



ASSISTANT SECRETARY OF DEFENSE  
WASHINGTON 25, D. C.

HEALTH AND MEDICAL

MEMORANDUM FOR THE SECRETARY OF DEFENSE

SUBJECT: Report Concerning Federal Support of Medical Research

1. Attached for your information is a copy of subject report by the Committee of Consultants on Medical Research to the Subcommittee on Departments of Labor and Health, Education, and Welfare of the Senate Committee on Appropriations. This excellent report contains the following recommendations concerning Department of Defense medical research programs:

a. Increase in appropriation for medical research by the Army, Navy, and Air Force

As recommended by the Advisory Panel on Medical Sciences to the Secretary of Defense 3 years ago, the appropriation for medical research in the armed services should be approximately doubled in order to permit the full utilization of the excellent facilities and opportunities for research available in military research institutes and hospitals.

b. Increase in number of Civil Service positions for the Department of Defense

The three armed services should be authorized and provided with funds to employ in military hospitals and research institutes a larger number of civilian scientists and the necessary supporting personnel under civil service, including additional Public Law 313 positions.

c. Increased stability and level of support for extramural programs of armed services

Sustained and expanded appropriations should be provided for more stable support of the extramural medical research programs of the armed services.

RG: 330  
Accession # 68A-1014  
Box # 4  
File # Research (Prof-62)

d. Use of bio-sciences information exchange

The Committee urges all three armed services to give full cooperation to, and utilize the services of, the Bio-Sciences Information Exchange in providing and obtaining information on the support of research, and recommends that they register all research applications when received, as the National Institutes of Health, the Atomic Energy Commission, and the National Science Foundation have done so effectively.

2. Unfortunately, this report has been made late in the Congressional session. At present it represents only the findings and recommendations of a fact-finding body. It has no Congressional or even Committee approval, and there is a possibility that such approval may not be given because of lack of time in this session of Congress.

3. I am of the opinion that the above recommendations have considerable merit, that their application within the Defense Department should be studied, and that vigorous action should be taken to accomplish appropriate implementation thereof.

4. Accordingly, with your permission, I will consult with Senator Lister Hill, Chairman of the Subcommittee on Departments of Labor and Health, Education, and Welfare, to determine what action he plans to take on this report. In the event that no approval action is taken by Senator Hill or the Congress, and no formal reference is made of the report to the Executive Branch, I strongly recommend that you direct that the recommendations cited in paragraph 1. above be studied within the Department of Defense, and recommendations made to you concerning their implementation.

Frank B. Berry, M.D.

Attachment  
(Report)

REVISED COPY

*AMR*  
*Sup's - 2/1/60*  
*When we get the latest*  
*will be enclosed.*

THE ARMY MEDICAL RESEARCH PROGRAM

Prepared for Presentation to the Committee of Consultants on Medical Research  
to the Subcommittee on Labor and Health, Education and Welfare of the Senate  
Appropriations Committee, 13 January 1960

The history of medical research in the U. S. Army dates back to the origin of the Medical Service during the Revolutionary War. Since that time, it has been traditional for Medical Service officers to perform research in an attempt to solve the medical problems of immediate concern to the Army, to make their fair share of contributions to the advancement of medical knowledge, and to fulfill an obligation to society by exploiting such unusual opportunities for medical research as may present themselves by virtue of unusual situations within the military environment.

Since 1946, the majority of medical research performed within the Army, or in civilian institutions through contract with the Army, has been more formally organized than before World War II and has been supported by public funds specifically allocated for the purpose of medical research. The magnitude of effort, in terms of personnel engaged and funds expended, has been related to the U. S. national policy, with regard to national defense, to strategic considerations, and to weapons development.

The growth of the Army medical research program during the past ten years is illustrated by the first chart (Chart Nr 1) which shows for each year since 1951 the number of projects and tasks for in-service research, the number of contracts with civilian institutions, and the Medical Service research and development budget. It is apparent that in each column except "Projects," the effort is approximately double in 1960 over what it was in 1951. The budget totals do not reflect the actual size of the medical program, in that funds transferred from other technical services are not shown on this chart. This data will be brought out later in this discussion.

It will be noted that in 1951 the in-service effort was slightly more than one-half as large as that supported through contracts with civilian institutions and transfers to other agencies of the government. This ratio has gradually shifted until, at the present time, approximately the same amount of money is spent to support in-service research as is spent in support of contractual research.

The organization of medical research activities in the Army has undergone some changes since the end of World War II. Immediately following that war, The Surgeon General of the Army accepted from the Office of Scientific Research and Development the responsibility of monitoring contractual research being performed in support of the Army. This was accomplished through the establishment of a Research and Development Board in the Office of The Surgeon General. Later, this Board became one of the many operating divisions in The Surgeon General's office.

In August 1958, Army medical research activities were re-organized into a Command structure, and the Research and Development Division became the Command headquarters. This change was made to obtain better integration of Army medical research activities, to effect better management over funds expended, and to assure field research units of adequate logistic support, which was not always available when they were entirely dependent upon local Army facilities. Also, the past year's experience has indicated that it has given research personnel a sense of belonging to an organization, of having a single individual to whom they can turn for assistance and guidance, and a headquarters with a greater interest in the personal affairs and careers of investigators. The Chief of the

new Command is a Brigadier General, whereas the former Chief of the Research and Development Division was a Colonel, and this in itself was believed by research personnel to represent an increased recognition of the importance of the medical research program.

The next chart (Chart Nr 2) shows the current organization of Army medical research activities. This is a traditional military organization, with a headquarters and field units, some of which are located in the U. S. and some in overseas areas. Most, although not all, of these units are physically located at Army medical facilities from which they obtain logistic support. In the case of those units which are located at Army hospitals, there is usually some integration of the work of the laboratory with the patient-care program in the hospital. This is particularly true at the U. S. Army Medical Research and Nutrition Laboratory at Fitzsimons General Hospital, the Walter Reed Army Institute of Research at the Walter Reed Army Medical Center, the Tropical Research Medical Laboratory at Puerto Rico, and the U. S. Army Surgical Research Unit at Fort Sam Houston. As this chart shows, we have seven units or laboratories in the Continental United States, one in Malaya, one in Puerto Rico, one in Landstuhl, Germany, and one in Panama, Belgian Congo, and Bangkok. In addition to research activities assigned directly to the Research and Development Command, clinical investigations in a number of Army teaching hospitals are supported by research and development funds.

This chart does not show the research relationships in the Department of the Army at levels above the Office of The Surgeon General.

In practice, we present our fund requirements directly to the Army Chief of Research and Development and obtain our fund support from him. He and his staff also monitor the medical research and development program. Civilian personnel spaces for medical research, on the other hand, are allocated to The Surgeon General by the Deputy Chief of Staff for Logistics. Although this may appear to be an undesirable division of responsibility, staff coordination provides a smooth working relationship in support of the medical research program.

The next chart (Chart Nr 3) shows the personnel authorizations in the Army Medical Research and Development Command. Looking at the "Total Column" to the left, it is apparent that the Walter Reed Army Institute of Research is not only our oldest research facility, but also the largest. Next in size are the Laboratory at Fort Knox, the Medical Research and Nutrition Laboratory at Fitzsimons General Hospital in Denver, and the Surgical Research Unit at Brooke Army Medical Center in San Antonio. It will also be noted that some of the units are exceedingly small, the Unit in Panama being authorized a total of 6; the Unit in Germany, 4; and the Unit in Malaya, 4.

These overseas units have highly specialized missions and are usually associated with some other research activity, which accounts for their small size. For instance, the mission of the Unit in Germany is to survey the ionizing radiation load of the European population, using a low level whole body counter donated to the Army by the Atomic Energy Commission after its use in Geneva. The Unit in Panama is part of a joint Army - Public Health Service research laboratory, and restricts its activities

to research in mycology. The Unit in Malaya occupies a part of the local Malayan Medical Research Institute and is concerned with insect vectors and the viral and rickettsial diseases which they transmit.

We also send field teams to foreign lands from time to time, usually at the request of local governments. During the last two years, we have had such teams in Bangkok, in India, and in Pakistan, studying cholera, Kyasanur Forest Fever, and sandfly fever, respectively. We currently have one parasitologist with the Institute for Scientific Research of Central Africa, located in the Belgian Congo. Also, we are currently trying to establish a small unit in Bangkok to study intestinal diseases.

In general, the laboratories are located where their specialized field of medical research interest is benefited by being in the specific location. However, some are where they are by virtue of chance circumstances such as the ready availability of physical facilities at the time of their origin. There is some degree of specialization in each of our laboratories and this in itself tends to minimize duplication of effort.

Our views on the scope and extent of an optimum peacetime program of medical research have been requested. A most important element in complying with this request is the definition of a "peacetime program." It is obvious that there are many forms of peace. During the period 1925 to 1935, between World Wars I and II, the average budget of the then War Department was 264 million dollars (including Air Corps). In contrast, during the period 1954 to 1959, the average budget for the Department of the Army alone was 8,700 million dollars. Both were periods of peace,

but the kind of peace was obviously different. For the purpose of this presentation, it will be assumed that the peacetime referred to is that which has existed since 1954.

In defining the scope and extent of a peacetime Army medical research program, it may be useful to define further the purposes of the program. Medical research in the Army has several purposes: First, it is required for the solution of medical problems anticipated in any future combat situation. The scope and extent are dependent upon the nation's foreign policy and on the concepts, as developed by the Joint Chiefs of Staff and the Army Staff, of when and where military operations may take place. If general war is a realistic threat, then the Medical Service must be prepared to support the Army in general war. If limited war is a realistic threat, then the Medical Service must be prepared to support Army task forces wherever and whenever they may be engaged in military operations. If political and strategic considerations indicate the possibility of combat in tropical rain forests, then the Medical Service must know the health hazards of the tropical areas in question and be prepared to protect the health of Army troops in such areas. A similar requirement exists if polar areas are considered to be potential zones of military operations.

I have indicated that medical research requirements are related to the types of warfare and the areas of the world in which combat may occur. Army medical research requirements are likewise related to potential weapons and weapons systems which may be used against our military forces. Thus, the possible use of nuclear weapons by an enemy force requires more knowledge of the biological effects of such weapons, more knowledge of how

to protect personnel against these effects, and improved methods of treating personnel who have become casualties of nuclear weapons. The same is true for other weapons systems such as chemical weapons, biological weapons, and improved, conventional weapons. One characteristic of the current weapons development trend is the increased recognition of the potentials of biologic and chemical weapons. Not only does defense against biological warfare present us with medical research problems of great magnitude, but medical research is essential to its evaluation as a weapons system. This is also becoming true of chemical warfare as more emphasis is being placed on so-called incapacitating compounds.

Thus, the scope and extent of military medical research are directly related to the nature of the peace, the characteristics of the weapons systems which may be used against us, the location and nature of possible combat and, finally, the urgency which the nation places upon the readiness of the U. S. Armed Forces for military operations. However, Medical Service problems even in time of war are not always directly related to the conditions of war or the weapons systems involved. Men still become sick and disabled from many causes which are operating at all times and in all places. Any contributions to the advancement of medical science or practice are beneficial to the Army and to the success of its mission.

A second purpose of medical research in the Army is to make contributions to the general advancement of medical science and practice. The Army Medical Service includes within its commissioned ranks 3,508 medical officers, 3,490 Medical Service Corps officers, 1,790 dental officers, and 400 veterinary officers. This represents a large body of professional skills and competence.

It is appropriate that these skills and this competence be used to exploit the opportunities presenting themselves in Army laboratories and hospitals at home and overseas to contribute new knowledge in the field of medical sciences. The Army Medical Service has accepted and fulfilled this responsibility in the past and expects to do so in the future.

Finally, medical research-- especially clinical research-- is an integral part of the Army Medical Service teaching program. Since the end of World War II, essentially the only method of recruiting medical officers in the Army has been to offer training opportunities, which are for the most part in the clinical residency training program. An essential part of a residency training program is clinical research. This is true in the Army as in civilian life. Research and development funds are used in moderate amounts to support clinical research in connection with the residency training program.

The next two charts (Charts Nr 4 and 5) attempt to further define the scope of the Army medical research program by providing a classification of the medical research and development problem areas associated with military requirements. The first chart (Chart Nr 4) is concerned with the factors in the environment of the soldier which may cause disease and disability. Some of these factors are entirely or largely peculiar to military activities. Gunshot wounds, for example, are not peculiar to military activities. However, the circumstances under which men are wounded and must be treated are peculiar, and present many specialized problems. Military vehicles present their own peculiarities which cause injury and death. Chemical warfare is exclusively a problem of military

operations and, although industrial toxicology as a broad subject is not, many of the toxic compounds to which people are exposed in Army arsenals and military activities are peculiar.

Anent the radiation hazards, although the industrial and medical sources are not peculiar to the military environment, when these hazards result from nuclear weapons, they do present unique medical problems.

The medical problems of military operations in the tropical and polar areas are both physical and biological. Cold injury incapacitated military personnel in Europe during World War II equal to the strength of more than two infantry divisions; and malaria took a similar toll in the Southwest Pacific Theater of Operations. With reference to biological warfare, although our knowledge in the prevention and treatment of naturally occurring infectious disease is applicable to artificially induced infectious disease, the latter presents many medical problems not satisfied by our present knowledge or likely to be satisfied by civilian research efforts in this field.

The next chart (Chart Nr 5) is devoted to the problem areas not associated with the environment. The specialized problems of war surgery are well known, and much progress has been made in their solution. However, not all of the old problems have been solved by any means, and improvements in conventional weapons are creating new medical problems. The same is true of the socio-psychiatric problems. Problems of motivation and adaptation are old ones, but they lack satisfactory solutions. The changing characteristics of modern warfare will indubitably create new problems in this area.

Lastly, nutritional problems gain in significance as this nation depends more and more on the manpower and combat potential of allies and friendly nations to assist in the struggle to maintain the freedom of man in the world of today and tomorrow. Moreover, there are many nutritional and metabolic problems associated with the care of wounded men that are important, and still unsolved.

The last two charts (Charts Nr 4 and 5) illustrated problem areas requiring medical research. The next chart (Chart Nr 6) shows the relative emphasis placed on each in terms of budget support.

It will be noted that the areas of major fund support are: Control of Communicable Disease, with 3.4 million dollars; Medical Problems of Ionizing Radiation, 3 million dollars; Military Surgery, 2.4 million dollars; and Internal Medicine, including Metabolism and Nutrition, 2.2 million dollars. An apparent reduction of funding for research in the Medical Problems in Ionizing Radiation in FY 1961 is shown on this chart. This is more apparent than real. Most of these funds are in support of a new project to find, if possible, new drugs which protect against radiation. If our experience this year shows promise, more funds will be reprogrammed into this research area in FY 1961. It will also be noted that no funds for medical operational research were programmed in FY 1960, but that 100 thousand dollars are projected for this type of research in 1961. This is a medical problem area concerned with development of doctrine for field medical service, and field medical materiel. More emphasis is being placed on this subject, and more research funds will be required to support the modernization of this important area of Medical Service responsibility. Research in the field of accidental

trauma, on the other hand, is being phased down. This is concerned with motor vehicle accidents, their cause, and their prevention. As the National Institutes of Health recognize this more and more as a national problem, support of research is being transferred from the Army to the Public Health Service.

We have been asked what problems we have in coordinating and/or collaborating with other federal medical research programs. Collaboration is accomplished by joint support of a contract program, in-service collaboration on a single project, or in the joint operation of a research facility. The Army and the Navy are currently collaborating through joint support of a contract on problems of preserving whole blood. Last year the Army, Navy, and Public Health Service collaborated on field cholera research in Siam. The Army and the Public Health Service jointly staff, finance, and operate a small medical research unit in Panama. These are a few examples of collaborative activities.

Coordination is another problem. There is, of course, no single agency to coordinate all U. S. government medical research. There are many mechanisms by which coordination is effected. These mechanisms are complex, frequently informal, and may appear ineffective to the casual observer.

First, there is some degree of formal coordination by the Bureau of the Budget, the Department of Defense, and the Department of the Army through budget control. Our budget requirements are presented, defended, and allocations made by identifiable areas.

Second, most agencies have their traditional fields of major interest. Although both the Navy and the Air Force have an interest in communicable disease, the Army possibly has the greatest interest in this field. Research projects recommended by the Armed Forces Epidemiological Board have been and are now funded almost exclusively by the Army. There is no formal or even informal agreement about this. It seems to be traditional and is, perhaps, a legitimate division of budget responsibility.

Thirdly, committees of the National Research Council, supported by all three services and sometimes other government agencies, provide a focal point for information about and guidance of medical research programs.

Fourthly, the whole system of interlocking scientific and advisory committees provides a mechanism for exchange of ideas and information. We have many advisory committees whose members are more often than not members on advisory committees to other agencies. Some of our advisors are representatives of other governmental agencies. Also, many members of our own Command are members of committees which advise other governmental agencies. These interlocking committee relationships, while complex and perhaps even confusing, do contribute materially toward coordination of government-supported research (Charts Nr 7 and 8).

Finally, one of the strongest factors in the coordination of research and the elimination of undesirable duplication is the individual investigator. If he is a good, competent investigator he will know the work going on in his immediate field, he will know what needs to be done, what is desirable repetition, and what is undesirable duplication; and he will

have no desire to waste his time or other people's money on the latter. If this statement is true, and I believe it is, the identification and support of good researchers and good research goes a long way to effect coordination of research.

One thing seems to be clear: A system of research management which drains off support from the bench scientist to support a large management effort, or control of research by non-scientist management personnel, would become dangerous to the whole research effort if carried to extremes and justified on the basis of the word "coordination."

I should like next to give you another look at the budget history of the Army medical research and development program. The next chart (Chart Nr 9) shows separately our basic budget, supplemental funds, and transfers to and from other government agencies. Several things stand out. Doubling of the basic budget has been shown on a previous chart. Supplemental funds have been most irregularly received. The major items included in funds received from other agencies are funds in the vicinity of one million dollars annually from the Chemical Corps for research in defense against Biological Warfare, and an equal amount from The Quartermaster General for investigations to determine the biological effects, if any, produced by sterilizing and preserving food by ionizing radiation. The foremost problem illustrated by this chart is the irregularity of supplemental funds. Such funds would be most helpful if they could be used without increasing the total recurring cost of the medical research program. Since relatively few medical research projects can be completed in a 12-month period, use of these funds to finance new contracts, or to

increase the annual operating level of an in-service laboratory, means trouble the next year unless more funds are forthcoming, which is never assured. In my opinion the greatest benefit which can be derived from our new authority to support basic research through the grant method would be that it will provide a mechanism by which supplemental funds can be used without increasing the annual recurring obligation to support an ever expanding program.

With regard to adequacy of funds for Army medical research, I have been associated with our program for slightly over one year and feel that we are adequately supported when considered in reference to the total Army research program on one hand, and the total government medical research program on the other. When we are not, in some specific instances, I suspect we may have failed to present our case adequately.

The scope and content of Army medical research during the next ten years will be dependent upon national military policies. Much of the content will remain unchanged. There are many, many problems related to the prevention of disease and the treatment of disease, wounds, and injury which are now unsolved and which will not be solved in the next ten years. Much of the medical research conducted and supported will consist of hammering away at these problems and advancing slowly, step by step, as new knowledge becomes available. Breakthroughs may occur and unlock a veritable flood of more profitable research; but such breakthroughs, although always hoped for, cannot be predicted. Other aspects of the medical research program will be modified to meet the predicted problems related to weapons systems developments. It is reasonable to believe that just as

we create new weapons systems and improve old ones, potential enemies are doing likewise. These new and improved weapons systems pose new medical problems which must be attacked as they become manifest. It is already obvious that more medical research must take place in the field of defense against nuclear weapons, biological weapons, and chemical weapons.

Insufficient effort has gone into the problem of developing field medical doctrine and development of field medical equipment to meet Army medical requirements of the future. This phase of medical research and development will be expanded in the next ten years.

In recognition that military medical research laboratories in underdeveloped areas of the world satisfy not only military requirements but frequently serve a useful foreign policy purpose in the technical assistance program, it is likely that our overseas research will expand, perhaps jointly with non-military agencies.

In general, national defense policies and requirements determine our program. We must keep abreast of the requirements as they develop or, what is more important, anticipate the requirements and be prepared to conduct or support the medical research necessary to assure the Army Medical Service of success in its mission.

In summary, I have presented, I hope, information of the type you are seeking. The content of our medical research program is primarily related to the needs of the Army. Some of these needs are unique for the Army; some are common to the Army, Navy, and Air Force; and some are, if not the same, similar to national needs. The magnitude of our program is

necessarily related to and dependent on the national attitude toward our military defense requirements. The Surgeon General believes that under the present system of requesting, defending, and apportionment of research funds, the Army Medical Service received a just amount. He does not believe a significant portion of this program could be as effectively carried on by a separate government agency, but does believe that military medical research is best managed and done by research administrators and scientists who are thoroughly familiar with the Army Medical Service and its unique facets and requirements.

In closing, I should like to present one additional chart (Chart Nr 10). The mission of the Army Medical Service is to minimize non-effectiveness of Army personnel which is due to causes susceptible to Medical Service approach. This chart shows the number of military personnel absent each day, per thousand strength, from disease. I cannot say what proportion of the success demonstrated on this chart is due to medical research in, and supported by, the Army and what is due to the benefits of medical research elsewhere. I do believe that our own research effort has contributed significantly to the improvement of the Army non-effective rate as shown on this chart.

If there are any questions, I will be happy to answer those that I can and obtain for you any answers I cannot give at this time.

Thank you.

ARMY MEDICAL SERVICE RESEARCH AND DEVELOPMENT BUDGET  
 Army Medical Service R&D Funds Only  
 (In Million Dollars.)

<u>Fiscal Year</u>	<u>No. of Projects</u>	<u>IN-SERVICE</u>		<u>CONTRACTS &amp; TRANSFERS</u>		<u>Total Net Budget</u>
		<u>No. of Tasks</u>	<u>Amount</u>	<u>No. of Contr.</u>	<u>Amount</u>	
1951	25	130	\$ 2.6	238	\$ 4.4	\$ 7.0
1952	26	210	4.2	325	5.9	10.1
1953	26	215	4.3	373	6.7	11.0
1954	27	205	4.3	383	5.8	10.1
1955	28	210	4.4	355	5.8	10.2
1956	28	214	4.7	347	5.8	10.5
1957	29	223	4.9	360	6.3	11.2
1958	29	225	5.4	393	7.0	12.4
1959	30	252	6.3	373	6.6	12.9 *
1960	28	284	7.1	400 **	8.8 **	15.9 **

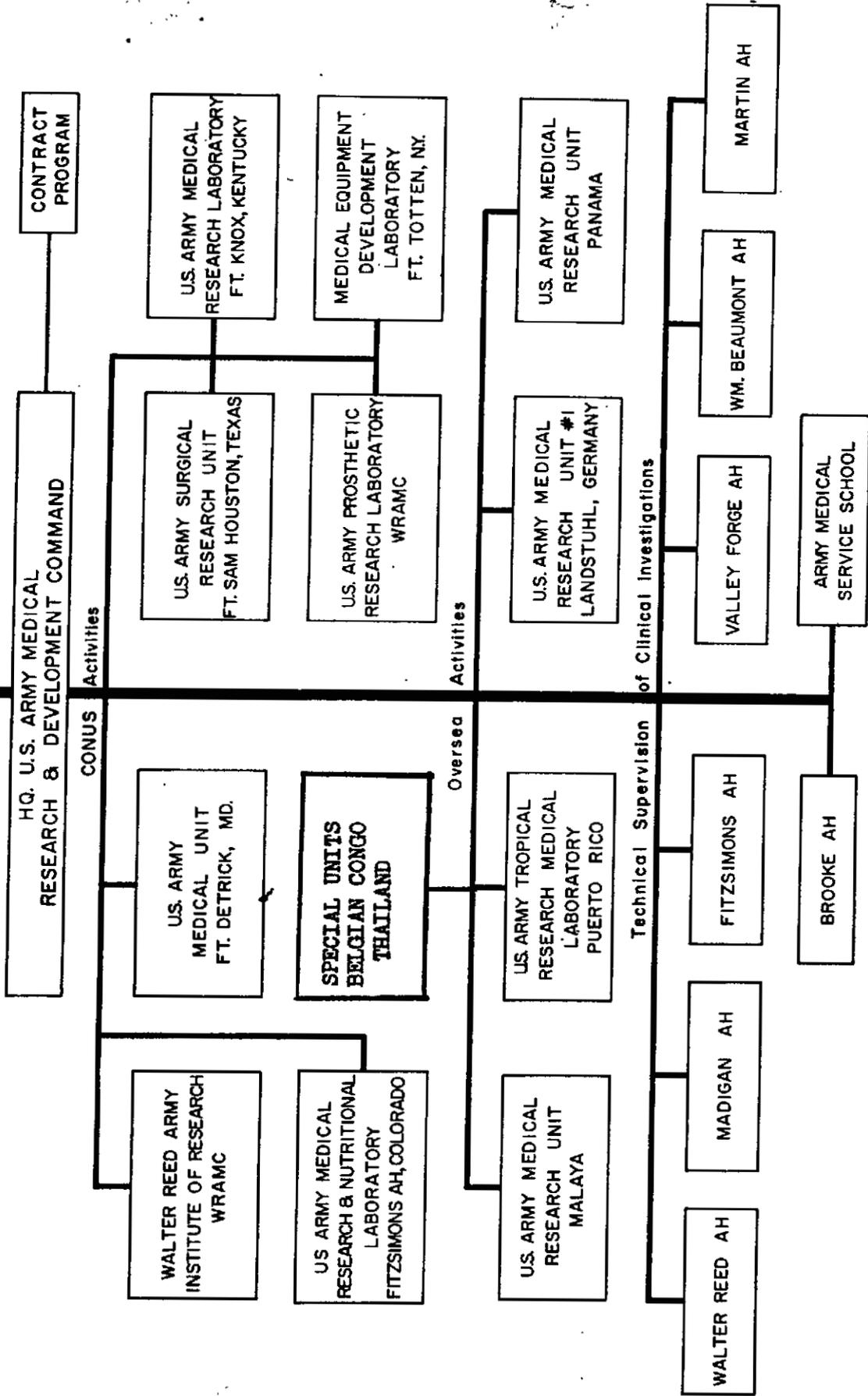
The numbers of projects and tasks have been adjusted to reflect the change in semantics since Fiscal Year 1951.

\* Does not include \$1,941,500 for longevity funds

\*\* Estimated.

(Prepared December 1959)

THE SURGEON GENERAL  
U. S. ARMY



U. S. ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND PERSONNEL AUTHORIZATION

Total Pers	Total MIL	Total Off	MC	DC	VC	MSC	ANC	Diet.	Enl	WO	Total CIV	Gr.	Ungr.
Hq Med R&D Comd 49	17	17	7	1	-	9	-	-	-	-	32	32	-
WRRAIR 751	319	138	58	7	14	48	10	1	177	4	432	316	116
MEDL 39	5	2	-	-	-	2	-	-	3	-	34	18	16
APRL 36	10	2	-	-	-	2	-	-	8	-	26	20	6
AMRU, Malaya 4	4	4	2	-	-	2	-	-	-	-	-	-	-
AMU, Detrick 97	51	28	10	-	10	4	4	-	23	-	46	32	14
TRML 62	38	11	4	-	1	4	1	1	26	1	24	19	5
AMEL 257	151	32	12	-	4	16	-	-	119	-	106	65	41
SRU 118	82	33	10	-	1	4	17	1	48	1	36	26	10
AME&NL 148	96	26	6	-	6	9	3	2	70	-	52	39	13
AMRU, Europe 4	4	2	1	-	-	1	-	-	2	-	-	-	-
AMRU, Panama 6	4	2	-	-	-	2	-	-	2	-	2	2	-
TOTAL MED R&D COMD 1571	781	297	110	8	36	103	35	5	478	6	790	569	221

(Prepared December 1959)

**PROFESSIONAL MEDICAL PROBLEM AREAS  
REQUIRING RESEARCH AND DEVELOPMENT ACTION**

**I. ENVIRONMENTAL**

1. Physical Hazards
  - a. Munitions (missiles)
  - b. Vehicles (land, air, amphibious)
  - c. Others
2. Chemical Hazards
  - a. Chemical Warfare
  - b. Industrial Toxicology
3. Radiation Hazards
  - a. Nuclear Weapons
  - b. Industrial
  - c. Medical (Diagnostic and Therapeutic)
  - d. Radiation Warfare
4. Extremes of Temperature
  - a. Heat
  - b. Cold
5. Biological Hazards
  - a. Natural
    - (1) CONUS
    - (2) World-wide
  - b. As Weapons System (B.W.)
6. Effects of Adverse Environmental Conditions on Military Performance
7. The Closed Ecological Environment and Other Problems of Travel and Existence in Space.

**II. NONENVIRONMENTAL**

1. Surgical Conditions
  - a. Resuscitation
  - b. Primary Surgical Care
  - c. Rehabilitative Surgery
  - d. Surgery of Mass Casualties
2. Non-Infectious Diseases
  - a. Peculiar to Military age group
  - b. Peculiar to Military Service
3. Social - Psychiatric Problems
  - a. General problems of military environment
  - b. Service in undesirable areas
  - c. Service under combat conditions
  - d. Service as Prisoners of War
4. Physical and Psychiatric Standards for Selection, Retention and elimination.

**III. MIXED**

1. Nutritional Problems

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BUDGET SUPPORT OF AREAS OF MEDICAL RESEARCH  
(Thousands of Dollars)

	<u>Inservice</u>	<u>Contr and Trf</u>	<u>FY 60 TOTAL</u>	<u>FY 61 PRES. BUD</u>
Advisory Services	84	176	260	250
Control of Communicable Disease	1,356	2,097	3,453	3,250
Military Surgery	595	1,809	2,404	2,190
Neuropsychiatry and Stress	493	244	737	875
Medical Problems of Ionizing Radiation	1,105	1,937	3,042	2,360
Internal Medicine, Metabolism & Nutrition	934	1,335	2,269	2,093
Arctic and Sub-Arctic Field Medical Problems	134	166	300	100
Psychophysiological Studies	302	248	550	435
Environmental Physiology	427	231	658	575
Health Hazards of Military Chemicals	0	75	75	75
Prosthetics Research	250	0	250	250
Oral Diseases	89	289	378	400
Accidental Trauma	4	194	198	40
Development of Equipment	160	0	160	160
Clinical Investigations	30	0	30	50
Physical Standards Research	0	23	23	50
Medical Operations Research	0	0	0	100
Germ Free Animal Studies	160	35	195	95
Operation and Maintenance of Facilities	<u>889</u>	<u>0</u>	<u>889</u>	<u>810</u>
	7,012	8,859	15,871	14,158

(Prepared January 1960)

COMMITTEES ON WHICH MEMBERS OF THE  
U. S. ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND PARTICIPATE

Department of Defense

Advisory Panel on Medical Sciences  
Armed Services Medical Materiel Coordination Committee  
Coordinating Committee on Science  
Governing Board for BioSciences Information Exchange  
Interdepartmental Committee on Nutrition for National Defense  
Interdepartmental Committee on Radiation Preservation of Food  
Technical Advisory Committee on Bioastronautics

Department of the Army

Army Committee on Environment  
  Panel on Environmental Research  
  Panel on Environmental Physiology  
Army Mathematics Steering Group  
Army Scientific Advisory Committee on Chemistry  
Army Scientific Advisory Committee on Materials  
Army Scientific Advisory Committee on Mathematics  
Army Scientific Advisory Committee on Physics  
ASTIA Liaison Committee  
Category 6 Committee, ABC  
Coordinating Committee on Satellite Tracking and Related Research  
Department of the Army Committee on Blast  
Senior Scientists Advisory Council  
Working Group in Physics

U. S. Public Health Service

Civil Defense Laboratory Resources Committee  
Liaison Representative to National Advisory Allergy & Infectious Disease Council  
Liaison Representative to National Advisory Neurological Disease & Blindness  
National Advisory Health Council of PHS Council  
National Institutes of Health Study Sections (32)

National Academy of Science

Armed Forces-NRC Committee on Bio-Astronautics  
Armed Forces-NRC Committee on Hearing and Bio-Acoustics  
Armed Forces-NRC Committee on Vision  
NRC Advisory Committee to Chemical Corps for Biological Warfare  
NRC Division of Medical Sciences, Official Representative of Department of the Army  
NRC Food and Nutrition Board  
Life Sciences Committee

Miscellaneous

Avert Aviation Vehicle Environment Research Foundation  
Coordinating Committee on Science - Medicine  
Department of the Army Board of Expert Examiners  
DA-AM Preservation, Packaging, and Packing Materials & Methods Committee  
Joint Services Steering Committee for Human Eyes Guide to Equipment Design  
Non-Medical Technical Committee  
OCDM Interdepartmental Ad Hoc Advisory Group on Research and Development for  
Food for Shelters  
Surgeon General-Quartermaster Task Force on Radiation Preservation of Food  
Task Force on Preservation of Food by Irradiation  
Tri-Service Motion Sickness Committee

Advisory Committees to the  
U. S. Army Medical Research and Development Command

Advisory Committee on Environmental Medicine  
Advisory Committee on Nutrition  
Advisory Committee on Metabolism  
    Subcommittee on Intravenous Fat  
    Subcommittee on Liver  
    Subcommittee on Trauma  
Advisory Committee on Psychophysiology  
Advisory Committee on Chemical Protection and Injury  
Requirements Advisory Group for Neuropsychiatric Research  
Dental Research Advisory Committee  
Armed Forces Epidemiological Board  
Scientific Advisory Board to Walter Reed Army Institute of Research

(Prepared December 1959)

ARMY MEDICAL RESEARCH AND DEVELOPMENT BUDGET

Army Medical Service R&D Funds with Transfers in and out of Other Government Agencies and within DA and DOD

Fiscal Year	Basic Budget	Supplements *	Net Army Med Svc	Rec's fr Other Gov't Agencies & Tech Svcs **	Transfers to Other Gov't Agencies and Tech Svcs #	TOTAL After Transfers
1951	\$5,200,000	\$1,800,000	\$7,000,000	\$268,000	\$160,000	\$7,108,000
1952	10,100,000	0	10,100,000	214,000	393,000	9,921,000
1953	11,000,000	0	11,000,000	184,000	551,000	10,633,000
1954	10,100,000	0	10,100,000	264,000	492,000	9,872,000
1955	10,200,000	0	10,200,000	602,000	452,000	10,350,000
1956	10,250,000	250,000	10,500,000	845,000	317,000	11,028,000
1957	10,400,000	800,000	11,200,000	2,096,000	440,000	12,856,000
1958	11,000,000	1,400,000	12,400,000	2,158,000	269,000	14,289,000
1959	12,100,000	800,000 ##	12,900,000	2,427,000	323,000	15,004,000
1960	12,339,000	3,532,000	15,871,000	2,098,000	276,000	17,693,000

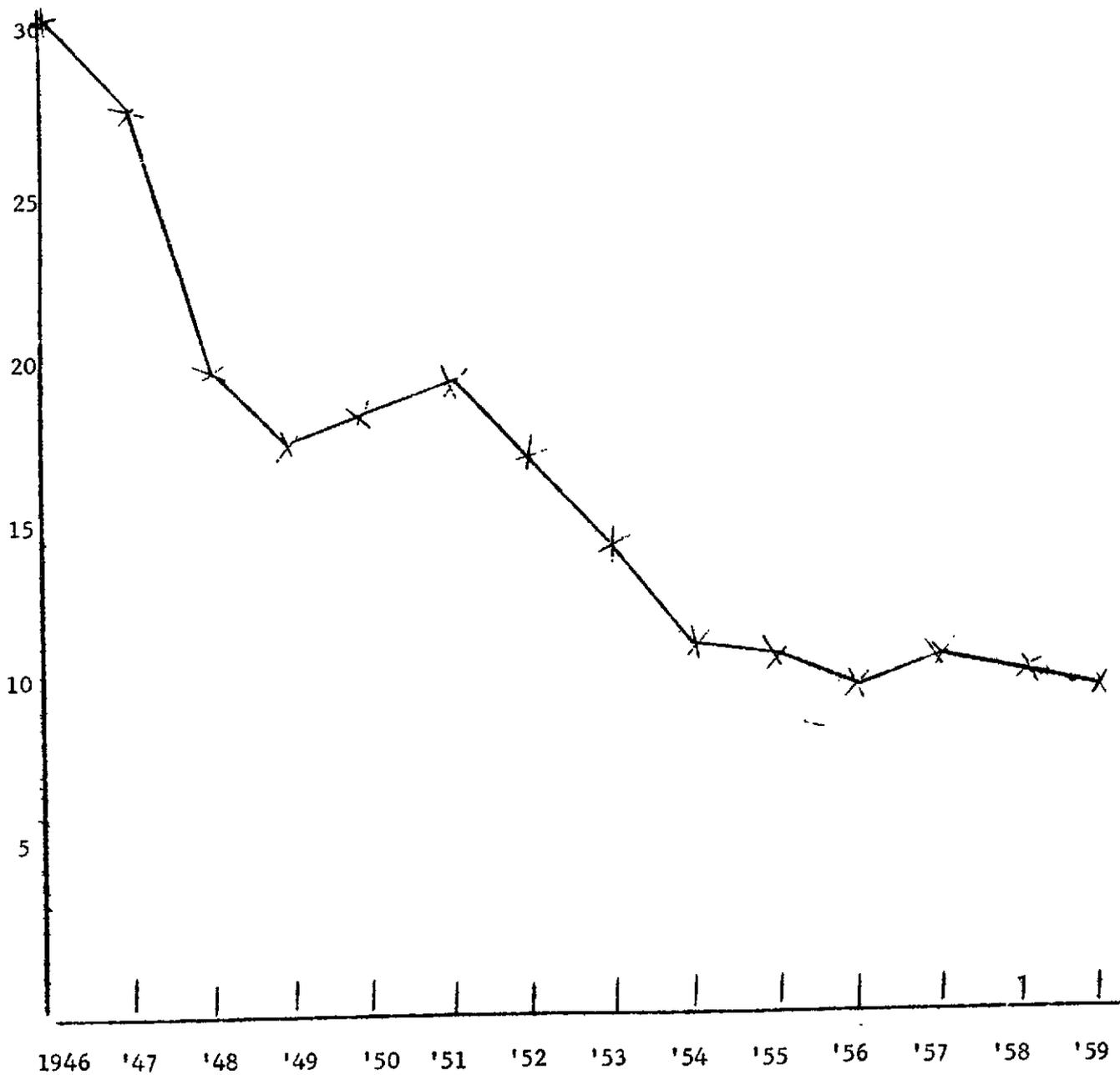
\* Sources: D&D Emergency, Reprogramming from prior years, etc.

\*\* Sources: Chemical Corps, Quartermaster, DASA, NASA, OCDM, VA; Navy and Air Force for MEDL

# Chemical Corps, NBS, Agriculture, ABA, CAA, HEW, etc.

## \$1,167,000 carried over from FY 1959 to FY 1960

(Prepared December 1959)



Daily Non-effective Rates from Disease per 1,000 strength  
U. S. Army, 1946 - 1959

(Prepared January 1960)