial protection measures, conversion of industry from civilian to defense production, etc. The duration of this period is uncertain. It may end with the initiation of strategic operations or with a moderation of the crisis and a return to a peacetime posture.

In the case of CDMS, this period also calls for the bringing of its formations to a state of full readiness, the accelerated stockpiling of medical supplies and equipment in protected storage facilities in the exurban zone, the distribution of individual first aid packets to the population, the establishment of communications between relocated [i.e., evacuated] civil defense chiefs and staffs at various levels and the chiefs of CDMS institutions and formations, the readying of CDMS hospitals in the exurban areas, and so on.¹⁴

Two important activities of CDMS during this period will be to provide medical assistance to the urban population and essential industrial workers during their evacuation and the implementation of the evacuation of CDMS formations and medical-health institutions from risk areas to the exurban zone.

5.3.1 CDMS Assistance to the Population During Its Evacuation

In the Soviet Union the evacuation of the population and essential industrial workers from risk areas is highly organized and tightly controlled. All evacuation is by places of employment for the working population and by places of residence for non-working adults, with pre-planned and assigned movement routes and destinations for each group of evacuees. All evacuees will be processed through pre-assigned Evacuation Assembly Points (SEPs) at their places of work or places of residence and will be scheduled to leave from designated points of embarkation on transport (trains, motor vehicle convoys, river or ocean-going ships) or from departure points for organized marching columns. The latter will proceed at least one days' march to Intermediate Evacuation Points (PPEs) from which they will subsequently be transported to their assigned host areas. The host areas will set up Evacuation Reception Points (PEPs) which will receive and register the arriving evacuees, assign them housing, and care for their immediate needs.¹⁵

Medical assistance during the evacuation of the population calls for the following:¹⁶

- o Participation of representatives of the CDMS in the Evacuation Commissions set up in cities, urban rayons, and at work places, as well as in the Evacuation Reception Commissions set up in rural rayons and designated host areas, to plan and coordinate the requirements for and employment of CDMS formations in the course of the evacuation and the resettlement of the evacuees in the host areas.
- o Surveying medical-sanitation conditions in designated host areas and implementing measures for their improvement.
- o Establishing medical aid posts at all SEPs, usually consisting of two to five fel'dshers or nurses and one or two first aid (SD) teams drawn from economic enterprises or public health institutions. The medical aid posts will be responsible for: giving the evacuees first aid; identifying individuals with symptoms of communicable diseases; evacuating seriously sick persons and those with communicable diseases to the nearest medical facilities; identifying among the evacuees individuals with medical (primarily first aid) training and requiring them to participate in giving

medical assistance to the evacuees during their move to the exurban zone; and insuring appropriate hygienic-sanitation conditions at the SEPs.

- o Transporting individuals too ill or incapacitated to report to the SEPs to hospitals for their evacuation to the exurban areas by medical institutions.
- o Assign medical aid teams--which may include one physician or fel'dsher, two nurses, and a SD team--to evacuation trains traveling further than 300 km (186 miles), and two nurses and one SD team if traveling short distances.
- o SD personnel or nurses may be assigned to travel with motor vehicle convoys.
- o Establish mobile medical teams along the routes of marching columns of evacuees (500-1,000 persons per column), each team being composed of a physician or fel'dsher, two nurses, and several orderlies operating along a 12 to 15 km stretch of the route.
- o Establish medical aid posts at the Intermediate Evacuation Points (PPEs), each headed by a physician or fel'dsher, and including several nurses and SD teams to provide first aid, treat the sick, and isolate persons with symptoms of communicable diseases and evacuate them to nearby hospitals.
- o Establish medical aid posts at Evacuation Reception Points (PEPs) and points of disembarkation of evacuees from trains or boats to assist the sick among the arriving evacuees.
- o Organize medical assistance to the evacuees in the host areas on the basis of existing public health facilities and rural as well as evacuated medical personnel.

Although it is planned to evacuate the population from risk areas, there is also a requirement for keeping essential industrial enterprises, utilities, and other installations in continuous operation in the cities. Consequently, it is planned for workshifts of essential workers to commute every 12 hours from their exurban dispersal areas, with the off-duty shifts resting in the host areas. It is planned, therefore, to provide the workshifts of essential enterprises with standby medical assistance at the latter.

This will be done by attaching to each shift medical aid posts manned by physicians and middle-level medical personnel, as well as SDs, and establishing medical aid stations in "reliable shelters" at these enterprises.¹⁷ In the large shelters at the essential enterprises, there will also be set up medical aid posts manned by middle-level medical personnel. The medical personnel for these duties will be drawn from the enterprises' health service and attached medical institutions.

5.3.2 Evacuation of Urban Medical Institutions and Personnel

"Simultaneously with the evacuation and dispersal of the population is carried out the evacuation to the exurban zone of urban therapeutic-prophylactic and anti-epidemic institutions, medical warehouses, and other medical facilities."¹⁸ All health institutions in the risk areas are subject to evacuation, with some limitations noted below.

When the government orders the evacuation of the population from risk areas, the hospitals and clinics will discharge all ambulatory patients who can be let go without endangering their health, while patients requiring further hospitalization will be evacuated to hospitals in the exurban areas.¹⁹ The hospitals in the rural areas will also release the largest possible number of current patients in order to free hospital beds for possible victims of enemy strikes. Patients unfit to be evacuated will remain at the urban hospitals but will be moved into the hospitals' shelters.²⁰ To ensure their continuous care, a portion of the hospitals' medical staffs will also remain in place and use these shelters for protection in the event of an attack.²¹

The urban medical institutions, their personnel not assigned to other duties, and members of their families, as well as their movable equipment and supplies, will be evacuated according to plans already developed in peacetime to pre-assigned locations in the exurban areas or small towns where they will be incorporated into the CDMS hospital system.²² The evacuated medical institutions will set up operations in dedicated sanatoria, rest homes, club houses, hotels, schools, and other suitable facilities.²³ They will greatly expand the capacities and medical capabilities of the rural medical subsystem and therefore play a major role in providing medical assistance to evacuees and to the victims of enemy attacks.

5.4 POST-STRIKE CDMS OPERATIONS

As was noted, a primary mission of CDMS is to provide medical assistance to the injured in the event of enemy strikes with nuclear, chemical, or bacteriological weapons. The two-stage Soviet system of medical assistance to the injured calls for the rendering of emergency medical assistance in the areas of destruction and the evacuation of the injured to hospitals in the exurban areas and safe towns for specialized medical treatment. The Soviet approach also calls for triage of casualties at all stages of the evacuation process. As was noted, emergency medical assistance will be provided by First Aid Squads and Detachments (SDs and OSDs) and by First Medical Assistance Detachments (OPMs).

5.4.1 Operations of First Aid Squads and Detachments

The extent of the operations of First Aid Squads (SDs) and Detachments (OSDs) in the areas subjected to enemy nuclear, chemical, and bacteriological strikes will depend in a large measure on the number of people present in the targeted areas at the time of the attack. As was noted, in the absence of pre-attack evacuation and short warning of an attack, large numbers of persons are expected to be injured and in need of rescue and emergency medical care. However, in the case of the pre-attack evacuation of the population from risk areas and the sheltering of workshifts of essential workers present in the targeted areas in blast shelters, the number of injured persons will be far fewer and, consequently, there will also be a lesser volume of rescue work required of the civil defense forces.

In either case, SDs and OSDs of urban--and especially industrial civil defense formations evacuated from the risk areas prior to the attack--and/or of formations in nearby smaller towns and rural areas will be used to provide first aid to surviving victims in the areas of destruction. As was noted, medical units of the Military Civil Defense forces will also participate in these operations. The SDs and OSDs will work as a part of civil defense rescue detachments, but may also act independently.²⁴ They will give first aid to the injured removed from damaged or destroyed above-ground structures and shelters by the rescue formations, and they may also participate in rescuing victims from relatively easily reached locations.

The first aid given by the SDs to the injured will be limited in nature. It will consist primarily of stopping bleeding, dressing wounds and burns, immobilizing broken limbs, providing cardiopulmonary resuscitation, removing liquid toxic chemicals and radioactive dust from skin surfaces, providing medications for pain, and possibly also using atropine syrettes as antidotes for persons exposed to nerve gases.²⁵ In contaminated areas or during radioactive fallout, SD personnel will also put gas masks on the injured if these are available. In rendering first aid, the SDs will use the medical supplies in their medical satchels.²⁶ It is claimed that a single SD can give first aid to up to 500 injured persons in ten hours. However, it is also estimated that the supplies contained in each medical satchel will only suffice to treat 15-20 injured persons.²⁷

The SDs will treat the injured on the spot or bring them to nearby collection points in more convenient and safe places for treatment. In the process they will also carry out an initial rudimentary triage of the injured, identifying those persons who are in the most urgent need of professional medical assistance and should be given priority in the evacuation of the injured to the nearest OPM. They will also determine injured persons who will walk to the OPM and those who will need to be carried on stretchers. The carrying of the stretcher cases to points from which the injured can be transported to the OPMs will be done by male personnel of the rescue formations.

In contaminated areas, SD personnel will work in protective gear. It is also recommended that the individuals make use of their personal medication kit, which contains "anti-radiation" medication, as well as an anti-pain syrette, antibiotic pills, anti-chemical pills, and anti-nausea pills.²⁸ The various medications are packaged in pill boxes of different colors for ease of identification and are also identified on the inside of the kit's lid by number and purpose. The so-called anti-radiation pills consist of hexamethylenetetramine, which should be taken in the event of a threat of possible exposure to radiation and again 4-5 hours later if the threat persists, and of potassium iodide pills to be taken over a period of seven to ten days following radioactive fallout if the individual expects to consume fresh milk or other foods which may be contaminated, along with antibiotics and anti-nausea medications.²⁹ There will be continuous monitoring of the radiation doses received by SD personnel as well as all civil defense personnel working in the areas of destruction to ensure their safety.

Control over the medical work carried out by the SDs will be by the deputy chiefs of OPMs for mass formations. Apparently, they will exercise their control from the loading points of casualties on transport means to carry them to the First Medical Assistance Detachment Facilities (OPMs).³⁰ These deputy chiefs will be in communication with their assigned SDs and OPMs. They will organize the replacement of SDs by fresh squads and be informed of the radiation doses received by the working squads.

Transportation of the injured to the OPMs will be by a variety of vehicles, i.e., ambulances, vans, buses, and trucks. If it is necessary to cross areas with dangerous levels of radiation or chemical contamination, large fires, or debris-choked streets, use may be made of armored personnel carriers.

5.4.2 Operations of the First Medical Assistance Detachments (OPMs)

In principle, all injured persons will be sent to and processed by OPMs before they are evacuated to hospitals in the exurban areas. The role of the OPMs in the CDMS system is, therefore, critical. Their mission includes: reception, triage, registration and medical tagging of the casualties, providing emergency professional medical treatment, organizing the evacuation of the casualties to hospitals in the exurban areas, and temporarily hospitalizing at the OPMs non-transportable patients. Medical assistance at the OPM will be limited to essential life-saving procedures and the preparation of patients for transport to the hospitals in the exurban areas.

The OPM is the mobile element of the hospital or polyclinic on whose basis it is organized. Depending on the magnitude of the disaster and the number of casualties, use will be made not only of OPMs from medical institutions from that area, but also of OPMs from rural medical institutions and nearby surviving towns. Indeed the OPMs form an important part of the rayon, oblast, and republic chiefs of CDMS reserves to be assigned to disaster areas in accordance with ascertained needs and priorities.³¹ In their areas of operation, the OPMs from evacuated or rural medical institutions may be assisted by surviving medical facilities and personnel.

The OPMs should be deployed as close as possible to the zone of destruction, but sufficiently far from it to be safe from radiation hazards, fires, flooding, and other threats. This means that the OPMs will be set up at the edge of the zone of light blast damage where radiation levels do not exceed 0.5 rads/hour.³² In very large areas of

destruction and fires, the OPMs may be located 10 to 20 km (6-12 miles) or more from the actual sites of rescue operations.³³ The OPMs will be deployed in surviving buildings suitable for their purpose, such as schools, club houses, etc. or, if necessary, in tents in the open during the warmer seasons. OPMs may also be set up on river or ocean-going ships or hospital trains. The deployment sites will be selected by the medical reconnaissance teams.

Upon arrival at the selected site, the OPM will begin by rapidly organizing and setting up its reception-triage and surgery-dressing sections and the pharmacy. This will be done by temporarily reinforcing these sections with personnel drawn from other sections of the OPM. In principle, the OPM should be ready to receive casualties 40 to 80 minutes after its arrival.³⁴

At the approaches to the OPM, some 50 to 150 meters from it, is set up a Distribution or Control Post (raspredelitel'nyy post or RP).³⁵ The RP is manned by a *feldsher* or nurse, one or two dosimetric control personnel, and one or two medical orderlies. The mission of the RP is to determine the extent of radioactive or chemical contamination of arriving casualties and to direct contaminated patients to the decontamination section of the OPM; to identify persons with symptoms of dangerous infectious diseases or psychotic behavior; and to direct the walking wounded and stretcher cases to the appropriate Reception-Triage areas. Thus, the RP begins the triage process and establishes the initial flow and processing of casualties according to the severity of their injuries. (See Figure 5.1, Layout and Casualty Flow in an OPM.)

Decontamination is carried out separately for walking or lightly wounded and the stretcher cases or severely injured. The former undergo showers and a partial decontamination of their clothes and shoes. The latter will be washed by attendants, and their contaminated clothes may be either partially decontaminated or removed and replaced by clean hospital gowns.³⁶

The Reception-Triage Section is divided into two parts, one for walking or lightly wounded and one for stretcher cases or severely injured. As was noted, each of these will have one or more reception-triage teams composed of at least one physician, two to four nurses, two registrars, and SD teams. The Reception-Triage Section should have sufficient space for 150 to 200 casualties.³⁷ In the case of the walking or lightly wounded, they may be given first aid on the spot or, if necessary, sent to the dressing

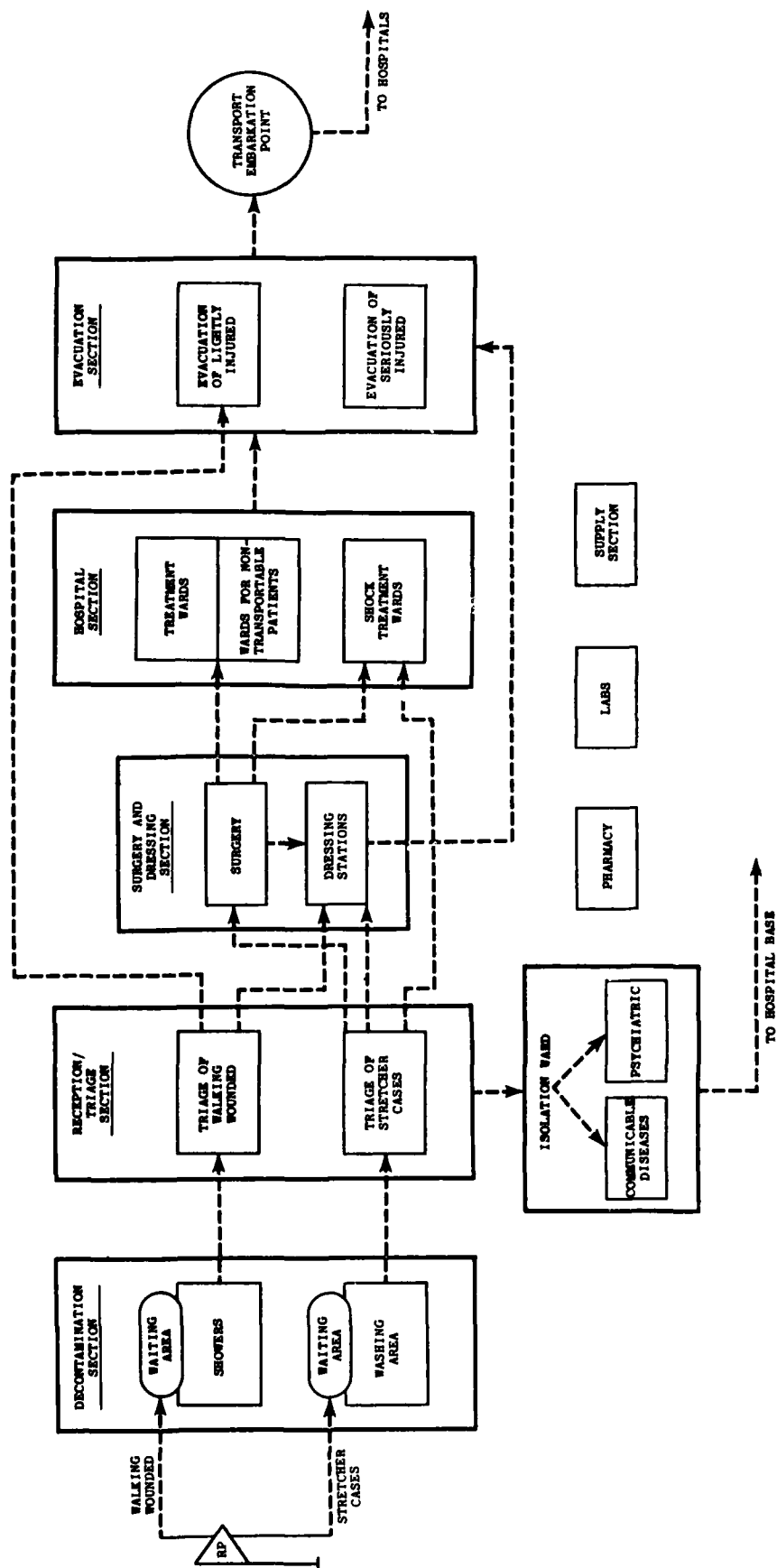


Figure 5.1 Layout of and Casualty Flow in an OPM

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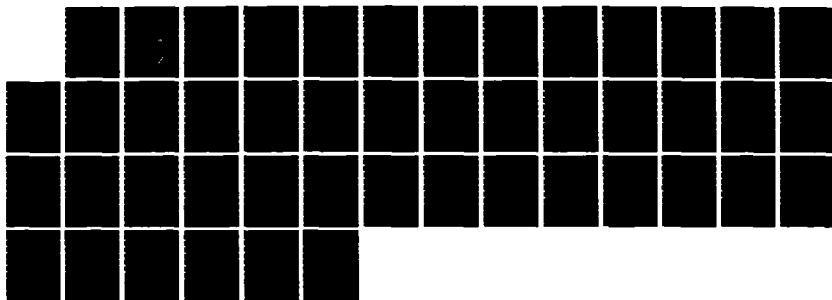
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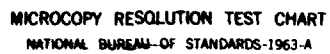
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station. In the case of the more severely injured, the reception-triage team will determine whether to send them to surgery for emergency treatment, the dressing station, the shock ward, the isolation ward, or directly to the hospital section (if not requiring emergency treatment or in the case of the dying). All patients with open wounds will be given anti-tetanus injections, and those in need may be given anti-pain medication or blood transfusions.

A very important procedure in the Reception-Triage Section will be the registration-medical tagging of the arriving casualties. This serves two purposes. The first is to classify and identify (for internal use in the OPM) patients according to sections they should be sent to and in what order of priority. This is done by attaching to the patients various colored and shaped disks marked with numbers or letters and also the identification of the OPM section to which the patient should be sent (see Figure 5.2).

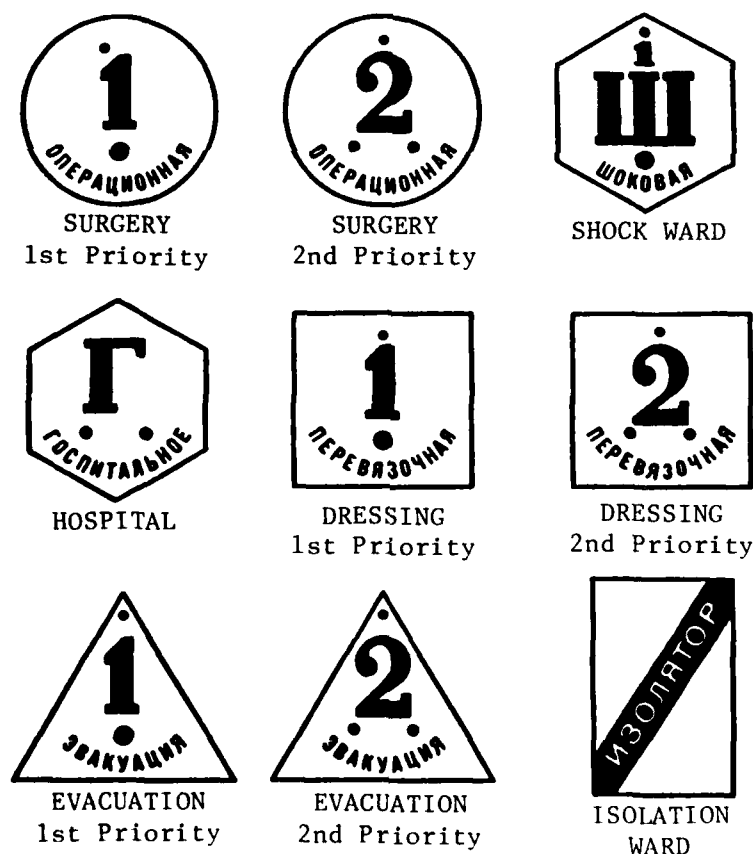


Figure 5.2 OPM Triage Identification Disks

On the instruction of the physicians carrying out the triage, the registrars also fill out a registration and medical diagnostic-treatment tag or Med-tag (see Figure 5.3) which is also attached to the patient. This Med-tag serves to record the diagnosis of the patient's injuries, the emergency treatment he has received, indicates whether the patient has been exposed to radioactive or chemical contamination, whether he requires urgent treatment upon arrival at the hospital or should be placed in an isolation ward, and what treatment he may have received at the various stages during the evacuation to the hospital. Given the pressures on the physicians performing the triage, the diagnosis of the patient's injuries inevitably will be rather superficial and unrefined.³⁸

The Surgical Section will have two or three operating tables, and the Dressing Section may have three to six tables.³⁹ The dressing station for walking or lightly wounded will be manned by one surgeon or fel'dsher, two to four nurses, and several orderlies or SD teams.⁴⁰ It is claimed that the OPM's surgical teams will be able to perform emergency surgery on up to 300 patients in a 24-hour period.⁴¹

It is anticipated that a significant proportion of the arriving casualties will be in shock and that anti-shock treatment will also be required by patients who have to undergo emergency surgery. The arriving patients will be administered anti-shock treatment. Those sent to the shock treatment wards will be under the supervision of teams of physicians assisted by teams of nurses. It is recommended that the shock treatment ward have at least 80 to 130 spaces.⁴²

The Hospital Section will be for the temporarily non-transportable patients. It is anticipated that a "significant portion of the injured" may have to be hospitalized at the OPMs for three to five days.⁴³ Consequently, each OPM must be prepared to temporarily care for several hundred hospitalized patients. The Hospital Section will also have a maternity ward and a ward for the dying.⁴⁴ It is planned to maintain a ratio of one nurse for every 50 patients, but the nurses will be assisted by SD teams.⁴⁵ The OPMs will also establish mortuaries. The isolation ward will have spaces for 10 to 15 patients with infectious diseases, and the psychiatric ward will have space for five to seven male and the same number of female patients.⁴⁶ The psychiatric isolation ward will be used only for patients who pose a danger to others. Of course, in a zone of epidemic infectious diseases, most of the OPM's Hospital Section would be transformed into isolation wards.

Last Name		First Name		Date of Birth		F		M	
Date of Birth		Home Address		NAME		Last		First	
HOME ADDRESS		DATE OF BIRTH		F		M			
CHARACTER OF INJURY		LOCATION		MEDICAL ASSISTANCE		EVACUATION			
1. Wounds		Skull		Tourniquet—how and date of application:		On Foot			
a) bone damage		Face				Sitting			
b) damage to large blood vessels		Eyes				Lying Down with escort			
c) crushing		Neck		Immobilization					
d) deep		Chest		Novocain Block					
2. Burns (degrees)		Stomach		Blood Transfusion		Transport:			
3. Internal Injuries		Pelvis		Antibiotics		Ambulance			
a) bone damage		Spine		Antidotes		Other			
b) damage to internal organs		Joints		Decontamination					
c) contusions		Extremities:		SERUM:					
4. Frostbite		upper		a) Anti-Tetanus					
5. Chemical Injury		lower		dose					
6. Radiation Exposure									
7. Infectious Disease									
8. Other Disease									
DIAGNOSIS AND ADDITIONAL INFORMATION ON TREATMENT									
Date and Hour When Given: D: _____ H: _____									
Physician's Name / Stamp of Institution									

EMERGENCY ASSISTANCE (Red Stripes)

SPECIAL ASSISTANCE FOR RADIOLOGICAL CONTAMINATION (Blue Stripes)

SPECIAL ASSISTANCE FOR CHEMICAL CONTAMINATION (Yellow Stripes)

SPECIAL RECOMMENDATION OF PHYSICIAN			SPECIAL NOTES	
(Notations at Subsequent Stages of Medical Evacuation)				
Refinement of Diagnosis, Evacuation Stage, and Name of Triage Physician	Date and Hour		Medical Assistance Provided (Specific Information)	Patient's Destination
	Arrival	Departure		
Date of Issue: _____			_____ (Identification of Medical Institution)	
PHYSICIAN'S NAME:				

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The Evacuation Section organizes the evacuation of the injured to hospitals in the exurban areas. The Evacuation Section will be staffed by a fel'dsher, several nurses, SD teams, orderlies, and stretcher-bearers.⁴⁷ The number of personnel will depend on the magnitude of the flow of patients to be evacuated and the availability of transport. Before the evacuation, the condition of the patients will be checked to determine whether they are fit to be transported, they are dressed, and their Med-tags are reviewed to ensure the completeness of medical information on them.⁴⁸ All patients who do not require further medical assistance are released. Presumably, they will return to their homes if these have survived, or they will make their way to their assigned evacuation host areas in the exurban zone. Priority in evacuation will be given to patients in urgent need of specialized medical assistance which cannot be provided at the OPMs. Patients with infectious diseases and violent psychiatric cases will be evacuated separately.

In most instances, the initial means of transportation of patients leaving the OPMs will be by motor vehicles (ambulances, vans, buses, and trucks) provided by units organized by the CDMS and the Civil Defense Transportation Service. Buses, vans, and trucks will be specially adapted to carry stretcher cases.⁴⁹ The driver of the vehicle departing the OPM will be issued a travel authorization indicating his assigned destination, the number of patients he is transporting and the basic nature of their injuries, time of departure, etc.⁵⁰ Vehicles carrying patients in most urgent need of further medical assistance will be sent to the nearest Collector Hospital. If there are sufficient means of transportation available, the vehicles will be loaded with patients with injuries of a similar character and severity, which will facilitate the determination of the vehicles' destinations, i.e., to the nearest or more distant Collector Hospitals and Head Hospitals.⁵¹ If there is insufficient transport, it may be necessary to mix stretcher cases with sitting (i.e., walking wounded) in the same vehicles. Distances from the OPMs to the hospitals will vary. It is recommended, however, that travel time to them should not exceed 10 to 12 hours.⁵²

Transportation of patients to hospitals may be carried out by the use of various mixes of transportation means. (See Figure 5.4, Diagram of the Deployment of Medical Formations and Evacuation of Casualties.) One method will be by motor vehicle all the way to the hospitals. Another will be transportation of patients by

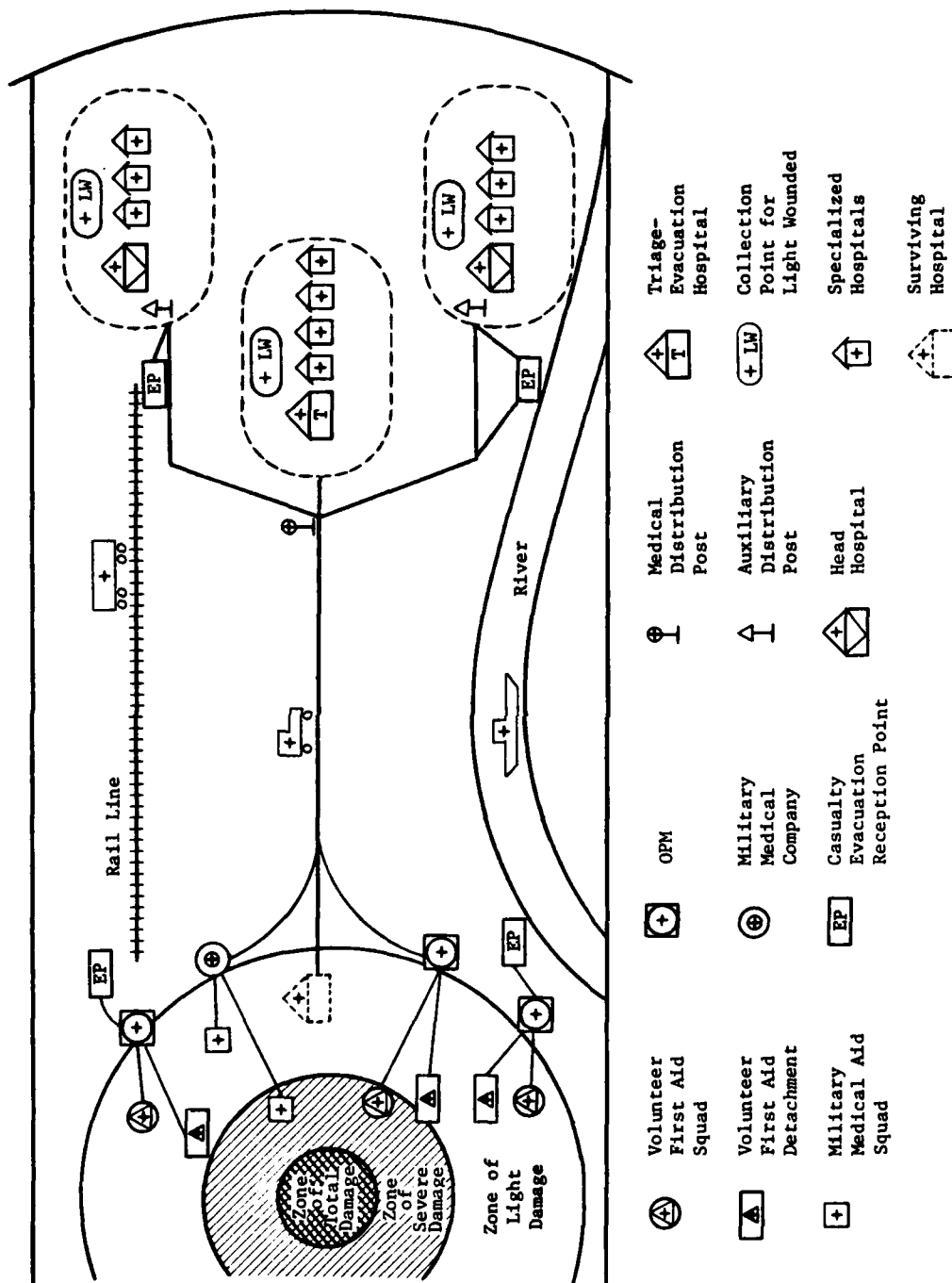


Figure 5.4 Diagram of the Deployment of Medical Formations and Evacuation of Casualties

motor vehicles to Casualty Evacuation Reception Points (EPs) at embarkation points for transport by rail, river boats, or by air. The loading of patients on hospital trains, boats, or aircraft will be carried out by SDs under the supervision of fel'dshers or nurses. EPs will also be set up at the disembarkation points of patients from trains, boats, and planes, from which they will be transported by motor vehicles to the hospitals. As was noted (see Section 4), these latter EPs will be manned by medical personnel detailed from the Triage-Evacuation Hospitals (SEGs).

The role of the Pharmacy in the OPM is obvious. The Laboratory Section has, in addition to its medical support function, the responsibility for carrying out dosimetric control over arriving patients at the RP and in the course of their decontamination, and also maintains dosimetric surveillance over radiation doses which the OPM personnel may receive to ensure their safety.⁵³ To expand the capabilities of the Supply Section for dealing with the large volume of supplies and support activities, i.e., provision of fuel, electric power, water, and also the burial of the dead, additional personnel may be conscripted from among the lightly injured patients or the nearby surviving population.⁵⁴

In the event that the OPM is deployed in areas subject to enemy attacks with chemical or bacteriological weapons, the organization and deployment of the OPMs will be adjusted to the character of this threat and the types of patients it will be expected to treat. For example, in the case of a chemical attack, the Hospital Section will deploy additional therapy and shock wards, and special collection points will be established for persons suspected of having had contact with persistent toxic agents.⁵⁵ In the case of use of bacteriological weapons or the outbreak of epidemics of dangerous communicable diseases, measures will include the vaccination of the population in the threatened area and the deployment of Infectious Disease Hospitals.⁵⁶ In this case, the OPM's operations will be coordinated with those of the Mobile Anti-Epidemic Detachments (PPEOs), Specialized Anti-Epidemic Brigades (SPEBs), and Mobile Hospitals for Infectious Diseases (IPGs) (See Section 4).

Section 5

FOOTNOTES

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2. Safronov, op. cit., p. 44.
3. Army General A.T. Altunin, Formirovaniya Grazhdanskoy Oborony v Bor'be so Stikhiynymi Bedstviyami (Civil Defense Formations in the Struggle Against Natural Disasters), 2nd edition, (Moscow: Stroyizdat, 1978), p. 170.
4. Altunin, op. cit., p. 169.
5. F.G. Krotkov, editor, Meditsinskaya Sluzhba Grazhdanskoy Oborony (The Civil Defense Medical Service), (Moscow: Meditsina, 1975), p. 100. See also L. Goure, Soviet Post-Strike Civil Defense Rescue, Damage-Limiting, Repair and Restoration Operations, Final Report, (McLean, VA: Science Applications, Inc., August 1982), prepared for FEMA, Contract EMW-C-0571, pp. 65-70; N.D. Koz'min and Kh.Yu. Tuychiyev, Zashchita Naseleniya ot Oruzhiya Massovogo Porazheniya (Protection of the Population from Weapons of Mass Destruction), 2nd edition, (Tashkent: Uzbekistan, 1977), p. 62; Gorelov and Dubrovin, op. cit., p. 24.
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7. Major General of Medical Service V. Mikhaylov, "The Concerns of Medical Service," Krasnaya Zvezda (Red Star), October 1, 1975; P. Gorbunov, "In Response to the Distress Signal in Belorussia," Voyennyye Znaniya (Military Knowledge), No. 7, July 1979, pp. 16-17; Captain First Rank V. Serkov, "When Disaster Raged," Voyennyye Znaniya, No. 9, September 1977, pp. 22-23.
8. For example, see Colonel General V. Grekov, in Sovetskiy Patriot (Soviet Patriot), January 9, 1977.
9. Altunin, op. cit., p. 171.
10. G. Dimov, "At the Earthquake's Epicenter," Izvestiya, April 10, 1976.
11. Major M. Ziyemin'sh, "After the Typhoon," Krasnaya Zvezda, September 15, 1981.
12. Altunin, op. cit., p. 171; Safronov, op. cit., p. 44.
13. Altunin, op. cit., p. 170.
14. Safronov, op. cit., p. 45; Babinskiy and Glebov, op. cit., p. 18.
15. For details of the Soviet evacuation system, see L. Goure, The Soviet Crisis Relocation Program, Final Report, (McLean, VA: Science Applications, Inc., May 1983), prepared for FEMA, Contract No. EMW-C-0571, passim.

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42. Babinskiy and Glebov, op. cit., p. 46; Rybasov, op. cit., pp. 77, 82-83.
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45. Babinskiy and Glebov, op. cit., p. 47.
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Section 6

CAPABILITIES AND EFFECTIVENESS OF THE CIVIL DEFENSE MEDICAL SERVICE FOR DEALING WITH MASS CASUALTIES

Any attempt to assess the capabilities and effectiveness of the CDMS for dealing with mass casualties in the event of a nuclear attack on the Soviet Union is fraught with many uncertainties. Such an assessment is very sensitive to assumptions about the attack scenario, i.e., the magnitude of the attack, its targets, the extent of strategic warning, and of implementation of pre-attack civil defense preparations, the probable number of casualties, and the post-attack environment in which CDMS will have to conduct its operations. Other factors will also influence the assessment, among them the size and quality of the Soviet CDMS forces and facilities, especially those surviving the attack; the size, distribution and content of stockpiles of medical supplies and equipment present in the exurban areas at the time of the attack; the magnitude of the contribution to post-attack medical assistance made by the armed forces' medical units and facilities; and so on.

6.1 THE SIZE AND DISTRIBUTION OF THE SOVIET MEDICAL SERVICE

The base line for assessing the capabilities of the CDMS is the size and character of the peacetime Soviet medical or public health service. In terms of its numerical indicators, the Soviet medical service is very large--in fact, significantly larger than that in the United States.

In 1981, the Soviet Union had 1,033,900 physicians of all types and specialties and 2,880,000 middle-level medical personnel.¹ In 1983-84, the Soviet Union is expected to have approximately 1,200,000 physicians or about one physician for every 220 Soviet citizens, compared to one physician for 450 citizens in the United States.² Total Soviet personnel in health employment in 1981 was on the order of 6.5 million. It should be noted that 68 percent of all physicians were women.³

In 1981, the USSR had a total of 23,100 hospitals, with 3,384,000 beds, and 36,500 physician-staffed polyclinics.⁴ Thus, in 1981, there was approximately one hospital bed for every 79 Soviet citizens or about twice as many as in the U.S. hospital system.⁵ In addition there were 13,523 sanatoria and rest homes with 2.189 million beds and a further 176,000 beds for short-stay visitors in vacation areas.⁶

The distribution of medical personnel and facilities among the Soviet republics, however, is uneven. Thus in 1981, the number of physicians per 10,000 inhabitants (national average 38.5) was highest in the Georgian SSR (49.6) and lowest in the Tazhik SSR (24.2).⁷ The republics with above average numbers of physicians per 10,000 inhabitants included the RSFSR, Latvia, Lithuania, and Estonia, while two of the largest republics in the European part of the USSR, i.e., the Ukraine and Belorussia, were somewhat below average (37.8 and 34.5, respectively). Similarly, the number of middle-level medical personnel per 10,000 inhabitants in 1981 (national average 107.3) ranged from 117.7 in the Latvian SSR to a low of 79.1 in the Turkmen SSR, with the RSFSR exceeding the average (115.5), as did the Georgian SSR and the other Baltic states.⁸

In 1981 the number of hospital beds per 10,000 inhabitants (national average 126) was highest in the RSFSR and the Kazakh SSR (130.8), the Latvian SSR (137.7), and lowest in the Azerbaydzhan SSR (97.1) and the Armenian SSR (83.9).⁹

As in the United States, the distribution of physicians, hospitals, and hospital beds tends to favor the urban population. This is so even though it is claimed that since 1965 the rate of growth of the number of physicians and hospital beds for the rural population has exceeded that for the urban population, and this despite the rapid urbanization of the Soviet population.¹⁰ Thus, in 1977, there was an average for the entire USSR of 30.4 physicians per 10,000 inhabitants, but an average of 36.8 physicians for the urban population vs. 19.9 physicians per 10,000 rural inhabitants.¹¹ Furthermore, this distribution varied in the various Soviet republics, with a high of 25.2 physicians per 10,000 rural inhabitants in the Latvian SSR and a low of 16.4 physicians per 10,000 rural inhabitants in the Kirgiz SSR.¹² Similarly, while in 1977 there were on the average of 84.2 middle-level medical personnel for 10,000 inhabitants in the entire USSR, there were 87.8 such personnel per 10,000 inhabitants in the cities, 38 per 10,000 inhabitants in rural towns, and 40.1 per 10,000 rural inhabitants residing in villages and collective and state farms.¹³ However, of the total number of fel'dshers, 24 percent worked in the cities and towns and 56 percent in the rural areas.¹⁴

In 1981, Soviet statistical reports continued to reflect a disproportionate concentration of medical personnel in the largest cities. For example, while the average number of physicians per 10,000 inhabitants for the entire USSR was 38.5 and of middle-level medical personnel was 107.3, Moscow had 99.9 physicians and 175.1 middle-level personnel per 10,000 inhabitants, Leningrad had 82.6 physicians and 144.2 middle-level personnel, Kiev had 81.3 physicians and 141.5 middle-level personnel, Alma-Ata had 86.6 physicians and 140.4 middle-level personnel, Odessa had 84.2 physicians and 154.5 middle-level personnel, and so on.¹⁵ In 1981, the ten largest cities in the RSFSR accounted for 31 percent of all physicians and 20 percent of all middle-level medical personnel in that republic.¹⁶ Four of the largest cities in the Ukraine accounted for 25.5 percent of all physicians in that republic.

A similar situation exists in the case of the distribution of hospital beds. For example, in 1975 rural hospitals (i.e., sector hospitals and rayon hospitals) accounted for 33.9 percent of all hospital beds, while large city, specialized, oblast and republic level hospitals accounted for 53.2 percent of all hospital beds.¹⁷ In addition, some two percent of the beds were in the clinics of institutions of higher learning and research institutes which are also located in large cities. Hospital-dispensaries presumably located in both urban and rural areas accounted for 6.9 percent of all hospital beds, maternity homes for 3.1 percent, and "other hospital institutions" for 11.1 percent.¹⁸

As in the case of physicians, the distribution of hospital beds also favors the largest cities. For example, with an average of 126 beds per 10,000 USSR inhabitants in 1981, Moscow had 137.5, Kiev 137.9, Alma-Ata 171.1, and so on.¹⁹ Some republics with lower than average numbers of hospital beds per 10,000 of their inhabitants had well above average of such beds in their capital cities. For example, the Turkmen SSR had an average of 106.1 hospital beds per 10,000 inhabitants in the republic while its capital city, Ashkhabad, had 163.3 beds per 10,000 residents; the Azerbaydzhan SSR had 97.1 beds per 10,000 inhabitants while its capital city, Baku, had 134 beds per 10,000 residents, and so on.²⁰

Of course, the Soviet medical service is continuing to expand. During a one-year period (1980-81), the number of physicians increased by 36.8 thousand, the number of middle-level medical personnel by 66 thousand, and the number of hospital beds by 60 thousand.²¹

6.2 THE THEORETICAL CAPABILITY OF CDMS TO DEAL WITH MASS CASUALTIES

While the number of personnel serving in the Volunteer First Aid Squads and Detachments (SDs and ODSs) is not known, there is evidence that they have been organized at industrial enterprises; collective and state farms; administrative, research, and educational institutions; and so on. Given their number in rescue and various medical units, it appears possible that SD members may account for some 10 to 15 percent of the total Soviet civilian civil defense force of some 16 to 20 million. In principle, this appears to be sufficient to carry out the various functions assigned to the SDs and in particular to provide first aid to large numbers of casualties.

Similarly, all hospitals and polyclinics are required to organize First Medical Assistance Detachments (OPMs). There is a great deal of evidence to indicate that this has been done, although two or more small clinics or hospitals combine forces to form one OPM. As was noted, in 1981 there were 59,600 hospitals and clinics. It seems possible, therefore, that some 30,000 and possibly more OPMs have been organized, staffed by in excess of 300,000 physicians. If, as the manuals claim, each OPM is able to treat up to one thousand casualties per day, then in principle the capability exists to provide first medical assistance to most injured persons even in the numbers which may result from a worst-case attack scenario. In a more favorable scenario, one that assumes the pre-attack evacuation of the urban population, the number of likely injured persons would be considerably smaller, possibly on the order of eight to fifteen million (assuming that the total number of fatalities and injured may be on the order of 15 to 30 million) or well within the theoretical capability of the OPMs to assist, process, and evacuate.

Of course the total number of SDs and OPMs does not reflect the real capability of the CDMS to deal with mass casualties. First of all, the availability of these units will depend on the attack scenario. If the attack were to occur prior to evacuation of the urban population and of medical institutions at risk, and the cities were actually subjected to nuclear strikes, a significant portion of the CDMS forces would be destroyed or pinned down in shelters in the targeted areas. Given that this scenario also assumes the largest number of civilian casualties, the surviving medical personnel, institutions, and SDs and OPMs in the smaller cities and towns and in the rural areas

may not suffice to deal effectively with all casualties. It is not known how many military medical companies and detachments may be available to assist the casualties. Furthermore, the ability of the SDs and rescue detachments and OPMs from rural areas and smaller cities to move to the areas of destruction will depend on the radiation environment, road conditions, and available transportation. It is with such a scenario in mind that some Soviet manuals speak of a possible insufficiency of medical capabilities in relation to the number of casualties requiring medical assistance.²²

Even under more favorable conditions, i.e., the pre-attack evacuation of the urban population, medical institutions, and personnel from risk areas, in the event of strikes on the cities, only the evacuated SDs and OPMs and those from nearby rural areas and smaller towns would be initially available to provide medical assistance to the injured in the targeted cities. However, as was noted, the largest cities also have the highest concentration of medical institutions and personnel, as well as of institutions on the basis of which SDs are organized. Consequently, if they are evacuated in time, these cities will have an advantage in the number of SDs and OPMs which would be available after a strike to assist the injured.

Of course, the rate at which the SDs and OPMs will have to render medical assistance to the injured will depend not only on the attack scenario, but also on the rate of rescue operations in the areas of nuclear damage. The injured will not arrive at the OPMs all at once. As was noted, the majority of surviving injured personnel are expected to be found in the zones of light and moderate damage, while the rescue of survivors in the zone of severe damage is expected to require significant time. Even in the zones of light and moderate damage, rescue operations will be slowed by the radiation environment, fires, and rubble. Consequently, Soviet planners appear to expect the flow of casualties to the OPMs to occur over several days, with the walking wounded predominating in the initial wave of arriving casualties.

Another uncertainty is the number of medical personnel who would be available to the CDMS for dealing with mass casualties. As was noted, in the event of a war a portion of the civilian medical personnel would be called up for service with the armed forces. This may reduce the total number of physicians by several hundreds of thousands. The same may happen to middle-level medical personnel. At the same time, however, military medical personnel and facilities may be assigned to assist the

population following an attack.²³ It is also anticipated that senior medical students, especially female students, will be used to reinforce the medical personnel in the hospitals in exurban areas.

While one can only guess at the wartime size of CDMS forces, it appears possible and likely that CDMS would have at its disposal approximately 70 percent of the total personnel employed in the public health system. Currently, this would represent a force of some five million, with an additional 1.6 to 3 million serving in the SDs. This number may include some three million physicians and middle-level medical personnel. This work force could be further expanded by drafting evacuees and rural residents to perform relatively unskilled tasks in the hospitals and the care of ambulatory patients.

In the matter of the hospitalization of the injured, Soviet concepts and plans appear to be potentially quite effective. Of course, there will be requirements for a rapid, large expansion of available hospital beds, especially in the rural areas and smaller towns. While this expansion would apply to hospitals in these areas and towns and could be independent of the evacuation of medical institutions and personnel from risk areas--primarily large cities, in fact it will be in a large measure associated with such evacuation. As was noted, under peacetime conditions the ready hospital bed capacity in the rural areas constitutes only some 34-35 percent of the total number of hospital beds in the USSR (in 1981 this would have represented some 1.1 to 1.2 million beds). In addition, there would be in excess of two million beds in sanatoria, rest homes, rural maternity homes, and similar facilities. Even if the hospital beds in the oblast center cities are added, it is obvious that the total would be inadequate to meet the needs for hospitalization of many millions of injured persons in the wake of a large nuclear attack. CDMS plans call for the setting up of additional hospitals in a variety of suitable buildings in the exurban areas, i.e., schools, administrative structures, dormitories, club houses, hotels, as well as sanatoria and rest homes. Of course, according to Soviet manuals, it is expected that some one-third of the injured will be ambulatory and, therefore, not require hospitalization. Also, as was noted, the majority of persons suffering from radiation sickness are not expected to seek hospitalization for one or more weeks following the attack. This would help reduce the initial demand for hospital beds and medical assistance. Presumably, the CDMS is developing the means to implement the emergency expansion of hospital facilities and beds.²⁴ Such preparations, however, call for the stockpiling not only of many millions

of beds or cots, but also a large volume of various other hospital equipment and medical supplies. Unfortunately, the actual extent of such preparations is not discussed in Soviet publications.

The flow of patients to the hospitals is likely to be uneven and will occur over a period of several days. In addition to the rate of rescue operations, the rate of arrival of patients at exurban hospitals will depend on the radiation environment, the condition of roads and rail lines, and the availability of sufficient means of transportation. As was noted, Soviet manuals mention the possibility of several days delay in the dispatching of patients from the OPMs to the exurban hospitals. While delays will probably increase the number of fatalities among the severely injured, it will also mean that the hospitals will have more time to cope with the flow of arriving casualties.

6.3 SOME OTHER LIMITATIONS ON THE EFFECTIVENESS OF CDMS IN DEALING WITH MASS CASUALTIES

There are various potential limitations on the effectiveness of the CDMS in dealing with mass casualties. These result in part from the quality of Soviet medicine and in part from shortcomings in the training and equipping of CDMS forces.

Overall, American physicians regard Soviet medicine as being backward in comparison with U.S. medicine.²⁵ This is said to apply to the quality of medical training of Soviet physicians and middle-level medical personnel as well as to the equipment used in Soviet medical facilities open to the general public.

Among the Soviet physicians, some 70 percent are simple clinical doctors or general practitioners with only six to seven years of training in medical schools.²⁶ Medicine is a relatively low paid profession in the Soviet Union. This holds true for physicians as well as middle-level medical personnel, and may partially explain why it includes such a high percentage of women. Low pay and inferior living conditions in the rural areas and backward oblasts also explain why many of their medical facilities are understaffed.²⁷ Rural areas also have fewer medical specialists.

In general, Soviet publications suggest that in the event of a nuclear attack on the Soviet Union, there may be a significant shortage of trained medical specialists needed to staff the specialized hospitals. This is the justification for the organization

of mobile brigades of medical specialists (BSMPs). In particular, Soviet manuals anticipate a shortage of surgeons and burn specialists in the event of an enemy surprise attack. While some Soviet manuals mention the need to provide medical personnel outside the large cities with specialized training, the extent of such training is unknown.²⁸ Indeed, given the relatively low quality of rural medicine and physicians practicing in the rural areas, it is doubtful that such training would meet with much success. There is, therefore, considerable uncertainty about the quality of the mass of Soviet medical personnel and their effectiveness in dealing with mass casualties suffering from multiple and complex injuries. Of course, under nuclear war conditions, it would not be possible in any event to provide large numbers of the injured with the sort of specialized medical care given in peacetime. For example, given the expected large number of patients with extensive burns, it would not be practical to provide them all with the type of specialized care given in peacetime to burn victims in burn-trauma centers.

In general, despite its numerical size, the persistent shortcomings of the Soviet public health system have been the subject of reported public criticism by the Soviet leadership. Speaking at the 26th CPSU Congress in 1981, Brezhnev complained about the "inadequacies" of the work done in Soviet hospitals and clinics, the shortage of medical personnel in various locations, the prevalence of "out-of-date" medical equipment still in use, the shortage of medications, and so on.²⁹ Soviet hospitals and clinics have been criticized for their frequent diagnostic errors, poor hygiene which causes infections, shortages of basic medical supplies, and so on.³⁰ There are also complaints about a shortage of middle-level medical personnel "everywhere."³¹ Of course, it could be argued that, by virtue of its own relative primitiveness, Soviet medicine is better prepared to work under emergency conditions and in the face of shortages than Western medicine.

Undoubtedly critical for effective medical assistance to large numbers of injured persons in the event of a nuclear attack will be the availability of medical supplies. The Soviet press periodically reports shortages of medications, sterile cotton, bandages, disposable syringes, needles, thermometers, and so on in hospitals and clinics as well as pharmacies.³² There are repeated reports from various localities indicating that some SDs find it difficult to obtain needed medical supplies for their medical aid bags through the local pharmacies or find it hard to obtain supplies needed to replace

those used in training exercises.³³ According to a 1977 article by the USSR Minister of Public Health, production of medical equipment and supplies in the USSR fell well short of requirements.³⁴

Of course, the output of medications and medical supplies as well as of medical instruments and equipment has and continues to grow. It is claimed that in the period 1971-1975, production of medical goods increased by 70 percent.³⁵ In the period 1975-1981, the output of medical equipment and instruments is said to have grown by 105 percent.³⁶ The 1981-1985 Five Year Plan calls for a 48.6 percent growth in the output of medical supplies.³⁷ Nevertheless, shortages obviously exist. This fact is also reflected in Soviet imports and exports of pharmaceutical products and medical instruments. For example, in 1981 the Soviet Union imported pharmaceutical products valued at 757 million rubles and medical instruments and equipment valued at 224 million rubles, and in 1982 it imported 876 million rubles worth of pharmaceuticals and 257 million rubles worth of medical instruments and equipment.³⁸ By contrast, in 1981 the Soviet Union exported 83.7 million rubles worth of pharmaceuticals and 19.6 million rubles worth of medical instruments and equipment, and in 1982 Soviet exports were 86.2 million rubles and 17.4 million rubles, respectively.³⁹

Given this situation, it is uncertain whether the Soviet pharmaceutical and medical instruments and equipment industries have the capacity to produce sufficient supplies to build up the necessary stocks which will be required to provide medical assistance to casualties in the event of a nuclear attack. Shortages reported in the Soviet press suggest that this may be difficult to achieve, although these shortages are at times the fault of the distribution system rather than of the producers. Yet, one must keep in mind that here, as in the case of other supplies, the Soviet Union appears to be committed to the building up and maintenance of large stocks kept strictly for wartime use despite peacetime shortages in the civilian sector. Indeed, according to past Soviet practice the buildup of such war stocks takes precedence over current needs of the population.

There is one more important uncertainty to be noted, and that is the potential effect of the radiation environment on the effectiveness of CDMS in assisting mass

casualties. One of these effects already mentioned is the delay which fallout can impose on the arrival of civil defense rescue and medical forces in the areas of nuclear destruction, as well as on the evacuation of injured persons to exurban hospitals. As was noted, Soviet authorities cite this to justify the need to train the entire population in first aid and for providing it with individual medical kits or packets. Another effect will be potential casualties this may cause among medical personnel and patients in exurban hospitals in the path of fallout. It is noteworthy that Soviet manuals make no mention of plans to shelter patients in exurban hospitals against fallout, although shelters are expected to be provided for non-transportable patients who will remain behind in urban hospitals following the evacuation of medical institutions to exurban areas. Of course, rescued injured persons will not be sent to hospitals in zones of dangerous radioactive contamination. By the time the OPMs will have treated and processed the injured and prepared them for evacuation, much of the fallout will be down and it should be known which hospitals to avoid. Even so, the patients in exurban hospitals will be at risk from fallout arriving from more distant strike areas and especially from fallout resulting from follow-on enemy strikes. Presumably, given the large numbers of patients who will collect in these hospitals, it is considered impractical to provide them with fallout shelters and attempt to move them into such shelters in the event of danger from fallout. However, a portion of the hospital's medical staffs may seek cover in fallout shelters. Thus, according to one Soviet civil defense manual, "under conditions of widespread fallout (contaminated evacuation routes, territories of rayons and hospitals, water sources, and equipment) radiation casualties among the [medical] personnel and patients apparently will be unavoidable."⁴⁰ Protection of patients will be sought by means of sealing the hospital wards against fallout dust, using medical prophylactic measures and individual means of protection and, in special cases, moving the hospitals to non-contaminated areas.

6.4 THE LEVEL OF EFFORT DEVOTED TO THE CIVIL DEFENSE MEDICAL PREPAREDNESS PROGRAM

In the absence of any published Soviet figures on the precise size of the CDMS and its annual budget, it is only possible to guess at the cost of the Soviet civil defense medical preparedness program. Indeed, estimates of the cost of the entire Soviet civil defense program are fraught with considerable uncertainties. The U.S. intelligence

community estimates the 1981 cost of four elements alone of the total program--full time civil defense personnel, operation of military civil defense units, construction and maintenance of facilities for these units, and blast shelter construction--at 360 million rubles or less than one percent of the estimated Soviet defense spending. However, the equivalent effort in the United States is estimated to cost three billion dollars.⁴¹ There are other estimates which place the level of annual Soviet investment in civil defense at the equivalent of five percent of Soviet defense spending.⁴² In terms of U.S. equivalent costs, various estimates place the total cost of the Soviet civil defense program on the order of six billion dollars per year.

One particular point to be borne in mind is that Soviet manpower costs are significantly lower than those in the United States. Thus, in terms of U.S. equivalent costs, the cost of full time Soviet civil defense personnel is estimated at 75 percent of the three billion dollar cost of four elements of the Soviet civil defense program mentioned above, vs. only about 45 percent in ruble costs in the Soviet Union.

USSR Civil Defense is believed to have in peacetime in excess of 100,000 full time paid personnel. It is likely that the number of full time public health personnel in the civil defense program is relatively small. Such personnel probably consists primarily of deputies to chiefs of CDMS at the USSR and republic public health ministry level and at oblast public health levels; possibly additional personnel serving with the full time civil defense staffs at the national, republic, oblast, and city levels; assistants for civil defense to chiefs of large hospitals and clinics; training instructors and inspectors; and so on. There is probably also full time personnel in charge of medical warehouses with stocks held in reserve for wartime use. In general, CDMS being only one of some fifteen civil defense services, it is unlikely to have much more than ten percent of the total number of full time civil defense personnel. Of course, in U.S. equivalent costs, this may represent an annual expenditure of some \$220,000 or significantly more than the present U.S. federal budget for the total civil defense program.

The overwhelming majority of Soviet personnel assigned to CDMS and medical first aid is involved in the program only on a part-time basis. This holds true for physicians as well as middle-level medical personnel. It appears not unlikely that all personnel controlled by CDMS represents some 25 percent and possibly more of the

total part-time Soviet civil defense forces of 16-20 million. Specifically, this means that this personnel is assigned to CDMS units and installations, is receiving both general civil defense and specific medical instruction and training, and is assigned various missions in an emergency situation.

The significant cost of the Soviet civil defense medical program is not in the cost of personnel, which is relatively low, with much of the training of CDMS personnel carried out in their free time and without pay, but results from equipment and supplies used by CDMS forces and stockpiled for emergency use. A single First Aid Squad (SD) of 24 persons with its uniforms, protective suits, gas masks, medical bags, stretchers and other personal equipment, dosimeters, and radios represents a not insignificant investment, and this is all the more true for a force of 1.6 to 3 million SD members. OPM personnel also require protective suits, gas masks, dosimeters and radios, and special mobile equipment including vehicles, water tank trailers, electric power generators, heaters, and so on. In theory, an OPM consists of some 70 to 76 persons and two SDs, and, as was noted, there may be some 30,000 OPMs in the CDMS system. Overall, it must be assumed that most or all CDMS personnel, like the personnel of other Soviet Civil Defense services, are provided with individual means of anti-chemical defense and personal medical kits, while units are provided--in addition to medical equipment and supplies--with dosimeters, radios, chemical detection kits, decontamination equipment, tents, and so on. Obviously the cost of such equipment for a force of possibly five million is not trivial.

Other costs of the program include the cost of medical supplies used up in training and exercises and the cost of accumulating and maintaining stockpiles of medical supplies, equipment, beds, and so on. As was noted, Soviet articles mention the expenditure of supplies carried by SDs and OPMs during exercises and the need to replace them.⁴³ Other supplies are used up in the general program of first aid instruction of the population and in the civil defense instruction of medical students and professionals and of CDMS personnel. A further cost is the adapting of vehicles and stockpiling of equipment for adapting vehicles, railroad cars, river boats and ships for transportation of stretcher cases.

Undoubtedly, the greatest cost is in connection with the stockpiling of medical supplies and equipment for emergency or wartime use. This would include supplies to

inoculate large numbers of Soviet citizens against dangerous infectious diseases in the event of post-disaster or post-strike epidemics. While various sources indicate that such stockpiles exist, their actual size is unknown. In principle, however, the build-up and maintenance of such stockpiles, including the replacement of perishable medications, may constitute a significant portion of the total annual Soviet expenditures on civil defense.

It is not unlikely, therefore, that Soviet annual expenditures on civil defense medical preparedness represent some 30 percent of total Soviet expenditures on civil defense. Of course, given the high cost of medical personnel, supplies, and equipment in the United States, the equivalent cost of a comparable effort in the United States would be substantially greater than in the Soviet Union.

Section 6
FOOTNOTES

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41. Director of the Federal Emergency Management Agency, Soviet Civil Defense, September 1982, FEMA-52, December 1983, p. 23.
42. See Zivilschutz (Switzerland), November-December 1977 and the American Civil Defense Association, Alert, February-March 1978.
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Section 7

POSSIBLE LESSONS FOR THE U.S. CIVIL DEFENSE MEDICAL PREPAREDNESS PROGRAM

While the problem of providing medical assistance to mass casualties in the event of a nuclear war is without a doubt a formidable one, the Soviet system and plans for rendering such assistance strongly suggest that this problem is by no means hopeless. This is especially true for a wide range of war scenarios other than the popular--but not necessarily realistic--worst-case scenario, which assumes a massive initial strike on all large U.S. cities with little or no prior warning and no preparations made to protect the population. Even so, most scenarios--including the ones more favorable to the prospects of survival of a majority of the population--still anticipate a totally unprecedented number of casualties and demand for medical assistance. It is obvious that this demand could only be met if a major portion of the medical system and capabilities is organized and prepared for this purpose and the necessary resources are created to support the effort to provide medical assistance to mass casualties.

Obviously there are important differences between the Soviet and U.S. medical or public health systems which must be taken into account. In the Soviet Union the medical system is completely socialized. With all medical and public health personnel, institutions, and facilities under state control in one form or another, it is much easier in the Soviet Union to organize and mobilize all medical capabilities for emergency situations, to instruct medical personnel in civil defense on a compulsory basis, and to develop first aid and medical formations specifically designed for disaster situations. By contrast, in the United States medicine and medical institutions are predominantly private and their participation in planning and preparation for emergency situations is largely voluntary. Indeed, at present there is a movement among medical personnel in the United States to refuse participation in civil defense planning and preparedness for a war situation for reasons of hopelessness or in support of various "peace programs." All this makes development of a civil defense medical preparedness program for dealing with possible mass casualties considerably more difficult. This difficulty is compounded by insufficient funding of U.S. civil defense programs, including the medical preparedness program.

Despite the differences between the Soviet and U.S. medical systems, the Soviet approach to the problem of dealing with mass casualties in a war situation and the system for doing so suggest a number of potential lessons for the U.S. civil defense medical preparedness program.

1. Given a large medical capability, good planning and organization, the medical problem of dealing with mass casualties and providing effective medical assistance to the surviving population in the event of a nuclear war is far from being hopeless as some people contend. This is especially true for a wide range of war scenarios other than the worst-case scenario. Even in the latter case, good medical organization and preparations could provide significant medical support to the surviving population. It is evident, however, that medical assistance to mass casualties resulting from a nuclear attack is only practical if a major portion of medical personnel and institutions are well organized, prepared, and effectively used in accordance with carefully worked out plans and resource allocation systems.

2. The medical preparedness program is inseparable from and an integral part of the general civil defense program aimed at protecting the population and mitigating losses among it in disaster, and especially war, situations. Indeed, the credibility of a medical preparedness program for a nuclear war situation is critically dependent on the credibility of the civil defense program as a whole, especially its capability and readiness to mitigate losses among the population and to sustain and assist the survivors in the post-attack environment. The reasons for this are obvious. The absence of population protection measures not only generates a sense of hopelessness among the population concerning prospects for its survival, but also greatly weakens any attempts to gain the active participation of the medical sector in the civil defense program. Furthermore, many people--including large segments of the medical sector--believe that in the absence of credible population protection measures the anticipated potential number of injured persons and losses among medical personnel and facilities would preclude meaningful medical assistance to the injured and survivors. The Soviet civil defense medical preparedness program clearly shows that such a program requires close coordination of medical measures with protection measures and plans. This is true for the sheltering of the population and medical personnel; for the pre-attack evacuation of the population at risk and the relocation of medical facilities, personnel,

and patients; the planning of expansion of medical capabilities in exurban areas; the post-attack rescue operations in areas of nuclear damage; measures to ensure medical care of the surviving population; the determination of locations for stockpiles of medical supplies in the exurban areas; and so on. Such coordination requires the active participation of the medical sector in the civil defense planning process at all levels. Presumably this could be done through the public health departments at city, town, county, state, and federal levels with the participation of representatives of professional medical associations and organizations. The Soviet approach suggests that the focus of medical preparedness organization and planning should be at the state, city, and county levels, with particular attention to careful planning and coordination between the cities believed to be at risk and surrounding counties which may serve as host areas for evacuated urban residents, medical institutions, and personnel.

3. Medical preparedness planning should be based on two or more alternate war scenarios--in particular, one that assumes no pre-attack evacuation of the population, medical personnel, and institutions considered to be at risk and another that does assume such an evacuation. In the first scenario, plans for medical assistance will have to be based on available medical personnel and institutions outside the high risk cities, and include the expansion of these capabilities and what the Soviets call "maneuvers" with medical forces and resources, i.e., the post-attack reinforcement of medical capabilities in critical areas by mobile elements of medical personnel and equipment from other unscathed areas of the state or even across state borders. The pre-attack evacuation scenario would allow for planning the maximum utilization of medical personnel and resources. This could include the planning of the expansion of medical and public health capabilities in areas not considered to be at risk on the basis of relocated urban medical and other public health institutions and personnel, the mobilization and effective utilization and allocation of private physicians among the population and medical institutions according to anticipated needs and the physician's and middle-level medical personnel's specialties, and so on. In this case, medical supplies and equipment relocated from risk areas probably should be viewed as a bonus but not a substitute for the necessity of stockpiling sufficient medical supplies and equipment in safe areas to support effective medical assistance to the population in the absence of relocated supplies.

It should be noted that the effectiveness of the Soviet civil defense medical service for dealing with mass casualties in a nuclear war situation depends to a large and possibly critical extent on the pre-attack evacuation of medical personnel and institutions and, indeed, of civil defense forces in general from high risk areas. In other words, in order to reduce the number of casualties, to preserve essential elements of civil defense forces required for post-attack rescue, damage-limiting, and repair operations and to assure the mobility and capability of the medical service to deal with mass casualties, there is an important incentive for the Soviet leadership to order the evacuation of the population and civil defense forces from high risk areas regardless of the availability of shelters for key personnel in those areas. This enhances prospects for the United States obtaining warning of a Soviet attack and for sufficient time to implement the relocation of the population and medical personnel from U.S. risk areas.

4. The Soviet two-stage medical evacuation and triage system appears to be a useful concept for dealing with mass casualties. Indeed, dealing with mass casualties appears to require a medical organization built to some extent on the Army's medical organization model. There is, however, no equivalent in the United States for the Soviet system of Volunteer First Aid Squads (SDs) and First Medical Assistance Detachments (OPMs), which play such a critical role in Soviet plans for dealing with mass casualties and represent the first stage of the casualty treatment and evacuation system. In a large measure this reflects the present absence in the U.S. civil defense program of plans and capabilities for carrying out large-scale post-strike rescue, damage-limiting, and repair activities in areas of nuclear damage, such as exist in the Soviet civil defense program. Existing plans, organization, and capabilities in the United States for conducting rescue operations and providing medical assistance in peacetime disasters would be incapable of meeting the needs of a nuclear war situation. The Soviet system of mobile SDs and OPMs appears to have much to recommend itself for the latter situation, although the use of female first aid teams in dangerous areas of nuclear damage soon after enemy strikes is unacceptable in the United States. Possibly a substitute for mass SD formations could be found. The development of large numbers of mobile OPMs based on hospitals and other large medical facilities and also staffed by private physicians appears worthy of serious consideration. The basic point is that in the event of mass casualties there will be a

requirement for the earliest possible medical assistance to the injured. This means that medical forces must be sent to provide initial medical assistance to casualties on the spot or close to the areas of damage and not wait for the transportation of the injured to hospitals.

5. Whether the application of the Soviet system of providing medical assistance to urban evacuees in the course of their evacuation to exurban areas is practical in the United States is questionable, given the differences between any U.S. and the Soviet evacuation systems. Two aspects of the Soviet system, however, may be relevant. One is the requirement for medical institutions to plan how to bring to the hospitals for further evacuation persons at home too ill or incapacitated to leave the cities by themselves or with relatives or friends, or lacking the means to do so. A system of notification of appropriate authorities of the needs and locations of such persons needs to be set up for such cases. Another possible applicable element of the Soviet system is the use of mobile medical, middle-level, or para-medical teams along evacuation routes to provide evacuees with emergency medical assistance.

6. The key element of a hospital system for dealing with mass casualties and providing the population and evacuees in non-risk areas with medical care is the medical and public health system in existence in those areas. It forms the basic core of the emergency hospital system available in the event of a nuclear attack, on the basis of which a large expansion of hospital facilities could be planned. Consequently, particular attention in the medical preparedness program should be paid to these medical and public health institutions, organizations, agencies, and departments, and to the planning of the rapid expansion of their capacities and capabilities in an emergency. This will require the pre-stocking of medical supplies and equipment required for such expansion at these institutions, especially those (a) relatively near the potential targets for enemy strikes, and (b) in the designated evacuation host areas.

7. The evacuation of medical institutions and their personnel from risk areas requires careful planning and coordination with host areas. It should be planned on the basis of requirements generated by regional plans for the development of capabilities for medical assistance to mass casualties and the surviving population. Specifically, each institution should have a specific mission in the system of medical preparedness

and assistance, an assigned host area with dedicated buildings for its use, and also a reliable source of supplies in the host areas. The organized evacuation of medical institutions, personnel, and some patients from risk areas will require the provision and organization of means of transportation for this purpose, given that such institutions lack sufficient transport to accomplish such a move beyond the use of the staffs' personal vehicles and a few ambulances, buses, or trucks. Another problem is what to do about non-transportable patients and the medical personnel needed to care for them. In the Soviet Union, such patients and personnel would be placed in the hospitals' and clinics' blast shelters. It is apparent that any credible U.S. medical preparedness program will have to deal with this problem.

8. The evacuation of medical personnel in the United States is unlikely to be as effectively controlled as it is possible to do in the Soviet Union. True, many physicians and middle-level medical personnel are in some form associated with medical institutions and could be encouraged or instructed to evacuate with these institutions if given assurances that their families would leave with them and would be cared for in the designated host areas. Other physicians and medical personnel should also be encouraged to proceed to specifically designated exurban locations which may be identified with medical facilities present there or with relocation sites of evacuated medical institutions or public health organizations. At a minimum such physicians and other medical personnel could be issued in peacetime with instructions suggesting where they should seek to relocate to and to what institution, agency or department in the exurban areas they are urged to report to for work upon arrival.

9. The Soviet civil defense medical assistance system strongly suggests the need for the integration of all medical, public health, hygiene and sanitation organizations and capabilities for dealing with possible outbreaks of epidemics of dangerous communicable diseases in the post-attack period. The Soviet concept of mobile hospitals for contagious diseases may have considerable merit. Critical, however, will be a system of continuous monitoring of the surviving population for outbreaks of such diseases and the rapid isolation and treatment of the victims.

10. The Soviet civil defense medical system correctly sees a requirement for the instruction of medical personnel in civil defense and in emergency medicine suitable for a nuclear war situation. At present there is no corresponding program in the

United States, either for medical students or for practicing medical personnel. Some or possibly all U.S. medical schools now offer instruction in emergency medicine, but this relates to peacetime rather than wartime situations. Ideally, the medical schools should offer courses in what may be called wartime medicine. Furthermore, a majority of U.S. medical personnel is not engaged in emergency medicine and has little experience in it. True, the United States probably has a greater proportion of medical specialists than is the case in the Soviet Union. However, in a war emergency there will be a need for many physicians in specialties and practices not calling for emergency medicine to practice such medicine, including performing triage and surgery, treating burns and radiation sickness, dealing with multiple injuries, and so on, and to do this under less than ideal conditions. This will require special training of medical personnel. No doubt, the civil defense instruction of medical personnel and their training in emergency medicine would have to be a part of a U.S. medical preparedness program. Its acceptability will probably depend on the institution of a comprehensive and credible civil defense program in the United States.

II. Soviet insistence on the importance of instructing the general public in first aid as a part of its general compulsory training in civil defense is a sensible concept, although the time devoted to this in the Soviet civil defense instruction program appears to be inadequate for this purpose. Also sensible is the Soviet idea of individual medical kits and decontamination packets, even though one can question the utility of some of their content. Of course, many individuals in the United States have and continue to receive instruction in first aid provided by the Red Cross and other organizations. Ideally, the content of this instruction should be reviewed to ensure that it meets the needs of first aid under nuclear war conditions, and any civil defense public education program should at a minimum encourage the public to take such instruction and acquire the necessary first aid supplies.

Section 8

CONCLUSIONS

Although Soviet propaganda aimed at Western audiences purports to confirm Western worst-case predictions of the consequences of a nuclear war--which assume a complete failure of the medical system to assist mass casualties and the surviving population, USSR Civil Defense takes a more optimistic or positive view of its ability to deal with the post-strike medical problem. Indeed, if such a capability is a measure of the seriousness and comprehensiveness of a civil defense program, USSR Civil Defense and its medical preparedness program appear to meet this test. This is not to say that the Soviet civil defense and public health leadership underestimates the magnitude of the medical tasks which may confront them in the event of a nuclear war or base their projections on unrealistic or only favorable scenarios. On the contrary, much of the discussion of the post-strike medical problem in Soviet medical civil defense manuals is based on the assumption that at least some of the large urban areas may be struck with little warning. At the same time, the Soviets also give serious consideration to alternate scenarios in which the population as well as medical institutions and personnel are evacuated in an organized manner from high risk areas prior to an attack and there is sufficient time to deploy all civil defense medical service formations as well as hospitals in the exurban areas. Preparations for such pre-attack evacuation are one of the key measures of the Soviet civil defense program and plans.

Given that the Soviets keep their actual war scenarios secret, they also do not discuss the specific targets in the USSR which they expect to be attacked or the number of casualties, i.e., fatalities and injured, which various strikes may cause under different assumptions about the length of pre-attack warning and civil defense measures. Nevertheless, it is clear that the Soviets expect to suffer very large casualties among the population in the event of an attack with little or no warning and markedly fewer casualties in the event of the pre-attack evacuation of the population from high risk areas and the implementation of civil defense protection measures. In either case, however, the attack is likely to result in unprecedented numbers of simultaneously injured persons who can be provided with effective medical assistance only if the country's total medical capability is effectively mobilized and organized to deal with such a situation.

The Soviet Civil Defense Medical Service (CDMS) may be called the senior service in the Soviet civil defense system and represents one of its largest components. It includes--on a compulsory basis--essentially the entire Soviet medical-public health system and all of its personnel and institutions regardless of their normal peacetime affiliations. This is facilitated in the Soviet Union by the total socialization of the medical-public health system and all aspects of medicine (there is no legal private medicine in the USSR), the control exercised over them by appropriate ministries and government departments at all levels, and their compulsory participation in the civil defense organization, planning, and instruction program. In effect, therefore, all medical institutions and personnel, except for those among the latter who would be called up for service with the armed forces in the event of a war, are part of and serve in various CDMS formations and institutions, and are assigned already in peacetime specific medical civil defense missions and functions in the event of an emergency/war situation.

Soviet civil defense recognizes that any attempts to deal with mass casualties in the event of a nuclear war will require great numbers of medical and support personnel. This is so because this situation will require the participation of medical personnel in large post-strike rescue operations in areas of destruction, in providing the injured in those areas with first and emergency medical assistance, and in their evacuation to greatly expanded hospital facilities in the exurban areas for further treatment. Consequently, even though in terms of numbers of physicians, middle-level medical personnel, and hospital beds per capita, the Soviet public health system is significantly larger than that in the United States, CDMS sees a requirement for further expansion of these capabilities by adding to them non-professional medical elements of the population, and, indeed, by involving the entire population in the medical preparedness program.

The expansion of the CDMS capabilities are accomplished first by the compulsory instruction of the general population in first aid as a part of the annual civil defense instruction courses for it. The purpose is to ensure that in an emergency the population knows how to practice self and mutual first aid until help arrives. It is further achieved by the organization and training of very large numbers of first aid squads and detachments composed of workers; employees; students of secondary,

vocational, and higher institutions of learning; collective and state farm personnel; and so on. These squads and detachments constitute the mass element of the CDMS, and will be used to provide first aid to victims in areas of destruction and to assist various professional medical formations, hospitals, and so on. A peculiar aspect of this system is that although these first aid squads and detachments are primarily composed of women, they will be sent into the areas of destruction in support of rescue operations where they may be in physical danger, while the professional medical personnel will not be so risked. Additional help may be provided by military medical units and institutions during rescue operations and in providing medical assistance to mass casualties.

The missions and responsibilities of CDMS in peacetime disasters and in nuclear war conditions are very comprehensive and sensible. One would expect a Civil Defense Medical Service to be concerned in peacetime with questions of planning, organization, personnel training, and the stockpiling and maintenance of stocks of medical supplies and equipment. Several features of the peacetime mission of CDMS are of particular interest. These concern planning and preparation for medical assistance to the population during its evacuation from high risk areas; the planning and preparation of the relocation of medical institutions, personnel, supplies, and equipment from high risk areas to exurban areas in the event of a threat of war; and the organization and training of hygiene, sanitation and epidemic control institutions and their personnel in measures to prevent epidemics and in dealing with outbreaks of dangerous communicable diseases among the population in a post-disaster or attack situation.

The Soviet concept of a two-stage triage-treatment evacuation system for the injured in a disaster or post-strike situation appears to be both practical and well suited for the problem of providing medical assistance to mass casualties. It also appears to provide for the efficient utilization of all available medical resources, based on a program of providing patients with increasingly more specialized medical treatment and care as the patient progresses through the two-stage system. The Soviet concept of organizing numerous mobile First Medical Assistance Detachments (OPMs) to provide the injured with emergency medical assistance in the areas of destruction and the setting up of mobile Brigades and Detachments of Specialized Medical Assistance (BSMPs and OSMPs) intended to ensure the best utilization of

relatively scarce specialized medical personnel appears to be a sensible one. So also is the Soviet approach to the organization and management of the CDMS hospital system, especially the concept of grouping Triage-Evacuation and specialized hospitals in Collector Hospitals based on rayons (counties). In principle this system ensures the effective and flexible allocation of medical personnel, resources, and supplies, along with control over the distribution of incoming patients and providing them with specialized medical treatment and care. The most notable draw-back to the two-stage medical evacuation system is the distance the injured may have to be transported between the OPMs and the hospitals in exurban areas. This may be inevitable, however, given the requirement to ensure the safety of medical personnel and patients in the hospital system and also the need to colocate large medical facilities with host areas for urban evacuees.

In principle, the number of first aid squads, OPMs, physicians, and middle-level medical personnel available to the CDMS in an emergency appears sufficient to provide medical assistance to mass casualties, even in a worst-case attack scenario which assumes the largest likely number of injured persons requiring medical assistance. All the more so, the CDMS has the capability in principle of dealing with the smaller number of injured in the event of an attack which is preceded by the evacuation of the population, medical institutions, and personnel from high risk areas and the sheltering of the population in blast and fallout shelters. Actually, in the worst-case scenario, which assumes the destruction of medical institutions and the loss of a significant portion of medical personnel, the CDMS may not have sufficient means in appropriate locations to deal with mass casualties in the targeted areas and sufficient early warning to expand the capacities of exurban medical facilities. At the same time, the redeployment of CDMS forces from other cities and more distant rural areas to the targeted cities may be seriously delayed by the disruption of transportation, damage to rail lines and roads, and wide areas of radioactive contamination.

The situation would obviously be more favorable in the case of pre-attack evacuation of the population, medical institutions, and personnel from high risk areas. Not only would there be far fewer injured persons as a result of enemy strikes on the cities, but CDMS would have at its disposal most of its medical forces and institutions for dealing with mass casualties. Furthermore, given that the large cities have above

national average numbers of medical institutions and personnel per capita, their pre-attack evacuation would insure that in the event of an attack such cities will have nearby large civil defense medical forces and large capacity medical facilities for assisting the injured among the essential workers present in these cities. Thus, given the significance of pre-attack evacuation of the population and of medical institutions and personnel for reducing the number of likely casualties and for the effectiveness of CDMS operations, this strongly suggests that if it has the opportunity the Soviet leadership would be likely to implement such an evacuation before risking a possible nuclear confrontation with the United States. Of course, a critical factor in the effectiveness of the CDMS in dealing with mass casualties will be the existence of sufficient stocks of medical supplies and equipment in the exurban areas for this purpose and for the rapid expansion of the capabilities and capacities of existing and evacuated hospitals in the exurban areas and smaller cities.

This is not to say that there are no constraints on Soviet medical capabilities for effectively assisting mass casualties. The most notable ones, aside from the problem of deploying large numbers of medical formations and evacuating large numbers of injured persons in a post-strike environment, are the relatively low quality of Soviet medicine and of training of the majority of Soviet physicians and the maldistribution of physicians and hospital capacities among the Soviet member republics and oblasts, and between urban centers and rural areas. At the same time, however, given that Soviet physicians are more used to primitive working conditions and shortages or lack of equipment, supplies, and medications, they may be better prepared to work under war emergency conditions than their Western counterparts. Other uncertainties which may affect the performance of the CDMS are the question of the availability of sufficient transportation means to evacuate the mass of the injured to exurban hospitals and the problem of the actual size and content of Soviet stocks of medical supplies and equipment maintained for emergency situations in exurban areas. There is also little information on the planned extent of medical assistance which the armed forces may provide for the population in the event of an enemy nuclear attack.

One measure of the seriousness of the Soviet civil defense medical preparedness program is the compulsory instruction of medical students, middle-level medical personnel, and physicians in civil defense and emergency medicine in preparation for possible mass casualties. The advantages of such instruction programs are self-

evident, even though, as Soviet publications indicate, the instruction and the quality of exercises conducted by the trainees at times fail to meet expected standards.

Overall, there is little doubt that the Soviet leadership is serious about civil defense medical preparedness just as it is serious about the civil defense program as a whole. Among its objectives is, as one Soviet official put it, "the instilling in the working people, in the entire population ... confidence in the effectiveness of measures and means being carried out for its protection against weapons of mass destruction." Above all, the objective of Soviet medical preparedness is said to be to ensure "the most rapid possible cure and restoration of the ability to work" of the injured and sick, presumably so that they can contribute to the war effort and the country's post-attack recovery. Of course, a medical preparedness program requires considerable investments, especially in stockpiles of medical supplies and equipment, and the equipping of masses of first aid squad members and of OPMs. While the extent of this investment is not known, it appears reasonable that some 30 percent of the annual Soviet civil defense budget, which, in equivalent U.S. dollar costs, may amount to some \$6 billion, is devoted to the medical preparedness program.

With due allowance for the differences between the U.S. and Soviet medical-public health systems, the Soviet approach to the problems of civil defense medical preparedness and medical assistance to mass casualties in the event of a nuclear attack offers what appears to be a number of potentially useful lessons for a U.S. medical preparedness program. In particular, the Soviet program offers a good example of what it takes in terms of mobilization of all medical-public health resources, organization, planning, strategy and tactics, preparations, training and instruction to develop a credible capability for medical preparedness to deal with mass casualties in the event of a nuclear attack.

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THE SOVIET CIVIL DEFENSE MEDICAL PREPAREDNESS PROGRAM

Dr. Leon Goure, Science Applications, Inc., McLean, VA
FEMA Contract No. EMW-C-0571, FEMA Work Unit No. 4212F
March 1984, 122 pages, Final Report, Unclassified.

This report describes and analyzes, on the basis of open Soviet source materials, Soviet Civil Defense concepts, plans, organization, priorities, training programs and capabilities pertaining to the Civil Defense Medical Service and its operations in wartime and in peacetime disasters.

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