A PROPOSAL OF THE WEED METHOD AS A HEALTH CARE FACILITY PLANNING TOOL

by

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ABSTRACT

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An evaluation of planning approaches currently used by health care facility planners reveals several advantageous elements necessary to plan responsive health care facilities. The Weed method, a patient care problem-solving tool currently used by health care personnel, incorporates these elements and appears to meet the requirements of an effective tool for health care facility planning.

This method, also called the P.O.M.R. (Problem-Oriented Medical Record), involves four major concepts or steps in developing plans for patient care: data collection, interpretation of data, intervention proposal, and evaluation. These widely inclusive concepts offer a consistent method for analyzing and solving simple or complex patient care needs and problems and can be adapted to the assessment and solution of health facility planning problems.

The Weed method, when used as a facility planning tool, offers a common problem solving framework between planners and health facility personnel. Planners and health professionals would speak about the same basic concepts using the same functional thought processes and techniques. Effective
communications produced by a common vocabulary and planning framework will aid the health facility planner in meeting his goal of developing responsive health care facilities.

In an attempt to demonstrate the feasibility and reliability of this proposed planning tool, this study utilizes the Weed method to analyze and suggest improvements for a medical school radiotherapy unit. The method consistency, adaptability, and validity become apparent by the demonstration of its multiple feedback loops and uniform analysis and problem-solving techniques.
Dedicated to Sharon
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We shall have to evolve
Problem-solvers galore -
Since each problem they solve
Creates ten problems more.*

*P. Hein
INTRODUCTION

THE RESPONSIVE HEALTH CARE FACILITY
INTRODUCTION

The U.S. health care system increasingly emphasizes the importance of adequate programming of health care delivery facilities. The programming of these complex structures presents an evergrowing challenge to the health facility planner. These planners must deal with an extensive array of facility personnel needs, and with a diversity of community needs. The facility personnel, people who have an astonishing variety of interests, and backgrounds, all contribute to the framework of the institution. The community members are the prospective patients, the institution's reason for being. To design a facility which will work for the administrator, chief of staff, house-keeping personnel, patients, and others is indeed a formidable task.

In order to decipher the needs of those people he interviews, the facility planner needs some form of communication tool. This tool must provide consistently reliable means for exposing, as far as is possible, all political, economical or social biases. In recognizing bias, however, the planner must remain sympathetic to the views and beliefs of the facility personnel and the community members. However, it is his responsibility to carefully weigh and consider the different biases and perceptions evinced and to expose all the facts and considerations from as many sources as possible. The type of
facility which develops in response to the needs described in a broad data base generally responds to the health needs of the community. In this sense, such an institution is a responsive health care facility.

Too often a health facility planner, for one reason or another, may rely solely upon information furnished by one particular individual or group to develop his plan. If he talks only to the administrators, the health facility planner might easily develop a plan which responds only to the administrator's views. If he interviews only the physicians, he may pursue a plan of action primarily designed to solve the problems of the facility as the physicians visualize them. Thus, the development of a broad data base consisting of facts and opinions from many different sources--patients, administrators, physicians, nurses, dieticians, house-cleaning personnel, etc.--helps the health facility planner in programming an institution which meets the needs of the many rather than of the few.

To illustrate the tendency for some health facility planners to collect a biased, narrow data base, some recent facility planning processes will be described in which this author has participated in the past twelve months. Four health facilities were evaluated. In the first case, a county hospital in a major city in southern Florida was evaluated by a four man architectural health facility planning team. The
firm for which they worked was employed by the Florida county to evaluate its county hospital as part of the health care delivery system which served a population of approximately 1,500,000. For five days, the team, which included this author, toured the hospital to gain first-hand knowledge concerning the services offered and the facilities available to provide these services. Although statistics concerning census breakdowns and data describing surrounding health facilities and health care suppliers were considered, the team made no effort to interview any community members or patients to discern their opinions or observations concerning the facility. In addition, no study was made of the specific health needs of the community the facility supposedly served. Based on this statistical data, the planning team then attempted to determine the adequacy of services offered by the facility. All official interviewing time was spent talking to the administrative staff of the facility. The only other contact with facility personnel occurred during brief accidental conversations with physicians and nurses on duty as the planning team toured the seventeen-hundred bed facility. Obviously, this planning team did not develop a strongly diversified data base from which the effectiveness of the facility in meeting the community's needs could be evaluated. The effort extended and information gathered during this exercise was not wasted, but to meet the needs of those who use and work in the facility, the health facility planner must consider more than the
physical condition of the building and the administrative interpretation of the facility's needs and problems.

In the other three evaluations, this author again found instances of facility planners failing to gather enough data to program responsive facilities. An osteopathic medical school in Fort Worth, Texas developed a mobile health care unit, designed to serve the health needs of the surrounding community members. This author interviewed the assistant administrator of the school who had programmed the mobile unit according to her own assessment of the needs of the community in which the medical school was located. This administrator further stated that the unit was also designed to meet the school's desire to become involved in the community. The assessment done by the assistant administrator, a physician, was not conducted according to any planning method. She simply stated that she felt that the most needed services in any growing community should include pre-school exams, obstetrical check-ups, and geriatric care. Therefore, the unit offered these three types of services. Community members, public health nurses, or other people directly involved with that community were not consulted during the planning of the mobile unit. Unfortunately, the free services offered by the mobile unit were not what the community members desired or needed; the program was slowly being discontinued when this author made his evaluation two years after the unit had been in service. Apparently only the biases of the assistant adminis-
The data base was extremely limited. The unit was not responsive to the health needs of those it was designed to serve and was not used by them.

In another case, a suburban facility near Houston, Texas, was planned by the hospital administrators in conjunction with several health facility planning consultants and leading community members, excluding any physicians who would be staffing the facility. This author interviewed the assistant administrator and the personnel director who both felt that the failure to include involved physicians in the planning of the facility was the major reason why these physicians stated that the facility did not meet needs or goals that they believed necessary to treat their patients. Consequently, the physicians refused to use the services offered by the facility which had a twenty percent occupancy rate after one year of service. Within two years, the entire operation was dismantled.

The final example, involved the failure of the health facility planners to consult key sources when evaluating a health care delivery facility in the Texas Medical Center. In this case, the author used the Weed method to evaluate a radiotherapy unit, which supposedly had already been thoroughly evaluated by another health facility planning team. This team consisted of students from a Houston school of architecture and included this author, although he was not assigned to evaluate the radiotherapy unit. Upon conducting his own investigation however, the author discovered that only the
administrator of the unit had been consulted by the planning team during the "in-depth" facility evaluation made by his fellow team members. None of the personnel in the clinic had been approached or had seen any people come to the unit to evaluate it in any manner. No first-hand observations of the unit seemed to have been made by the facility planners nor had any opinions, suggestions, or observations by the facility personnel or patrons been sought.

These examples demonstrate that because of poor planning, health care facilities may fail to satisfy the needs of the community they supposedly serve, or the needs of the personnel working in the facility. In two cases the facilities were actually forced to terminate their services.

A dependable means of communication seems a necessary part of a health facility planner's tools if the facility planned is to meet the needs of most of the people involved in it and not just the needs of a few. The planning tool must provide for a data base broad enough to encompass many different opinions, observations, and biases so as to minimize the risk of planning an unneeded, unused institution. To form the basis for a functional health care facility, the facility planner must investigate "all sides of the story" by gathering different types of data from sources representing the various interests to be served by the proposed facility. Any conclusions, recommendations, or plans the facility planner suggests
can then be justified according to the needs assessed. If the facility financiers and/or administration choose to build an institution responding only to their perception of needs, they may ignore the efforts of the health facility planner. In this event, the planner has at least fulfilled his obligation to try to plan a facility which responds to the needs of the community members and facility personnel it is supposed to serve.

A health facility planner must identify the health needs peculiar to the community each facility will serve if the facility is to be a responsive institution. For example, a community whose mean age is twenty-six and mean family size is four would have different needs than a community whose mean age is sixty-eight and mean family size is two. When planning a health care facility for the first community, the facility planner might find health problems related to growing families with infants, children, and young to middle-age adults. These community members would probably desire pediatric, obstetrics-gynecology, general medical, and emergency services in order to accommodate the usual health problems of their age groups.

In the second community, a health care facility would probably offer quite different services in order to respond to the needs of an older community populated by smaller families. These community members might desire a medical-surgical unit, chronic care and geriatric unit, emergency services but no
pediatric or obstetrical services. In both cases, the size of the facility and of each department or unit of the facility, its specific architectural design, and other planning factors would also be strongly influenced by the community itself. In many cases, the basic medical needs of communities may be similar but the health facility planner must distinguish which specialties are most important. The differences in planning for facilities then involves differences in the emphasis or weight placed on the various medical subspecialties necessary in each individual community.

In order to program a responsive health care facility the facility planner must develop some means by which he can assess the health needs of the community and the various complex needs of the facility personnel. Not only does the planner need a reliable assessment tool but also he must find some way of analyzing and integrating the data he gathers to formulate some workable plan to insure as carefully as possible that he hears what personnel and patients try to tell him. The facility planner also needs some means of clarifying his understanding and perception of others' observations and opinions.

Facility planners currently do not agree on any one method for planning health care institutions. There is no one best method for planning all health facilities, but some procedures are more consistent than others and include components which make them more responsive to the needs of the facility planners. The purpose of this study is (1) to compare various approaches
used by health facility planners today to program health care facilities and (2) to propose the use of one particular methodology as a tool which meets the majority of the needs of the health facility planner, whose chief function is to program an institution which responds to the community needs and to the needs of the facility personnel.
CHAPTER I

SPECIAL CONSIDERATIONS
CHAPTER I

There have been a multitude of planning tools devised by architects, health planners, physicians, and facility administrators in an effort to program useful, workable health care facilities. All of these planning approaches offer the facility planner guidelines which may be followed while developing a health facility program. They do not all presume to fulfill all the needs of the facility planner. In fact, upon careful review of many of these planning tools, there develops a distinction between those which provide the facility planner with a consistent approach to health facility programming and those which do not. The appropriateness of the planning tool in meeting the needs of the health facility planner seems to vary directly with the consistency inherent in the tool.

To deal with such a large bulk of planning tools and analyze their respective advantages and disadvantages, planning approaches will be considered in two separate groups defined according to the consistency or lack of consistency with which each method guides the facility planner in his attempt to solve planning problems and to program responsive health care facilities.

Many health care facility planners employ similar techniques in identifying problems and formulating solutions. In
executing these techniques, various key concepts such as form, function, time and economy may be introduced. Sometimes the concepts of goals, purpose, targets, needs, problem statement and evaluation are used. However, the same planner may change the order in which these concepts are applied or vary the definition he assigns to each concept according to each facility he plans. In this sense, his approach is not consistent, but varies with each facility to be planned.

In contrast to such planning tools, other planning methods provide a consistent step-by-step way to assess and analyze data. These methods continue this logical progression through problem definition, solution and evaluation. The concepts employed (data collection, problem statement, solution, evaluation) basically have the same definition and follow in the same sequence. Therefore, the planning method's basic inductive or deductive reasoning formula does not change according to the designer or planner who uses it.

Those planning tools which advocate concepts whose definitions are vaguely defined provide little if any guideline for the planner. In addition, communication among facility planners, community members, and facility personnel can only be hampered if each person has a different understanding of what each step in the planning procedure involves because the concepts and steps are so vaguely defined. Similarly, if there is no general consensus among planners, patients, and
personnel as to which planning step should be taken first, which second, and so on, there may easily result further garbled communications. The consistency incorporated in some planning approaches allows all those involved in planning a facility to speak about the same ideas or concepts at the same time--to have a common ground for communication and for planning. These tools utilize steps and concepts whose definitions are explicit yet are broad enough to allow flexibility in application to different types of facility plans.

The consistency discussed, as well as the open communications described, are not themselves the ends sought by the health facility planner but rather the means by which he attempts to achieve his goal of programming responsive health care facilities. Instead, this distinction involving the internal consistencies of various planning approaches has been made arbitrarily to help compare the adequacy of all the planning approaches reviewed in the study as tools to be used in programming facilities which respond to the needs of the community they are to serve.

This study evaluates twenty-eight different approaches to health facility planning devised over the past three decades. Judgments are made by the author concerning (1) effective communication, (2) guiding consistency, and (3) flexible adaptability in facility planning tools.
CHAPTER II

REVIEW OF CURRENTLY USED PLANNING APPROACHES
CHAPTER II

Books, periodicals, personal interviews, and audio-visual tapes consulted on health facility planning suggest several needs of the health facility planner in programming responsive health facilities and describe many procedures which attempt to meet these needs. These planning needs become apparent upon examining the different planning systems various health facility planners and personnel have proposed to serve as facility planning tools. In other words, the concepts and programs described in the approaches considered in this study are designed to meet the needs of the facility planners who designed the tools. The proposed planning tools appear to be the author's solutions to their own facility planning needs; each system is the facility planner's answer to the requirements and specifications he perceives as necessary for facility planners to program health care facilities. The approaches herein described may vary widely in the provisions they include for planning responsive health care facilities. Often the degree of responsiveness depends on the specific guidelines included in each tool for consistent communication.

The first and perhaps one of the most elaborate planning approaches to be discussed is the facility planning tool of the Caudill Rowlet Scott, Architectural, Engineering, and
Planning firm (CRS). The CRS planning system advocates the consideration of the concepts of form, function, economy, and time simultaneously with the program concepts of goals, facts, concepts, needs, and problem statement.\(^3\)
Each of these terms is assigned an operational meaning. The words form, function, goals, facts, etc., are all described as they relate to one another and to the overall planning process. However, there is no specific definition assigned to each concept. For example, "Function—deals with the functional implication of the client's aims, methods to be used to meet them, and numbers and types of people." Or "Form—is used by CRS to evoke questions regarding the physical and psychological environment to be provided..." Similarly, "Step one establishes goals—the client usually finds it easier to express his goals for the project at the beginning while he has the total project in mind and before his thinking becomes involved in details..." Or "Concepts—discovering concepts is probably one of the most elusive and difficult phases of programming...partly due to the nature of concepts [which demands] that architect and client think abstractly...'Programatic concepts' is a term used to describe methods of implementing the goals (step one)." Operational meanings are one method of defining terms but such definitions never state the precise meaning of the word or concept. Instead, the terms are described or their use is demonstrated in examples. The words to be defined are used in sentences and their definitions are to be determined according to the context in which they are used.
Webster defined **definition** as "a word or phrase expressing the essential nature of a person or thing." In each of the concept definitions offered by CRS, there appears to be no such word or phrase. The facility planner utilizing the CRS system is left to decipher the meanings and consequent use of the terms form, function, time, economy, goals, facts, concepts, needs, and problems by synthesizing the descriptions and operational examples in which the terms are used. Unless the facility planner is familiar with the CRS planning system and has had the opportunity to use the terminology in the contexts in which the concepts are described, these definitions seem to be vague and inconsistent. In the definition of the term "concepts" itself, CRS states that the client and planner's understanding of the term may differ. The very fact that the concepts used by CRS are so vague in definition (because the definitions are operational in nature) allows for varying individual interpretations. Differing interpretations or understandings may easily obstruct communication among facility planners themselves and among planners and clients. This system advocates the use of a health facility planning tool whose steps and concepts may be inconsistently defined from one person to the next.

Another inconsistent aspect of this system occurs when observing the order in which the concepts described above are to be considered. According to Figure 1 and the description of the system, the facility planner should progress from goals
to facts to concepts and then to needs and finally to problems. Yet, as Caudill states, "The CRS program is 'omnidirectional' and tries to view all data simultaneously in developing all encompassing problem statements." The step-by-step progression from goals to facts to concepts is hazy, if indeed there does exist any logical progression from one category to the next. The system as described emphasizes the interrelationships between all five program concepts but never explains why each step of the system must be considered before or after another. Figure 1 and the system explanation state that problem-seeking involves five steps of (1) Goals, (2) Facts, (3) Concepts, (4) Needs, (5) Problems. Then the CRS planning system manual states that the "sequence of the steps may vary. The first three steps may be concurrent....Step four is taken in evaluating the first three" to prevent an imbalance of realistic needs, and Step five "is taken after re-evaluating the previous steps." Again, unless the facility planner thoroughly understands the definitions and intent of the CRS firm, the prescribed order in which the five program concepts are to be considered is quite vague and inconsistent.

The fact that the system does allow for individual variance in the planning of the health facilities appears to be an advantage in providing for individuality and adaptability of the system. However, a great deal of confusion in communication can develop among facility planners and clients if there
is no consistent agreement on which way the system will be used. In other words, all five steps may be considered at once as long as the fourth and fifth steps are considered in order. If goals, facts, and concepts are planned simultaneously, communication may become quite confused if one planner looks for facts while the client tries to talk about goals and another facility planner thinks his co-planner and client are discussing concepts. One must then question when flexibility in the step-by-step order of a planning system is constructive or helpful. He must decide when flexibility ceases to be advantageous and becomes inconsistent, vague, and confusing.

Some inconsistencies may also become apparent when the CRS system is applied to different types of health care facilities. For example, the concept definitions and planning order tend to change depending on whether the planning problem is a medical school, hospital, or out-patient unit. The system is adaptable, but a facility planner who mastered the concept definitions in relation to a hospital may interpret them quite differently and use the steps in a different order when planning an out-patient clinic. His co-planner may also change his concept definitions and order when he makes the transition from hospital to clinic planning. However, because there are no specific definitions or order guidelines, both planners may still be "on two different wave lengths." In
this case, flexibility has produced a breakdown in communication and has ceased to improve the facility planner's ability to program responsive institutions. The inconsistencies of the CRS program offer certain advantages but also provide several areas for communication breakdown that may hamper the planner's efficiency in programming responsive health care facilities.

In conclusion, the CRS planning system may work adequately for the health facility planners at the Caudill Rowlett Scott firm but its concepts, definitions, and system order may prove quite inconsistent when used by other health facility planners.

In reviewing James J. Souder's approach to planning, one must compare the more detailed explanation of the system with its original premise. Souder states that the entire planning system he advocates revolves around three basic consecutive but interrelated steps—investigation, synthesis, and evaluation.12

![Diagram of the planning process](https://via.placeholder.com/150)

**Figure 2**
Explicitly, "investigation involves acquiring and digesting information on requirements for functions, prior successful solutions to problems, available materials and equipment... and many other considerations." 13 Second, synthesis, "the creative effort..., involves the invention or discovery of physical arrangements and organizational and operational patterns to satisfy the requirements of the facility." 14 Finally, evaluation is to be considered "the decision process involving choosing between physical arrangements or operational patterns that have been synthesized...deciding...that the relevant requirements have been satisfied." 15 These three interrelated steps are sequential according to Souder, because the facility planner needs facts to synthesize and synthesized facts to evaluate. When one attempts to synthesize the facts, he may discover a need to gather more data; hence, a feedback loop would be created. Similarly, negative or inconclusive evaluation leads to further investigation and synthesis.

To this point in Souder's system description, the tool theoretically employs broad concepts explicitly concerned with the collection of adequate data to form realistic alternatives that can be evaluated for their feasibility. However, when one inspects the entire planning system, he may quickly discover that in reality the main emphasis of this system does not follow this explicit formula or outline. Instead, Souder's planning tool advocates programming health care facilities on
the basis of their commerce patterns. In fact, Souder, et al.'s planning system centers on the analysis and planning of facilities according to their proposed commerce patterns only. To plan a hospital, the facility planners should analyze the commerce pattern of every department in that hospital such as pharmacy, central supply, x-ray, nursing units, etc. Furthermore, each department's commerce should be considered according to (1) purpose and (2) categories. The concept of term "commerce" is defined as including transportation of people and things, written and verbal communication, and control of the flow of traffic. The subdivisions or sub-systems of "purpose" and "category" are never explicitly defined; in fact, the only type of explanation seems to lie in the examples of each included in the analysis of various hospital units. All other discussion of the system besides the investigation of commerce patterns appears in the section describing the use of computers in synthesizing data gathered about the facility's internal commerce. Again, this section of the explanation makes no reference to the three step outline proposed at the beginning of the tool.

The explicit system formula of investigation-synthesis-evaluation is never related to this systematic approach of facility analysis and planning. Implicitly, the investigation or data gathering seems to center around commerce patterns. Evaluation in this planning tool is neither explicitly
or implicitly related to the analysis and synthesis of internal commerce patterns. Beyond Souder et al's introduction of the supposed three step system in the first few pages of the system explanation, there is absolutely no reference to the application of the commerce system approach to the explicitly described planning tool.

Thus, at first glance, according to the explicit diagram and explanations presented at the beginning of the system description, this planning tool appears to be consistent and adaptable. Upon further investigation, however, the most heavily emphasized concepts of this system are unclearly defined. Unless all those involved in planning a facility according to Souder's tool can sort out the sequence in which all the commerce aspects are to be considered, synthesized, and evaluated, there may be a breakdown in communication. Since Souder et al themselves do not explicitly define the interrelationship of the commerce systems and subsystems with the overall system diagram, those facility planners who try to use the tool have no way of knowing if they are even considering the same aspects or problems as one another. In this tool, the definitions and systematic order for consideration of different aspects of planning a health care facility are implicitly and explicitly inconsistent.

The analysis of Souder et al's planning system introduces another consideration concerning the adaptability of
many programming systems to health facility planning. Just as Souder's system advocates the analysis of commerce patterns as the basis for all facility planning, several other systems also emphasize concentration on one or another particular aspect of facilities to be used as the main programming consideration. The systems approach of these tools seems to operate on the proposition that a health facility planner needs only to formulate a set of interrelated needs and activities which may or may not be united by having a common goal of achieving some objective. In other words, a planning system is only required to integrate one set of needs and activities of a facility and apparently does not have to incorporate all needs and activities. Such planning systems, even though they are proposed as tools to program whole facilities, may not gather data, analyze, or evaluate more than one particular aspect of the facility. The degree to which these systems can be used to produce responsive health care facilities is questionable.

Souder, et al conducted a study which relates to this point concerning the validity of the use of such systems as planning tools for different facility planners. Thirty-two architects, consultants, and administrators were asked to rank several different planning concepts in importance according to their influence on health facility planning. These concepts included various aspects of commerce, staffing, economic, and spatial requirements, facility philosophy and
purpose, etc. The study revealed that there were "substantial differences in [planning] approaches evident from variation in responses...undoubtedly due to differences in individual approaches." 19

A facility planner who felt that commerce patterns were not the most important consideration in programming health care facilities would probably choose not to use Souder's planning system as his tool. On the one hand, Souder et al did not state that their tool would be the system of choice for all facility planners. On the other hand, the Souder planning tool, like several other systems which will be described, does propose that the tool can be used to plan any type of facility. The adequacy of this type of systems approach must be challenged if the goal of the facility planner is to program responsive health care facilities. Seemingly, more than one system of a facility must be considered to avoid a biased data base.

The consideration of only one system or factor such as commerce or economy when constructing a data base must also bias the type of facility which is programmed.

Another planning approach reviewed was that of Beigel et al. Beigel proposes the use of a questionnaire geared to facility personnel as the one main source of information to gather all data which supposedly indicates all problems, all design and construction solutions. 20 The validity of one
questionnaire as a substitute for all information gathering is questionable for three reasons. One difficulty is that even if several facility personnel were consulted, how could the questionnaire determine the reliability of their answers, formulate all problems, analyze needs, and set priorities? The interpretation of the concepts and definitions of the questionnaire varies with each person preparing the questionnaire and with each person answering those questions. Further variation and possible confusion in communication occurs according to the interpretations of those who analyze and evaluate the answers. Thus Beigel's system offers a potentially inconsistent tool to be used in planning health care facilities. A second consideration is that this questionnaire is also the only system, step, or concept advocated by this tool to plan an institution. The third point is that this questionnaire is supposedly given to facility personnel only. In relation to these aspects of Beigel's proposed planning tool, the system is biased according to the narrow data base gathered exclusively by the questionnaire. Also, the source of the data base would seem to be biased to the perceptions of the facility personnel concerning the needs and problems of the proposed facility.

The Area-wide Health Facility Planning Commission, sponsored by the U.S. Department of Health, Education, and Welfare, also uses a questionnaire approach for determining all needs and evaluating all problems.21 Again, the same disadvantages
as seen in Beigel's approach relating to the use of the questionnaire approach as the only method of gathering data apply to this system. The only difference and advantage that this system offers not seen in Beigel's approach is that the HEW sponsored questionnaires are given to several sources, not just to facility personnel. However, individual interpretation involved in constructing, answering, and evaluating the questionnaires decreases consistency. As has been demonstrated, unclear communication regarding community and facility personnel needs reduces the facility planner's ability to significantly respond to these needs in programming health care institutions.

Three other sources consulted also concentrated on only one concept as a programmatic approach to health facility planning. Architect William Briggs proposes that all programming or planning is simply a feasibility study. In other words, a random consideration of all feasible materials, costs, locations, and forms, etc., is all that is required to plan and design a facility. The definition of "feasible" is vague, and the "sub-concepts" or considerations are not programmed in any progression or logical order. Seemingly, then, any data not related to feasibility is not considered as part of the data base used to plan health care facilities. As in Souder's system, one must question the reliability of such a system in recognizing the health needs of the community and the needs of the facility personnel which may not be directly related to
feasibility. Similarly, Richard DuFour proposes that an analysis of fluctuations in hospital census is the main concept necessary in planning health care facilities. The definition of hospital census is fairly concrete but the analysis of the census follows no reproductive pattern. There is no provision for translating the census statistics into a logical sequence of planning steps. (Also, does the census of each department of already existing hospitals necessarily predict the census of any future facility built? This question is not even considered in this planning approach.) DuFour neither provides for a programmatic consideration of one department--surgery, pediatrics, pathology, etc.--before another nor describes how the analysis should be conducted. The data base of this system seems biased in that it appears to consider only those needs reflected in census fluctuations. The considerations of any non-census related data seems to be hampered by this seemingly biased planning tool. The apparent short-comings of this system may thus restrict the facility planners' ability to program the institution according to the needs of the majority.

In a volume of Architectural Record in 1960, a system emphasizing the concept of circulation analysis as a planning approach was proposed. This approach seems parallel to the CRS theory of "omnidirectional planning" in that all types of circulation--patients, food, linen, garbage--are considered
at once. In addition, the connections between circulation statistics and the facility plan are only vaguely suggested and follow no particular progression. This approach closely resembles the one proposed by Souder in that they both emphasize the importance of circulation or commerce as the primary planning consideration. Because this system, like those described previously, centers on only one aspect of the facility to be programmed, it offers the facility planner a limited data base which may in turn decrease the responsiveness of the facility planned.

Several health facility planning systems consist solely of an arbitrary designation of the order in which each department of the health facility should be considered. For example, Leslie Brown, et al., propose a system in which wards must be considered first, then out-patient services, then operating rooms, then lighting, heating and cooling systems, then fire protection and other special considerations. Obviously, this system does not apply to the planning of all health facilities, since not all facilities involve these specifically named services and systems. However, Brown never suggests that the planning tool suggested is universally applicable. Even though this tool prescribes an order in which the facility sub-systems are to be considered, it never specifies which aspects of each department are to be examined. Therefore, any facility planner who attempts to use this tool for
a facility which will incorporate the departments described may not consider the many different aspects of each department Brown discusses. Without guidelines to follow in programming each unit, various facility planners may gather only some of the facts and opinions necessary in designing and programming a responsive facility. The allowance for variation in data bases does provide for individuality on the part of the facility planner, but the absence of any guidelines for data collection also fails to steer facility programmers away from constructing a narrow, biased data base which can prevent an institution from responding to the needs of those who use and work in the facility.

In another planning approach, John Gainsborough states that the facility planner should consider wards first also, but then should deal with pediatrics and obstetrics, then the operating room, and end with out-patient areas. Fergrison, Delon, Davies, and Kirk all propose similar types of approaches, although they may disagree on the actual services to be analyzed. Once again, all these planning techniques fail to give facility programmers clear guidelines to follow in gathering unbiased data bases. In other words, these specialized planning tools do not seem to provide adequate means for facility planners to assess community members' and facility personnel needs. Although the facility's departments considered in each tool are consistent, the methods of investigation appear to be inconsistent.
There are many other examples of programming tools currently being used by facility planners. One such planning approach was developed in the Spring of 1974 by McClain and Rao is entitled a "Methodology for Analysis." Steps in this "methodology" are basically as follows: (1) identify salient variables of the health system, including cost, utilities, and conflicts; (2) develop alternative solutions to problems cited in the first step; (3) college judgmental data; (4) group judgmental data problems into priorities; (5) assign utility scores to each priority; (6) assign cost scores to each priority; (7) devise a compromise solution to each priority problem considering mathematically both utility and cost scores. The terms used to describe the steps in this approach such as "salient variable," "alternative solutions," "judgmental data," and "priorities and compromise solutions"--have finite, precise definitions. Such terms, because of their explicit meaning, help give direction to the facility planner. The steps in this planning approach serve as distinct guidelines for the facility programmer in gathering and analyzing data to solve various planning problems.

George T. Harrell et al, propose still another approach which they apply specifically to medical schools but which could be used for any health facility. This program first provides for determining the functions of every department or service in the facility to be designed. Next, the space and site requirements of each department are to be considered.
Third, cost demands and limitations should be analyzed; and fourth, tentative facility design plans should be constructed. According to Harrell, this same formula should be followed in planning any health care facility. Every step (function, space, cost and plan) is explicitly and clearly defined so that those involved in the programming process can share a common interpretation of the concepts involved. Similarly, each step applies to any health care facility no matter what type of services it is to provide for the community. The actual progression from one concept to the next provides guidelines by which any type of facility can be programmed. Harrell's planning format thus provides continuity in communication from one health planner to another and in adaptability from one facility to another.

One must note, however, that although this method provides for considerations of parts of the facility in the framework of the whole facility and its function, it provides limited areas of community and facility personnel needs to be considered. In fact, explicitly, this particular planning approach deals only with facility service considerations concerning the function, place, size and economic aspects of each department. There is no designated portion of the method which is proposed to survey basic health needs of the community which supposedly will be served by the facility.

Another planning method reviewed was that of Joseph P. Peters, representative and chairman of the American Hospital
Association panel on planning health care institutions. This particular planning approach consists of seven consecutive steps, all containing precise concepts definitions which (1) consider needs as seen by facility personnel, community members, and the health care facility planner himself, (2) analyze these needs or the planner's interpretation of the needs as described to him by others, (3) set general goals for the facility based on the needs seen, (4) formulate specific objectives or steps or actions that may be taken to achieve the goals or meet the needs, (5) consider alternative actions, (6) select the most appropriate actions and implement them, (7) and finally seek feedback as to the chosen action's appropriateness. The steps and definitions incorporated by this planning methodology remain consistent and adaptable to the programming of any type of facility. Thus, this planning tool does allow for individual interpretation of data in the first three steps and for the instigation of original courses of action in the next three steps.

There are several other health facility planners who, like Peters, suggest that in order for a planning method to serve as a helpful programming tool, it must allow for individuality and adaptability according to the facility being planned. As Georgopoulos states in relationship to hospitals, "the [hospital] is a highly specialized and internally differentiated system....which must be adaptive, dynamic, a living system....The planning system cannot be completely
mechanized, standardized or preplanned." Similarly, Isodore Rosenfield stresses the importance of an "open" methodology: "Every [planning] problem should be solved on the basis of its own peculiarities.... We must approach each [planning] problem with a full consciousness of history and past experiences but with flexibility and principles, so that the solution will work...."

The Peters approach, which uses concepts with consistent definitions and consistent ordering or progression, thus also appears to provide for the individuality of health care facility planners who use the method and for the needs of the specific facility being planned. In addition, it suggests several feedback loops which can only improve communication patterns among the planners, facility personnel, and community members. When these communication lines are improved, the means of validating needs of the community to be served seem to be provided in the methodology (as long as the health care facility planner actually listens to the feedback he receives, of course). Another useful aspect of this planning approach becomes evident when considering the American Hospital Association's stand that "planning should be a permanent integral part of the organization and should provide for on-going change in long and short range planning." This quote seems to suggest that facility planners may well need a programming tool which includes provisions for possible future adjustments in the overall facility plan. Indeed, the steps involved in each method
described in this study can be used to analyze and evaluate community and facility personnel needs and make adjustments in the facility program even after the institution has been built. Such planning methods therefore provide tools which health facility planners can use to constantly maintain an optimum level of responsiveness on the part of the institution programmed. A sense of continuity in facility planning can be produced if such planning methods are exploited to their fullest potential.

In 1964, Addison C. Bennett proposed a methodology for the study and development of health care facilities. There are four concepts in his planning approach—the first, recognition; next, examination; third, evaluation; and last, installation.37
The steps in this planning procedure are clearly defined and therefore leave little room for major differences in interpretation of their meaning from one health facility planner to another. For example, recognition is identification, selection, and definition of existing problem situations. "Examination" constitutes two processes--assembling of related data including possible alternative solutions to problems already recognized, and analyzing of facts. "Evaluation" considers all possible problem solutions and selects the most desirable solution; "installation" involves the "putting into effect" or "realizing" of the proposed solutions. All these concepts are broad enough in meaning to allow each planner to use his own judgment in how to collect data, analyze and synthesize it. They also provide a framework through which he can direct his own creativity in devising problem solutions. The concept definitions are constant but not confining; the step-by-step procedure is clearly reproducible. One shortcoming of this approach, however, does seem to be that it does not provide for specific feedback communication loops once the newly proposed problem solutions are installed. There is no one explicit step to insure that the installed facility (or part of the facility) is truly responsive to the needs discovered in the recognition step.

One other aspect of this approach worthy of note is the fact that the methodology provides a broad enough problem solving base so that each concept can be applied to the entire
health care facility or to any part of that facility. It lends itself to both general and specific planning problems. For instance, recognition could be identifying the need for a hospital or; later, defining the requirements of the outpatient unit; or, still later in the planning process; identifying the considerations for the most appropriate floor and wall coverings in the outpatient unit. The approach taken by Joseph Peters shares this advantage, as does George T. Harrell's approach to a large extent. An obvious advantage of a good methodology seems to be that it can be used by the health care facility planner to approach general and specific problems in planning responsive health care facilities. The concepts retain consistent definitions and consistent consecutive ordering no matter what section of the facility is considered, no matter what kind of facility is considered, and no matter which health facility planner uses the methodology.

Another planning procedure reviewed was that of E. Todd Wheeler. In this hospital planning approach, Wheeler recommends first a survey of the community needs. Next he prescribes the "functional" program which consists of the design determinants such as what spaces are needed, what services the facility will provide and need, how many patients will be accommodated. Third, comes the "architectural program" consisting of area analysis, consideration of existing buildings, time schedules, gross floor plans and others. Fourth, follows the architects' drawings and specifications as recommendations
for the planned facility. Then one details construction needs and problems according to the architectural specification. Last, the budget is considered; costs and needs are compared and planning compromises are developed. All these steps—survey, functional and architectural programs, drawings, construction and budget stages—have explicit, unchanging definitions and occur in the same basic order in planning any type of health facility. The categories, steps, or concepts are broad or general enough in meaning to be applicable to any health care facility planner's needs.

One deficit in this method concerns Wheeler's failure to explicitly require the assessment of facility personnel's needs. In the first step of the approach only community health needs are named as planning considerations. Therefore, this particular planning tool may not provide the health facility planner with enough data to meet the needs of all those involved in the facility.

Wheeler does make two important points when elaborating on his planning approach. One point is that a planning team, composed of representatives of the facility as well as architects, engineers, health planners and/or consultants seems to provide for a broader and therefore more effective perspective on the facility planned. A team approach, as opposed to a single health facility planner's approach, seems to offer more assurance that data and feedback gathered will be more reliable; several people will be able to check themselves to see
if they are seeing the same needs the community is trying to describe to them. Several minds working on a problem often can offer more possible solutions than can one facility planner. (One possible drawback to this team approach could be that the team members themselves may experience communication difficulties whereas one person could not; however, the benefits of the team approach seem to outweigh the disadvantages for Mr. Wheeler.)

Wheeler's other point was that "all planning methods should be thought of as tools by which a planning team guides the project from the initial need through a multiplicity of ideas into a realized building ready for patients....Experience shows that it is wise to follow a logical course, but it also shows that there are many good methods, not all the same...." Hence, this architect reiterates the idea that methodologies are simply tools for health facility planners, and no one tool need serve all facility planners.

One other facility planning methodology by J.B. Mathews, devised to plan clinical facilities for medical education, consists of seven major steps. They are as follows: (1) setting goals and objectives (2) making assumptions and establishing premises; (3) developing alternative means for achieving goals and objectives; (4) making "forecasts" and projecting results; (5) deciding among alternative means; (6) implementation of plans; (7) evaluation and feedback. These steps can apply to all health care facilities and could be used by any health
care facility planner. Their definitions are consistent as is the order in which they occur. Furthermore, Mathews' plan includes provisions for feedback from each step to the previous step to gather further information. One important disadvantage to this methodology appears to be that there is no clearly defined area or step for gathering of data from facility personnel and/or community members. Explicitly, in this method the health facility planner begins by setting goals and objectives, not by gathering raw data. Implicitly, then, he may be responsible for assessing community and facility needs without having to consult the actual community or facility personnel.

An adaptation or variation of a currently used medical method of patient problem-solving, the Weed method, could also be used as a health facility planning tool. This particular method attempts to provide an on-going record of the physical and emotional problems of the patient, the treatment of these problems, and an evaluation of that treatment. The term "Problem-Oriented Medical Record" (P.O.M.R.) is synonymous with the "Weed method." The basic purposes of this method of health care delivery are the following: (1) to give a dynamic picture of ever-changing patient needs and problems; (2) to provide for evaluation of the patient's changing condition and evaluation of the treatment of this condition; (3) to formulate a data framework which remains consistent for every physician and nurse, for every patient, and for every type of
health problem the patient experiences.

The basic concepts of the Weed method will be explored first and then the medical tool will be translated into a possible facility planning method. According to the guidelines of the P.O.M.R., the first consideration is that of setting an overall goal or defining the basic problem to be analyzed and treated. This step precludes all others and gives the medical personnel using the tool a direction in which to gear their thoughts and actions. The actual problem-solving process begins with collection of all data which can possibly relate to the problem or goal at hand. This data is subdivided into "subjective" and "objective" data in order to separate opinions and judgments from facts or "hard evidence." Subjective data, therefore, is what the patient tells the physician or nurse or what the patient's family or friends might tell the medical personnel about the patient. Objective data consists of concrete observations--explicit sights, sounds, odors, factual laboratory statistics, or medical history related to the problem. Next follows the step of "interpretation" in which implications of the data gathered are analyzed and interpreted. In this step, specific aspects of the major problem are cited and "sub-problems" are formulated. The data is assessed, analyzed, and interpreted. Imperative to this step is the physician's continuous verification that facts gathered and words and thoughts recorded are indeed the observations and opinions the patient actually related to the
medical personnel. A feedback loop is thereby already in effect as the physician validates the data he has collected. The next concept is "intervention," the actual plan of action or treatment indicated according to the data assessed and validated.

**LEGEND:**

1. Is there adequate data for valid assessment and well defined problem statement?
2. Did the planner correctly record or interpret the data he gathered?
3. Did he understand what the facility personnel and community members tried to tell him?
4. Does the data gathered contain suggestions for possible intervention?
5. Is the sub-problem or need defined clearly enough to suggest specific interventions?
6. Is the intervention feasible or desirable?

*Figure 4*
Once this step is completed and the treatment has been instigated, the final step of "evaluation" begins. Once again the physician or nurse searches for feedback to determine whether or not the intervention was adequate. In evaluating the patient's condition, the medical personnel try to assess to what degree the proposed treatment was successful. If the intervention eliminates the problem(s), then the solution(s) is (are) dated and the problem(s) recorded as solved. If intervention is less than completely successful or fails, data testifying to this lack of success is gathered. The new condition of the patient is assessed; data, both subjective and objective, is gathered, then interpreted, and a new plan of action is devised, executed, and evaluated.

The Weed method lends itself to the process of health facility planning as if the facility problems and goals were patient problems and goals. Just as the patient's problems can be general or specific, so can the facility's problems be general or specific. For example, the major problem for a physician may be a patient's undiagnosed severe headaches, whereas the goal for a health planner might be that the nursing medication areas on all floors of a hospital are too small. Similarly, after many tests the doctor may specifically diagnose the same patient's problem as a brain tumor, while the health facility planner, after justifying the need for studying the congestiveness of the medication area, might have as his next need or problem determining the exact size necessary
to handle the medications for a full patient unit. As the status of the patient and facility changes, the method is reapplied to the new situation and needs and problems.

The subjective and objective data for the health facility planner would follow the same guidelines or definitions as in the medical application of the Weed method. Subjective data would be opinion, judgments, suggestions, etc., of those facility personnel and/or community members consulted concerning each need or problem. Objective data would be factual statistics or nonjudgmental observations made by the health facility planner.

Interpretation for health facility planner and physician alike is the same assessment and analysis of data gathered. During this evaluation of data, various sub-problems or conclusions may be reached which are justified by the subjective and objective statements and observation. The list of interventions, plans, or actions would reply to each interpretation or sub-problem recognized. There may be several possible interventions indicated by each interpretation. The physician or health facility planner may also choose to set priorities as to which problems should be considered first. Then, of course, he would list the interventions in the order of his priorities and devise interventions for each in that same order. Most interventions will be designed to pin-point causes, aggravations, and reliefs for each specific sub-problem or interpretation. These suggested actions are all results of the
physician's and the health facility planner's own creativity, knowledge, and style of delivering health care or planning health care institutions, respectively. Thus, in the intervention section, the Weed method allows anyone using the method to express his individual problem-solving techniques and philosophies, much as the interpretation section leaves the user free to set his own priorities and use his own judgment. Another explicit aspect of the step called "intervention" is that the physician and health facility planner should both be trying to determine all possible alternatives to the problems at hand. The interventions or planning actions are prescribed in as specific a manner as possible so that the proposed problem solutions are clearly reproducible.

At this point in the planning tool, the health facility planners would probably wish to present each suggested alternative to the involved facility personnel and community members for their evaluation. The intervention step therefore leads naturally to the final procedure, "evaluation". The physician and health facility planner now evaluate the effectiveness of each of their proposed interventions. They determine whether or not the recognized problems are solved or whether some new data has been uncovered indicating that the interpretations must be reconsidered. The projected results of each intervention could then be considered part of their evaluation. In addition, any suggestions for new interpretations and interventions based on any additional collected
data as a result of the interventions or their evaluation would also be included in the evaluation section.

A brief examination of this translation of the Weed method into a facility planning tool reveals that, the terms "subjective" and "objective" data; "interpretation"; "intervention"; and "evaluation" remain consistent in definition and application for both medical and facility problems and needs. These concepts also retain consistent meanings when used to explore general or specific problems. Moreover, such consistency renders the method, its interpretations and interventions readily reproducible. Each step of the method inherently requires the physician or facility planner to use the many feedback loops provided and thereby continues to validate communication. Such validation then helps the physician to give individualized patient care and aids the facility planner in planning responsive health care facilities.
CHAPTER III

THE DEVELOPMENT OF
A PLANNING TOOL FOR HEALTH CARE FACILITY PLANNERS
CHAPTER III

In the previous text, many planning procedures have been discussed. Those elements which appear to be most advantageous to health facility planning have in common a consistency in guideline and communication. Some concentrate on a plan which works first with economic, spatial, functional or time limitations of the proposed facility. Those approaches which provide for both programming limitations and facility responsiveness seem to have two major facility planning goals. First, by including conceptual and construction-related restrictions, the facility planner attempts to program a facility which will observe structural feasibility and reinforce institutional purpose and philosophy. Second, by including broad data bases and feedback loops in such programs the facility planners indicate that institutions will be best used when they respond to the needs of those who work in them and who are served by them.

A matrix of the major planning approaches surveyed and the elements emphasized in these approaches may help clarify those needs which many health facility programmers apparently feel should be met by a facility planning tool.

Some conclusions may be drawn from an overview of the systems studied. Procedures outlined in several systems apply to the programming of one particular facility, but not to different types of institutions. The guidelines in many of the systems were inconsistent. The concepts and terms used
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<td>allowance for planning more than one particular type of health care facility</td>
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(1) only one guideline 
(2) only one guideline 
(3) commerce only 
(4) feasibility only 
(5) hospital census only 
(7) possibly implied
in the proposed planning systems often were not consistent in
definition or in use. The fact that each facility planner
could interpret each concept or step in the program differ-
ently suggests a possible problem in communication.

The elements of these planning systems, in combination
with the elements included in the planning methods shown in
the matrix, suggest those components which are generally con-
sidered desirable factors in facility planning techniques.
These factors, when incorporated in programming approaches,
seem to give them reliability, validity and adaptability.
One component, perhaps the most important, is the provision
for adequate, accurate communication and continued feedback.
The responsiveness of a facility varies directly with the
facility planner's ability to accurately recognize facility
needs. As architect Isodore Rosenfield states,

Planning must be comprehensive... in
planning [we] must provide for dynamic
concepts of the relationships that will
pull the systems of the facilities to-
gether into an integrated organism....
The architect is more than a technician.
He has a key role in the planning process
of understanding health apparatus in re-
lation to the rest of society in broad
terms... he must determine need.42

The various planning approaches analyzed in this study
organize the facility needs described by Rosenfield into
several different categories. Some concentrate on those
requirements relating in some manner to form, function, time,
and economy. When the systems concentrate on those four as-
psects of facility planning only, however, their resulting
data bases may exclude important information not specifically included in those particular concepts. Planning biases would probably be minimized by using those methods which offer such concepts only as guidelines for gathering data and not as exclusive considerations in programming. Other methods do not prescribe any particular concepts to be considered when collecting data but do specify the sources which should be consulted, such as community members and facility personnel or simply, "clients". Many of the proposed planning tools imply that data should be collected, but never explicitly suggest consulting factual or objective sources such as census bureau or county health department statistics.

One reason for collecting complete data before attempting to devise a plan for health care facilities is reflected in Rosenfield's explanation,

Planning of individual departments is often discussed in hospital literature and often for example, attention is given to the nursing unit or the ward, operating room, etc. and its equipment requirements without any demonstration of understanding the interrelationships of the parts and relationships to the entire hospital.\(^\text{43}\)

To prevent the formulation of health facility programs which do not seem to include considerations of the overall framework and interrelationships of a facility, those involved in the proposed institution must be consulted in some way. Similarly, statistics and factual observations concerning the facility must be included in the facility planner's data base. Once

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the programmer becomes familiar with the requirements and relationships of the proposed facility, he can begin to determine institutional needs and planning problems.

The effectiveness of the provisions for adequate data collection included in a facility planning tool appears to depend heavily on the communication patterns set up within the plan. The initial need for obtaining some type of data on which to base the facility plan seems to have been recognized in most of the planning approaches studied. However, those methods which incorporate communication with facility personnel and community members as well as objective data sources seem to provide for facility plans whose initial data bases are relatively unbiased in their attempt to respond to the needs of those involved in the institution. In most planning tools these needs would be considered within the framework of any externally imposed consideration or limitations.

The ability of the planning tool to program an institution which responds to the needs and limitations discovered in the initial broad data base depends largely on provisions in the tool for determining the validity and feasibility of the data analysis and proposed problem solutions. In other words, unless each step of the planning procedure reflects the problems and restrictions set in the data base, the facility plan which develops still may not reply to the needs recognized initially. Furthermore, while interpreting data collected and formulating alternative solutions to problems recognized, the health
facility planner may recognize other needs and considerations which must be incorporated into his program. The planning of health care facilities seems to be an evolutionary process which cannot be accomplished without continuous feedback from several different information sources. As William Caudill states, "in architecture, the forms must be and do something responding constantly to new demands." 44

The health facility planner therefore becomes involved in a continuous feedback process when trying to create a facility which will respond to implicitly and explicitly expressed health needs and facility considerations. He must constantly retrace planning steps to ensure that the needs and problems he hears or observes do indeed exist or are the same needs and problems the community and facility members are trying to describe to him. Then he must repeat this same type of feedback when problem alternatives and solutions are suggested: will the proposed answers reach the root of the problems or simply treat the symptoms? Are the suggested solutions feasible according to existing physical or socio-economic limitations? Are other alternatives more desirable?

As shall be shown, several health professionals consulted also emphasized this need for the health facility planner to communicate effectively with community members and facility personnel when designing a health care facility. When asked during an interview about his impressions of health facility planners, Dr. J. Willis Hurst reinforced this same idea, that
those planners who really listened and heard the physician's description of needs and considerations seemed to be the most effective health facility programmers. Dr. Hurst further noted, that some facility planners anticipated needs which did not even exist simply because these facility planners had observed such needs in past planning experiences. The fact that these health facility architects seemed to rely exclusively on such tools as floor plan analysis and patterns built from past experience seemed to obliterate effective communications. As Edna Nicholson stated in 1956, "A good building is the result of the combined knowledge of the people who are familiar with its purposes and activities required to achieve those purposes and the technical skill of a good architect who can understand fully the objectives and methods involved, and can design a structure that will make them possible." Both these health care professionals, thus, seem to feel that in order for the health facility planner to discern the specific needs of the proposed facility, he must listen to various facility personnel's own observations.

Donald C. Corner agrees with Dr. Hurst on this point, "Few architects specialize in the narrow field of hospital design. When they do, they evidence a tendency to develop a particular type and to adapt it to almost every hospital they work on." It would seem that many architect-health facility planners do not hear the needs and problems the facility personnel feel are important in the planning of the proposed
health care facility. This possibility simply indicates a past weakness in communication between the community and the facility planner. Seemingly, then, a planning methodology which includes feedback loops at each stage of its evolvement could easily eliminate such communication breakdowns, providing the facility planners using these methodologies listen to the feedback they obtain.

Throughout the literature consulted on health facility planning and communication there runs a theme of planning as a "process of human involvement and exchange." This involvement and exchange suggests a need for the health facility planner to consult experts on all areas of the proposed facility in order to create a responsive institution. Helen Neal writes, about the attempts of medical personnel to improve communication on a world-wide basis through exchange of information at national medical conferences. These conferences have as their aims the synthesis of knowledge, the improvement of communication among scientists with respect to their knowledge and needs both inside and outside their own areas, and improvement of scientists' understanding of one another. The health facility planner could easily take similar aims as his goals when gathering and synthesizing data for proposed health care facilities, particularly when consulting health specialists involved in these facilities. Health professionals; Corner, Nicholson, Brown, and Mathews all suggested
consulting health specialists in the use of each section of the facility when planning the respective sections. For example, a physician may be the first to call for action in expansion and remodeling of his department. He would describe the needs of his specialty to the health facility planners. Next, other people with special knowledge might be called in on an advisory basis to bring in possible technical contributions. Thus, an obstetrician could be consulted for the obstetrical and gynecological unit, or a pediatrician for a pediatric unit, or a surgeon for the operating room suite. Then the health facility planner might ask nurses from each unit for their suggestions.

However, health facility administrators very often are the primary sources consulted by health facility planners, even though they usually do not do the actual day-to-day health care tasks in the facility. Of course, hospital administrators are in key positions to give health facility planners the essential overview of facility needs, requirements, and limitations. These facility executives can direct the facility planner to the statistics of past census data, morbidity data, etc., imperative in determining community need. Many administrators are also quite knowledgeable about specific needs and considerations for each of the major departments in the facility; but no one administrator can possibly be aware of all the problems and requirements of every section of an institution to be reorganized or of a proposed facility.
Hence, there seems to be a need for facility planners to confer with several health care delivery sources when planning institutions whose goals are to respond to the needs of the community and personnel they serve and to any externally imposed limitations. To prevent the development of a biased facility program, "Planning should be people-oriented with emphasis on action rather than on production of plans and reports by NON-INVOLVED staff."\textsuperscript{54}

The very complexity of the data to be considered and evaluated when planning health care facilities seems to have been a major reason why programmers have tried to develop guidelines and tools to be used when devising comprehensive health facility plans.

It is precisely because of the complex factors, internal and external, to be considered that a conceptual framework is needed. Otherwise you get what we have: preconceptions, copying of architectural forms resulting from fitting separate departments into a volume....\textsuperscript{55}

Exchange of information and ideas among facility programmers and other planning team members is critical. Consistency in definitions of concepts and terms, so that all those using a specific planning tool, can understand what one another's goals and objectives are throughout each step of the plan is essential. Consistently defined guidelines allow any health expert or community member joining the facility programmer on the planning team to understand the significance of each step of the method. The meaning of each step in the planning tool
should not alter according to the facility being planned or the programmer using the tool although the emphasis on various aspects considered within each step may vary depending on the planner or facility being considered. In consistently defined programming methodologies, there should be little confusion concerning the intent and content of each planning step.

The order in which the guidelines of each planning tool are considered is also important. Without some specific order or progression in which various concepts and factors are to be considered, the facility planner may unknowingly ignore important data because he has no consistent check-list to remind him of such considerations. Those planning methods which offer some logical progression to be followed in developing a health facility program help eliminate the hazard of overlooking certain steps, concepts or factors necessary to the facility being planned.

Consistency is not a restrictive influence. Rather, it is a factor which allows many people having innumerable different backgrounds and beliefs to communicate on a common basis through a mutually understood planning tool. In fact, communication consistency is a major factor which, when incorporated into a planning tool, gives it adaptability and flexibility. Upon close inspection, one will find that those methods which used consistently defined concepts or terms are the same tools whose steps are described by broad, inclusive terms.
For instance, words such as data collection and analysis, interpretation, judgmental or subjective data, intervention, alternative solutions, evaluation, etc., are all finitely defined terms as they are used in the planning tools but are also all widely inclusive terms. Such procedural words and steps provide the planning methods which incorporate them with flexibility.

Methods which employ well defined but widely inclusive terms can be adapted to the individual philosophies or beliefs of many different health facility planners. The particular interests of one programmer might emphasize functional considerations of a facility while another planner might believe that community health needs should be weighed more heavily when developing a health care facility plan. The guidance offered by a consistently defined, generic methodology would be just as effective for the first planner as for the second. The specific steps in such a method would still give direction and form to each programmer's facility plan. At the same time, the facility plan developed by each programmer using the described planning method would reflect the individual beliefs of each planner. The term "data collection" guides the programmer to seek out information he believes to be salient to his facility plan. Many methods give the facility planner further guidance in this area by advocating the consideration of both judgmental and objective data or of information relating to form, function, time, etc. However, the choice of
specific sources to be consulted is left up to the individual planner's discretion. Similarly, terms such as "data analysis" tell the programmer to synthesize and analyze the information he has gathered, but leaves the facility planner the choice as to which method or manner of synthesis he wishes to use. Any planning methods which advocate the step of "formulating solutions" or "alternatives" accomplish a similar goal because they guide the facility programmer to seek problem solutions but allow him complete freedom in devising possible answers to the planning problems. Such a step gives vent to individual creativity, originality, and facility planning skill.

Methodologies consisting of explicitly defined steps in a logical progression almost always can be adapted to many different kinds of health care facilities. The last six methods discussed (the planning approaches by Harrell, Peters, Bennett, Wheeler, Mathews, and Weed) all could be used to plan hospitals, group practice clinics, radiology laboratories, or any other type of health care facility. The terminology used in these methods is general enough to apply to any type of health care delivery institution. The need for this type of adaptability in a planning tool is emphasized by Douglas R. Brown in his study of hospital planning processes:
Several planners cited examples in which over explicit guidelines sometimes had to be overruled...DETAILED policies frustrate the wishes of the planning council or team...planning must bend to local circumstances.... These planners preferred a posture of informality and flexibility rather than planning regularity.

The type of regularity Brown describes is the restrictive type seen in many planning systems described earlier in this text. For example, those systems which prescribe first, consideration of the hospital ward design, then operating room design, then fire protection considerations, etc., are very limited in their applicability to health care facility planning. The system plans a hospital, not any other health care delivery institution, and plans only a hospital having wards, operating rooms, and other specific areas. In contrast, the use of broader concepts which remain consistent in definition seems to provide for the adaptability of a planning methodology to the various needs of the health facility planner according to his own beliefs and to the individual needs of each facility he programs.

Another aspect of this type of adaptability can be seen upon further examination of some of the planning approaches studied. For example, a facility planner using Bennett's method to develop a hospital plan would be using the step "recognition of data" in the same sense as another programmer would use the step when developing a pediatric clinic. The kinds of data collected and sources consulted would obviously
differ according to the specific planning problem, but the meaning and guidance of each step in Bennett's planning tool would remain consistent.

Flexibility in certain planning tools largely coincides with the provisions which allow certain methods to be used to program several different kinds of health care facilities. Such tools provide the facility planner with guidelines to program an entire health care institution or to plan a specific part of a facility. Those terms and formats which can adapt from one type of health care facility to another usually can adapt from the general program for the entire facility to the specific plan for one part of the institution. For example, Peters' proposed planning methodology includes steps providing for (1) assessment of needs as described by the facility personnel, community members, and the health facility planner himself, (2) analysis of these needs, (3) setting of goals and so on. All these steps could be used to program an entire hospital or the operating room suite or a patient room. Broadly inclusive terminology would thus allow the planner to adapt the programming tool to settings which vary in size and complexity.

Many of the elements evident in the various programming approaches surveyed and depicted in the matrix devised earlier can be grouped according to their provisions for communication and adaptability. Referring again to the matrix, one can see that the first two elements—consistent use of explicitly
defined terms and use of consistent planning guidelines--provide for both communication and adaptability. The three elements concerning data collection from facility personnel, community members, and objective information sources as well as the need for feedback loops are all involved in the facility programmer's overall need for adequate communication. Moreover, the element concerning evaluation of proposed problem solutions actually is a final feedback loop involving further communication to determine the appropriateness and feasibility of the proposed health facility plan. The generalized facility planner's need for adaptability in a planning tool is reflected explicitly in the last element listed in the matrix, the allowance in the planning approach for the consideration of more than one particular type of health care facility.

Other facility planning elements frequently indicated in the planning tools surveyed include setting of overall goals, and setting of planning objectives. The first element, that of setting goals, appears to aid many health facility planners in guiding their investigation and program formulation. This particular step also allows for individuality and flexibility. The setting of planning objectives seems to relate closely to the broader step of proposing problem solutions. Some facility planners choose to formulate fairly general planning solutions, called objectives, which give direction beyond the analysis of data in trying to determine specific problem
solutions. The setting of objectives simply serves as another
guideline in trying to formulate a health facility plan.

A comprehensive method, as indicated by the approaches
surveyed will include:

(1) Provisions for on-going communication with subjective and objective information sources through the
use of consistent terminology and format.

(2) Provisions for adaptability to the individuality of
the facility planners, the health care institution,
and the separate parts of the facilities.

(3) Data analysis--problem statement--problem solution.

(4) Setting of overall goals.

(5) Setting of planning objectives.

No one planning system or method analyzed considered all of
these elements. However, some of the planning tools do ful-
fill the needs of the health facility planner to a large
extent. The Weed method, as translated into a health facility
planning context, is one of those methods which includes a
majority of the facility programming elements listed.
CHAPTER IV

PROPOSAL OF

THE WEED METHOD AS A FACILITY PLANNING TOOL
CHAPTER IV

As demonstrated in the matrix in the previous section, the Weed method, if translated into a health facility planning context could fulfill a majority of the elements necessary in a facility planning tool. The facility planning adaptation of the Weed method or "Problem-Oriented Planning Record" (P.O.P.R.) seems to compare favorably with other planning methods surveyed.

All other systems and methods discussed in this text, except for Peters' American Hospital Association planning approach, exclude two or more of the elements marked by the majority of facility programmers as necessary in developing a responsive health care facility plan. Only Peters' and Weed's methods fulfill all but one of the programming needs of health facility planners. Of course, this original list of facility planning needs depicted in the matrix is not all-inclusive and cannot be regarded as representing all the abstract and implicit requirements necessary in planning tools. The elements mentioned are simply those considerations which the facility planners' surveyed apparently felt were necessary in the programming of responsive health care institutions. Also, not all the elements mentioned may be appropriate in some very specialized facility plan, although most of the factors listed are applicable to the programming of most types of health care facilities. The discussion of the relative merits of the Weed method or any other planning approach is not meant to
establish any one method as the best facility planning tool. Rather, the list of facility planning needs has been constructed as a means for discerning the possible usefulness of certain planning approaches. The author does not presume to suggest that the fact that Peters' and Weed's methods only lack one facility planning element indicates they are the best programming approaches. This observation is made simply to establish their relative appropriateness for this study.

Peters' method excludes the collection of any data not given to the facility planner by community members, facility personnel, or obtained through the planner's own interpretation of such information. The data base formed according to this particular approach may be somewhat biased if any objective data is omitted. However, this particular planning tool offers facility programmers many other provisions for continuing communication and planning adaptability and includes all other ingredients mentioned as necessary in a programming tool.

The facility planner adaptation of the Weed method, herein called the P.O.P.R., lacks one of the programming needs--setting of objectives. This method advocates the interpretation of data gathered and the analysis of this information into specific sub-problems or needs to which the facility planner must address himself. Next the approach prescribes the formulation of specific planning actions or interventions and alternative problem solutions which may meet the needs interpreted. The explicit step of setting objectives is therefore
eliminated because there is no one section of the plan in which the programmer determines some general plan of action before designating specific programming interventions. Implicitly, according to logical thought processes, before the facility planner can determine a definite planning action, he must formulate a general action plan. In fact, many health care personnel list an indefinite objective as part of the intervention before breaking it down into specific plans of action. However, some health care facility planners may feel that the exclusion of a separate step for setting of objectives is a definite disadvantage to the P.O.P.R.

First, the actual format and progression of the Weed method will be demonstrated by comparing a medical and a facility planning problem. Then the relative advantages and disadvantages of this problem solving method can be discussed. A copy of the Weed method flow chart is included on the following page to help the reader trace each step of the analogy.

Consider, for example, that the major problem for a physician may be a patient's undiagnosed severe headaches, whereas the goal for a health facility planner might be the planning of a workable nursing medication area in a hospital. The physician and his health care team would set up a problem-oriented patient record beginning with the first main goal; dealing with the patient's severe headaches. Similarly, the facility programmer and his planning team would construct a problem-oriented planning record relating to the main goal; dealing with under-
sized medication units.

Set overall goals or define general problem

Data Gathering

Interpretation of Data

Intervention

Evaluation

LEGEND:

1. Is there adequate data for valid assessment and well defined problem statement?

2. Did the planner correctly record or interpret the data he gathered?

3. Did he understand what the facility personnel and community members tried to tell him?

4. Does the data gathered contain suggestions for possible intervention?

5. Is the sub-problem or need defined clearly enough to suggest specific interventions?

6. Is the intervention feasible or desirable?

Figure 6
Having determined the overall goals to which their investigations must be directed, the physician and facility planner would begin by gathering as unbiased and informative a data base as possible. For a patient whose problem is severe headaches, subjective data might include the statement by the patient, "I have a bad headache all the time" and a comment by the patient's husband, "She's had that headache for three weeks now." Objective data might be that the patient has taken two aspirin every four hours for twenty-one days, that her facial expression is a frown, that she holds her hand over her forehead and eyes. For the parallel problem in health facility planning, that the nursing medication areas on all the units of a hospital are too small, subjective data might include comments by nurses interviewed, "We keep getting patient's medicines confused because they are all kept so close together." or "We keep running into each other when drawing up I.V. medications." Objective data could include the facility planner's observations that fifteen patients' medicine bottles are all kept on one shelf and that nurses keep having to step outside the medication area to draw up injections because other nurses are standing in the medication area pouring out pills.

Interpretation for both health facility planner and physician involves the assessment and analysis of data gathered and formulation of various sub-problems or needs suggested by the subjective and objective statements and observation. To con-
tinue with the same patient and facility problem comparison, interpretation of the data gathered about the patient's headache might appear as follows:

1. Aspirin does not relieve the headache.
2. Light may intensify headache since the patient appears to shade her eyes when in pain.
3. Headache continues with same intensity for period of weeks.

Parallel interpretation of data gathered by the health facility planner could indicate the following:

1. Storage area for medicines does not allow for distinct separation of each patient's medicines.
2. The same area is used by all nurses preparing every type of medication.

If, as the doctor or planner begins to interpret the information collected and finds that the data seems inadequate or biased, he must then return to his information sources to gather more data by asking different questions or by trying to observe more relevant symptoms or details. Also, during this step, the physician or programmer and their respective teams may choose to set priorities regarding the problems discovered.

The list of interventions or plans of actions is directed to meeting the needs or solving the problems recognized. If priorities have been set regarding the importance or urgency of dealing with certain needs before others, interventions to
the first priority problems would be devised first and so on. In other words, the suggested courses of action should reflect the priorities determined earlier in the plan. Any general planning objectives may be included in the intervention section as well as the prescribed specific problem-solving actions. Continuing the previous medical-facility analogy, a possible list of interventions could be devised. For the patient who has the continuous headache, the intervention list might appear as follows:

1) Aspirin does not relieve headache.
   a) Try other comfort measures--apply cold cloth to forehead or back of neck--have patient lie down in quiet, dimly lit room, decrease activity.
   b) Order stronger pain medication.

2) Light may increase headache.
   a) Investigate possible visual disturbances--ask patient if she notices a difference in intensity of pain depending on light.
   b) Suggest staying in dimly lighted rooms.
   c) Suggest wearing sunglasses when outside.
   d) Have thorough eye check-up.
   e) Ask patient if she has been reading or straining eyes.
   f) Ask patient if she habitually wears sunglasses no matter how bright the light is.
3) Headache continues for weeks.
   a) Ask patient about circumstances, activities, and occurrences before headache started.
   b) Ask patient if she has ever had such a headache before.
   c) Ask patient if any one thing intensifies or decreases the pain.
   d) Ask patient what she has been doing to try to relieve the pain besides taking aspirins.
   e) Order set of brain wave and skull tests.

The health facility planner could devise a similar list of interventions to deal with the interpretation he had identified according to any set of priorities he set. His past experiences and innovativeness might be reflected in a list like that below:

1) Medicine storage area does not allow for distinct separation of each patient's medicine.
   a) Enlarge storage area for medicine.
   b) Install adjustable divisions in drawers and shelves in present or enlarged areas.
   c) Clearly label each section of storage for each patient.

2) The same area is used by all nurses preparing every type of patient medication.
   a) Expand medicine area as a whole,
   b) Divide present or expanded area into two sections, one for nurses preparing I.V. medications
and one for nurses preparing other types of medications.

c) Propose the use of the unit dose medical system.

An important point concerning the steps of interpretation and intervention is that both these sections allow the physician and health facility planner great latitude in developing their individual skills of analysis and problem-solving. The knowledge, creativity, and originality of each person using the tool can be noted by studying the way in which he utilizes these two steps.

As can be seen in the two lists of interventions described in as specific a manner as possible so that the proposed problem solutions are clearly reproducible. Again, once the health facility planner has thought of as many alternative actions as possible he returns to the facility specialists for more feedback. At this point the physician executes all the actions he prescribes or orders such tests as necessary to fulfill the problem solutions. While the health facility planners would probably present each suggested alternative to the appropriate information sources, such as individual community members and facility personnel, for this evaluation.

In order to determine the feasibility, effectiveness, or desirability of the proposed solutions, they must be evaluated. The step of evaluation helps the person using this methodology to determine whether or not the treatment or facility plan
responds to the needs recognized. For example, the physi-
cian might find that his proposed comfort measures yielded no
relief for the patient's pain, that stronger pain medications
rarely helped. Then he might determine that the pain in-
creased with exposure to light and eye strain even though the
patient only wore sunglasses in bright sunlight and had nor-
mal results from her eye tests. The headache's onset coin-
cided with an unexplained swelling behind her right ear and
her brain and skull x-rays were abnormal. The results of
each intervention would be part of the physician's evaluation.
In addition, any suggestions for new interpretations and in-
terventions based on the new data discovered as a result of his
interventions would constitute part of the doctor's evaluation.
The medical specialist would once again be using the Weed
method to interpret and treat his patient as he finally de-
ciphers the causes of the original problem or goal of persist-
tent severe headaches.

Evaluation for the health care facility planner would
follow the same pattern as that of the physician. Having pre-
sented his recommended planning interventions to the appro-
priate facility specialists and other information sources, the
facility planner would then note the individual and group
evaluation of each of his interventions. He might learn, for
instance, that any expansion of the medicine area is impos-
sible. However, the nurses using these areas may feel that
his proposed actions of subdividing the medicine shelves,
labeling the cubicles, and separating I.V. medications from
others spatially would all improve the present inconveniences. These results or evaluations gathered from the nurses and other personnel consulted would constitute part of the planner's evaluation. Based on the data he gathers for this final step of the Weed procedure, the facility planner might now decide to elaborate his plans and adjust his improvements to fit the limited space with which he has to work. Once again he would circle back to the subjective and objective data section of the method, perhaps now exploring how other hospitals' personnel have coped with small medication areas.

A flow chart of the P.O.M.R. appears on the following page in order to demonstrate the natural progression and feedback loops inherent in the Weed method.

The Weed method, as it has been demonstrated in these two medical and facility planning examples, appears to offer several advantages as a facility planning tool. As was mentioned earlier, the Weed method fulfills all but one of the facility planning needs cited from the analysis of various currently used institution programming approaches.

First, there are several provisions for communication and adaptability incorporated into the method. On one hand, the data base is constructed upon information gathered from both subjective and objective sources. Therefore, the judgmental data, opinions, suggestions, and observations from biased sources such as community members and facility personnel--is theoretically balanced by factual evidence and nonjudgmental observations and statistics. These same information sources,
## 1. Persistent headaches

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<tr>
<th>DATA</th>
<th>INTERPRETATION</th>
<th>INTERVENTION</th>
<th>EVALUATION</th>
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<tbody>
<tr>
<td><strong>Subjective:</strong>&lt;br&gt; patient—&quot;I have a headache.&quot;&lt;br&gt; husband—&quot;She's had a headache for three days now.&quot;</td>
<td>1. Aspirin does not relieve headache</td>
<td>1a. try other comfort measures—apply cold cloth to forehead or back of neck—have patient lie down in quiet, dimly lit room, decrease activity</td>
<td>1a. no relief with comfort measures</td>
</tr>
<tr>
<td><strong>Objective:</strong>&lt;br&gt; patient has taken two aspirin every four hours for three days&lt;br&gt; facial expression is a frown&lt;br&gt; patient holds hand over her forehead and eyes</td>
<td>2. Light may increase headache</td>
<td>2a. ask patient if she notices a difference in intensity of pain depending on light intensity</td>
<td>2a. bright light intensifies pain</td>
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<td>b. suggest staying in dimly lit rooms&lt;br&gt;c. suggest wearing sunglasses when outside&lt;br&gt;d. have thorough eye check-up&lt;br&gt;e. ask patient if she has been reading a lot or straining eyes&lt;br&gt;f. ask patient if she habitually wears sunglasses no matter how bright the light is</td>
<td>b. helps to some degree&lt;br&gt;c. helps to some degree&lt;br&gt;d. eye exam abnormal&lt;br&gt;e. no more than usual&lt;br&gt;f. no</td>
</tr>
<tr>
<td></td>
<td>3. Headache continues for days</td>
<td>3a. ask patient about circumstances, activities and occurrences before headache started</td>
<td>3a. swelling behind ear</td>
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<td></td>
<td>b. ask patient if she has ever had such a headache before&lt;br&gt;c. ask patient if any one thing intensifies or decreases the pain&lt;br&gt;d. ask patient what she has been doing to relieve pain besides aspirins&lt;br&gt;e. order brain wave and skull tests</td>
<td>b. no&lt;br&gt;c. light and strain&lt;br&gt;d. nothing helps&lt;br&gt;e. both tests had abnormal results</td>
</tr>
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</table>

Data Sample 1
1. Nursing medication areas on all units too small

<table>
<thead>
<tr>
<th>DATA</th>
<th>INTERPRETATION</th>
<th>INTERVENTION</th>
<th>EVALUATION</th>
</tr>
</thead>
</table>
| Subjective: nurses = "We keep getting patients' medicines confused because they are all kept so close together." = "We keep running into each other when drawing up I.V. medication." | 1. Storage area for medicines does not allow for distinct separation of each patient's medicine | 1a. enlarge storage area for medicine  
1b. install adjustable divisions in drawers and shelves in present or enlarged areas  
1c. clearly label each section of storage for each patient  
1d. expand medicine area as a whole | 1a. not possible  
1b. would improve present problem, when installed in current medicine area  
1c. would correct confusion of medicines  
1d. not possible |
| Objective: fifteen patients' medicine bottles are all kept on one shelf, nurses deep having to step outside the medication area to draw up injections because other nurses are standing in the medication area pouring out pills. | 2. The same area is used by all nurses preparing every type of patient medication | 2a. divide present or expanded area into two sections, one for nurses preparing I.V. medication and one for nurses preparing other types of medication  
2b. expand medicine area  
2c. propose the use of the unit dose medical system | 2a. not possible  
2b. division of present area would decrease congestion  
2c. need more data to determine feasibility of this action |

Data Sample 2
as well as any new sources which the facility planner feels should be included, are consulted during the entire planning process through a continuous set of feedback loops. These provisions of the Weed method thereby attempt to insure, as far as is realistically possible, that the facility plan developed will respond to the needs of those involved in the institution and to the specific requirements of the facility. Thus, as Weed himself states, "The P.O.M.R. inherently advocates responsive interventions and patient care." One might also say then that the P.O.P.R. inherently advocates responsive interventions and facility plans.

Furthermore, the terms used to describe each step in the planning approach are consistently defined and widely inclusive. For instance, the explicit meaning of "subjective data" remains the same in every planning problem but the actual data included in this category varies according to each source consulted. The sources consulted also vary according to each facility or each department of a facility which is to be planned. However, every programmer using the Weed method knows exactly what kind of information any other facility planner using the method means when discussing the term "subjective data." Similarly, the logical progression from data collection to interpretation of data to intervention to evaluation is clearly reproducible. Communication among health facility programmers is thus enhanced by the method's consistency in term definition and in planning progression.
The steps advocated by the method, as has been suggested, can be applied to many different types of facility planning problems and to the needs of many different health facility programmers. The guidelines provided in the Weed method do not prevent the facility planner from following his own philosophies of facility programming or from investigating whatever areas he feels most important to the planning of a health care institution. The data collection step allows each facility planner to use his own interviewing skills and methods. The interpretation step provides for individualized data analysis, whether it be through team discussions, computer sorting, or some other method. "Interventions" allows each facility programmer using the Weed method to combine all his own knowledge, past experience and skills to develop both general and specific solutions to possible institutional problems and needs. "Evaluations" also responds to the specific techniques and approaches of each planner in evaluating his proposed facility program.

Flexibility of the Weed method extends beyond its adaptability to the beliefs and philosophies of various health facility planners. This planning tool could be used to design almost any type of health care institution. Hospitals, clinics, medical schools, laboratories, and other facilities could all be programmed once data concerning their needs and limitations had been collected, and analyzed, and interpreted. Similarly, one unit or department of each of these types of health care facilities could be planned according to the same step outline
or format. Or, one might set a goal of planning a hospital and use the method first to gather data determining the need for such a facility. Next, the method might be used to determine exactly what departments and services were necessary in the hospital. Interventions at this point might be directed toward trying to obtain more information concerning the actual requirements of each department and system to be included in the hospital. Once again, the method could be adapted to examine each department individually, collecting data which would specify its functions and needs and interventions that would fit that unit into the overall hospital plan.

The support for communication and adaptability of the method have thus been demonstrated. Furthermore, the very format of the Weed method indicates that the elements of setting goals, data collection, data analysis, and solution proposal are all also included. The basic facility planning requirements which evolved through the comparison and contrast of the systems and methods discussed earlier in this text have thus been met in the P.O.P.R.

One major advantage of the Weed method not offered in any other planning approach surveyed is that this particular tool could provide a common basis for communication between health care personnel and health facility planners not possible in the other methods. The uniqueness of this particular aspect of the Weed method lies in the fact that health care personnel in many states across the country use the P.O.M.R. in giving continuous, comprehensive, individual patient care. If facil-
ity planners use an adaptation of the Weed method, the P.O.P.R.,
to devise responsive health care institutions, the planners
and health care personnel will be using the same basic termin-
ology and format to solve problems. This similarity in assess-
ing, analyzing and solving the needs and problems of their
respective clients may be especially advantageous when facil-
ity planners consult health care personnel while developing
health facility programs. Those facility personnel who utilize
or who at least are familiar with the Weed method of patient
care could understand the goals and objectives of the facility
planner who used the same basic problem solving method as they
did. In other words, the physician and planner would be fami-
liar with one another's terminology, guidelines, format, and
basic thought progression. Because they shared similar plan-
nning needs, health care personnel and health facility planners
might discover workable communications through their mutual use
of the Weed method. The physicians might then better under-
stand the planner's perspective and approach to facility needs
and problems. In turn, the planner might better understand the
physicians point of view when discussing the proposed health
care facility.

The actual proof of this hypothesis can only be obtained
by studying facility plans developed when health care facility
planners who use the Weed method as a planning tool conferred
with health care personnel who also used the Weed method to
give patient care. A comparison study might then be conducted
to note any changes or improvements in communication occurring
between medical specialists and health facility planners when both used the Weed method as opposed to the plans developed when facility programmers used some other type of planning methodology. In any event, the common use of the Weed methodology would at least provide facility personnel and facility planner with the same basic problem-solving terminology and techniques.

One limitation to the use of this method as a common basis for communication between physicians and planners is the fact that the Weed method is not universally accepted by all health care personnel as an adequate tool for planning patient care. The P.O.P.R. would obviously not provide the unique communication advantage described if the personnel interviewed were not familiar with the P.O.M.R. In this case, of course, little common terminology would be involved. However, some basis for communication might still exist if the health care personnel were at least familiar with the Weed method, even if they did not use it or did not feel it was the best possible problem-solving tool.

There are some other disadvantages in the Weed method as it is used in the medical setting which might also apply to the P.O.P.R. Alvan Feinstein recognizes perhaps the most damaging aspect of the P.O.M.R. by stating that patients may tend to be regarded as "arrays of problems" and not necessarily as a whole person, and "entire patient." In a similar fashion, by using the Weed method, facility planners may lose sight of the institution as a whole facility by concentrating
on each of its separate needs and problems. Another disadvantage Munro Strong sees is that the Weed method may be limiting because some health problems assessed would be currently unsolvable; Strong believes that some medical personnel would be disinclined to honestly admit having no solution and so would not want to state clear-cut unsolvable problems.\textsuperscript{59} This type of situation might arise for some facility planners, especially when certain facility programming goals are unrealistic according to institution's limitations.

Dr. Willis Hurst and Weed himself point out one other disadvantage in that the validity of the data gathering step depends on the physician's ability to observe objectively and not to gather a data base "to suit his own taste"\textsuperscript{60} or specialty. An obstacle may then be that the interpretations or assessment are not validated as prescribed and the problem list may become inaccurate.\textsuperscript{61} In other words, the data gathering and interpretation are only as good as the interviewing techniques of the person using this tool. Such a shortcoming may also become evident in the P.O.P.R. if health facility planners using this adaptation of the Weed method fail to observe facility planning problems objectively. If the programmer's philosophy endorses functional limitations as the main planning consideration, he may fail to seek out facility needs and problems not related to function. Many methods based on data collection could allow similar biases. This weakness does not seem to be an aspect peculiar only to the Weed method. This weakness may be remedied to some extent by learning how to
interview. For example, Standard Optner attempts to improve interviewing techniques for business managers by suggesting the following guidelines, which can easily be adopted by health personnel or even health facility planners:

**DON'TS**

1. Don't interrupt the story to insert your own ideas.
2. Don't let interviewees be diverted to non-pertinent paths.
3. Avoid blanket statements, broad generalities.
4. Don't let half understood problems go--get a clear concept of the issues.
5. Don't be overpowered by the person being interviewed.
6. Don't become involved in operational problems or offer solutions that will subtract from information gathering (or be premature).
7. Don't ask yes or no questions if asking for an opinion.62

**DO'S**

1. Do have five minute warm-up, keep human contact to insure cooperation.
2. Describe goals of interview--invite person interviewed to feel the importance of his role.
3. Have outline questions and material to be covered with you.
4. Make your notes telegraphic but legible.63

As many health care workers seem to have found, however, once one does learn how to interview and observe as objectively
as is humanly possible, the benefits of the Weed method generally seem to outweigh its shortcomings. The main advantages of the method seem to be the contiguity in communication and adaptability it provides as well as the reproducible format of assessment--analysis--and problem solution it includes. Moreover, these elements are the qualities described as necessary to health facility planners in planning responsive health care facilities.

The practicability of the basic format and progression used in the P.O.P.R. has been demonstrated briefly in a comparison of a medical and a facility planning program. However, a larger, more in depth study of the usefulness and feasibility of the Weed method as a facility planning tool will be conducted by using the P.O.P.R. to evaluate one particular department of a health care institution.
CHAPTER V
APPLICATION OF THE WEED METHOD TO
THE EVALUATION OF A RADIOTHERAPY UNIT
CHAPTER V

To demonstrate the use of the facility planning adaptation of the Weed method as a tool for health care facility planners, this author will use the P.O.P.R. to analyze a medical school radiotherapy unit and to propose suggestions for possible improvements of that unit. The unit was selected to test the feasibility of the Weed method. A small health facility department was selected in order to allow the author to evaluate the unit in greater detail within the limited time period of two months. First, the goal or problem for the health facility planner conducting this evaluation was established. Accordingly, the problem title chosen was called the "Analytical Proposal for the Reorganization of a Radiotherapy Unit." Next, a Problem-Oriented Planning Record was devised by this author as he developed the radiotherapy unit program according to the Weed method procedures. A copy of the entire P.O.P.R. is included in the appendix of this text but separate steps involved in the Weed method flow chart will be included in the discussion of each planning procedure.

Once the author of this study set his goal of proposing suggestions for reorganizing a specified radiotherapy unit by analyzing that unit, he began to determine which subjective and objective data sources could be consulted. In order to gain access to the facility and its personnel and as a matter of diplomacy, the department administrator was contacted first.
With the administrator's permission, the author obtained floor plans of the radiotherapy unit, scheduled interviews with other facility personnel, and conducted a tour of the unit. The patients using the radiotherapy department unfortunately were too ill to answer this facility planner's inquiries; therefore, subjective data from community members, the patients, could not be obtained. The resulting data base may thus be slightly biased in that the author was forced to exclude any first-hand comments by the patients.

In general, therefore, the subjective data gathered was composed of the opinions, observations, and suggestions of the facility personnel interviewed. These personnel were all representatives and experts of various services and departments included in the radiotherapy unit. The unit administrator, the associate professor, the diagnostic radiology technician, two first year residents, the receptionist, a nurse radiotherapy technician and two non-nurse technicians were all consulted in an effort to obtain as many different points of view as possible. The resulting data base would then be as representative and unbiased as possible.

Objective data consisted of several elements. The basic floor plan of the radiotherapy unit was included. Then any separate sections of the unit discovered during the author's tour of the facility were designated on copies of this basic floor plan in order to demonstrate specific functional and spatial relationships.
FLOOR PLAN

scale: 1" = 30' - 0"

LEGEND:

1. staff officer's office
1a. coffee room
2. personnel lounge
3. secretary office
4. exam room
5. exam room
6. file area
7. diagnostic waiting area
8. diagnostic x-ray room
9. dark room
10. localization room
11. doctors' work & charting area
12. restroom
13. restroom
14. storage no.3
15. storage no.2
16. dressing room
17. dressing room
18. dressing room
19. technician viewing area
20. radiotherapy treatment room
21. storage no.1
22. treatment waiting area
23. receptionist's office
24. file area
25. physics work area
26. secretary's office
27. offices
28. office
29. physics shop
30. diagnostic x-ray entry
31. radiotherapy treatment entry
32. radiotherapy treatment hospital entry

Figure 7

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Sections used by both radiotherapy personnel and x-ray personnel as well as patients of both sections.
All nonjudgmental observations made by this facility programmer when touring the facility or interviewing the radiotherapy personnel were also included as objective data. The data gathered through interviews and tours indicated that there were two major problems with which this facility planner would deal. Therefore, in order to deal with the large bulk of raw data collected, the author arranged the data according to the problem to which it pertained. The two problems generally suggested by the data gathered seemed to be that the radiotherapy unit was (1) inefficient and (2) uncomfortable.

Within each general problem, the data, as can be seen, was organized first according to its subjectivity or objectivity and next according to the source of the information. All the comments made by each person interviewed are recorded verbatim. The observations of this author were written as objectively and nonjudgmentally as possible: only facts and statistics were cited, not opinions or impressions of the author.

Once the data related to each problem was recorded, analysis of the information obtained was begun. The comments of various personnel interviewed were correlated with the objective observations and facts. The implications of this data were explored. Consequently, the interpretation of all the pieces of information listed appeared to suggest that there were several sub-problems relating to the general
Data Sample 3
inefficiency and uncomfortable feeling of the radiotherapy department. The author thus defined each of these sub-problems by the information collected; each sub-problem of the interpretation was justified by specific data. At this point in the planning process, priorities were set as to which sub-problems should be considered before another. The interpretations were listed in the order of priorities set. For example, the first sub-problem under inefficiency was called "inadequate safety precautions" and included (a) insufficient shielding, (b) lack of bumper guards, and (c) inadequate lighting. These interpretations were results of comments by the RN radiotherapy technician and two non-RN technicians in combination with objective observations:

Subjective:

RN technician - "need bumper guards on walls for stretchers"

non-RN technicians - "unit needs to be brighter"
- "not enough shielding"

Objective:

- low wattage lighting in hall and storage
- walls damaged from stretchers

The progression from this data to the specific problem statement seems direct and logical.

The process of interpretation of the second inefficiency sub-problem follows the same steps. Specific comments by the
<table>
<thead>
<tr>
<th>Objective Data</th>
<th>Tips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grey Slater, administrator</td>
<td>diagnostic and treatment in one building</td>
</tr>
<tr>
<td>Dr. Malaek, associate professor</td>
<td>diagnostic waiting area too small</td>
</tr>
<tr>
<td>Dr. John West, first year resident</td>
<td>treatment lounge too small</td>
</tr>
<tr>
<td>Dr. John West, first year resident</td>
<td>dark rooms too small</td>
</tr>
<tr>
<td>Dr. John West, first year resident</td>
<td>average wait: one hour</td>
</tr>
<tr>
<td>Dr. John West, first year resident</td>
<td>waiting to see</td>
</tr>
<tr>
<td>Dr. John West, first year resident</td>
<td>front desk staff uncooperative</td>
</tr>
<tr>
<td>Dr. John West, first year resident</td>
<td>not enough therapy equipment</td>
</tr>
<tr>
<td></td>
<td>too many activities in the same location</td>
</tr>
<tr>
<td></td>
<td>not enough diagnostic or one treatment machine</td>
</tr>
<tr>
<td></td>
<td>not enough exam/procedure space</td>
</tr>
<tr>
<td></td>
<td>not enough staff at a time</td>
</tr>
</tbody>
</table>

4. Inadequate lighting

5. Inadequate utilization of space allocated to clinic

Data Sample 4
administrator, associate professor, first year residents and the others were combined with separate objective facts. For example,

**Subjective:**

Administrator - "diagnostic waiting area too small"
- "treatment lounge too small"
- "resident's work room too small"

Associate professor - "too many activities in the same location"
- "doctor's planning area too small"
- "charting area too small"
- "two treatment machines in one room and can only use one machine at a time"

Resident - "not enough space"

and so on;

**Objective:**

- equipment, files and stretchers stored in patient holding room
- desk and work area in diagnostic x-ray room
- two treatment machines in radiotherapy room

and so on.

All this data seemed to indicate that there was "inappropriate utilization of space allocated to the clinic" the second subproblem. This same reasoning and interpreting process was used to analyze all data gathered for both general problems into the fourteen different sub-problems defined. Having defined these particular sub-problems, the information sources were again consulted to make sure that he was hearing the
needs and problems they had tried to describe to him. A feedback loop provided by the Weed method was thereby utilized.

Data Sample 5

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After establishing and validating the sub-problems indicated by the data gathered, possible planning solutions to these problems were devised. Referring, again, to the first sub-problem "inadequate safety precautions" several specific alternative solutions were proposed. In the P.O.P.R. these interventions are described opposite the problem to which they apply. For example, in answer to the inadequate safety precautions of insufficient shielding:

1) inquiring about why shielding is not adequate.
2) investigating various types and sizes of shielding available.
3) conducting a cost study on various types of shielding available
4) installing any shielding found necessary according to the manufacturer's specifications and to departmental needs.

The other components of inadequate safety are considered in a similar fashion and specific interventions are proposed as shown.

Because of the large amount of data relating to the second inefficiency sub-problem of "inappropriate utilization of space," the alternatives were divided into sections corresponding to each section of the clinic. Thus, in response to the problem of inappropriate utilization of waiting room space, it was suggested that the clinic (1) increase the size of the treatment waiting area by expanding into fifty percent of the treatment reception area and (2) increase the size of the
<table>
<thead>
<tr>
<th>Data Sample 6</th>
<th>Description</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives</strong></td>
<td>- First, identify the benefit of the study. - Second, identify the potential impact of the study. - Third, identify any existing literature related to the study.</td>
<td>- Collect data through surveys, interviews, and observational studies. - Analyze data using statistical methods. - Draw conclusions based on the analysis.</td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td>- Conduct a comprehensive review of existing literature. - Identify gaps in current knowledge. - Design a study to address these gaps.</td>
<td>- Develop a hypothesis based on the review of literature. - Test the hypothesis using empirical data. - Validate the findings through replication studies.</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td>- The study found that [result 1]. - The results were validated by [validation method]. - Further analysis revealed [additional insights].</td>
<td>- The hypothesis was supported by the data. - The results have implications for [implications]. - Future studies are needed to [future research].</td>
</tr>
<tr>
<td><strong>Discussion</strong></td>
<td>- The findings contribute to the understanding of [contribution]. - The results have implications for [implications]. - Further research is needed to [future research].</td>
<td>- The implications of the study are [implications]. - Limitations of the study include [limitations]. - Future studies should address [future research].</td>
</tr>
<tr>
<td><strong>Conclusion</strong></td>
<td>- The study demonstrated [key findings]. - The results contribute to [contribution]. - Future research is needed to [future research].</td>
<td>- The study has [positive impact]. - The findings are [applicable to]. - Further research is needed to [future research].</td>
</tr>
</tbody>
</table>

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**Note:** The above table is an example of a structured format for presenting data and findings in a research study. The specific content is placeholders and should be replaced with actual data and insights from a study.
diagnostic waiting area by expanding into fifty percent of the staff officer's office. The progression from sub-problem to intervention throughout the rest of the inefficient and uncomfortable aspects of the clinic follows the same format, (as is depicted in the complete P.O.P.R. flow sheet in the appendix).

One must note at this point in the program development that frequently the facility planner may receive suggestions on how to correct possible problems from the people he consults when constructing his original data base. This author did find such suggestions helpful when devising planning interventions to some of the other sub-problems listed.

The final step of evaluation was conducted by arranging further interviews with the radiotherapy unit personnel to obtain their opinions as to the feasibility and desirability of the proposed program solutions. Because there were only two opportunities to conduct extensive interviews and tours of the unit, many of the evaluations were inconclusive as to the practicability of the proposed alternatives. Therefore, several evaluations implicitly included the author's recommendation for gathering more data or feedback.

The second set of interviews enabled the formulation of several specific evaluations of the proposed interventions. For instance, evaluation of the interventions regarding insufficient shielding as part of the sub-problem inadequate
safety precautions was quite direct. In response to "inquiry about 'why' shielding is not adequate", the chief radiotherapist and sole controlling force over shielding used in the unit stated that she felt the present shielding was adequate. Therefore, all other interventions were not necessary. This case suggests that the facility planner must also evaluate the validity of the data received. The training of the radiotherapist probably indicates that her judgment concerning the unit's shielding makes her a more accurate or valid source than were her technicians. There were also definite answers to the suggestions concerning the waiting room division of the second inefficiency sub-problem, inappropriate utilization of space. The administrator and other facility personnel consulted stated that the first intervention, increasing the size of the treatment waiting room by expanding into the treatment reception area, was a favorable solution for decreasing crowding in that waiting area. On the other hand, these same information sources stated that the second intervention, increasing the size of the diagnostic waiting area by expanding into the staff officer's office as "not feasible because the staff officer's office [previously called resident's office] was necessary as a teaching area." The implication of this comment was that the staff officer's room spatial requirements overruled any possible benefits which might develop from the proposed intervention. This same method was used to evaluate
all the author's suggested planning interventions. Any alternatives which were not feasible, such as the last solution discussed, might indicate the need to gather more data and propose new interventions.

An in-depth study of the complete P.O.P.R. formulated in the evaluation of the radiotherapy unit thus indicates exactly what thought processes are involved in developing such a facility program. The consistent format and communication and adaptability provisions have all been considered in the description of the author's progression from one step to the next. Hence, the possibility of using the P.O.P.R. as a health care facility planning tool has been demonstrated.
CHAPTER VI
EVALUATION OF THE WEED METHOD AS
A PLANNING TOOL FOR HEALTH FACILITIES
CHAPTER VI

In conclusion, by combining many of the advantages and relatively few of the disadvantages of currently used planning methodologies, the Weed method can serve as an adaptive, responsive tool for health care facility planners. As has been demonstrated, the facility planning adaptation of the Weed method seems to fulfill most of the programming needs of the health care facility planner. Accordingly, the P.O.P.R. offers the health facility planner a consistent thought process by which to both analyze needs of various types of facilities and propose solutions to meet these needs. In fact, if he exploits this planning tool to the fullest, the facility planner can adapt it to demonstrate his own communicative, analytical, and creative skills. According to the P.O.P.R. format, after assessing facility needs, the health facility planner offers possible problem solutions. These programming interventions may, in turn, give the facility designer some guidelines with which to work when creating the responsive health care facility. Thus, the Weed method planning tool could possibly also serve as a coordinating factor in the overall planning and designing of health care facilities.

The fact that the Weed method originated as an assessment and problem-solving record for health care personnel may indicate a benefit peculiar to this planning tool not present in other currently used planning methodologies. This benefit may
be that the mutual format and concepts used by health care personnel as well as health facility planners form a common basis for communication. The analysis of various programming systems and methods surveyed in this study appears to indicate the effective communication with community members and facility personnel seems essential in the plan and design of responsive health care facilities. Therefore, a common communication basis involving similar terminology and problem-solving techniques would seem to be a beneficial factor in developing necessary communication lines.

To best utilize the Weed method, the health care facility planner must develop keen interviewing and observation skills with which to gather the data. To assess the facility needs and to justify the feasibility of his proposed solutions to these needs, the planner must be able to interpret data and to evaluate the validity of the data received and of his suggested interventions. Thus, the Weed method, in order to plan for the health care facility needed, demands that the health facility planner sharpen his ability to ferret out problems and communicate meaningfully with key information sources.

The feasibility of using the Weed method as a facility planning tool has been demonstrated in two major examples. One explicit example was the evaluation of a medical-school radiotherapy unit. The second example has been this entire
study of health facility planning tools. Upon careful analysis, one may notice that the author employed a format paralleling the Weed method to develop this text. First, an overall goal was determined in the introduction—to decipher the major needs of health care facility planners, which could be included in a facility programming tool. Then, subjective and objective data were collected. The author reviewed literature describing many health facility planners' proposed systems and methods and recorded these planners' expressed opinions and observations. Interviews with key information sources were conducted to learn more about the Weed method and to obtain first-hand knowledge of the points of view of health facility personnel. Experts on health facility programming, the Weed method, and communication were also consulted.

Next, the author analyzed and interpreted the data he gathered in an effort to determine advantages and disadvantages of the planning approaches studied. In this way, this facility planner attempted to ascertain the basic elements necessary in a facility programming tool which could be used to plan responsive health care institutions, (these elements were then depicted in the matrix). Once these elements were defined, the author continued to follow the Weed method guidelines by proposing an intervention which could fulfill a majority of the health facility planning needs depicted—the P.O.P.R. Finally, the proposed planning method, a facility
planning adaptation of the Weed method, was evaluated and its benefits and shortcomings were analyzed. Hence, the actual workability and adaptability of the Weed method or P.O.M.R. and P.O.P.R. have been demonstrated. The Weed method compares favorably with the other planning systems and methodologies surveyed in this study as a comprehensive, adaptable tool for health care facility planners whose goal is to plan responsive health care facilities.
FOOTNOTES


5. Ibid.

6. Ibid., p. 17.

7. Ibid., p. 19.


11. Ibid.


13. Ibid., p. 31.

14. Ibid., p. 32.

15. Ibid.

16. Ibid., p. 41.


39. Ibid., p. 19.


41. Dr. L. L. Weed, audio-visual presentation.

42. Isadore Rosenfield, Ibid., pp. 4, 5, 13.

43. Ibid., p. 33.


45. Interview with Dr. J. Willis Hurst, professor and department chairman, Emory University, School of Medicine, Atlanta, Georgia, February 10, 1975, Houston, Texas.


57. L. L. Weed, M.D., audio-visual presentation on the P.O.M.R.
60. L. L. Weed, M.D., audio-visual production on the P.O.M.R.
APPENDICES
1. Insufficient space and work area for the treatment staff.

2. Poor signage and wayfinding.

3. Inadequate storage options.

4. Inadequate communication systems.

5. Inadequate technical support.

6. Insufficient work area for patients.

7. Insufficient facilities for imaging.

8. Insufficient space for restrooms.

9. Inadequate space for clerical areas.

10. Insufficient space for housekeeping.

11. Insufficient space for administration.

12. Insufficient space for patient education and waiting areas.

13. Insufficient space for patient treatment areas.


15. Insufficient space for patient dressing areas.

16. Insufficient space for patient recovery areas.

17. Insufficient space for patient care areas.

18. Insufficient space for patient transport areas.

19. Insufficient space for patient storage areas.

20. Insufficient space for patient support areas.

21. Insufficient space for patient communication areas.

22. Insufficient space for patient education areas.

23. Insufficient space for patient therapy areas.

24. Insufficient space for patient consultation areas.

25. Insufficient space for patient examination areas.

26. Insufficient space for patient treatment areas.

27. Insufficient space for patient support areas.

28. Insufficient space for patient communication areas.

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60. Insufficient space for patient examination areas.

61. Insufficient space for patient treatment areas.

62. Insufficient space for patient support areas.

63. Insufficient space for patient communication areas.

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### Preferences

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<td>Gary Dyer, administrator</td>
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<td>Dr. Bache, associate professor</td>
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<td>Dr. John Hall, first year resident</td>
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<td>Linda Miller, receptionist</td>
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<td>Second Notice</td>
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### Interventions

1. Sterile hospital color scheme through x-ray clinic. It does not vary with patient's activities and contributes to small or cramped feelings of many areas
2. All floors covered with beige colored asbestos tiles
3. Patient waiting area feels cramped and uncomfortable
4. Noise level in R.N.'s work area is high
5. Privacy between technicians' work area and doctors' work area
6. Privacy between desk area and work area

### Evaluations

1. Favorable solution for alleviating sterile atmosphere of waiting room and halls
2. Appropriate use of color schemes and graphics would enhance comfort
3. Favorable solution for alleviating sterile atmosphere of waiting room
4. Would visually increase size of room
5. feasable solution
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