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THE EVOLUTION OF THE PHYSICIAN'S ASSISTANT: BROWNIAN MOVEMENT OR COORDINATED PROGRESS*

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> This nation has an inherent obligation to make quality comprehensive health care available to all its citizens without regard to income, employment, place of residence, age, sex, race, state of health or any other inhibiting factors.
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> To meet the need that universal accessibility will entail, the nation must move as quickly as possible to guarantee that medical services . . . are available in sufficient quantity.[1]
>
> . . . Health care for all in their own localities will not be available without adequate manpower. . . . Maldistribution of medical personnel is increasingly critical. . . .[2]

These were among the conclusions reached at the recently convened Aspen Institute–American Assembly on "The Health of Americans," held at the Aspen Institute for Humanistic Studies, March 31-April 4, 1971, and attended by rising young community leaders and health care experts from government, the universities, and business. This is the most recent expression of what has been voiced many times during the last few years. It is a reiteration of the latest Carnegie Commission Report on the Nation's Health[3] and many similar authoritative presentations.

This paper concerns a specific aspect of providing "medical services . . . in sufficient quantity"–that of the evolution of the physician's assistant. This new health worker has suddenly appeared on the American scene in response to the alleged shortage of 50,000 physicians. The

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latest physician-to-population ratio for the United States is 1:640.[4] However, this figure is of little relevance in determining the actual need for physicians within a particular state, a specific county, a certain urban ghetto, or a small community remote from any metropolis. It is generally agreed that there is a maldistribution of physicians across our country, not only in many places but also among the specialties. For many Americans there appears to be a crisis in the availability of practitioners providing family health care.

The Shortage of Physicians

There is the belief that the shortage of doctors pertains predominantly to rural and ghetto populations. However, it is clear that the deficit of today relates not only to these groups, but increasingly to middle income and to affluent urban families. The reader can cite examples similar to these: 1) the Wall Street industrialist who in 1971 must wait just under two months to see an ophthalmologist; 2) the wife of a rising young executive in upper middle class suburbia with an infant son who has a 104° fever who cannot find a pediatrician to come to the home at 2:00 a.m. in a blizzard to see the child; 3) the elderly and feeble, though wealthy, widow who, far distant from family members, at 10:00 p.m. on Easter Sunday suffers moderately severe chest pain but is unable to find an internist to see her in her metropolitan condominium apartment.

In an attempt to alleviate the shortage of physicians there are obviously two routes: either educate more physicians or devise an alternative to increase the productivity or output of physicians. To increase the number of physicians in the quantity deemed necessary runs squarely into several major problems: availability of adequate funds to enroll and graduate increased numbers of medical students; insufficient space in existing medical schools to enlarge the student load significantly and therefore the need for development of new medical schools; the increased need for adequately prepared faculty; and last, but of perhaps greatest significance, the time lag. Even if the input of students were doubled by September 1971, no effects in functioning medical manpower would be manifest until 1978 and it would be 1981-1990 before any substantially increased manpower pool of physicians existed. We believe that in order to attain this goal of increased physician manpower while still maintaining highest quality in medical care as well as dis-

tribution, two routes should be pursued: the augmentation of both the physician-manpower pool and the pool of allied health personnel.

Increase in Numbers of Physicians and Allied Health Workers

What then must we do during the interim period until adequate numbers of physicians can be prepared?

We must increase the efficiency and productivity of the physician by delegating to another category of health personnel those tasks and responsibilities which do not require the physician's high level of professional skills. Thereby the physician is enabled to provide care to greater numbers of patients. Perhaps, too, he could then spend a greater portion of his time in preventive medicine and health education.

In an attempt to make adequate or better health care available to more members of our society, there has been the rather recent introduction of a *new* category of allied health assistant: the physician's assistant. In our present system there are already about 125 allied health occupations as identified by the National Center for Health Statistics of the U. S. Public Health Service.[3]

In the last three or four years, the proposal to extend the physician's services, thereby bringing greater balance to the supply-demand equation for health care, through the addition of this *as yet undefined health worker*—and we repeat *as yet undefined health worker*—has created much discussion and controversy as to who this individual is or should be or is not and should not be. The proposal has also produced a plethora of writings and has generated 137 programs clearly identified by the Department of Health, Education, and Welfare to train or educate the several categories of assistants to the medical practitioner.[4] In 1969 the House of Delegates of the American Medical Association (AMA) adopted *Guidelines for the Development of New Health Occupations*[5] and requested of other national medical groups to look seriously at the types of health manpower needed and to study techniques of evaluation or models for assessment various types of "physician-extender." Accreditation of educational programs for the various allied health professions is presently under study.[6]

The role of the as yet undefined physician's assistant presumably would be to spare the physician for those responsibilities that need his level of professional education and expertise, to relieve him of tasks which can be accomplished by persons who have lesser knowledge and

skill, and thereby increase his productivity by extending medical care to more persons. The idea of a physician's assistant is not new. For years doctors have had assistants, i.e., the nursing, laboratory, radiology, and pathology assistants in the hospital or clinic; the nursing, clerical, receptionist-secretarial, auxiliary assistants (or the AMA's recently proposed "Man Friday") in their office practices.

Is the physician's assistant who is being proposed today one of the following?

1) The nurse who from the time of Florence Nightingale has assisted the doctor in the hospital care of his patients as well as in his clinic and office practices.

2) The public health nurse in the community who sees patients in neighborhood clinics or in their homes in rural areas, who implements the orders left by the physician, and who refers the patient to a medical practitioner when the condition warrants.

3) The nurse-midwife who has functioned in England and Scandinavia for so many years.

4) The nurse anesthetist.

5) The pediatric nurse-practitioner or the child-health associate as developed in Colorado.

6) The surgical technician of the operating room.

7) The radiology technician, the laboratory chemist, the pathology assistant, the orthopedic assistant, etc., who assists the physician in his daily endeavors.

8) The ex-military medical corpsman who will be transformed through the Duke University Program, through MEDEX, or through other new 2- to 5-year programs.[6]

Our concerns, as is obvious from these examples, stem from the lack of an exact definition, or even a widely accepted clarification, of the role of the physician's assistant, and from the multiplicity and variety of training programs, which range from 14 weeks to 5 years in length.[6] We might well ask how such varied programs can prepare the same quality of product? The answer is, of course, that they do not. Nor should they purport to do so. This leads us to the imperative need for a definition.

It is clear that the pressure of demands for health services and the complexities of new techniques have given rise to a division of labor which has created a multitude of health occupations, and new ones

constantly emerge.[9] As Dr. Leonard D. Fenninger, associate director for Health Manpower at the National Institutes of Health, has stated: "The allied health professions and occupations categories are not well defined, and the definitions of some of the functions within them are undergoing rapid changes. . . ."[10] If in the present turmoil a new category is to be trained and accepted, then important issues include identifying the new worker, defining his role, and determining the education required to prepare him for his tasks in order to maintain quality in practice. Dean George James of The Mount Sinai School of Medicine of the City University of New York has emphasized that, if new health specialists are to find general acceptance by the medical profession and by the public "It must be made clear to all who they are, what they can do, what they cannot be expected to do, and the value of their services."[11]

New Members of the Physician's Health Team: Physicians' Assistants

At this juncture of our confusion we should do well to refer to a well-organized set of criteria for the Physician's Assistant—that is, those published by the National Academy of Sciences in the report of its Ad Hoc Panel on New Members of the Physician's Health Team: Physician's Assistant.[12] A distinguished group of consultants contributed to this monograph and defined three categories of Physician's Assistants: Types A, B, and C.

> *The Type A Assistant.* The Type A Assistant is capable of approaching the patient, collecting historical and physical data, organizing these data, and presenting them in such a way that the physician can visualize the medical problem and determine appropriate diagnosis or therapeutic steps. He is also capable of assisting the physician by performing diagnostic and therapeutic procedures and coordinating the roles of other, more technical, assistants. While he functions under the general supervision and responsibility of the physician, he might, under special circumstances and under defined rules, perform without the immediate surveillance of the physician. He is, thus, distinguished by his ability to integrate and interpret findings on the basis of general medical knowledge and to exercise a degree of independent judgment.[13]

The Type B Assistant. The Type B Assistant, while not equipped with general knowledge and skills relative to the whole range of medical care, possesses exceptional skill in one clinical specialty, or more commonly, in certain procedures within such a specialty. In his area of specialty, he has a degree of skill beyond that normally possessed by a Type A Assistant and perhaps beyond that normally possessed by physicians who are not engaged in the specialty. Because his knowledge and skill are limited to a particular specialty, he is less qualified for independent action. An example of this type of assistant might be one who is highly skilled in the physician's functions associated with a renal dialysis unit and who is capable of performing these functions as required.[14]

The Type C Assistant. The Type C Assistant is capable of performing a variety of tasks over the whole range of medical care under the supervision of a physician, although he does not possess the level of medical knowledge necessary to integrate and interpret findings. He is similar to a Type A Assistant in the number of areas in which he can perform, but he cannot exercise the degree of independent synthesis and judgment of which Type A is capable. This type of assistant would be to medicine what the practical nurse is to nursing.[15]

The Type B and C assistants (B, who is highly skilled in a *limited area,* and C, who performs to a *limited degree* a variety of tasks under supervision) are the well-known military medical corpsmen or hospital corpsmen—traditionally successful and respected partners in our military medical services. Hence we are able to compare the utilization of these two types in the civilian sector with that in the defense establishment.

The Type A assistant, the generalist, presently espoused as a physician-extender, has not been utilized in the full context but has, in fact, in a number of situations, acted as the physician's alter ego with independent initiative and action. In actuality, our most highly skilled military corpsmen perhaps fall somewhere between the A and B categories; they are exposed to a great deal of on-the-job training, but have not always been prepared by a structured educational curriculum. We are therefore unable to provide any direct comparison in utilization.

The Russian Feldsher: A Counterpart of the Physician's Assistant

The independently acting physician's assistant who takes histories, does physical examinations, and undertakes a certain amount of diagnosis and treatment, supposedly under supervision, is purportedly derived from the experience of the Russians, who have feldshers. Many writers have extolled the role of the feldsher and his potential value in our system of medical care.

The origin and development of the Russian feldsher system are pertinent to our thesis. The genesis of the feldsher is most interesting.[16-19] The origin of the word dates back to about 1700. Peter the Great, tsar of all of the Russias, introduced feldshers for surgical care of his soldiers. He borrowed this innovation from the German army system, the "feldscherer"– which translated literally means "field barber"[20] or "barber surgeon."[21] This military anomaly, trained by apprenticeship or by a few special courses, continued to provide the major portion of medical care to the tsar's armies well into th 19th century. During these decades, in addition, retired military feldshers often provided the only medical care available in rural areas.[20]

With the freeing of serfs and the organizing of the local governments in the early 1860's, the tsar directed the newly established local district assemblies to provide medical care for the populace. Without adequate funds to pay the salaries of physicians, the district assemblies hired feldshers.[22] Thus the cult of "feldsherism" was considered second-class rural medicine; it was a necessary expedient. With the increased demand for this kind of medical worker, who previously had learned his trade through apprenticeship to a physician, five two-year schools opened in 1864 for the training of feldshers.[23] By 1900 there were 32 feldsher schools. In 1913, just before World War I, the 30,000 feldshers comprised two-thirds of Russia's 46,000 paramedical personnel.[24] They constituted a group of middle-level medical workers, abbreviated by Sidel as MMW's[25] and used in this paper to identify persons between the level of the physician and the lower-grade auxiliary worker. This middle group also included nurses and midwives.

During the Russian Revolution of 1917-1918 large numbers of physicians, primarily in the larger cities and primarily members of the bourgeoisie, were liquidated. The result was a huge vacuum in Russian

medicine. Through its Ministry of Health, recently created, the Soviet regime instituted studies to determine not only the health conditions throughout the country but to ascertain the availability of resources needed to cope with them. The problems caused by malnutrition, poor sanitation, and communicable diseases were of paramount importance and received high priority.[26]

This priority resulted in expansion of a health care delivery system; opening of new medical schools with a six-year program in which thousands of doctors were educated; and, significant to our thesis, emphasis was directed toward preparing in the shortest possible time large numbers of various kinds and levels of medical workers competent to deal with a specifically identified health problem. A wider category of MMW's was developed; with it there ensued a de-emphasis of the role of the feldsher. Considerable effort was made, however, to define and refine the functions of the feldsher and to prepare this worker to carry out these functions efficiently.[26] Hence, the role of the feldsher became more specialized and subtypes evolved: the general feldsher, the sanitarian-feldsher, the feldsher-midwife, and the feldsher-laboratory technician.

In a greater part of rural Russia and at agararian collectives the general feldsher continued to serve in lieu of a physician; he also acted as the industrial physician in many rapidly expanding industrial plants. The work of the sanitarian-feldsher, essentially in public health and preventive medicine, included health education of the citizenry, creation of school-health programs, and sanitary and epidemic control. The role of the feldsher-midwife is obvious, and although midwives were on the ascendancy, some feldsher-midwives (general feldshers with additional training in midwifery) were still trained for the isolated health care stations. The laboratory feldsher was similar to our laboratory technicians.

In the late 1920's and early 1930's the Soviet regime decided to eliminate feldsherism because of its stigma of second-class medicine. It attempted to upgrade the younger and brighter feldshers to doctors, to replace feldshers with physicians, and to recruit increasing numbers into medical schools for duty in rural areas. This policy was unsuccessful. The Soviets discovered that the problem of recruiting physicians for remote and disadvantaged areas was extremely difficult. We may observe parenthetically that our problems are no different today. With

their low physician-to-population ratio the Soviets found they could not deliver medical care to their widely dispersed populations without the feldsher and their other more recently expanded categories of MMW's (as nurses, midwives, dental technicians, pharmacists). Although the training of feldshers was resumed, there was an upsurge in the training of other MMW's (especially nurses) and of physicians. From that time the training of feldshers has lagged and the role of the feldsher has been downgraded, while the training of other MMW's has been expanded, strengthened, and upgraded. [23]

After World War II the Soviet health care system was again enlarged considerably. Not only was there increased emphasis on educating larger numbers of physicians but priority was given to the preparation of greater numbers in other categories of what we would call allied health personnel. In industrial plants and on collective farms as well as in the isolated areas, feldshers continued to act as practitioners —supposedly under regular supervision by qualified physicians from the district polyclinics.[19, 27]

Because of their special training in differential diagnosis and their accessibility to persons who were unable to reach the polyclinics, the feldshers performed important tasks in screening the population.[27, 28] However, in the main, except for the very remote areas, the independent role of the general feldsher has continued to diminish.

The accompanying figures and tables contain adaptations of data available to us from several sources. Validity of data is difficult to determine and, as those who have labored over statistics from the Soviet Union will attest, one has some degree of difficulty in accepting them as verifiable because of the nature of a totalitarian society.

Figure 1 shows the rapid growth in all health personnel per 100,000 population from 1913 to 1970. It indicates the early paucity of physicians, the attempt to bridge the gap with feldshers followed by the great augmentation of MMW's.

The Soviet objective has been to create and maintain a network of closely integrated health services stretching across their vast territories in an attempt to provide medical care and health education free of charge to all citizens, even in remote areas. To do this the variety of medical services are staffed by a range of health workers in one of three categories: higher, middle, and lower medical personnel. The highest category is the physician group; the middle, the MMW's as noted

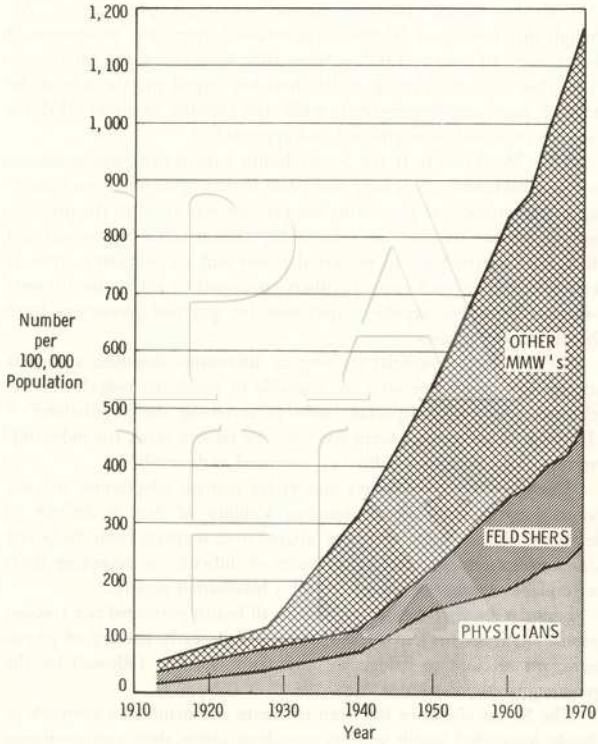

Fig. 1. Growth of medical personnel per 100,000 population in the USSR, 1913-1970. Adapted from Sidel, V. W.:[17] The feldsher in the USSR. *Ann. N. Y. Acad Sci. 166:* Fig. 1, p. 958, 1969. Reproduced by permission.

TABLE I. USSR PHYSICIANS (INCLUDING STOMATOLOGISTS, EXCLUDING THE MILITARY), 1913-1970*

	Total	*Per 10,000 population*	*Per cent women*
1913	23,205	1.5	10
1928	63,200	4.0	45
1940	141,752	7.2	60
1950	247,346	14.6	—
1955	308,290	—	76
1960	401,612	18.6	75
1963	463,500	20.5	74
1965	485,000	21.9	—
1968	568,000	23.6	—
1970	619,000	25.3	73

*Source of data: 1913-1963, Field, M. G.[18]; 1965-1970, Swanker, W. A.[29]

above; and the lowest, the nonprofessional or auxiliary group made up of orderlies, maids, cooks, launderers, drivers, and janitorial, maintenance, and other supportive personnel.[30, 31]

The highest ranking medical personnel group is composed of three grades or levels of physicians: the academicians (of whom there are very few), the professors (relatively few) and the ordinary physicians or clinical practitioners (*vrachi*). This latter group is divided into many subspecialties and provides the bulk of Soviet health care. There are great differences in status and income between the academic and professorial levels and that of the practicing physician. It is of interest that presently about 73% of all Soviet doctors are women;[29] the peak of 76% was reached in 1955.[32] The trend today is for medical school classes to be either equally divided among men and women[29] or to be 60% male,[33] a distinct reversal from former ratios. The aim is to increase this to 70% men by the early 1980's.[29, 33]

As Figure 1 portrays, there has been a tremendous growth in total numbers of physicians. In Table I we note that from 1913 to the present there has been a 28-fold increase and that from 1940, despite the ravages of World War II, the numbers rose somewhat more than four and one-half times. Today the 82[34] or 92[35] Soviet medical schools are graduating about 30,000[29] to 35,000[34] persons annually; this is in marked contrast to the United States production of 9,300 per year (for 1971). The present ratio of Soviet physicians to total population is one of the

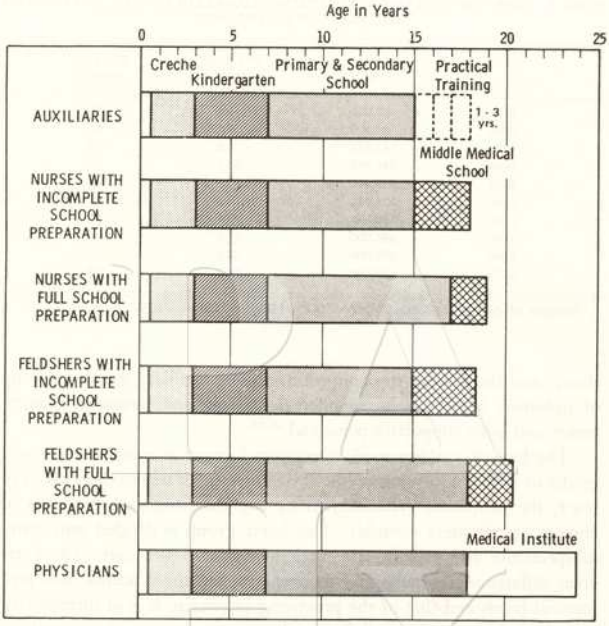

Fig. 2. Education and training of medical personnel in the USSR. Adapted from Sidel, V. W.:[17] The feldsher in the USSR. *Ann. N. Y. Acad. Sci. 166:* Fig. 4, p. 963, 1969. Reproduced by Permission. Data for 1965-1968 and 1970 from Swanker, W. A.[29]

highest in the world—one per 375-400[29] (as compared to the United States of one per 640[4]), and is projected to increase to about one per 300 over the next 10 years.[29, 35]

Despite their large number of physicians and the high ratio of physicians to inhabitants, the total is insufficient when related to the vastness of territory, the great distances between urban and rural centers, and the numerous tiny settlements, many without doctors.[36] In Moscow and Leningrad the ratio of physicians to population is nearly three times the national average of 25.3 per 10,000.[29] However, when one

TABLE II. USSR MIDDLE MEDICAL WORKERS, 1913-1970*

	Total number	*Per 10,000 population*	*Per cent women*
1913	46,000	3.3	—
1928	113,700	7.7	—
1940	472,000	24.	—
1950	719,400	40.	—
1960	1,338,300	65.	—
1963	1,523,400	67.	92
1970	2,043,000	90.	About 90

*Includes feldshers. Data for 1913-1963, Field, M. G.[18]; data for 1970, Swanker, W. A.[29]

moves from urban to provincial centers, the ratio drops sharply—often to about 2 per 10,000 for some isolated areas.[37] Indeed, many of these remote areas would be continuously without a physician's care if it were not for the policy of the Ministry of Health to assign newly graduated doctors to these areas for three-year obligatory periods.[29, 34, 38]

Observations by recent visitors to the larger centers confirm that in the Soviet Union physicians perform many tasks delegated to allied or even auxiliary personnel in the United States.[28, 29, 33, 39] Conversely, in rural Russia feldshers are doing the work of physicians.[36] Of more than passing interest is the fact that about 25% of Russia's doctors have had middle medical worker experience.[28, 29, 40, 41]

Figure 2 represents the spectrum of the educational system for medical personnel within the Soviet Union. Secondary school education is generally comparable for medical, feldsher, nurse, and other MMW students who have completed the full 10 or 11 years. Relevant to this presentation is the fact that the feldsher student with incomplete secondary schooling is required to take a 3½ year program in the Technicum, or Technical Training School, whereas his colleague with full secondary school preparation needs only 2½ years. Preparation for nursing requires either three or two years, depending on length of previous schooling. The content of courses for these two groups is delineated according to the specialty area. The nurse receives more hours in nursing theory and practice while the feldsher obtains greater depth in first aid, differential diagnosis, and preventive medicine. The physician (i.e., the general practitioner or the *vrach*, not the professor

TABLE III. USSR HEALTH PERSONNEL (EXCLUDING THE MILITARY), 1967*

			Percent of total†
Physicians		519,500	19.9
Stomatologists		30,910	1.2
Dentists		47,843	1.8
Paramedical personnel			
Feldshers	417,448	16.0	
Feldsher-midwives	82,100	3.1	
Midwives	184,800	7.1	
Nurses	892,600	34.2	
Laboratory technicians	71,700	2.7	
X-ray technicians and assistants	22,600	0.9	
Assistants to public health physicians and epidemiologists	31,400	1.2	
Sanitarians and auxiliary sanitarians	68,100	2.6	
Pharmacists	39,600	1.5	
Assistant pharmacists	103,300	4.0	
Dental laboratory technicians	22,157	0.8	
Physiotherapists	4,646	0.2	
Other health auxiliaries	70,970	2.7	
Total paramedical personnel		2,011,421	77%
Total		2,609,674	

*1967 is the latest year for which detailed data on health personnel are available.
Source: Swanker, W. A.[29]
†Total may not add to 100% due to rounding of numbers.

or academician) requires six years in the medical institute beyond his secondary education.

From the educational system just described a serial review in terms of production within these various categories is shown in the next tables. Worthy of note in Table II is the 18-fold increase since 1928 and the extremely large percentage of female middle-medical workers. To demonstrate the allocation in numbers to each of the health care categories, Table III is illuminating. (Note that persons characterized as dentists are less trained than stomatologists and normally perform such functions as examination of teeth, prophylaxis, and uncomplicated extractions.)

Indicative of the tremendous growth in specific categories of the middle-medical worker group is the information in Table IV. For comparative purposes it is unfortunate that data for the two decades prior to 1940 are unavailable to us. However, the reader will recall that "in 1913 . . . the 30,000 feldshers comprised two-thirds of Russia's 46,000

TABLE IV. NUMBER OF SPECIFIC MIDDLE MEDICAL WORKERS AND RATIO PER 10,000 POPULATION, USSR, 1913-1970*

	General feldshers		*Feldsher-midwives*		*Midwives*		*Nurses*	
	Total number	*Per 10,000 population*	*Total number*	*Per 10,000 population*	*Total number*	*Per 10,000 population*	*Total number*	*Per 10,000 population*
1913	30,000	1.9	—	—	—	—	—	—
1940	82,200	4.2	12,800	0.7	68,100	3.5	227,700	11.6
1950	160,000	9.4	42,000	2.5	66,500	3.9	325,000	19.2
1960	334,700	15.5	76,200	3.5	139,300	6.5	623,500	28.9
1964	380,400	—	78,000	—	167,000	—	742,000	—
1965	395,900	17.7	79,300	3.4	171,400	7.4	784,900	34.2
1966	411,900	17.7	80,200	3.4	180,300	7.7	836,400	36.0
1967	417,448	17.8	82,100	3.5	184,800	7.8	892,600	38.0
1968	434,600	18.3	80,400	3.3	193,200	8.1	944,400	39.8
1969	452,000	18.9	81,600	3.4	203,500	8.5	986,800	41.3
1970	500,000	20.4	82,300	3.4	213,500	8.8	1,026,800	42.0

*Sources of data: 1913, Sigerist, N. E.[28]; 1940-1960 and 1965-70, Swanker, W. A.[29]; 1964, Roubakine, A. N.[26]

paramedical personnel." It is probable that the remaining 16,000 were spread over several occupations. Hence, it seems clear that the growth in numbers of feldsher-midwives, midwives, and nurses—particularly the latter—has equalled or far outdistanced the 17-fold increase in general feldshers.

Finally, Table IV portrays the output of feldshers up to their peak year of 1970. This date is apparently the turning point, as our information indicates that in coming years the number of feldshers will be less impressive than the number of physicians[42] and other MMW's.[29]

In summary, our current information indicates that the number of admissions to courses for the training of general feldshers is to be decreased.[29, 42, 43] For example, at the largest MMW Technicum in Moscow a definite reversal of the upturn noted in Table IV is apparent: where eight years ago 150 feldsher students were admitted, last year (1970) only 30 admissions were allowed.[44] However, admission to MMW nursing courses is on the increase,[29] and Technicums are strongly encouraged to expand nursing student accessions.[44]

Some observers believe the trend away from the use of large numbers of feldshers is designed to erase the taint of second-class medicine.[29, 45] Also available is information that part of the Soviet disillusion-

ment is the result of the feldsher not fulfilling his total mission whereby referral to a physician should be accomplished whenever the medical problem exceeded his competence.[37, 46, 47] This has undoubtedly caused the medical profession great concern as to the inevitable dangers and the reduced quality of medical care.

Since we are seriously considering the utilization of another health worker at an intermediate level, we should consider realistically what the Soviet experience has been. Chancellor Bismarck's classic comment is timely, "Only a fool learns from his own mistakes; I learn from the mistakes of others."

The Evolution of the Physician's Assistant

Having considered the experiences of the Soviets with the feldsher over the past half century, our attention must be focused on our own problems in the delivery of health care. That this nation faces a crisis of sorts in the medical and health arena has become axiomatic.

The delivery of health care is a multifaceted, sharply debated, highly charged, emotional issue that extends well beyond the scope of this article. It is all-consuming in its interests. There are vocal advocates on every aspect of every issue. Confusion, arbitrary positions, and contradictions have been apparent. We do not propose to enter this arena. Our concerns relate to one facet of the problem of health care: the evolution of the physician's assistant, hereafter referred to as the PA. From here our interests will be focused on the ultimate fate of the PA in the United States.

It is our contention that our present system for delivery of medical care is disjointed by what actually amounts to a maldistribution of physicians, both geographically and by specialty. We believe this can be accepted as fact. Do we also realize that the maldistribution is so physician-dependent as to be self-defeating?

As conceived in the mid-1960's by Dr. Eugene Stead at Duke University, the PA would become the extension of the physician in providing primary care—a most laudable goal. As the PA program at Duke gained public notice and as health became a political issue, the PA has begun to be viewed as something of a panacea, like a Moses leading us to the promised land of better health care for all! How can the PA provide that leadership when he is, and ever will remain, physician-dependent? To expect the PA to correct the health care system and

right the maldistribution is to engage in utopian fantasy. The PA system works only where physicians practice.

The utilitarian views surrounding the PA are such that many social scientists apparently believe that quick quantification of all forms of medical care can come from the use of this new allied health worker.[48] An ever-expanding base of PA's theoretically abound in the ranks of discharged medical corpsmen. Here also is a great danger in that the public may be misled by zealots who cite 30,000 discharged corpsmen as available for duty in the civil sector as PA's—either immediately or with additional training as at Duke or under MEDEX. We believe such thinking to be dangerous because it deludes the public. Of greater importance is the fact that patients are apt to be victimized by promises—promises which must stand the test of demonstration and evaluation before they can be accepted.

Of the approximately 30,000 corpsmen discharged each year a conservative estimate of those eligible, qualified, or interested in becoming PA's approaches 3,000.[49] Why such a discrepancy? Basically it is because the "medic" in service often possesses high intelligence. He receives basic military training followed by basic medical training and is content to spend his two years of military duty as a medic, but not as a highly trained medical specialist or technician, which involves greater service commitment. Therefore, he applies Band-Aids, dispenses APC's and cough syrups, and performs other menial medical tasks. Why? The answer probably lies in his desire to leave the military service as soon as possible and return to college or to other pursuits. The figure of 30,000 appears to us to be highly inflated but it has received so much publicity that it is often believed by many who are looking for candidates to fill the spaces for PA students in more than 135 documented training programs in the United States.[6]

To date the output of PA training programs has been only a trickle. By September 1971 Duke University had graduated 66 PA's, but there are increased expectations for the next several years. The locale of their employment bears out our contention that the PA is not increasing the delivery of primary health care in remote or disadvantaged areas, since the PA goes where the physicians are. And we are well aware that the vast majority of our physicians are in urban areas and, more frequently than not, associated with university hospitals, research centers, or major metropolitan hospitals.

The inner cities and the rural areas remain a medical void to be filled—but the PA cannot do this. Or can he? Are we willing to use the well-trained two-year PA to serve in these areas alone or with only meager supervision by the physician? Can we as physicians accept the PA as our surrogate? Will the public accept him? These difficult questions deserve answers before we proceed further to continue ". . . talking about something that in practical terms does not exist" (these are the words of Dr. Stead).[50]

Public acceptance must be studied fully and evaluated fairly. We are concerned that resentment of the PA will arise in the ghettos and inner cities because inhabitants already believe they are viewed as second-class citizens. To receive medical care from a nonphysician can serve only to reinforce their convictions of inferiority. We see no particular difference in assigning the PA to rural areas that lack physicians and where poverty conditions are often at parity with those prevailing in inner cities. Immediately then, we face a political issue superimposed on the medical problem of how to improve the delivery of health care to Americans. It is to be hoped that the health care legislators and planners will bear these truths in mind as they proceed to reconstruct our health care delivery system for better—or for worse.

If one scrutinizes the program-summary information derived from three highly publicized PA training programs (Duke, MEDEX, and Alderson-Broaddus College),[6] it is clear that the curricula have been thought out carefully and are designed to produce qualified and competent PA's. The problem has been bothersome to us, however, and we were delighted to observe that Dr. Herbert Berger, past president of the New York State Society of Internal Medicine shares these concerns, when he stated in the April 1971 issue of *Medical Opinion*, "No matter how bright young people are, and I do not tend to underrate their abilities, they cannot acquire, in a year or two, the kind of information that it takes others twelve or more years to learn."[51] To this we can only add a solemn amen!

Dr. Berger also points out that use of PA's in a primary health care setting—which follows the basic premise surrounding their development—is to put the least trained person in an area of medicine requiring the highest degree of competence.[51] Who can attack such a statement? Today's family practitioner or general practitioner carries immense responsibilities. Can the PA, trained for two years, really extend the

physician's services or will the PA soon be relegated to the role of a technician? How long will the PA be content to remain a physician's assistant? If the PA role becomes a route to medical school, and if credit for PA experience is available, then we might possibly produce a few more M.D.'s.

Pitfalls to Be Considered

Many educators of PA's have emphasized that the PA career field must not be allowed to become a dead end, that mobility upward and laterally must be built into the structure. How is this to be done when as yet we have no evaluation, no analysis, and few facts available to make discerning judgments?

To what extent will the employment of PA's give rise to increases in the fees of physicians? The economic absorption of PA's may well be an obstacle. This is particularly true in private practice (solo or small group) rather than in hospitals. Present salaries for trained PA's range between $8,500-$15,000; this is quite an added economic burden for the employing physician. Civil Service entry pay scales for the recently established PA career field vary from $8,582 (GS-7), to $10,470 (GS-9), to $12,615 (GS-11).[52]

Another question which must be asked is: Just how much can the employing physician delegate to a PA without creating a diminished market for his own services? Can this become economically counter-productive if other physicians in the locale prefer to continue to provide their patients with personal attention to medical science as well as to the art of medicine?

We must consider briefly the other side of the economic picture. If physicians become too dependent on physician's assistants simply because of their increasing numbers and a willingness to employ them. perhaps we shall see the day when physician's assistants will organize or unionize. This could and would lead to increased pressures for increased pay and benefits by specialized groups of physician's assistants. Such an occurrence should not be unexpected. Where this will lead we cannot predict except to observe that it would not be a new phenomenon in paramedical fields.

Further discussions about the physician's assistant inevitably, and quite correctly, turn to the legal issues involved. Concerns over the legality of employing a PA run the gamut from wanting nothing to do

with them until their legal status is fully delineated by the various state medical practice acts to the rather quixotic view that legal issues can be settled as they arise, if indeed they will arise. This idyllic view demonstrates the grossest immaturity on the part of its advocates. In this legal arena we are between Scylla and Charybdis.

To paraphrase Professor Sidney H. Willig, reality tells us that state medical practice acts must be considered as expressions of the legislative intent of the people.[53] Therefore they are paramount. It then appears to us illogical or unwise to assume that an individual or institution can act contrary to that intent until the statutes are modified or altered.

Several states do provide in their licensure acts for some degree of delegation of functions. Arizona and Oklahoma apparently have made provisions for delegation by physicians. Kansas and Colorado provide for some general exemptions for a delegation of functions.[54] You may be aware of the recent California statute that specifically applies to the physician's assistant.[55] The essence of this statute is confined to the medical doctor who hires one or two PA's and who is then responsible for all they do or do not do. The California legislators were wise in providing that the physician desiring to hire a PA must make application to the Board of Medical Examiners to do so. The Board of Medical Examiners will approve the application to hire a PA when it is satisfied that the PA is a graduate of an approved program and is fully qualified to perform medical services under the supervision of a licensed physician. Quite wisely legislation limits the M.D. to a maximum of two physician's assistants. The program is considered a trial effort, inasmuch as the Board of Medical Examiners must report to the legislature by January 1, 1972, on various aspects of the PA program, including recommendations for establishing a permanent program of certification or licensure for PA's or dissolution of the program. Of collateral interest, a local California county medical society has recommended that the term physician's assistant be changed to "health care assistant."[56]

Those idealistic advocates who base their arguments on prevailing custom and practice without regard for the legal issues involved are ignorant of the fact that it has been held that professional custom is no defense for contravention of a licensure statute.[57] These advocates seemingly do not fully appreciate the role of the doctrine of *respondeat superior* in medicine and the responsibility that may remain with the

physician for acts of omission or commission by the assistant.[58] Therefore, to us the concept of the PA's suitability insofar as practical usage is concerned revolves about the legality of his employment by a physician, hospital, or other medical care facility. As Professor Willig observes, what is needed is a legal trial and position-transition operation to be observed by representatives of the public, the profession, and the government. If the operation is satisfactory and its benefits outweigh the risks, appropriate supportive legislation can be introduced to legalize the PA's status.[59] Regrettably, the PA concept is sweeping across the country and we fear that the medical profession will be faced with litigation, civil or criminal, in order to establish precedents. Before this occurs one wonders how many patients may suffer.

In summary, then, before physician's assistant programs become an accepted part of our health care system, many questions must be answered and the entire concept of the physician's assistant must be evaluated rationally and realistically. Every facet relating to this proposed new health worker must be appraised thoroughly:

1) *Acceptance*—by the public without trace of discrimination against a segment of our society, acceptance by physicians and by other health professionals.

2) *Protection*—of *all* groups, of the public, of the patient, of the physician, and of the PA himself.

3) *Opportunity*—for the PA experience must be sufficiently professionally satisfying to prevent him from overstepping his limits into primary care without adequate preparation. Where is the career ladder to avoid a dead-end employment opportunity? It becomes irrational if we train PA's to work in inner cities or rural areas if the medical care system itself is not reorganized to give the PA's a milieu in which to work, in close touch with a physician, and not alone with a carpetbag or buckboard.

Readers might well ask what the Department of Defense is doing about this real problem. How does it propose to cut the Gordian knot?

Historically, we have had, and do now have, many so-called physician's assistants. As noted above, they are known by other names: corpsmen, hospital corpsmen, pharmacists' mates, medical technicians, ward attendants, urology assistants, orthopedic technicians, etc. They are our physician's assistants, Types B and C if you will, as defined by the National Academy of Sciences.[12]

Physician's Assistants Educational Test Programs of the Department of Defense

The Department of Defense (DoD) is very sensitive to changes in the delivery of care to patients. Innovations arising within DoD often go unnoticed or are unknown to the public. Last summer the Medical Department of the U. S. Army expressed great interest in the independent Type A physician's assistant as a mechanism to extend its capability to care for the ever-increasing medical load, most notably in field units, clinics, and outpatient departments.

To reject the PA concept summarily would have been unwise and unrealistic. It was concluded that what was needed was an evolutionary approach utilizing a test project to determine the validity of the PA concept in the milieu of the DoD. An ad hoc committee, consisting primarily of physicians, was established at the same time to review and study this complicated and beguiling subject, and to recommend various possibilities for utilization of the PA or to disapprove the concept.

We are especially anxious regarding acceptability by patients in our setting. Will the patient, especially the dependents so long accustomed to being treated by a physician—albeit not always the same one—accept routine care from a nonphysician? Will we be in a positive cost/benefit posture by increasing care, reducing the time that patients are kept waiting, increasing the utilization of the physician, and decreasing the number of physicians required without impairing the quality of service provided? To these hard questions we must have satisfactory answers before we yield to pressures to utilize more PA's in the military departments in lieu of more physicians and other types of accepted health professionals.

The U. S. Air Force Medical Service initiated its *pilot* project on July 7, 1971, with the first class of 25 students carefully selected from senior noncommissioned officers who already possessed many general and special paramedical skills. The Army Medical Department is developing a similar program which it hopes will be ready early in 1972. With these two *test* projects and a period of observation following the 24-month curriculum, we should be able to determine if continuance of these programs is warranted. Perhaps by then we shall be able to profit as additional experiences are gained in civilian medicine. We are convinced that we must move in this direction very slowly and with great

caution. Caution is our guiding tenet as we proceed to test the Type A assistant for use in the military medical departments.

Just as in the civilian sector, the military medical services are moving forward aggressively in still another direction: the augmentation of the skills of the traditional nursing component into such special fields as community-health-nurse practitioner, pediatric-nurse practitioner, clinical-nurse associate, nurse gynecologist, family-nurse practitioner, and various other types. We are probing the value of extending the physician's efficiency through the utilization of nursing skills. Thus, rather than committing ourselves only to the new option of the PA, we are availing ourselves of an alternative, built on a long-standing asset and member of the health care system—the nurse.

Alternatives to Creating a New Member of the Health Team

Before embracing a new category of health personnel to extend the services of physicians, should we not look to an already proved entity—the nurse—who for years has been the reliable assistant for the physician (and not just the handmaiden as is so often said); the nurse, who continually over the decades has taken on tasks that previously were performed by M.D.'s; the nurse, who from the inception of nursing has provided immense support to medicine.

We believe we should consider seriously the broader utilization of members of this competent profession—an extremely valuable asset to and adjunct of medicine. By virtue of her educational background does not the registered nurse already possess the knowledge, competence, and experience on which to build increasing medical judgment and additional specialized training? Would this not lessen the time required to train another category of health personnel to provide the additional service needed by our population?

By offering the same scale of salaries that is now being proposed for the PA, i.e., $8,500-$15,000, and by offering higher status, can we not entice back into medicine (as Dr. Walter Bornemeier, immediate past president of the AMA, has suggested) many of this nation's inactive registered nurses (RN) who are inactive because they found some aspects of nursing wholly frustrating and without satisfaction? Will not some of these individuals be interested in the larger role now anticipated for them?

We are well aware of the present demand for nursing services and

of the inadequate supply of registered nurses. However, for the *safe* extension of physician services we believe this potential resource must be reevaluated carefully if we sincerely desire to improve and expand our health care delivery system. Why cannot more of the services, i.e., certain bedside nursing and technical activities—now provided in hospitals, clinics, and nursing homes by registered nurses—be accomplished by less well-trained personnel such as licensed practical nurses, nursing aides, or assistants? For example, in the Washington, D. C. metropolitan area at least one hospital has a daytime nursing staff comprised of 60 to 75% *registered* nurses. It is impossible for us to believe that all the RN's on this staff, many with years of experience, are fully challenged or are really engaged in professional nursing. Nor do we believe that many of the experienced nurses do not have higher abilities and higher aspirations than can be satisfied in their present blind-alley positions.

Physicians, we fear, have considered nurses essentially in their traditional roles: bedside nursing, ward work, dispensing medications, carrying out doctor's orders, and draping patients for examinations—and rising to higher nursing responsibilities and techniques only as head nurses, supervisors, and professors of nursing, or moving laterally to operating-room nurse, central sterile-supply nurse, intensive-care-unit nurse, public health nurse, and thence upward. These nurses have helped, and continue to help, doctors to carry the work load. However, have we considered that over the years, without our really recognizing it, there has developed an entirely new category of personnel, trained basically as nurses, who carry work loads themselves? We remain inhibited from the full utilization of these persons because we have not recognized the difference—the difference between helping doctors to carry the work load and carrying a work load individually with the backup and support of a physician.[60]

Decades ago the public health nurse was introduced to the American scene in the tenement and settlement-house areas of New York City. As time passed, her role expanded to the point where she has become truly the physician's assistant in many urban as well as rural settings. She makes the home visits and, as necessary, refers a patient to a clinic or doctor or requests a physician to see the patient in the home. The public health nurse certainly carries her own work load of patients. If she were not available, an even larger segment of American society would go without health care.

Similarly, years ago the nurse anesthetist came into her own—one of the first categories within nursing to carry a specialized work load. Some will recall how they were first received. In addition to the aura of "interloper" there was the downgrading which occurred during the lean years of the depression. There was near-extinction, but the flame never quite went out, since there were persistent physician-supporters at two great centers of medical learning—Johns Hopkins and Cornell —who had the foresight to believe in the worth of this group of specially prepared nurse practitioners. Nor can we forget the era of World War II when, as at a great medical center such as Peter Bent Brigham Hospital, Boston, Mass., an expert nurse anesthetist taught the rudiments of anesthesia to doctors. Now nurse anesthetists are again on the ascendancy and are officially recognized as a special category of personnel. Because they have received recognition and their education has been accredited, they can replace some anesthesiologists, but not all. If we did not have nurse anesthetists, we should require more doctors.

Brought into practice in some areas of the United States because of the doctor shortage, but not yet fully accepted by all segments of American medicine, is the nurse-widwife, whose talents and abilities are utilized increasingly. We all recall the outstanding work of the nurses of the Frontier Nursing Service who for 4½ decades have provided obstetric and maternal care to citizens in the mountain regions of Kentucky. With the passing of the years these nurses have successfully broadened their services to that of family-care practitioners. No one else is available to provide health care! The services which certified nurse-midwives are performing increasingly often in urban areas must not be overlooked. For example, we understand that the Family Planning and Obstetric Clinics at Kings County Hospital in New York City are staffed entirely with and operated by nurse-midwives and one consultant in obstetrics and gynecology who is called for unusual or difficult problems. Here, nurse-midwives with additional specific preparation prescribe, insert, and provide follow-up of intrauterine devices. Each of these nurses sees patients and provides examination, treatment, or counseling which otherwise would have to be given by a physician. While these nurses do not entirely replace doctors their contribution does make possible the provision of quality care to more patients with fewer doctors.

Last, the Colorado Pediatric Nurse Practitioner (PNP) program,

begun in 1965 and therefore still in its childhood, is worthy of mention. Recent medical and nursing literature has shown the value of PNP's and has indicated that the PNP could handle most of the children who came to a low-income urban health center. Parental satisfaction with PNP's has been high, and disagreement between physician and PNP concerning patients has been low.[61]

We should give much more attention to advanced training of nurses. We cannot forget the contributions that nurses have made to American medicine. The delivery of health services will be greatly augmented when this group returns to the mainstream of health care and is given many more new incentives and goals than heretofore.

Conclusions

We have outlined in considerable detail the evolution of the new health-care practitioner recommended as the cure-all for the shortcomings in our health care system—the physician's assistant. We have outlined the experience in Soviet Russia of his counterpart, the feldsher, often used as the model whereby the PA prototype may be duplicated and introduced into our system. The apparent disillusionment in the Russian medical fraternity with this experience has been discussed. We have pleaded for the necessity of careful and objective evaluation of the PA in various settings prior to wholesale adoption or injection of this new worker into our health care delivery system. As an alternative we favor the augmentation of special skills within our nursing group and a significant increase in the production of physicians.

To reminisce, a quotation from a great American physician is pertinent:

> A young and energetic man . . . will not settle in certain districts. . . . He will have acquired tastes which will make his life unpleasant in such places. Yet these places must have physicians of some sort, and it is not clear as to how they are to be supplied, if some of the universal and extensive reforms in medical education which have been proposed were to be enforced.

These words were written a century ago by John Shaw Billings in reviewing *A Century of American Medicine—1776 to 1876*.[62]

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