

AN APPROACH TO
THE DEVELOPMENT OF A HEALTH CARE SYSTEM FOR RESTON

Remarks by John Renner, M.D.

to the

Reston Citizens Association Health Committee

13 November 1969

Right at the beginning I want to say that I believe that a health care system exists to serve the people in the community. The needs that must be satisfied by a health care system are the needs of the people to be served, not the needs of the physicians in the system. If a health care system is to meet the needs in the community, then those needs must be identified by the community and the health care system must be evaluated in terms of how well it meets those identified needs. Thus, in the final analysis, a health care system is not evaluated in terms of the number of physicians included, nor the number of hospital beds, nor the educational level of the nursing staff, nor the sophistication of its equipment. A health care system must be evaluated by measuring the extent to which it is responsive to the needs which the community wishes it to address.

There is a basic problem that is encountered when one takes this position. If one selects a representative sample of the community to speak for the community and to identify its needs for health care, it is discovered that the spokesmen are usually not sufficiently tutored in the business of health care to be able to state comprehensively and precisely what it is they wish the health care system to do for them. It is for this reason that physicians get into the act of deciding what the criteria should be for health care systems, and it is for this same reason that health care systems are seldom truly responsive to needs in the community. There is a way out of this dilemma, however; that is for the community spokesmen to retain qualified health professionals to work with them in the development of a specification which sets forth clearly what it is that they want the community health care system to do for their community. When health professionals are employed in this way, their allegiance must be to the community. Health professionals so employed must be didactic; they must teach the community spokesmen the basic

things that they need to know in order for the spokesmen to make wise decisions when they set forth the specification for their community health care system. Such health professionals must also recognize the absolute right of the community to set its own goals, whether or not those goals are the ones that would be selected by the health professionals themselves.

I am a physician. Tonight I would like to attempt, however, to step outside of my role as a family physician and pretend that I am simply a member of the community, a consumer of health care, who has been well tutored by a health professional--well enough tutored that I am able to speak for the community in a knowledgeable way as I talk about the development of the health care system which I would want for my community.

As a spokesmen for my community I would attempt in my first characterization of community needs to get right to the heart of the matter. To do this, I will have to permit myself to be somewhat imprecise, recognizing that later I will be able to put more precision into my initial concepts. At the broadest level, then, I want my community health care system to meet three fundamental needs. They are these:

CHART 1

1. I want the health care system to deliver to all of the members of my community the greatest possible number of years of enjoyable life.
2. I want the health care system to ensure that each member of the community experiences the least possible morbidity--and I include here both psychological and physiological morbidity. I count as morbid a man who is suffering from mental anguish just as I count as morbid a man who is suffering pain from a traumatic wound.
3. I want my community health care system to contribute to the development of full functional capability of every community member in all of his roles--at work, at play, at home--to the fullest extent to which medicine can contribute to functional capability.

Let us accept this three-part statement as a primitive statement of need. The needs that are grossly stated in it can be re-expressed as a specification--as a set of measurements, which can be taken to assess the health status of members of the community--as a set of measurements which reflect mortality, physiological morbidity, psychological morbidity, and functional capacities of community members.

I know from experience that at this point I will have to interrupt my logic and talk about the problems that attend the measurement of health status in the community. I understand full well that it is impractical to talk about the direct measurement of morbidity and functional capability of every member of the community. But the fact that it is impractical for me to perform this measurement directly, does not deter me from defining my objectives in terms of what I would like to be able to measure, if I could. Thus, I will not compromise my statement of objectives--my identification of the needs which the health care system should address--simply because the measurement of them is difficult. Often I am told that it is folly to set my sights on meeting these needs because of the difficulty of measurement. I must reject this kind of criticism. What I would do to solve this problem is to accept the best kind of indirect measurement of health status that I can afford, and use that on a day-to-day basis to evaluate the effectiveness of my health care system. Meanwhile, I will always keep in mind the way in which I have defined the objectives so that I may have a constant guide to what I want ultimately to achieve by means of health care, and so that I may be constantly on the lookout for better methods of measurement.

Now I will return to the main line of my argument. When we measure the health status of a population, either directly or indirectly, we are at the same time measuring the effectiveness of the health care system that serves them. When very few health problems are found, system effectiveness is high; when many problems are found, system effectiveness is low. From now on, I will refer to measurement of health status in the community as measurement of system effectiveness. Once we have in hand a way of measuring system effectiveness, we have a tool by which alternative systems may be considered. And as I have said, here at Reston it is the consumers of health care (or their spokesmen) who should develop the measure of effectiveness with the help of health professionals who will work with the interest of the consumers as their guideposts.

The method of measuring health care system effectiveness that would be developed in such a manner would be an important element of a top level system specification--one that would be used in several different important ways. Some of them are, for example:

CHART 2

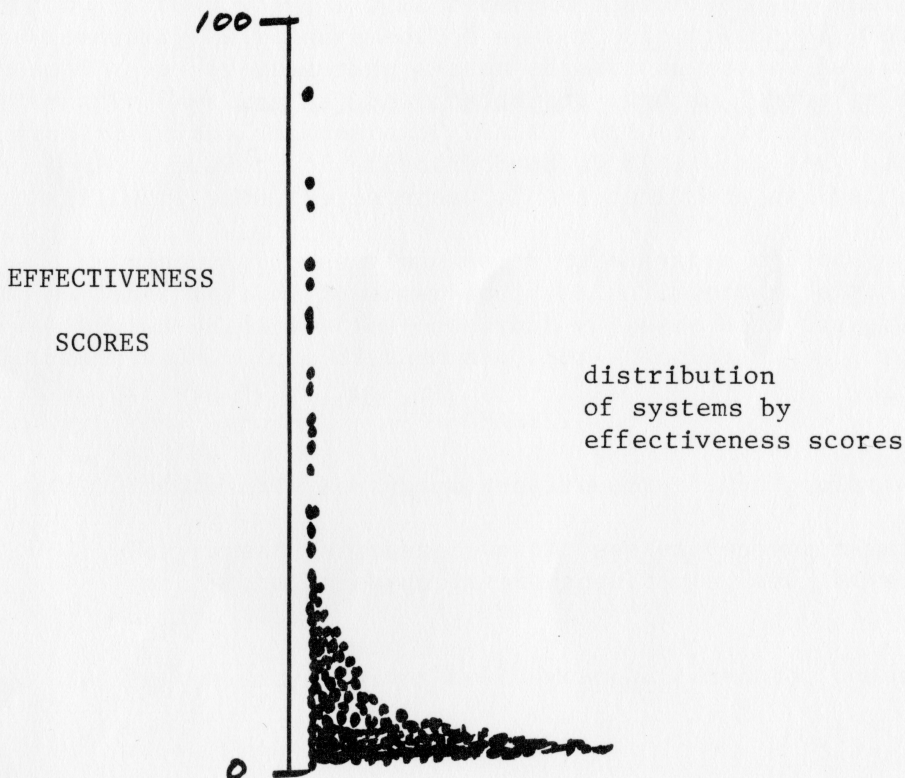
1. To present the system requirement to the preliminary design team.
2. To present the charge to the system designers including the architects, the equipment consultants, and the software design team.
3. To evaluate designs as they are offered for consideration.

4. To evaluate the health care system at the time of delivery of an operational system.
5. To conduct on-going monitoring of the operating health care system by its manager.
6. To conduct periodic audits of the operating health care system for the benefit of the consumers it serves.

A most common fault in the development of health care systems is failure to document a top level method of measuring system effectiveness --one which reflects the needs which the community wishes the health care system to address.

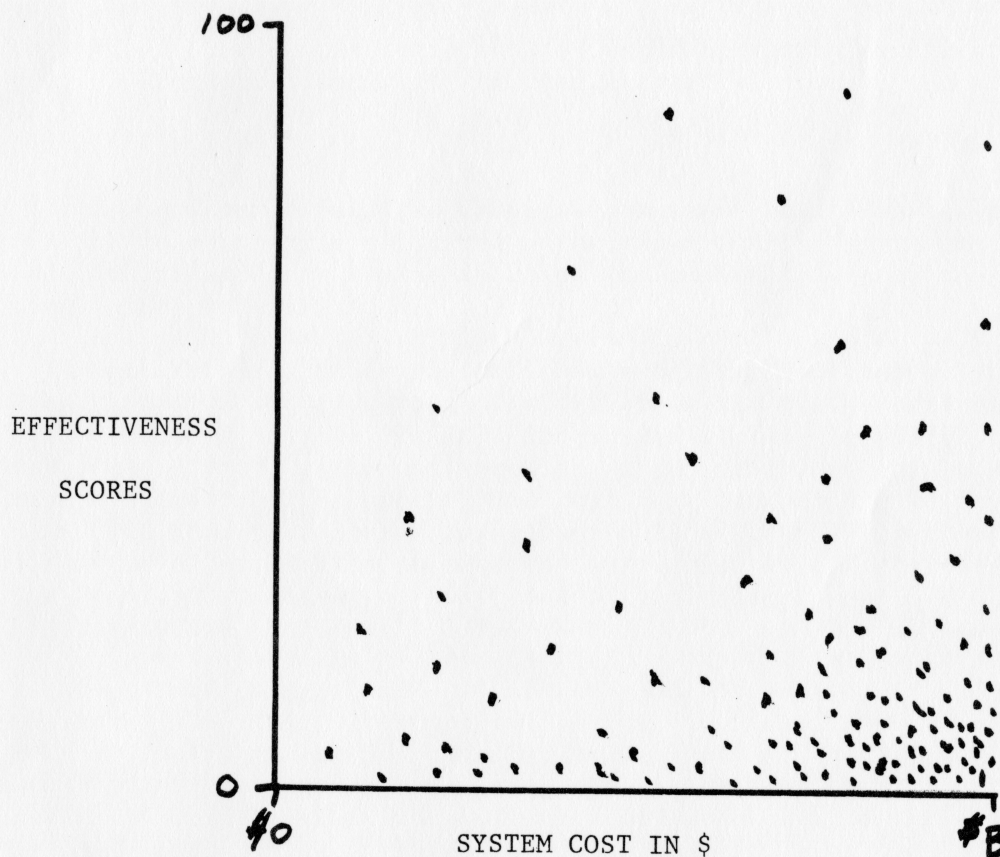
But what if a proper method of measuring effectiveness is developed. Does this give the consumers of health care all of the control which they need to ensure that the health care system would be responsive to them? Not quite. There is another problem at the same level: not all health care systems cost the same. Some cost more than others to develop, and some cost more than others to operate. If we take all systems which differ in effectiveness as measured by a selected effectiveness rule, they would most likely be distributed like this, ignoring cost:

CHART 3



If we sorted these systems out by cost, we would find them distributed in a cost/effectiveness space like this.

CHART 4



In general, those systems that are most effective cost the most, but those which are least effective are not always the cheapest. It follows that, as consumers, we need to be prepared to sort out solutions that might be offered by taking both effectiveness and cost into account jointly. Thus, we need a rule for estimating the cost of any system that might be offered as well as a rule for estimating its effectiveness. If we have estimates of both the cost and the effectiveness of all of the alternative systems that are offered to us, we have a basis for selecting that one which gives us the most effectiveness for the resources that we can afford to expend for health care.

Suppose, then, that we have both: a method of measuring the effectiveness of any system that might be offered, and a method for measuring

the cost of any system. Do we have enough? No, we need to specify some constraints as well. Thus, I believe that we need to place some limitations on the means which the system designers may use to develop their candidate health care systems. I recognize that, in general, it is best to give the designers so free a hand as possible, but despite this belief in designer freedom, there are still some things that I would like to present to the designer as preferred design concepts. I will discuss four of these.

First, I would want to place some constraints on the way in which the personal physician is treated in the system. I would want to make certain that personal physicians are included. But beyond that, I would want them to be included in a special way. I will discuss my rationale and then present the constraint that I advocate.

Let us consider any single individual in the health care system. If that individual is to receive the highest quality of care, then there must be some single person in the health system who accepts responsibility for the delivery of that care--that is, for the health status of the individual.

When responsibility is split among two or more physicians, there will inevitably be gaps in care--interactions among physiological and psychological problems that are not recognized, and times when none of the physicians sharing the responsibility for a patient recognizes the patient as a total individual requiring a professional commitment by him to the care of his total health. Each individual thus requires a personal physician who accepts responsibility for his care. Most of us, moreover, live in family groups. Within a family, there are strong relationships such that the health status of one member tends strongly to affect the health status of other members, not simply by means of bacterial infection, but also because of psychological relationships. For this reason, it is difficult to provide high quality care for an individual who is a family member without recognizing his family status and without having continuous knowledge of other members of the family. For this reason, the personal physician should often be a family physician. As a family physician, he must be able to effect treatment of the immediate family environment of his patient as one of the methods of care available to him.

For these reasons, I would say to the designer that any solution which is offered as a response to my request for a health care system must employ the concept of a personal physician--each consumer of health care must have opportunity for selecting a continuing relationship with a single personal physician who accepts responsibility for the total health status of the individual.

Because I believe that the community must have control over the effectiveness and cost of its health care system, and because I believe the objective data in the hands of the community would give it the necessary control, I am adamant about the requirements for a periodic audit and I would insist that any health care system be designed to ensure that the necessary data for an audit can be obtained readily, whenever they are desired.

The third constraint that I would advocate has to do with health insurance. Health insurance companies have no stake in health. The measure of success of a health insurance company is in terms of dollars of profit; the success of such companies is not measured by determining the health status of the people they serve. I find this to be an entirely inappropriate motivational structure. It has resulted in a failure of the health insurance companies to support preventive medicine including, for example, the support of periodic examinations where they are warranted; support for health education; and support for preventive programs in the area of mental health. If an effective health care system is to be developed--it must be able to bring to bear all of the effective tools that are available within current technology, including a full range of preventive techniques. If a health care system is to be cost-effective in this manner, then it must have income that is not earmarked solely for crisis care--it must, for example, have income that it can use in a discretionary way to provide for the prevention of physiological and psychological ill health. It follows that the function of health insurance must be encompassed within the health care system where the management of funds is rewarded when superior health status is achieved as a result of that management.

Recognizing these things, I would place a constraint on the health care system designer that the system must eventually encompass a payment method such that payment schedules and the determination of how funds will be used fall within the health care system. Call it a prepayment or capitation plan, if you wish.

The fourth, and last, constraint that I would like to introduce here deals with the use of health resources. Health resources--physicians, nurses, inpatient care facilities, emergency facilities--are in short supply throughout the nation and throughout the world. It is inappropriate to use them ineffectively. In Reston, and in the area surrounding Reston, there are already established health care resources, and there will be more that will be outside of the health care system that could be responsive directly to your specification. Our own Herndon Medical Center is one of these resources. It is not my purpose now to look after our own clinic, however, but to caution that all parallel outside health care resources should be taken into account in planning your health care system. The Reston health care system should be constrained from overlapping with satisfactorily established health care facilities which

serve the same geographic area. The Reston system should be conceived, I believe, as a complement to the services that are already established in the community. In this way, the duplication of services will be avoided, and resources will be conserved. On the other hand, whenever established services outside of the scope of control by your audit are found not to meet the stated community needs for health care, either from the standpoint of cost or from the standpoint of effectiveness, the Reston system should fill the need.

Other constraints will also have to be added to any system specification; these are signal ones which exemplify the manner in which constraints can operate. Overall I do recognize that the specification should stay out of the design business insofar as possible. The specification, you will remember, is to be developed by health care consumers to reflect their needs. Health care consumers are not as a rule qualified in health care system design and they should stay out of that business and leave it to professionals. Health care consumers should focus on gaining control of the health care system by means of a good specification so that the system will be responsive to their needs. If they do a good job with this, they will have the necessary control of the system design without getting into the design business itself.

In review, I have pointed out that the top level specification for the health care system should be developed by the consumers it will service. To do this, they should employ the services of professionals who will help them to express their specifications in an effective form. I identified three of the important elements in the specification: the method of measuring effectiveness; the method of measuring system cost; and important constraints to be placed on designers. I would like to talk about one more important element of a complete specification, and then move on to some selected design considerations.

In a complete specification of a health care system, there must be an unambiguous identification of the population to be served by the system. The concept of an audit, for example, is meaningless unless the consumers to be audited are identified. In the case of the Reston system, there are two important options to be considered in developing the rule by which members of the population to be served may be recognized. Thus, the population may include persons outside of Reston, or it may be restricted to Reston dwellers. The decision that is made in this regard will have an important effect on the rate of growth of the health system, and upon the array of health care services that it will be able to offer in the near term. For example, if the population to be served is restricted to Restonites, it will probably not be cost-effective to build a hospital as part of the system until the Reston population reaches about 50,000. At this population, if we assume that two-thirds of the people use the health system, there will be support for a 100-bed hospital--the

smallest hospital that is generally found to be viable. If a pre-pay method of some sort is adopted, of course, the population to be served will be the members of the pre-pay group--a well defined population. But it will be some time before a large enough population will reside in Reston to support a pre-pay approach to comprehensive health services.

Although it is too soon to talk about system designs with any implications of "frozen design," nevertheless it should be informative here to look ahead at some of the major design features which the health system may have.

In thinking about health care system design, it is important to keep continuously in mind that a health care system is more than buildings and physicians. When I speak here about design, I mean the design of all of the components necessary for a comprehensive health care system that will meet all of the expressed needs of the community for health care. I, therefore, include in the design process consideration of hardware, including buildings and equipment; and software, including personnel, management, data, procedures, and so on--in short, everything needed to deliver health care.

Within this conception of health care system design, I would like to call attention to some of the features which I think would necessarily be found in an effective system. I recognize in doing so that a careful design effort may prove me wrong.

First, the system should be built around a progressive care concept. It will be designed to provide not simply clinic and hospital care, but rather to make use of all of the types of care that are found to be useful from time-to-time. One objective will be to ensure that the type of care selected for each patient at each stage of care will be that one which matches his need and which is reasonable in cost, taking need into account. Thus, for example, we will want to avoid a health care system in which patients must pay for acute care beds when they do not really need them. Some of the levels of care that will have to be considered in the design will be these:

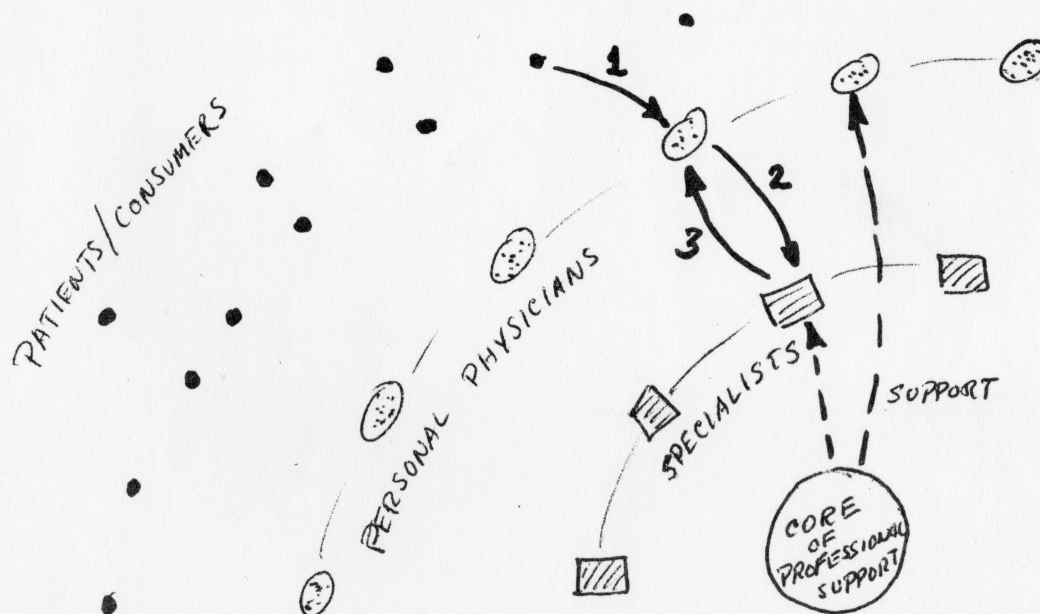
CHART 5

- Self-care
- Home-care
- Out-patient care
- Self-care in the hospital
- Acute-care
- Intensive care
- Extended convalescent care
- Custodial care

Terminal care
 Short-term and long-term psychiatric inpatient care
 Rehabilitative care

Earlier, I spoke briefly about the role of the personal physician. The personal physician is a member of a group of health professionals which includes all of those who provide direct care to patients. This group includes, for example, psychiatrists, obstetricians, orthopedic surgeons, dentists, ophthalmologists, and clinical psychologists. There are other health professionals who do not provide direct care or who only occasionally provide direct care; they support those who do provide direct care. This group includes radiologists, pathologists, anaesthesiologists, and psychometricians, for example. The burden of responsibility for the delivery of health care falls on those physicians who provide direct care. These physicians in turn may be divided into two groups: the personal physicians who have prime continuing responsibility for the health status of their patients, and the specialists who provide direct care in support of the personal physicians. Family physicians, general practitioners, gynecologists, and general internists all may practice as personal physicians. Ophthalmologists, otologists, gastroenterologists, and thoracic surgeons almost never practice as personal physicians. Overall, this conception may be summarized in terms of relationships among health professionals and the patients using the health system, as shown in this diagram.

CHART 6



I think that a good health care system design must recognize these relationships.

This list of the major direct care components of a health care system will give you a feeling for what we mean by a comprehensive system.

CHART 7

Preventive Services
Emergency Services
OB/Newborn Services
Outpatient Services
Inpatient Services
Rehabilitation Services
Extended Convalescent Services
Custodial Care Services
Dental Services
Institutional Services
 (occupational, school, penal, contract services)
A Program for the Improvement of Health System Utilization
A Patient Satisfaction Program
A Professional Rewards Program

Other key components of the health care system which are not direct care components include for example.

CHART 8

Radiology	Psychometrics
Laboratory	Family Services
Pharmacy	Anaesthesiology
RN Services	Inhalation Therapy
Aides	Physiotherapy
OR and RR	Occupational Therapy
Dietetics	Diagnostic Services
Prosthetics	

This listing of facilities will give you a feeling for the kinds of facilities required to implement a comprehensive health care system. It is not intended to be a complete list.

CHART 9

SOME OF THE FACILITIES IN A COMPREHENSIVE HEALTH CARE SYSTEM

- Hospital
- Physician Offices
- Emergency Treatment Facility
- Emergency Transportation
- Dental Facility**
- Short-term Psychiatric Inpatient Facility
- Extended Care Facility
- Outpatient Mental Health Clinic
- Health Education Facility (e.g., trailer)

You may want to call it to my attention that the Reston population may never support a health care system that includes all of these facilities and services. I would respond by noting that, nevertheless, from time-to-time consumers in the Reston population will require the use of these kinds of facilities when they are patients. It follows that a comprehensive health care system which includes physicians who accept responsibility for health status must have these kinds of facilities available to the physicians so that they may bring the full state of the art of medicine to bear in providing health care. Physicians can not be called upon to deliver high quality care if they are denied the tools they need. I do not insist that all of these facilities be "owned" by the health care system; I do require that provision must be made to make all necessary services available to support the physicians in the system by contracting or by other forms of agreement. Thus, from the outset, the health care system should encompass all of the functions necessary for delivery of the highest quality of care at reasonable cost. At the beginning, the physical plant may be limited to physician offices, but the design must make provision for all of the other functions to be implemented by means of supporting facilities that have been carefully pre-selected and that will be continuously monitored for quality of service.

I will close out my description of what the health care system may encompass by talking briefly about system software. I believe that the system should include a management subsystem designed from the outset to articulate with a management data system that will enable the direct-care physicians to control the quality of care provided by the system through periodic read-outs of its performance.

I suspect that when I am through, I will hear some rather strong opinions about these design ideas that I have expressed. Before I close my talk, however, I would like to cover one more major topic. I would like to address the question of how to obtain a comprehensive health care

system such as the ones I have been talking about, I will talk about the steps in a development program and about funding.

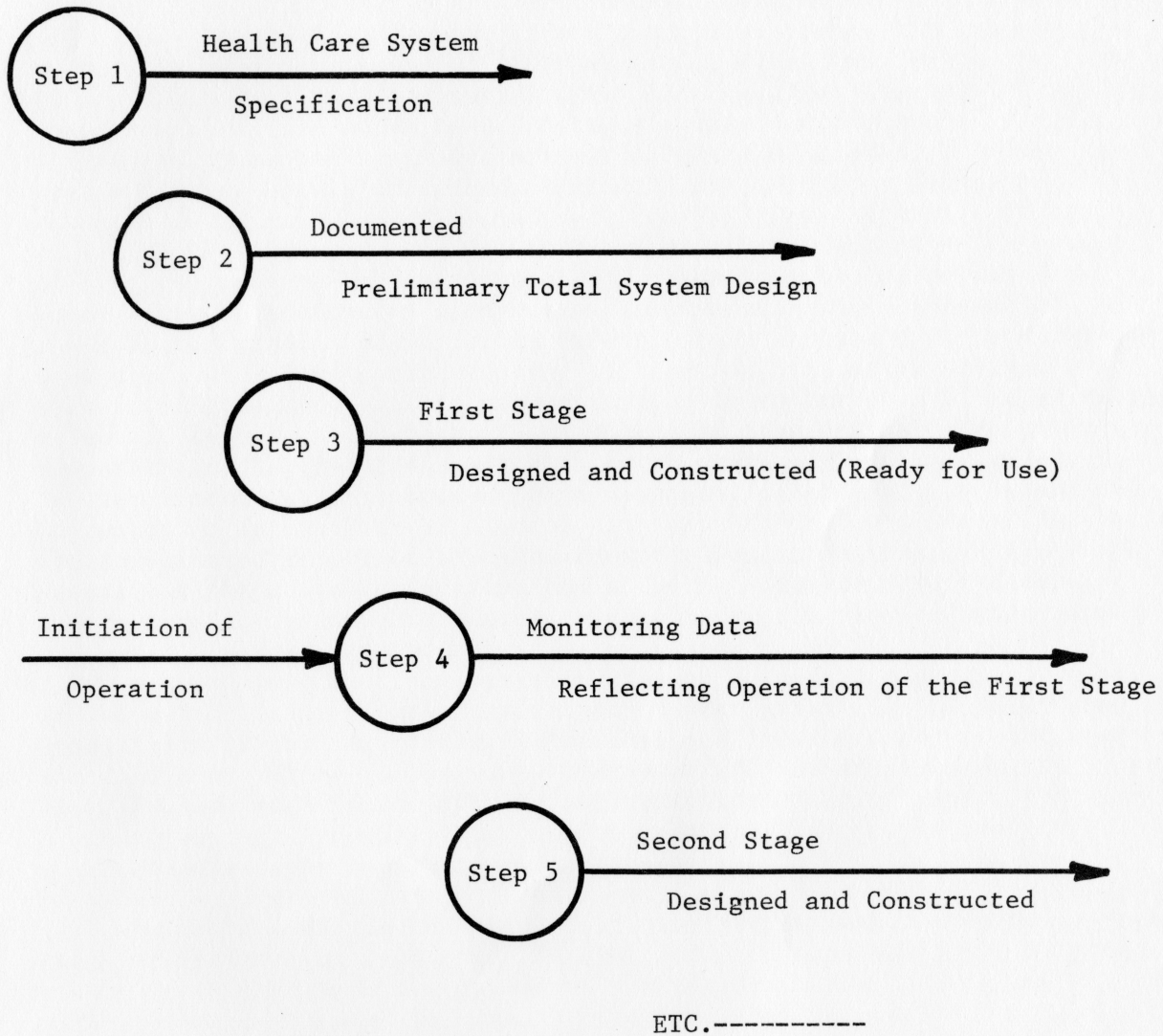
There is, of course, a lot that needs to be said about the program of development by which a comprehensive health system for Reston will eventually be acquired. I will restrict my remarks to a brief review of the way in which the system specification is related to the development process. In this way, I will have an opportunity briefly to characterize the development cycle for the health system as we see it from here, and I will be able to underscore the need for a special effort to be undertaken to develop a proper system specification--as the very next step which you should undertake.

I will start my discussion of the development cycle by noting that it must be focussed on the ultimate acquisition of a comprehensive health care system 5 to 10 years from now. What is needed is a staged development program that is keyed to the growth of Reston itself. The development cycle will have to be one that will put a first stage of the total system into operation in the near future. After that it will be necessary regularly to add other stages to that initial stage in an orderly planned manner to ensure that the developing health care system keeps pace with its responsibility to provide the highest quality of health care to the community it serves. These are not simply words in favor of "motherhood." The important implication of these observations is that the initial specification should be one that looks to the ultimate health care system that is desired; it should be one which calls for a preliminary design of the total ultimate system to be undertaken as the second step in system design--starting hopefully within the next few months--so that the detailed design of the first stage of the system will call for the acquisition of hardware and software that will be a planned step toward the ultimate system--so that the first step will be designed deliberately to articulate with the design of the second step--and so that the first stage to be acquired will fit into the total 10-year development process as an integral part of the total development cycle.

The major steps in the development cycle that I am trying to describe will be these:

CHART 10

MAJOR STEPS IN THE DEVELOPMENT CYCLE



It can be seen that the development of the specification that we have harped on here for so long is the lead step. It is followed by a step I have labeled preliminary design. It is in this step that the major outline of the total health care system should fall into place. The specification will have described the system from the outside; a main result of the

preliminary design effort will be a delineation of the major solution concepts to be employed to implement a system that will be responsive to the specification, an initial description of the inside of the system. The preliminary design effort should include studies of alternative ways to implement the system, comparing the alternatives in terms of their expected impact on total system effectiveness and cost. Comparisons would include for examples, alternative insurance or capitation methods; alternative ways to locate and utilize family physicians in the system; alternative plans for providing for inpatient care--by "contract" arrangements with outside facilities, as compared with "owned" facilities; alternative internal system management plans, and so on. What I am saying is that the major design attributes of the system should be selected by means of sound system analytic exercises, rather than by roundtable discussion. The major design attributes should be selected primarily on the basis of how they will contribute to the overall responsiveness of the system to the needs expressed by the consumers in the specification. Ideally, this effort should encompass the preliminary design of the total system, and for this reason, it can be anticipated that it will be a relatively expensive step to undertake. Its cost will be out of line with the cost of the next step, the detailed design and acquisition of only the first stage of the system. Given a good preliminary design effort, however, the design of all subsequent steps will be supported by a master plan which provides for the eventual articulation and integration of all of the stages of development--a master plan which identifies the key solution concepts to be used in the detailed design of each stage, and which includes a master development cycle plan identifying the major development steps to be taken.

The step following the preliminary design effort is the design and acquisition of the first stage. The design effort here should include the design of all of the software needed for the first stage, as well as the design of the system hardware. It is conceivable, in fact, that the design effort for the first stage of development here at Reston would require only software design--only the design of operating procedures, management procedures, staff requirements, preventive medical services methods, and the like. What I want to call your attention to now is that the specification will be a key to the successful accomplishment of this step. It will provide the guidepost for the designer, so that his efforts will be directed toward solving the problems that you want solved; it will provide a method by which the designer may "test" his design. It will provide a criterion by which you as customer may evaluate the recommendations of the designer, and finally, it will be a public criterion by which you may evaluate the acceptability of what is finally delivered to you as the first stage of the operating health care system.

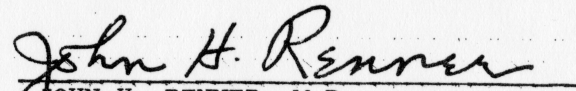
In the next step, the specification plays its most important role. The next step is the operation of the first stage of the system--this

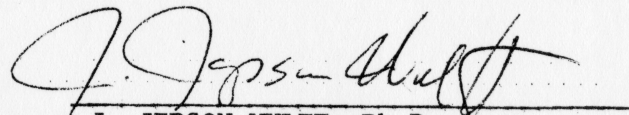
stage lasts until the second stage of the system is acquired and joined to the first stage. In the operation of the system, control by the consumers of health care can be assured only if they know how well the system is meeting the needs they want it to meet, and control of system performance from within the system by its managers can be assured only if managers have continuous read-outs of how the system is performing in terms of its requirements for performance. During this stage, it is the specification that is the basis for the procedure for continuous monitoring of the system. The monitoring by the managers of the system and by its users will be used continuously to correct the operation of the first stage of the system when it does not perform as required; the results of the monitoring will also be used as important input to the detailed design effort for the second stage of the system.

So much for the development program for now. I think that you can see that I have been underscoring my contention that the immediate need is for the development of a specification that will ensure the continued control of health care by the consumers. I have tried to show you at each stage of my discussion how the specification relates to that objective. I urge you to develop one and to use it as the vehicle by which you may then go on to select a "contractor" to perform the preliminary design step, and after that, as a vehicle by which you may solicit and select a contractor for the detailed design and development of the first stage of your system. I, thus, strongly feel that it is inappropriate to commit Reston to any agency now for the design, development, and operation of the health system. Gain control for yourselves first, and then use the tool of the specification to obtain responsive agents to develop and operate your system.

I have one remaining topic to cover, and then I will give you an opportunity for questions, if you like. I am sure that you are already aware of the various sources of money for the development of your health care system. In the beginning when you are developing your specification, you will probably have to find the small amount of money required for that purpose out of your own resources--or the resources close to home that you can influence. When you get to the preliminary design stage, I suspect that you may be able to find some support from agencies that are concerned with the process of health system development per se--as a process that needs to be improved and documented for the use of all communities in the nation. That is, I would hope that you would undertake a preliminary design effort that would be sophisticated enough to warrant support as an applied scientific endeavor which would be worthy of foundation or federal support. Insurance companies, too, might be interested in giving support at this stage. Hopefully, you will enter the preliminary design stage without a constraint in your specification that will preclude consideration of the development of a proprietary for-profit or a proprietary non-profit

health care system. I do not want to advocate a proprietary approach at this time, but I would advocate that you keep an open mind with respect to this approach. It can solve many of your funding problems, and it does provide a motivational structure which favors cost control. With the control over effectiveness that you will have by virtue of the certified public system audit, you will not need to fear cost-cutting at the expense of quality of care.


JOHN H. RENNER, M.D.


J. JEPSON WULFF, Ph.D.