



Room 14-0551  
77 Massachusetts Avenue  
Cambridge, MA 02139  
Ph: 617.253.5668 Fax: 617.253.1690  
Email: docs@mit.edu  
<http://libraries.mit.edu/docs>

## **DISCLAIMER OF QUALITY**

Due to the condition of the original material, there are unavoidable flaws in this reproduction. We have made every effort possible to provide you with the best copy available. If you are dissatisfied with this product and find it unusable, please contact Document Services as soon as possible.

Thank you.

**Due to the poor quality of the original document, there is some spotting or background shading in this document.**

THE KEY VARIABLES IN PLANNING AND CONTROL IN  
MEDICAL GROUP PRACTICES

by

Gladys Geraldine Mooradian

B.S., University of Wisconsin  
(1958)

SUBMITTED IN PARTIAL FULFILLMENT

OF THE REQUIREMENTS FOR THE

DEGREE OF MASTER OF

SCIENCE

at the

MASSACHUSETTS INSTITUTE OF

TECHNOLOGY

September 1976

Signature of Author.....  
Alfred P. Sloan School of Management, June 23, 1976

Certified by.....  
Thesis Supervisor

Accepted by.....  
Chairman, Departmental Committee on Graduate Students



THE KEY VARIABLES IN PLANNING AND CONTROL IN  
MEDICAL GROUP PRACTICES

by

GLADYS GERALDINE MOORADIAN

Submitted to the Alfred P. Sloan School of Management on June 23, 1976,  
in partial fulfillment of the requirements for the degree of Master of  
Science in Management.

ABSTRACT

This thesis is an examination of the control variables or key variables used by the administrators of medical group practices in their activities of strategic planning and management control in an organization while it is delivering health care. Also examined is the information that they use to measure their progress toward their goals on each of their key variables.

Three medical group practices delivering ambulatory care were selected as particularly appropriate sites for this study. They were:

Keene Clinic, Keene, New Hampshire  
Administrator, Stewart Blakely

Rural Health Associates, Farmington, Maine  
Executive Director, Clint Conant

Southboro Medical Group, Southborough, Massachusetts  
Administrator, Tom Doyle

The methodology used was to interview the top administrators of these medical group practices. The questions in the interview were directed toward producing a picture of how the group practice operated in all areas relevant to the planning and control activities of the administrator. The specific focus was on defining the key variables and the information used to measure them. From these interviews an actual model of planning and control was constructed for each of the group practices. These actual models were then compared to a normative model developed by John F. Rockart in the profit-making and private sector of the economy.

The conclusions reached from this study are:

1. The administrators do not define their management planning and control activities as falling into the three categories as defined by Robert Anthony: strategic planning, management control, and operational control.
2. The administrators select a number of key variables depending on the situational factors of their organization. They then

track those variables to ensure the success of their organization. The variables change over time, vary in controllability, and vary in priority of importance. The information systems underlying these variables are formal and informal, providing specific and nonspecific data.

3. As the group practices grow and become complex organizationally more of the components of Rockart's normative model will be formally defined and adopted.
4. The objectives of these organizations are clearly understood by both the physicians and the top administrators.
5. The managerial styles of the administrators are characterized by aggressiveness and openness to change and new ideas, especially if they are cost justified.
6. While all the administrators are aware of the importance of strategic and long-range planning systems, they are in various stages of initiation and implementation because of limited resources.
7. These groups are successful in meeting their objectives although their planning and control activities are not always explicitly defined and organized into formal systems.
8. There is a definite need in the future for a greater anticipation of the problems and needs of the demands for health care facing their organizations.
9. The planning and control systems appropriate to private, for-profit businesses are also appropriate for health care organizations.

TABLE OF CONTENTS

Title page.....	1
Abstract.....	2
Table of Contents.....	4
List of Tables.....	5
List of Figures.....	6
Chapter I. INTRODUCTION.....	7
A. Purpose.....	7
B. Framework Used for Analysis.....	7
C. Methodology.....	29
Chapter II. RESEARCH FINDINGS.....	34
A. Keene Clinic.....	34
B. Rural Health Associates.....	52
C. Southboro Medical Group.....	72
Chapter III. EVALUATION.....	86
A. Keene Clinic.....	86
B. Rural Health Associates.....	94
C. Southboro Medical Group.....	102
D. Comparison of the Three Actual Models.....	108
Chapter IV. CONCLUSIONS.....	117
References.....	121
Bibliography.....	123

LIST OF TABLES

Table 1.	Information Requirements by Decision Category.....	22
Table 2.	Medical Specialties at Keene Clinic.....	37
Table 3.	Medical Specialties at Rural Health Associates.....	53
Table 4.	Medical Specialties at Southboro Medical Group.....	73
Table 5.	The Administrators' Key Variables.....	112

LIST OF FIGURES

Figure 1.	Normative Planning and Control Model.....	14
Figure 2.	Interrelationship between the Components of the Long-Range Planning and Management Control Processes.....	18
Figure 3.	Information Systems: A Framework.....	24
Figure 4.	Management Information Systems in Health Care.....	26
Figure 5.	Relations among Objectives, Key Variables, and Goals.....	35
Figure 6.	Organizational Chart, Keene Clinic.....	40
Figure 7.	Organizational Chart, Rural Health Associates.....	56
Figure 8.	Organizational Chart, Southboro Medical Group.....	75
Figure 9.	Actual Model of Planning and Control, Keene Clinic.....	87
Figure 10.	Actual Model of Planning and Control, Rural Health Associates.....	95
Figure 11.	Actual Model of Planning and Control, Southboro Medical Group.....	104

## I. INTRODUCTION

### A. Purpose

The purpose of this paper is to examine the control variables or key variables used by the administrators of medical group practices for strategic planning and management control in an organization while it is delivering health care. Also examined is the information that they use to measure their progress toward their goals for each of their key variables. After isolating the variables, one important question is: Are the actual models of planning and control that the administrators use successful in light of the individual characteristics of their situational setting? The other important question is: Are there significant similarities and differences among the actual models, including the key variables, which are important for health care planning and control systems in general?

The purpose of this paper will be achieved by comparing the administrators' actual models of planning and control to normative models developed in the profit-making private sector of the economy.

### B. The Framework Used for Analysis

Management control systems have traditionally been oriented toward budgeting and finance. In other words, a manager would have a specific goal or set of goals such as a net profit of 10 percent, an increase in market share of 15 percent, or a return on investment of 12 percent. His budget is drawn up to help him to meet these specific goals and his success or failure is measured by his ability to attain the goals.



While in the short run he may be permitted to fall short of the specific targets, in the long run his promotions and even continued employment with the company are in serious jeopardy.

In the health care industry, a "not for profit" business, this control has traditionally been more informal and less well defined. A solo practitioner operated on a cash basis and what was left over in his checking account after paying the bills was his income or "profit." Hospitals and private physicians used a cost-plus system whereby the charges were simply increased, especially in laboratory and x-ray, to cover total expenses.

Management control in health care was ill defined because of the life-and-death environment with "quality" the important measure. The goal of most medical care providers was to deliver quality health care, which is difficult to measure and differs from physician to physician and hospital to hospital.

The traditional concept of management control in medical organizations has been changing because of the pressures created from the present trends<sup>1</sup> in the health care industry, such as soaring costs, rising consumer demand, governmental regulations, the changing needs of medical professionals (e.g., physician free time and consultation among physicians), and the changing roles of health care providers (e.g., the use of paraprofessionals). As a result, group practices have grown in number and size, medical centers and hospitals have flourished, and the number of solo practitioners has decreased.

Now that the organizations are larger and more complex and cost

considerations are critical, management control has become especially important in health care. The tendency is to look toward the profit making sector for management techniques that will be useful. There, management control is moving away from only financial variables to a mixture of qualitative and quantitative variables to reflect the dynamic internal and external environment of the organization. An effort usually is made to integrate management control into an organization-wide strategic planning system which consists roughly of objective setting, alternative plans, a choice among alternatives, and evaluation of the chosen plans.

Given the above situation, the analysis in this paper will use two frameworks or models developed in the profit-making sector. They are the most advanced and appropriate frameworks for the health care industry and are the drawing together of the ideas and research of major authorities in the planning and control field. The frameworks are:

1. A structured framework for analysis, including a definition of the management control variables, from R. N. Anthony's Planning and Control Systems: A Framework for Analysis.<sup>2</sup>
2. A process framework of analysis based on J. Rockart's "Planning and Control Component Model"<sup>3</sup> and "An Analytical Sequence: Seven Critical Areas to Note in the Diagnosis or Design of Planning and Control Systems."<sup>4</sup>

For the purposes of this discussion, the general meanings of structure and process will be those used by Peter Lorange for planning systems.<sup>5</sup> Structure is defined as the delineation of the major categor-

ies of management activities for planning and control. Process is defined as how these management activities are actually carried out, with the management control activity as a focus.

It is important to note that Rockart's Planning and Control Component Model is a drawing together of other theories and frameworks. His model is used since it not only incorporates the most recent thinking in the area but specifically pulls together the structure and process models into a model where all the components are defined in relative detail. He also defines the areas of this model critical for the purposes of diagnosis and design of planning and control system. Reference will be made to the other theories and frameworks whenever a particular element of any one model will be helpful in clarifying the specific components of Rockart's model.

#### 1. Structured Framework for Analysis

Anthony views management activities in planning and control as a **broad** continuum with planning on one end and control on the other. However, for the purpose of clarification he groups all planning and control activities into three major categories: strategic planning, management control, and operational control.

Strategic planning is defined as: "the process of deciding on objectives of the organization, on changes in these objectives, on the resources used to attain these objectives, and on the policies that are to govern the acquisition, use and disposition of these resources."<sup>6</sup>

The area especially pertinent to this paper is management control, which Anthony defines as: "the process by which managers assure that

resources are obtained and used effectively and efficiently in the accomplishment of organization's objective."<sup>7</sup>

At the end of the continuum he places the remainder of management activities in his third main category, operational control, defined as: "the process of assuring the specific tasks are carried out effectively and efficiently."<sup>8</sup>

He defines the major characteristics of these categories as:

- a. The scope of the activities. Management control is involved with the total operations while strategic planning focuses only on a portion. Operational control focuses on a single task or operation.
- b. The degree of structure. The management control process is rhythmic and recurring while strategic planning is irregular, reacting to a new idea or specific problem. Operational control is a highly structured system with specific rules and procedures.
- c. Nature of the information. Management control information is based on money as a common denominator and results from internal coordinated and integrated systems that are consistent and on-going. Strategic planning information is basically external and imprecise and the data are gathered only once for each specific plan. The information in operational control is often non-monetary; it is exact and collected as the event happens or in "real time."
- d. Organizational relationships. In management control, interactions among people are heavily line oriented with communications

as wide and complete as possible. In strategic planning they are heavily staff oriented; communications are simple and involve relatively few people, mostly at the top of the organization. In operational control the communications involve a few people working on a specific task and the immediate supervisor.

An example of strategic planning activity in health care is a group practice's decision to provide care in a new specialty area by hiring a new physician. This would be a strategic decision if such a provision of service meant a major change in the strategy and direction of the organization. Previously it may have limited itself to only one or two specialty areas, since it did not want to become a major source of care in the area or the physicians did not want to practice in a larger, more complex organization. (Even the hiring of several new physicians in the same specialty or subspecialty of a three-physician practice might be a strategic decision if the objective was to become a large specialty group with the latest technology, many highly skilled physicians, and a large support staff.)

In hiring a new physician in a new specialty area, however, the concerns would be whether he could work with other physicians in the organization and whether there would be enough patients or demand to cost justify his services. The necessary information would be collected from the physicians but also to a large extent from the environment, in regard to population trends and other health providers in the area. The decision would be made by the physicians or the board of directors with some input from the administration.

An example of management control activity in health care would be the tracking of the efficiency of operations, for instance, comparison of current income and expenses of the total operation with those budgeted. Such a comparison would be made monthly with financial information and collected regularly from the business operations. Primarily involved in this activity is the administration, board of directors and/or physicians only when major variances occur that need major alterations in the plans and projects.

An operational control activity might be the pulling of medical records. This would involve the clerks and supervisor in the medical record room and possibly the next line administrator or department head, and would focus upon the number of medical records pulled per day per physician.

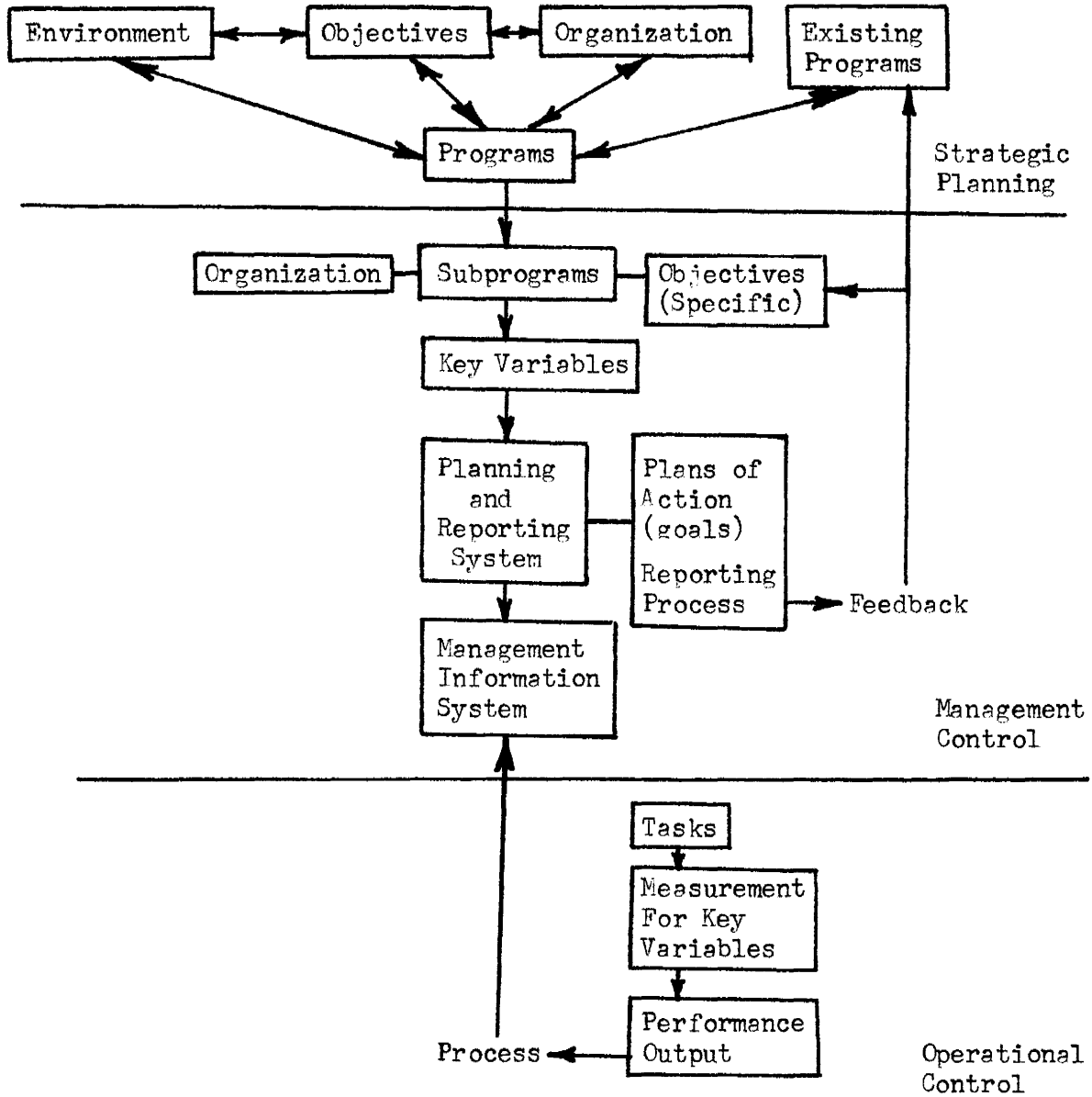
## 2. A Process Framework for Analysis

Rockart's Planning and Control Component Model (see Figure 1) is divided into three major processes corresponding to Anthony's three management activity categories: strategic planning, management control, and operational control.

Rockart defines strategic planning as the process of the creation of programs after top management (physicians and administrators, in this study) examines its environment, objectives, organizational characteristics, and existing programs. This is a broader definition of strategic planning than Anthony's because the total organization and its environment is considered when programs are defined. In 1964 Anthony limited the view to only that portion of the organization and environment

Figure 1

Normative Planning and Control  
Component Model



Source: Rockart, John, unpublished class notes, Sloan School of Management, MIT, Cambridge, Mass. 1976.

affected by the particular program under consideration. The present viewpoint, also supported by Vancil and Lorange<sup>9</sup> is that the effect of one program on another is extremely important and therefore all programs must be viewed together as a "portfolio."

The Vancil and Lorange Model<sup>10</sup> is specifically defined for large multidivisional corporations which are engaged in long-range, strategic portfolio planning. Some of their basic concepts, however, help to clarify strategic planning in any size of organization and are encompassed in Rockart's model. In addition to the portfolio concept, they define planning as a second concept that involves scanning the environment and adjusting the objectives and organizational structure whenever the environmental information indicates a change is necessary.

Another important concept is that of the narrowing down of strategic options. In other words, the process of strategic planning is the selection of alternative programs to create a limited set of programs that the organization can carry out to meet its objectives.

A final concept is that the objectives of an organization are not its goals. The objectives are the broad strategies and policies of the organization often stated in its charter or at the beginning of the planning process by the corporate management. Objectives include expansion by acquisition, financing by external sources, concentration in high-technology businesses, and social concern for the quality of life. Goals of such an organization would be the specific determination of targets after the programs are selected. These targets might be 15 percent growth in market share or a net profit of 10 percent.



In the example of a health care strategic planning activity as being a decision to provide care in a new specialty area, Rockart's model would stress the comparison between this decision (or program) and a range or portfolio of alternatives. The alternatives might be hiring a new physician, contracting with other providers, or abandoning another specialty area to use limited resources for provision of this particular care. The information necessary to make the decision would come from a continual scanning of the external and internal environment, including the progress of existing programs. The environmental information, for example, might well result in the selection of the second alternative: to contract for this service with a physician in a nearby medical center because there are not enough patients in the community needing the special care and office space is just not available. Whatever alternative is selected, would have to comply with the broad objective of the medical group practice to provide quality care.

The management control process is defined by Rockart as involving the setting of subprograms, defining of key variables for each program and subprogram, defining of plans of action for each subprogram, and instituting of a planning, tracking, and reporting system based on the management information system. The setting of the subprograms may be strategic, in that they point the organization in an entirely new direction; or ongoing in that they only improve upon current activities with no change in the present direction of the organization. This breaking down of the major programs is a process of setting specific objectives, considering the appropriate organizational form (e.g., cost centers,

profit centers, investment centers, matrix), and allocating the necessary resources.

For example, a subprogram might be a marketing strategy to increase the market share of a particular product or the financing and purchasing of new equipment to increase production. It is especially important to note that the input to this component comes from top management in the strategic planning process, from the department level, and from levels below. Communication is hierarchical, and the subprogram is finally shaped by information input from bottom and top in an interactive process.

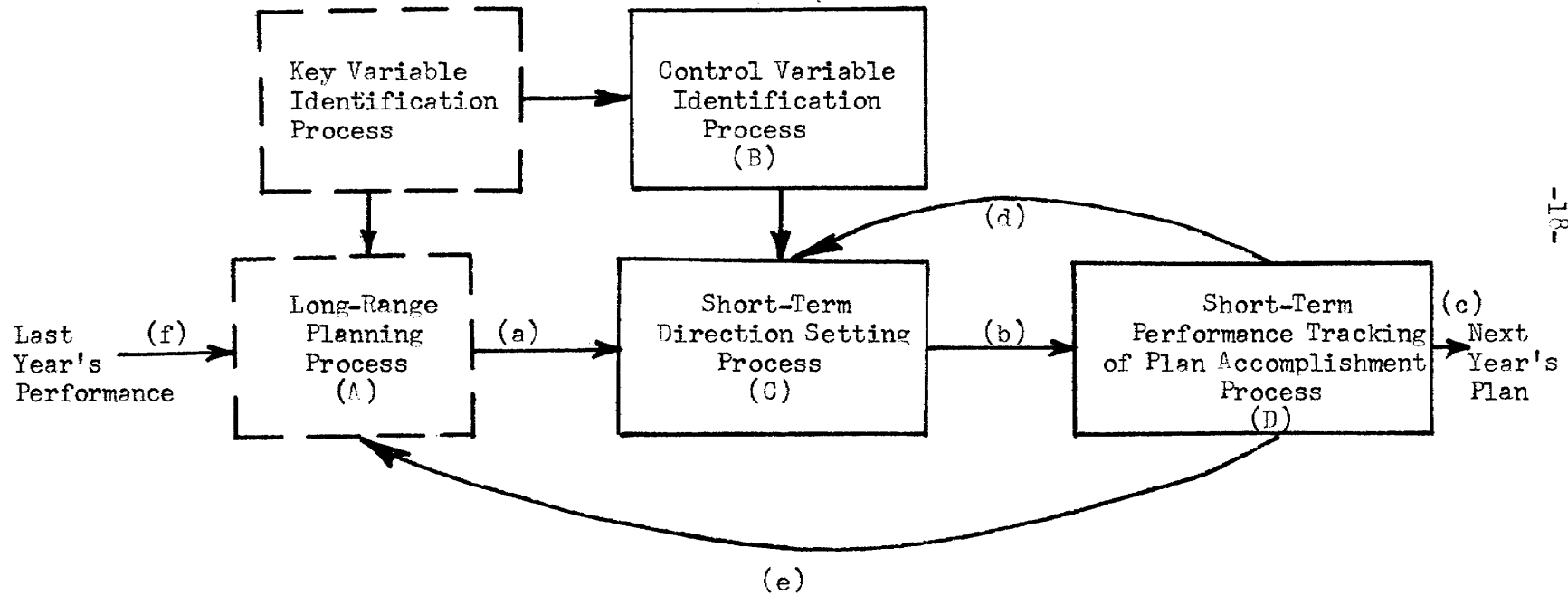
Key variables are defined as the critical success factors or variables to be controlled in a subprogram or "what must go right" for the organization to successfully meet its objectives. The goals of the organization are the specific targets set for each of these key variables, and the purpose of management control is to measure by some "yardstick" or instrument the progress of the organization toward any one goal for a key variable. For example (see Figure 2), an objective of the group practice might be adequate income to physicians, efficiency of operations would be a key variable, a measuring instrument would be the collection ratio (the percentage of accounts receivables collected), and the goal would be 90 percent.

The process of selecting the key variables is difficult because success factors differ from program to program and from manager to manager. Consequently some controversy has arisen as to just what constitutes a key variable.

Lorange and Scott Morton define key variables as "operational measures that reflect the goals of the organization."<sup>11</sup> They are a result of the

Figure 2

Interrelationship between the Components of the Long-Range Planning and Management Control Processes



Source: Lorange, Peter, and Michael S. Scott Morton, "A Framework for Management Control Systems," Sloan Management Review, Fall 1974.

long-range planning process. Control variables in the management control process (see Figure 2) are identified as those key variables that are controllable by management (change in market share) versus key variables that are uncontrollable (a product innovation by competitors). In actuality, uncontrollability of the latter example might not be valid because some influence can be exerted: for instance, producing an item that competes directly with a competitor's new product or lowering the price of your substitute product. Governmental regulations, generally considered uncontrollable in the past, are coming to be viewed as key variables controllable through lobbying and other influences on Congress.

Rockart's next component in the management control process is the establishment of a planning and reporting system. The planning system might be short range (one year) or long range (two to five years) and would project the subprograms into specific plans of action over a certain period of time. Specific goals would be set for each of the plans of action along the appropriate key variable. A reporting system for tracking and evaluation would be set up. This system would provide for a systematic analysis of the information received from the management information system (MIS) so that a manager would ensure ongoing feedback and evaluation for each plan of action. While Rockart (Figure 1) does not provide for explicit feedback paths of communication, he does recognize that control is maintained only if there is feedback on measures of human performance, the productivity of the organization, the nature of decision-making, and the rapid isolation and definition of problems.

Lorange and Scott Morton (see Figure 2) define the setting of short-

run goals as a separate process from control variable identification and define it as Short-Term Direction Setting. For multidivisional corporations, this is one of the later stages in a systematic narrowing down of the wide number of business opportunities, immediately facing the corporation, into a single set of proposed business actions. Input comes from top management in the long-range planning process but also included is input from divisions and departments, usually a responsibility center, which feed their short-term goals and plans to divisional management for integration. This process is also interactive in that plans may be sent back down for modification and clarification. The final result for all levels is a budget.

Lorange and Scott Morton define the next step as Short-Term Performance Tracking and Diagnosis. Performance is measured by recording deviations. In recording the deviations each control variable is measured, a decision is made as to how much of the deviation is controllable and by whom, and how much the deviations are uncontrollable is determined so that adjustments can be made. Then explicit corrective actions (arrows (b), (cc), (d), and (e) in Figure 2) will be taken which may result in revision of resource allocation, major revision of short-run plans, or a significant reshaping of next year's plans in accordance with the deviation.

Considering the components of management control discussed so far, a comparison of Rockart's management control model with the Lorange and Scott Morton model indicates that the critical activities of identifying key variables, setting of goals, defining the short-range plans, and the establishment of tracking or reporting systems are present in both

models although not necessarily in the same order. Rockart's model also includes a subprogram component separate from the plans of action and an MIS as a necessary component. Lorange and Scott Morton's model describes specific feedback loops from the tracking component not only to the present plans of action but to next year's plan and to the long-range planning process.

These additional components help to define the management control process in detail and help to clarify the processes that actually occur in organizations. Present research, however, does not indicate whether all the components in both models must appear in a particular order or even if every step must be present for successful control. While this study helps to shed some light on this area for small nonprofit organizations in health care, there is a need for considerably more research.

To return to Rockart's management control process, the final component is the management information system. It is especially important since this information underlies the entire planning and control system. At first glance this would appear to be the simple collection of information on pieces of paper and/or in computer storage facilities. The really difficult problem is in defining the kinds of information needed for decision-making in each component in the planning and control process. Since Rockart's concept of such a system relies on some of the earlier research, the important developments will be briefly discussed here.

Table I

Information Requirements by Decision Category

Characteristics of Information	Operational Control	Management Control	Strategic Planning
Source	Largely internal -----		External
Scope	Well defined, narrow -----		Very Wide
Level of Aggregation	Detailed -----		Aggregate
Time Horizon	Historical -----		Future
Currency	Highly current -----		Quite old
Required Accuracy	High -----		Low
Frequency of Use	Very frequent -----		Infrequent

Source: Gorry and Scott Morton, Framework for Management Information Systems.

A helpful framework for much of this research is that proposed by Gorry and Scott Morton.

a. The information requirements are grouped into Anthony's three main categories and summarized in Table 1. Strategic information is external to the organization, comes from a wide variety of sources, is broad, aggregate information, and for estimates of the future, is used infrequently. On the other hand, the information for operational control is specifically defined, narrowly focused, comes from within the organization, is used frequently, and tends to be more accurate.

Management control information falls somewhere in between.

b. On the other dimension the kinds of decisions facing a manager fall along a continuum from programmed to nonprogrammed, concepts

originally defined by Simon as follows:<sup>12</sup>

Decisions are programmed to the extent that they are repetitive and routine, to the extent that a definite procedure has been worked out for handling them so that they don't have to be treated de novo each time they occur. Decisions are nonprogrammed to the extent that they are novel, unstructured, and consequential. There is no cut-and-dried method of handling the problem because it has not arisen before, or because its precise nature and structure are elusive or complex, or because it is so important that it deserves a custom-tailored treatment. By nonprogrammed I mean a response where the system has no specific procedure to deal with situations like the one at hand, but must fall back on whatever general capacity it has for intelligent, adaptive, problem oriented action.

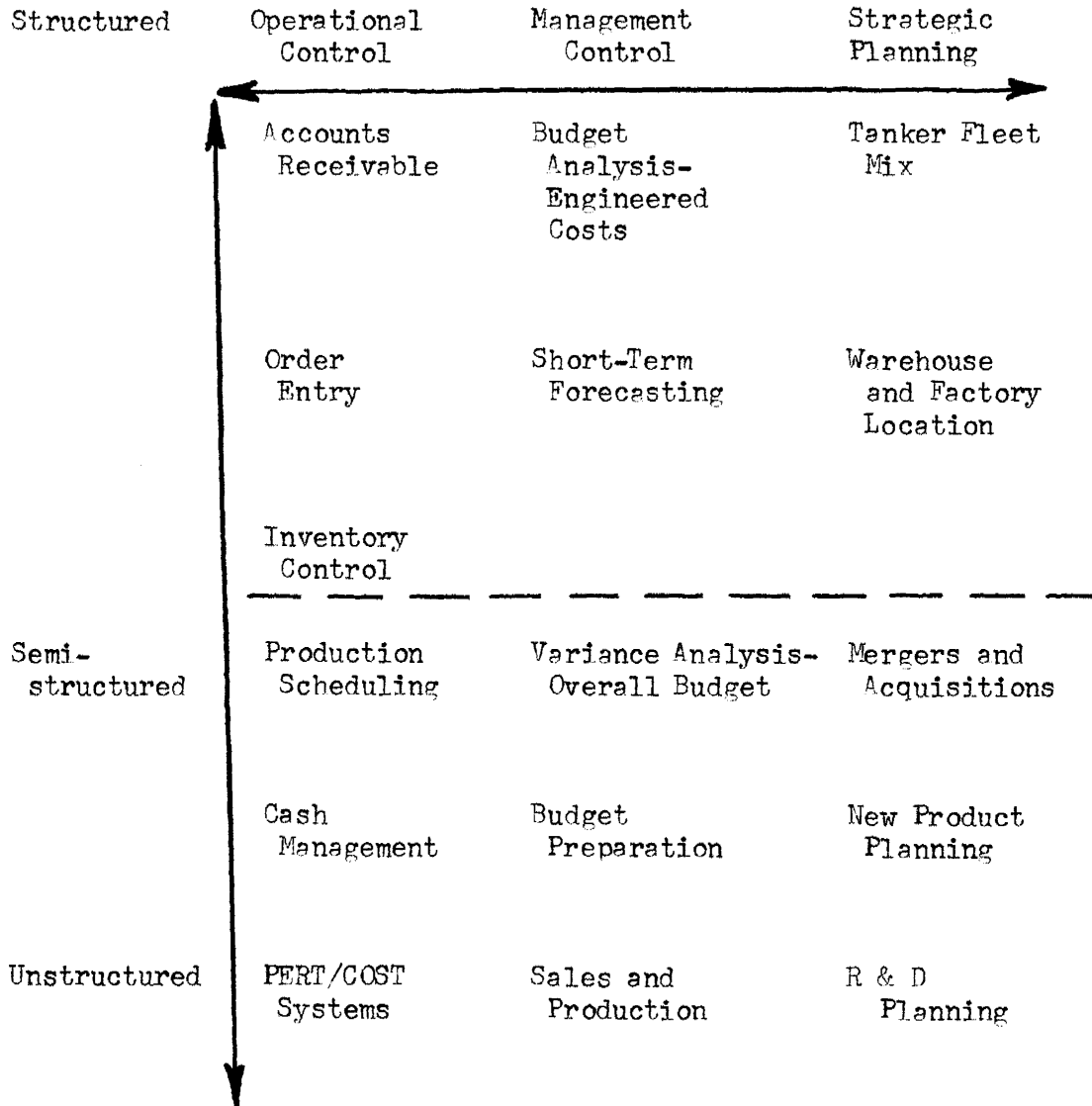
Gorry and Scott Morton use the terms "structured" and "unstructured" for "programmed" and "unprogrammed," so that they are not confused with programmed problem solving by computers. Integrating Anthony and Simon's theories they then develop their own framework (see Figure 3). It is particularly important to note that the most important decisions for managers to make are unstructured and occur within the strategic planning and management control areas. Most of the management information systems in the past have dealt with the structured operational control cell. The line between structured and unstructured is continually being pushed toward the structured end as our knowledge about decision-making is increased.

In addition it must be remembered that most managers have enough information now if not too much. The real problem is to train them in the decision-making process and help them to learn how to organize and select the information already available to them. It is more difficult in the unstructured areas where the information needed for a decision is



Figure 3

Information Systems: A Framework



not well defined. This is in direct contrast to the structured-operational control decisions where the decision process is well defined and based on rules and procedures that are often computerized.

Rockart would agree with this basic concept that information can be classified into cells defined by structured and unstructured on one dimension and strategic planning, management control and operational control on the other. His research has helped him to define the computer technology and computer models available for MIS in each of these cells. From his research in the health care industry, he sees the information (see Figure 4) actually being used as falling principally into the structured-operational control cell with some spillover into the structured-management control and unstructured-management control and -operational control cells. Computerization generally includes accounts receivable, billing, and laboratory results. There are formal paper systems for gathering the information for medical records, scheduling, general ledgers, budgeting, and physician productivity.

His research has also shown that the information in health care institutions is of two main types and purposes: (1) medical information to be used by the medical staff and (2) administrative and financial information to be used by the managers. There is some overlap in the usage of the information and there is a general trend toward a centralization of both kinds of information into one computerized data bank. Within the data bank the information may be grouped into logical families (e.g., patient accounting, resource accounting, general ledger, budgets, profit and loss statements, and fund and grant accounting) where the information is used together for similar purposes and often by the same

Figure 4

Management Information Systems  
in Health Care

	Strategic Planning	Management Control	Operational Control	Financial Accounting
Structured		Budgets	Accounts Receivable Billing Lab Results Medical History	General Ledger
Unstructured		Forecast Sensitivity	Scheduling Out Patient Bed Allocations	

people. At present, however, the majority of health care institutions, including the medical group practices described in this paper, maintain the medical records in the medical record room and the administrative and financial information principally in the business offices.

An example of management control process in Rockart's model in the health care field would be the institution of a new credit collections procedures. The key variable would be the efficiency of operations, the goal would be a 90 percent collection ratio, the short-run planning and tracking or reporting system would be the reports of the collections by month from the collection and credit department which would be monitored by the administrator. The information could come from an accounts receivable and billing system or from the collection and credit department in daily production reports or logs.

The operational control process is defined by Rockart as the setting up of specific tasks, measuring of the output, and the transfer of the data to the management information system. The particular components involve the supervisors and the people performing the tasks who report directly to them. The output is usually readily measurable and is collected or recorded daily or hourly. Composite reports are then transmitted as part of the MIS (according to a formal set of rules and procedures) to the central data bank for the people responsible such as the administrator.

An example of the operational control process would be, first, the definition of the task component such as the maintenance of an appointment book by the receptionists. The output would be an accurate appointment

book containing pertinent information and available as input to the medical record room for another task at a specified time. When significant inaccuracies are found, the receptionist's supervisor would be alerted by the supervisor of the medical record room or the physicians. The output or appointment book as part of the MIS is input to both the medical record room and often to the business office if patient demographic information is needed before the patient is actually seen by the doctor. The control function can be clearly defined by time and volume demands for the efficient operation of the organization.

Given this model, Rockart then defines an analytical sequence for evaluating planning and control systems by isolating seven of the critical areas for diagnosis: goals and objectives, strategy, organization, key variables, reporting and information systems, motivation, and implementation. The questions to be asked are:

1. Goals, Objectives      Is top management clear on what it wants the organization to be and do? Is this differentiated for each suborganization?
2. Strategy                Is the conceptual route to the goals and objectives well designed?
3. Organization            Is the corporation (division, department) organized to meet the needs of the environment? Is the proper financial organization (costs, profit, investment center) being used to optimize motivation and market response?
4. Key variables            Have these been selected to provide a clear attention focus? Do the organization, man-

agement process, etc., help the organization to do well on these few factors?

5. Reporting and information system

Is the right level of information (detail, timing) provided to each level of management?

Is information gathered from the places where it exists?

6. Motivation

Most important, how does the system motivate managers? Does it promote goal congruence?

7. Implementation

Are the proper time and energy spent on educating managers in the use of the planning and control system? Are the top executives using the system as a tool?

### C. Methodology

#### 1. Selection

The criteria used for selecting the participating medical group practices were the heterogeneity of the groups as to size, kinds of medical specialties being offered, number of years the group was in existence, and the presence of a dynamic and successful administrator. The limitations on selection were willingness of the administrator to spend his limited time in interviews and the traveling time necessary for the interviewer (within a few hours' driving time of Boston). Another limitation was the author's awareness of the group's existence, since there were insufficient resources to do a broad survey followed by a study of a large number of practices. It must be stressed that there was no effort to find groups with specific or unusual problems but that the interest was in how a

successful administrator maintained control. Success was measured not only by a lack of major problems but by increase of physicians and patients in the practice as well as the personal feelings of satisfaction expressed by the administrators.

## 2. Method of Data Collection

Open-ended interviews were conducted with the top administrator of each group practice and those other people in the organization whom he felt would be helpful. The intent of the interviews was to gather information about how the practice operated and the activities and concerns of the administrator, culminating in a direct question as to "what were the management control variables that the administrator tracked?" This strategy was used so that the interviewer could gain an overall view of the organization including the external environment, organizational structure, the medical staff, goals and objective, support staff, operations flow by functions (medical records, business office and billing, receptionists, and appointments), and the managerial style and background of the administrator.

When the administrator was asked to define his key variables, an effort was made not to put the words into his mouth but, by asking broader indirect questions, to elicit the administrator's own personal views. He was also asked what information was available to him, i.e., how did he measure each key variable. Finally he was asked to order the variables from most important or critical to least. This was often difficult for the administrator to do since some were of equal importance and their critical value changed over time.

In these interviews, the researcher attempted a deductive approach in

defining explicitly what model of decision-making (including key variables) each administrator used implicitly in his management control decisions. As Anthony, Dearden, and Vancil have discussed<sup>13</sup> this deductive approach is valuable in that it defines the model that the administrators actually use, providing important input for the development of theories and normative models.

The actual interviews were conducted for two to three hours at a time with periods of hours or days between. During the gaps the interviewer's notes were reviewed and misunderstandings or holes in the information were then cleared up in another interview or telephone call.

During the interviews the interviewer was made acutely aware of the time pressures on the administrators through telephone calls, employees asking questions, and overt comments by them as to how busy they were. This often limited the detail of the answers but seemed to be offset by the administrators' interest in the interview topic itself and in describing their activities.

### 3. Some Possible Weaknesses in the Methodology

How accurate is the information that is elicited in an open-ended interview? It may be influenced by the interviewee's desire to look good to someone who is going to write down their answers, who is from MIT, and who is a woman. But of more significance in this situation is the lack of a common definition in the interview as to what are management control and control variables or key variables. Some effort was made to overcome this confusion by means of probing questions asked after the direct question about key variables was put. This technique



seemed relatively successful since the administrators readily brought out their emphasis on the efficiency of the operations, but often only after further questioning would they begin to discuss really how important governmental regulations and other variables were to them.

Another question may be why not homogeneous groups? In other words, there is more control of the situation by holding other variables constant. For this study it does not seem to be an important constraint since the results may be more meaningful and generalizable when based on heterogeneous groups. It is not a study to determine how the variables will differ if one independent variable is changed with the others held constant.

Is there a bias due to retrospective assessments? Has the view of the administrator changed over time? As he looks back--and he must, to grasp the ongoing nature of management control--does he see his important variables as the ones he would have liked to have controlled but did not have the time or the proper information to do so? This is almost impossible to determine because of the dynamic nature of the management control activity within which the variables are constantly coming into being or are downgraded in importance.

Finally, it should be noted that two of the groups had been studied before, one of which had been studied many times, while the third had not been previously involved in a research project. This may have constrained an administrator from a previously studied group who had put in a lot of time and effort and received very little return in practical benefits. At the same time, the administrator of the group who had not been studied may not have known what to expect and was therefore reluctant to be as

open in his answers. This aspect is impossible to measure or constrain in a limited study, and it seems unlikely to bias the results to any significant degree since the administrators even with their time constraints were highly motivated to participate and were exceptionally cooperative. Also, they were especially open to change and new ideas.

## II. RESEARCH FINDINGS

For each group practice a brief overview will be given to provide a setting for the reader. Following the overview the data will be reported for that specific clinic grouped under the seven critical areas for diagnosis as proposed by Rockart.

Although the group practices in actual fact often use the terms goals and objectives interchangeably, for this paper objectives will be defined as the broad goals of the organization. Objectives, for example, might be to provide quality care to the patients and an adequate income to the physicians. A key variable might then be the efficiency of operations; one measure of that variable might be the collection ratio of accounts receivable and the goal would be 90 percent or over in any one year. Figure 5 illustrates this definition. It is important to note that there can be many different measuring instruments for any one key variable and that the goals are specific and may be changed from time to time as a result of experience.

### A. The Keene Clinic

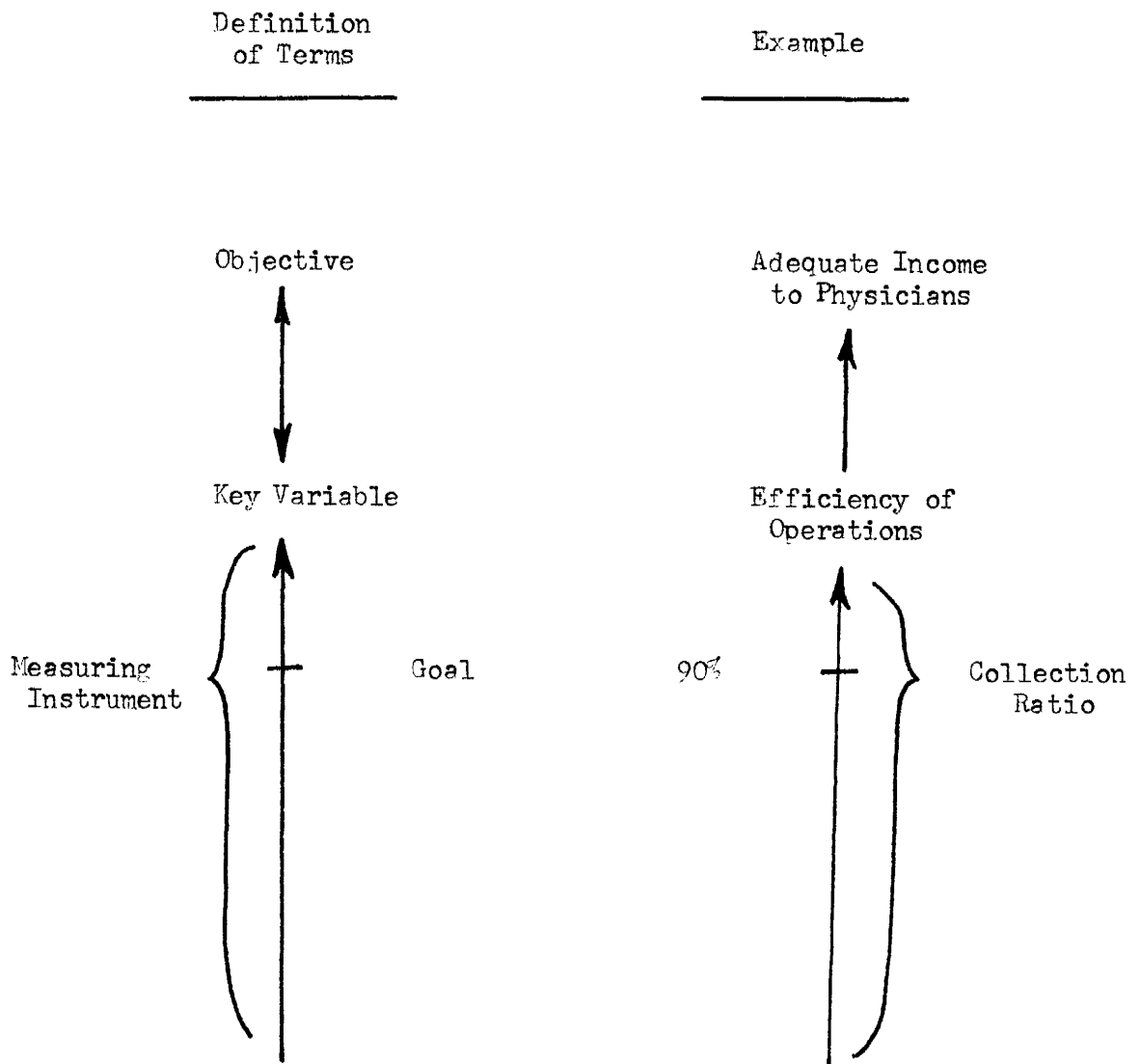
#### 1. Overview

In 1948 the Keene Clinic was founded by six physicians who believed they could practice better medicine and render more diagnostic and treatment services by practicing together. This group practice is organized as a for-profit corporation owned by the physicians.

The original clinic building was a house to which an addition was made. The facility served a staff of ten physicians very adequately.

Figure 5

Relation among Objectives,  
Key Variables, and Goals



About 1966 the clinic undertook a program to define explicitly goals and objectives and to examine the clinic's responsibility to the community. As a result, additions to the medical staff were planned in 1967. A nearby house was rented which provided offices for three additional physicians. In 1970 a small office building was leased which provided offices for five more physicians. Long-range clinic building plans had to await a decision by the local hospital regarding its future building plans. Finally in 1971 the construction of the new community hospital began. The clinic acquired eight and a half acres adjoining the hospital's site. Construction of a new \$1.2 million clinic building to house 32 physicians began in April 1972 and the building is presently occupied by a medical staff of 30.

The Keene Clinic, located in Keene, N.H., with a population of about 22,000 delivers health care in 13 specialty areas. It is estimated that the clinic serves a population of 87,000 to 100,000 residing principally in Cheshire County in southwestern New Hampshire. This area has diversified industry including light engineering, textiles, tourism, and some agriculture. The patient population is increasing at an average of 5,500 per year, and the Keene Clinic now provides 80 percent of the health care in the area.

With 95,000 patients, the clinic was processing about 54,000 billing transactions in March of 1975 (an increase of 69 percent since March 1970). The 13 medical specialty areas are listed in Table 2.

Table 2

Medical Specialties at Keene Clinic

<u>Specialty</u>	<u>Number of Physicians (full-time)</u>
Allergy	1
Anesthesia/Adult Medicine	1
Family Practice	4
General Surgery	2
General & Thoracic Surgery	1
Internal Medicine	6
Neuropsychiatry	1
Obstetrics-Gynecology	4
Ophthalmology	2
Orthopedic Surgery	2
Otolaryngology	1
Pediatrics	4
Urology	<u>1</u>
	Total 30
	<hr/>
Medex	1

2. Seven Critical Areas

a. Objectives

-The physicians will provide comprehensive medical services of the highest quality within the group practice setting.

-Clinic staff will be medical advisors as well as medical consultants.

- Changes in the staff and facilities will be to provide better patient care.
- The clinic staff will be encouraged to contribute to medical knowledge and teaching.
- The clinic staff will support community involvement both in medical and civic affairs.
- The physicians will be provided with an adequate income related to productive effort.
- The physicians will be allowed a reasonable amount of time for social and personal activities.
- The clinic staff will fulfill its obligation for the welfare and security of its employees.

The objectives of the Keene Clinic, paraphrased above, are explicitly written down in broad terms and then described in detail. They make up a 30-page document.

b. Strategy

The strategy of the clinic's staff to maintain high quality care is careful recruitment of new physicians. When a new specialty area is to be provided at Keene's Clinic, this formal recruitment procedure is used. Once the physician becomes a full member (investing a substantial amount of capital), there is a concern to keep the organization financially viable. The physician is now a stockholder in the Keene Clinic Corporation. He can also buy into the realty trust that owns the building which the group practice rents. He is encouraged to do this so that when a number of physicians retire or leave, both the group practice and the

realty trust do not face a major loss in financial assets.

Another strategy for maintaining quality care is to provide a stipend and time off to each physician for further education.

The construction of the new building was a strategy to provide facilities for the good practice of medicine and for the expansion of the number of health specialty areas to be offered by Keene Clinic.

Efficient operations are maintained by a strategy of careful attention to daily operating details. Adjustments are made immediately including the adoption of new technology when it can be cost justified. Also, the support staff are given a great deal of responsibility for their daily tasks with broad overall supervision by the administrator.

The strategy used in relations with the community is generally one of waiting for the community to come to the clinic staff with requests or suggestions which are then met if at all possible.

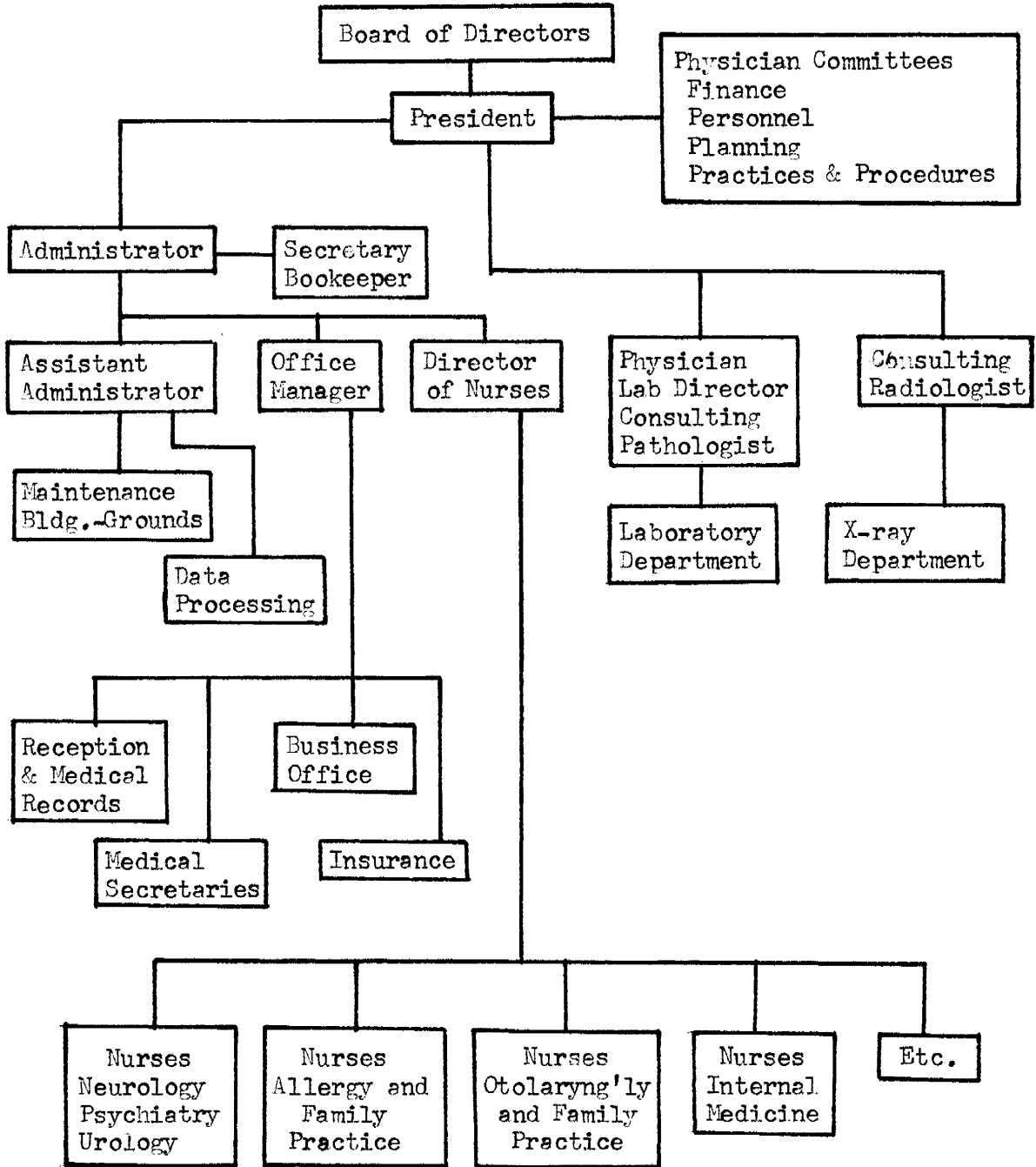
#### c. Organization

The group practice is a for-profit centrally organized corporation (see Figure 6) with the administrator responsible for all the support personnel as well as many of the medical support staff (i.e., nurses, laboratory technicians, and x-ray technicians). In spite of the centralized organizational chart, in actual practice the supervisors in each department are given considerable responsibility for day-to-day operations and all the employees are encouraged to organize their tasks in ways compatible both with their needs and interests and with those of the clinic. While the administrator has the responsibility for the day-to-day operations, he concentrates on problem solving and the making of critical



Figure 6

Organizational Chart, Keene Clinic



decisions. The laboratory and x-ray technicians are also supervised by physicians, an arrangement that gives some matrix character to the organization, which is important for a medical and nonmedical division of labor.

While a medical organization such as this is not organized into profit centers, various departments have recently been designated as cost centers, with the initiation of a new cost accounting procedure.

The decision-making process involves the Board of Directors\* for strategic planning and policy decisions. For example, decisions about nonroutine capital expenditures, new personnel policies, establishment of medical procedures, and the setting of physicians' fees. The Board also relies on the Finance Committee, Personnel Committee, Planning Committee, and Practice and Procedures Committee (all made up of member physicians) for input when making decisions. Some of their decisions are operational in nature, such as approval of the budget. The administrator makes the day-to-day, organization-wide operational decisions (including financial ones with input from the Board of Directors and the physician committees when necessary). For any major decision such as voting in a new physician member or building a new building, all the physician members (stockholders) vote. Action is taken only unanimously.

The managerial style is one of close attention to detail, a negotiating relationship with the physicians, and the encouragement of employee participation in task design and measurement. The administrator

---

\*The Board of Directors consists of four full member physicians who serve four-year rotating terms with the third year as president. A fifth director, elected from the newer stockholders, is appointed to the board for a one-year term. Three laymen from the community serve on the board.

is a patient facilitator open to innovation who likes a dynamic environment with challenges, in spite of the fact that many of them are crises. This style has certainly been compatible with the kind of external and internal environment that he faces.

The financial resources available to the group are adequate since the practice is operated efficiently. This has provided the necessary resources for the practice to continue to grow until it is a major health provider in the area. Physicians have received an adequate income, and capital funding for financing the new building was obtained through local bank loans.

Technological resources are available but not utilized as soon as they might be because they cannot be cost justified. For example, a computerized billing system was instituted when the old system could no longer handle the increased number of transactions and when the costs could be covered by operating income.

Human resources are more than adequate since the practice has no trouble attracting competent physicians willing to work in a group practice setting and support personnel who like the flexible work schedules, job security, and the prestige of working in a medical facility.

The environment that the organization operates in is one of an increasing demand for medical specialties, small but steady increase in the population, increasing governmental regulations as to what services they can provide and what fees they can charge, and quality assurance reviews. There are very few solo practitioners in the area and the other major medical service is provided by the 175-bed Cheshire Hospital next

door. There are problems with the relationship to the hospital since the group is viewed as a natural competitor for laboratory and x-ray services. At the same time Keene Clinic physicians treat patients at the hospital, help to cover the emergency ward, and participate in hospital clinics (e.g., prenatal, crippled children, cancer, and TB).

d. Key variables

The first critical success factor and the most important one for the administrator at this time is governmental regulation. The principal regulation involves the Health Service Agency (HSA), a result of P.L. 93-641, the National Health Planning and Resources Development Act of 1975, which has yet to be designated by the governor. The responsibility of HSA will be effective planning and development of health services, manpower, and facilities in its area. The law, while supplying the HSA with huge sums of money (until the President slashed the funding levels), is vague as to specifically how HSA will plan and develop health services. The agency, however, will administer the certificate-of-need program, assess the health services available, and set up or work closely with a rate setting commission.

Another regulation anticipated as coming soon is the creation of a PSRO or similar concept applicable to the practice of medicine in a medical group practice. Also important under governmental regulation are the state statutes presently being passed, such as a licensing law for agencies performing medical laboratory tests. While Keene Clinic has its own voluntary quality assurance program in the laboratory as recommended by the pathology association, the clinic physicians must be aware of what

is in the laws and be prepared to meet their requirements.

The second variable is efficiency of operations, which has been an ongoing control variable and must be a success for any of the other variables to be important. The patients' view of the group practice is an important third, ongoing variable. The fourth variable is Keene Clinic's relationship to the hospital, which, while important, is difficult to control satisfactorily and even to measure at times. With the advent of the malpractice insurance problem the administrator of the Keene Clinic anticipates the justifiability of health care diagnosis and treatment as a potentially important control variable. It not only affects costs but how the physicians practice medicine. Finally, the last key variable is the relationship to the community which is difficult to measure and not considered so critical since the group is established and growing.

e. Reporting and information system

With regard to governmental regulation, external information as to what is happening politically is collected informally and intermittently as rumors, articles, and governmental officials bring this information to the attention of the administrator. For example, The New Hampshire Medical Group Management Association is being sought out by agencies who will provide a speaker to present their case for being designated the HSA by the governor. A great deal of information is exchanged informally among the members of the association because the group is closely knit and has a strong esprit de corps. The need is felt for clinic manager representation on the HSA board to set up a formal channel of information flow and for some control or influence over this key variable.

To control government regulation there is a need for "hard facts" from within the clinic. The administrator is already instituting a cost allocation procedure to collect information formally about direct and indirect costs by physician, by specialty, and by visit so that when the HSA sets physicians' fees the Keene Clinic will have reliable data on which to base its arguments. For some time a formal review procedure for medical audits has existed; the Medical Audit Committee consists of six physician members each of whom review five charts per month so that every physician in the clinic will have one medical chart audited per month. This information with the physician's responses is brought to the committee as a whole for discussion. In addition, the very fact of practicing together (with a patient's chart being seen by different physicians) helps to ensure review and quality. This information will be available to any forthcoming quality assurance governmental body. Some control is expected to be maintained by the administrator because with a solid base of historical data he can help define the quality control criteria of the agency.

The information system that relates to efficiency of operations is formal, with specific procedures and measurable output. It involves a great number of people and financial resources. The measuring instruments used for this control variable are described as follows.

- (1) Budget variances are provided based on information from the general ledger accounts showing expenses and income broken out monthly and year-to-date. In the past, the general ledgers have been manual with the accounts receivable on punched cards. At present all these accounts are being transferred to an Edelmans Systems, Inc. A computer and software system

which also does computerized billing. The goal is, of course, actual expenses less than or equal to those budgeted or income great enough to cover the extra expenses. The budget is prepared from last year's financial reports by projecting possible changes for next year with input provided by the physicians in informal discussions. A memo is sent out requesting information which is usually received in one-to-one contacts. The budget is then approved by the Board of Directors with input from the Finance Committee.

(2) The amount of time from date of service to the date the bill is sent out is an important measure. The average time in the past has been about 30 days. The new billing system has helped to reduce this processing time by means of a charge ticket created after the appointment is scheduled. Information from the charge ticket is entered into the computer after the visit has taken place and used for the printing of Blue Shield claim forms. Already the processing of the Blue Shield insurance form has been reduced from one week to two or three days on the average. The specific goal in this area was simply to reduce the prior 30-day time lapse.

(3) Cost allocation for each medical specialty is a measurement instrument presently being developed, with no specific goals set as yet. The costs of the service support departments are being allocated to the specialty areas and the physicians on the basis of such measures as billing transactions, x-ray procedures, personnel, and floor space.

(4) The collection ratio (percentage of accounts receivables that are collected) is a year-end measure that is routinely calculated

and compared to the Medical Group Management's (MGMA) standard of 94 to 96 percent. The goal is to do as well or better as the MGMA. In 1975, Keene's ratio was 92 percent. This information is structured and comes from the business office.

(5) The percentage of overhead is a broad figure that must be included but has been difficult to calculate accurately. With cost allocation the information will not be structured and routinely available. Comparison is usually made with the general goal of that of the MGMA, which is about 46 percent.

(6) The ratio of the number of support staff to the number of physicians is another figure that the administrator tracks but reacts to only when there are major shifts. The goal is the MGMA's of 3.5 to 1. With Keene's goal of 3.25 to 1, Keene's present ratio of 3.8 gives the administrator confidence that the clinic is operating efficiently.

(7) Fees generated by physician by type of service are routine products of the computerized billing system and are used in tracking income (on a year-to-date basis) for this year as compared to last year. The goal is to do as well or better than last year to meet the budget.

(8) Return on investment is a measure that the administrator would like to use since the physicians must put in a substantial sum when they become full members both in the clinic and in the realty trust. There has not been enough specific information, time, or financial resources available to do this.

Presently, reports available are budgeted and actual figures by month, income by physician by type of service, and cost allocations.



The information to measure the key variable of the patients' view of the practice is often acquired informally or intermittently. One type is noting if there is any sudden reduction in the number of visits by patients of long standing. Ongoing information appears in the form of complaints by telephone or letters which are carefully checked out by the administrator personally. In addition a questionnaire is sent out now and then to a sampling of the patients. The results are tabulated and are shown to those involved (e.g., the business office when the complaint is about an unpleasant episode with the cashier). The goal is subjective and a minimum of complaints or a majority of favorable statements would be considered success. It is difficult to measure since the information is highly unstructured and based on external opinions.

The information available to measure the key variable of the relation to the hospital is even more difficult to obtain. There may be direct complaints from the hospital administrator at the same time that the hospital agrees to use the Keene Clinic's patients' medical record number on laboratory and x-ray reports. The information may come through the physicians who have had some difficulties in treating a patient at the hospital. The information is vague, politically biased, and often must be interpreted intuitively to get an accurate measurement of the situation. The goal is simply better relations between the hospital and the clinic staff.

The key variable of justifiability of health care and diagnosis (professional liability) is difficult to measure since the information available is incomplete and consists mostly of fears of and opinions about what might happen. It is known that physicians are moving out of California, where malpractice insurance is high, and the hypothesis is that the

potential supply in New Hampshire, where insurance is relatively low, will increase. At the same time there is very little information about the effect on the physician's style of medical practice; for example, has he increased the hospitalization of patients in order to lower his risk? The possible goal here would be accuracy of information and a decrease in physicians' risk.

The nature of the information for the key variable of community relations is unstructured, political, and public-relations oriented. The information system is informal and intermittent. The inclusion of lay members on the Board of Directors is one effort to find out what the community needs and how it views the Keene Clinic. The physicians provide information to the community by being involved in community activities such as running for City Council, conducting health clinics, participating in a radio health-problems talk show twice a week, and treating the indigent for nothing. But these activities do not always provide the best of communication for they do not impact on a really large number of people. The information flow is not more comprehensive because the Keene Clinic staff are oriented toward concentrating on the practice of quality medicine and therefore usually wait to respond to external pressures when the community initiates communications. The advent of the HSA may force more community interaction since the agency will be an organized voice for health planning and services and will provide pressure on the clinic because it is such a major provider of health care in this area. The goal is better community relations.

f. Motivation

The administrator is highly motivated because he has a clear idea of his goals and their relation to the objectives of the organization. A safe assumption is that the objectives of the organization are his objectives. He feels a strong sense of control reinforced by his 20 years of successful administrative experience. His success is a growing and satisfied patient population, a new and sophisticated clinic building, physicians who are satisfied with his performance, a financially viable organization, and most important, his pivotal role in helping to ensure the delivery of quality health care.

He is further motivated by an adequate income and a personal investment in the organization as well as a deep enjoyment in performing his job.

The information system specifically helps to motivate this administrator since it supplies him with concrete facts and answers which he immediately seeks out when a problem arises. This behavior is most likely influenced in some part by his training as a controller. He is also open to suggestions and learning from others. He finds new experiences challenging and interesting just "because he has never done it before".

The other support staff are also well motivated by the system because the information they receive is relevant to their specific task. This is especially true for the efficiency of the operations, where such measures as number of medical records pulled, the number of new patients registered, or the number of charge tickets keyed into the computer are

readily available. When problems arise with a particular task or process, output information is gathered and adjustments are quickly made. Recently the registration clerk who collects and checks out changes in the patients master registration file fell behind. The backlog of corrections was some 2,500. After a record was kept of the type and number of corrections completed per day, some adjustments were made in the procedures, and this bottleneck was eliminated. These rapid adjustments, made by the administration with the involvement of the personnel themselves, maintain high morale.

g. Implementation

The implementation of information systems (medical, business, and financial) has been highly satisfactory because the administrator has responded to real needs and the system has been tailored to fit the people who are going to use it. With a relatively small organization such as the Keene Clinic much of the information is gathered informally and/or intermittently. The success of this procedure depends on the explicitly stated objectives of the administrator and the organization as a whole and his ability to incorporate the information into his decision-making process. This may involve long periods of careful negotiations, especially with the physicians, but that is the administrator's forte. Information may be gathered for a time but the system abandoned when there is no longer a need for it. This is especially true in strategic planning (a physician's survey of what new specialties would be covered in the new building) and in operations control (information was gathered about who was making telephone calls through the switchboard, tying up the operators and forcing patients

to wait a long time to get through). On the other hand, the management control information system was set up to be highly structured. The information is routinely tracked and action is taken only when a significant deviance is noted, for example in the collection ratio.

## B. Rural Health Associates

### 1. Overview

The Rural Health Associates (RHA) based in Farmington, Maine, was formed in 1971 with the aid of federal funds, in an effort to improve the deteriorating health care situation in west central Maine. Additional impetus for forming the group came from OEO sponsorship of a prepaid plan for low-income residents. The four physicians who formed RHA's original medical nucleus were committed to forming a closely knit group, with opportunities for cross-fertilization of ideas, use of new technology, and the delivery of quality primary care.

Satellite health centers were established in the communities of Rangeley, Kingfield, and Jay-Livermore. The first two are connected to the central clinic in Farmington by interactive television and are routinely staffed by physician assistants. Physicians visit these two clinics on certain specified days while two physicians are permanently based at Jay.

RHA is a nonprofit health services corporation governed by a policy making Board of Directors. The corporation rents the Farmington building but it desperately needs more room and is in the final stages of deciding whether to buy another building, lease a building in a

shopping center, or build next to the hospital which is five miles away on the other side of Farmington.

RHA, with a total of ten physicians covering five specialties, four physician assistants, and two dental hygienists (see Table 3) is serving a population area of about 30,000 plus 10,000 tourists for winter skiing and in summer resorts.

Table 3

Medical Specialties at RHA

<u>Specialty</u>	<u>Personnel</u>
Surgery	1
Internal Medicine	2
Family Practice	5
Pediatrics	1
Dental Medicine	<u>1</u>
Total	10
Physician Assistants	4
Dental Hygienist	2

The population is relatively stable in this rural and rather mountainous area which often experiences severe winters with difficult travel. The principal industries are lumbering, paper mills, shoe factories, tourism, skiing, and farming.

The group's present patient population is about 20,000 --4,000 in a prepaid plan (OEO) and the remaining 16,000 as fee-for-service patients. It processes about 3500 billing transactions per month.

After steady growth, the patient load has leveled off with the arrival of an obstetrician-gynecologist and a general practitioner who have set up private practices in Farmington.

2. Seven Critical Areas for Diagnosis

a. Objectives

The group still maintains the objectives held by the original physicians forming RHA, i.e., formation of a closely knit group, cross fertilization of ideas, use of new technology, and the delivery of quality primary care. Of particular importance is the commitment to comprehensive care, which includes patient education, patient outreach, patient care (the patient takes his own blood pressure and calls in the results) and preventive care as well as primary care. A long-term objective is community recognition and acceptance, which has been difficult to achieve until now.

b. Strategy

A principal component of the physicians' strategy is openness to innovation, especially in new technology (the TV communication with satellite facilities, for example), which has resulted in their participating readily with research groups from MITRE, the University of Michigan, and MIT. In addition, they have talked with many individuals who have made site visits to observe not only the physicians but also the total organization and day-to-day operations.

Their strategy to provide quality care also includes the opening of satellite clinics (which must have financial support during the start-up period), the extensive use of physician assistants, use of medical protocols, special services to the community such as hypertension clinics, and

the teaching of health education courses for the University of Maine in Farmington and in the public schools. In addition they have joined with the Community Action Program to provide an outreach service. This department is staffed by six people who provide help to low-income persons in solving health problems of a social nature, such as a lack of good nutrition, lack of transportation to health care facilities, inability to get food stamps, and drug abuse. To help facilitate these educational and outreach services they have organized a Department of Integrated Services (see Figure 7). The corporation grants the physicians and physician assistants two weeks off each year for continuing education plus a stipend to help cover expenses.

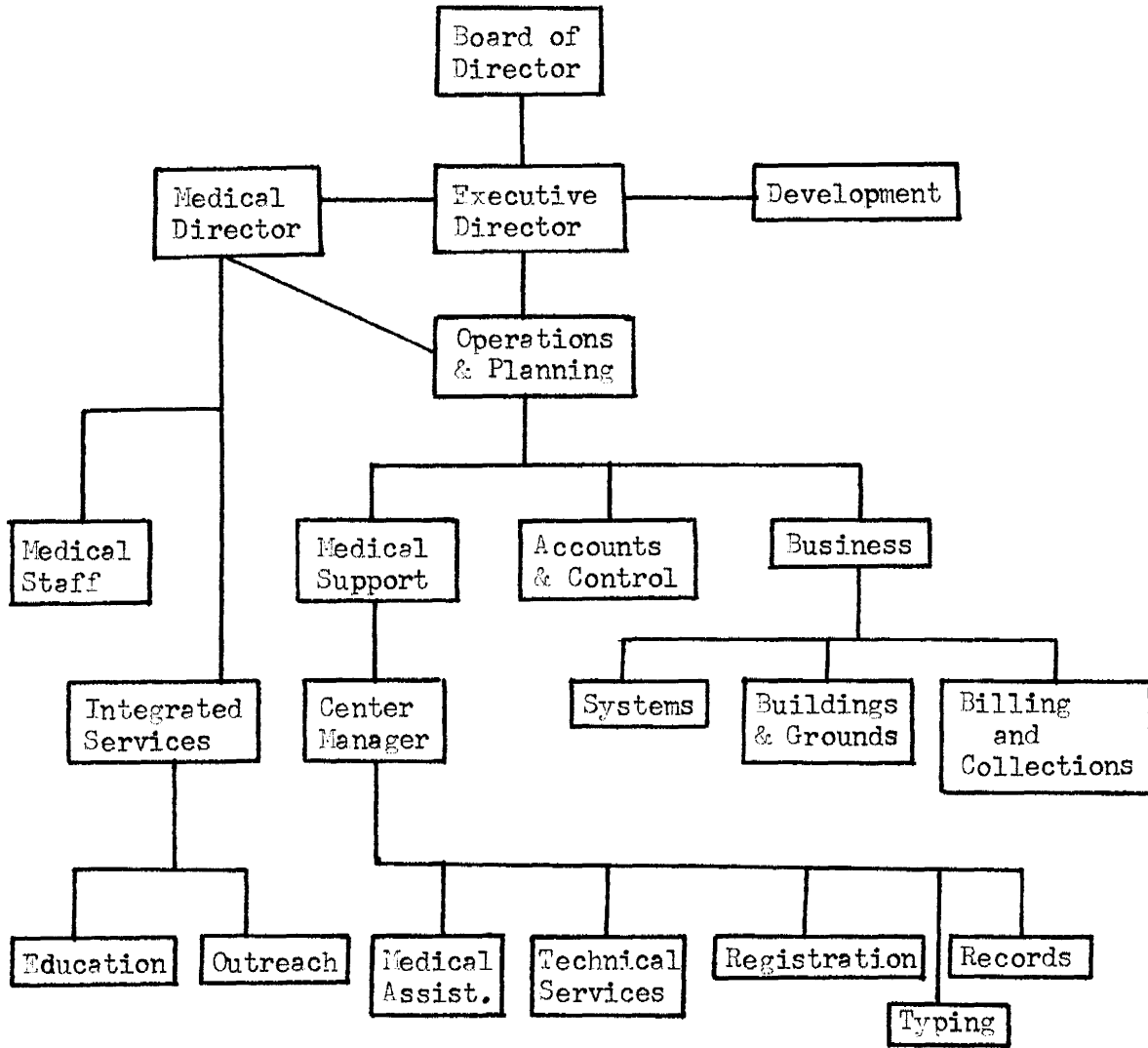
The strategy to maintain a closely knit group and encourage cross-fertilization centers around recruiting physicians who are open to new technology and to communication with their colleagues. Their personal goal is to practice quality health care. They are also willing to live in a nonurban area, probably earning less money than they could elsewhere. Closely knit feelings are also emphasized by the opinions of some community members that medical group practice is undemocratic. The physicians would like to improve their relations with the community but can see no other strategy than just to wait for time to bring about acceptance.

The Executive Director also sees his role as one of being an advocate for the patients in his meeting with the physicians. His strategy is always to press for comprehensive quality care, including education and preventive care and using the latest technology and methods. He continually seeks out new programs to meet the health needs of the patients. To



Figure 7

Organizational Chart for Rural Health Associates



provide himself with adequate time for this important activity he delegates much of the responsibility for the efficient operations of the practice to two other administrators: The Director of Operations and Planning and the Business Manager.

c. Organization

The group is organized (see Figure 7) basically along the two functional lines around the medical staff and the support staff. These functions are integrated at the top by the Board of Directors and through the matrix technique, i.e. the use of three committees:

- (1) The Policy Committee, composed of the Medical Director, Executive Director, and the Director of Operations and Planning.
- (2) The Committee on Operations, composed of the Medical Director, the Director of Operations and Planning, the Executive Director, the Director of Medical Support, the Controller, and Business Manager.
- (3) The Education and Outreach Committee, composed of the Medical Director, Director of Operations and Planning, and the Director of Integrated Services.

Broad policy decisions are made by the Board of Directors. The three committees make the rest of the decisions in each of their areas.

The managerial style of the organization is characterized by the fact that each administrator operates in his particular area of interest and expertise. The Executive Director is an aggressive innovator who was most effective during the start-up phase of RHA, establishing it as a

viable and stable organization. Now he is focusing on the development of new programs, such as establishing a new satellite clinic, extending the prepaid plan to non-low-income families, increasing the role of RHA in the new HSA (he is on the board of directors), helping to write state statutes (an HMO law for the state of Maine), and lobbying Congress to continue to provide federal funding for RHA.

The Director of Operations and Planning works well with people in the day-to-day operations and is interested in planning. He has instituted a personnel advisory committee with employee representatives on it to deal with mutual problems. He has also begun to devise a strategic planning system by surveying the physicians as to their goals and objectives, what services they shall deliver, and the ultimate size of the group.

The Business Manager has a great deal of expertise in financial management and is especially interested in developing a more efficient business system.

This substantial amount of managerial talent in people open to innovation and committed to the objectives of RHA, is available because a portion of the federal funding underwrites their salaries.

From the environment comes strong community and consumer input to the RHA organization through the Board of Directors. Because of the OEO charter, five directors are elected by the members of the prepaid plan. In addition there are four members of the corporation and three other providers in the community. They are concerned about the quality and scope of the health care provided by RHA, a concern manifested in the administration's reluctance to use resources for exceptionally attractive physical facilities. The move to a new building is motivated by the critical

need for additional space by the medical staff rather than by desire for a building. The conservative viewpoint has also developed because the economy is not booming and Maine has only limited coverage for the poor. Thus the burden for a very efficient operation is shifted to RHA, especially for the prepaid plan.

Another important characteristic of the environment is the number of solo practitioners in the area. There are six physicians in private practice and four dentists. Six physicians plus the ten from RHA and a potential patient population of 40,000 results in 2,500 patients per physician and indicates a slower growth rate for RHA, given the stable population in the area. The keen competition, with a possible loss of income for RHA, tends to keep alive the community issue of solo practice versus group practice. The Executive Director and the physicians, however, view the competition as good in that it pressures RHA to continue to provide quality and comprehensive care.

Financial resources are available both from federal funding and from the management of an efficient operation. Human resources are exceptionally capable, drawn to this group because of a commitment to the mission of RHA. The group is open to new technology in both medicine and business, the only real constraint is that it be cost justified. For example, the TV communication with the satellite clinics, initially funded by an outside grant, is now maintained out of operating income and the use of a NCR-399 machine for billing and accounts receivable is also financed from operating income.

d. Key Variables

The primary key variable for this group is the quality and comprehensiveness of the health care it delivers. This variable relates most closely to the "mission" of the physicians, the Executive Director, and the Board of Directors.

A second key variable is federal funding, which is critical to the survival of RHA and necessitates ongoing lobbying efforts. Indeed, it is especially critical in light of the economic depression and the slashing of budgets by the national administration. Another aspect of this variable is the continuing negotiation of catastrophic coverage contracts with the state of Maine under the new Health Maintenance Organization type of state statute for Medicaid patients (statute drafted with the assistance of RHA's Executive Director).

A third key variable is governmental regulation. Not only is governmental funding a concern but also are the provisions of the statutes and their effect on RHA. The Executive Director of RHA, who helped draft the HMO law, is also on the Board of Directors (69 members presently and more to be added in the future) of the HSA created by the governor. The Executive Director anticipates being on the Executive Board (25 members) which will oversee the day-to-day operations of the agency. These activities are a critical part of an increasing effort by the Executive Director to control this very important variable.

Efficiency of operations is the fourth key variable of the Executive Director. Responsibility for this management control variable has been partially delegated to the Director of Operations and Planning

and to the Business Manager. They monitor the day-to-day operations, alerting the Executive Director when there are major variances, and have had significant input into the measuring instruments for this key variable. This responsibility system has been instituted only recently, so adjustments are still being made and the eventual effect on the control of this key variable is still uncertain.

The patients' view of the practice is the fifth key variable. This variable essentially is composed of two parts or points of view. One is that of the members of the prepaid plan, who view RHA as a source of their total health care needs. The second is that of the fee-for-service patients, who are much more free to go to other providers in the community. At the time the Director of Operations and Planning is the person who receives complaints from the patients and follows up with any necessary action.

The sixth, and a specific variable for the Executive Director, is the establishment of satellites to provide more patient services. The major factor in the establishment of a satellite is the availability of a physician or physician assistant who wants to provide health care there. The ability to cover costs is not critical in the short run since the purpose is to provide quality health care wherever it is needed. It is assumed that RHA as a whole will subsidize the satellite in the beginning. This control variable is important because one of the major programs of the group has been to establish satellite clinics that can provide good health care to deficient areas.

Other providers in the community is the seventh variable, especially important since these providers may take away some of the

income critical to RHA. While this variable is relatively uncontrollable, there are ambivalent feelings as to whether it should be influenced to the extent of "driving out" other physicians in the community. RHA recognizes the importance of a patient's going to a local physician and the competitive pressures ensuring quality care, but there is concern that the private physician is not sharing the risk for those in the prepaid plan and is not under the close peer review that RHA maintains.

RHA's relation to the hospital is the final key variable. The only hospital in the area, Franklin County Hospital, has 60 acute patient beds and 20 for extended care and has recently moved into a new building. Relations with RHA are strained because the hospital staff view RHA as taking away potential patients, x-ray, and laboratory work. RHA physicians help to cover the emergency room and hospital bills for patients who are members of the prepaid plan are covered by RHA. Efforts to improve relationships, such as the sharing of a radiologist, have not worked out. RHA's liaison committee shares members at hospital board meetings. The group contemplates building a new clinic next to the hospital. At the same time RHA encourages preventive and outpatient care, sends much of its laboratory work to a commercial firm in Portland, and does most of its own x-ray work because it is more economical.

e. Reporting and information system

The information available for quality and comprehensive care is informal, based principally on the new technological and research findings that the physicians bring to the group. It includes material learned through research study groups and is shaped by general openness to innovation. Some scanning of the environment is done by the Executive Director

in his interactions with other health administrators when working on governmental activities.

For the first key variable, quality and comprehensiveness are difficult to measure. The way it seems to be done is in the programs and services provided to the patients, which include:

- (1) satellite clinics
- (2) use of physician assistants for acute cases
- (3) use of visiting nurses
- (4) use of two buses to transport patients
- (5) hypertension clinic programs
- (6) activated patient care
- (7) dental health care education courses
- (8) community health education courses at the University of Maine
- (9) participation in research study groups
- (10) referral of some cases to the Maine Medical Center
- (11) review of medical records for both physician assistants and the physicians themselves
- (12) the physicians' concentration on chronic and preventive care

Their goal is as broad coverage as possible, with high quality assumed to be a result of continued efforts by the physicians to use new technology, hold mutual consultations, and continue their education.

The information about federal funding is basically informal and unstructured and comes from the Executive Director's discussions with Maine's congressmen both in Maine and on special trips to Washington D.C. The goal is economic viability through political negotiation. The costs of the OEO or prepaid plan patients are reported monthly to HEW so this



is a measuring instrument which underlies those negotiations. The goal therefore is funding adequate to cover expenses.

To influence the government regulation the Executive Director maintains personal contact with the Maine legislature by getting to know the people involved. Information is gained in one-to-one discussions. Information is also gained by the actual participation of the Executive Director in the writing of statutes and the operation of governmental agencies. Such information is intermittent, political, and of necessity often only estimated forecasts of the effects of legislation. The view of the Executive Director is that he must be involved in political interactions if he is to provide input from RHA and thus control the funding and regulations in a significant way.

The goal for the variable of governmental regulation is also difficult to measure but is basically one of influencing the regulations so that they have a positive affect on RHA. The measuring instrument is the subjective judgment of the Executive Director as he justifies his actions both to himself and to the physicians and the Board of Directors of RHA.

The internal information system for efficiency of operations is formally structured and involves a number of subsystems, including medical records, the billing and accounts receivable systems, the scheduling of patients (including the bus schedules), and the HEW accounting and reporting system. The NCR-399 billing machine prints the bills and updates accounts receivable ledger cards. The insurance claim forms are typed by insurance clerks and credit collection is made by a clerk with the assistance of the Business Manager. The controller manually maintains

detailed general ledger accounts for both the prepaid and the fee-for-service income and expenses. He prepares the monthly budget variances (or income statement) which are available at the monthly meetings of the Committee on Operations one month after the month being reported. These are manual and tedious operations which the group anticipates putting on a computer as soon as it can be cost justified. The information for the budget is collected from the Business Manager and the Controller, who with the Executive Director and the Director of Operations and Planning draw up a budget. Input is received from the physicians in informal discussions, with budget review handled by the Committee on Operations and final approval given by the Board of Directors.

The management control measures that the Business Manager computes, such as collection ratio, accounts receivable ratio, and average time of collection, come from the accounts receivable ledger cards which he personally computes regularly. He then communicates the results to the Executive Director and to the Committee on Operations at their monthly meeting.

There is close personal and informal communication between all of the top administrators as would be expected in a closely knit organization. The various committees aid in communication and provide problem solving once the information is received, permitting rapid feedback to those who are responsible. There is concern with the information delivery feedback time on budget variances, however. Since it takes a month to gather the data, there can be almost two months delay before a formal examination of the figures takes place.

The information from the satellites comes in daily and includes the cash and income generated as well as some medical records. Transmission of the medical record is viewed as a significant problem since the patient's medical record is kept at the satellite where he originally registered but he may then be sent to Farmington for further treatment or appear there for acute care. To get the medical record at the correct place is difficult; sometimes it is read to the physician over the telephone or via the TV lines. Since the availability of the medical record influences the quality of care this is viewed as a management control problem as well as a medical problem.

The measuring instruments for the efficiency of operations are first the budget variances, which are examined at the monthly Committee on Operations meetings and are compared monthly and year-to-date. The goal is, of course, positive variances of expenses less than budgeted. This process is complex in RHA because it has both prepaid and fee-for-service patients.

RHA must report costs for the prepaid plan as compared to federal funding capitation income. At the same time it measures income and produces a balance sheet for RHA as a whole. Revenue is also measured by 40 different services, by providers, and by satellite location daily and monthly. Under the prepaid plan the group must measure income plan population, number of salaried personnel, enrollee encounters by type of service, hospital utilization and revenue, and expenditures, comparing actual to projected quarterly. The goal is to keep actual expenses and income equal to that projected.

For both prepaid and fee-for-service operations, the Business Manager measures employee-to-provider ratio (2.82 at present: 3 would be too high); income generated (total and by physician); collection ratio (96.1 percent - the goal is to improve it); income from third-party payers, cash flow, how fast to collect accounts receivable (2 1/2 months average), and the average accounts receivable, a ratio of average monthly accounts receivable divided into the accounts receivable at any one time (3/2 is too great and action must be taken). The goals are generally based on the past experiences of RHA and of the Business Manager himself. He is also working on improving the collection procedures, including the aging of accounts. Overhead is looked at but this measure is not considered very useful since it is done only once a year and is confused by the special grants and special projects which are difficult to separate out. The budget variances are considered the most important measures.

The new Director of Operations and Planning is involved in the management control of the day-to-day operations and looks at employee morale (Employee Advisory Committee), patient complaints, physician complaints, physician complaints, backlogs in information flow, ways to improve jobs and costs of operations, salaries and fringe benefits. He is concerned with the efficiency of the total operation; the effect of one individual or a department on the rest of the organization, although difficult to measure specifically, is important. The goal is to reduce complaints, raise morale, and generally smooth the operations of the organization.

Information on the key variable, patients' view of the practice, is collected informally and intermittently. The most significant

information comes from the members of the prepaid plan who are on the Board of Directors; the next most important comes from individual complaints. Also important is input from a number of waiting-room surveys taken in the past in addition to the views expressed at the public hearings prior to the formation of RHA.

Since the patients all live in close proximity in this rural community, there is much informal communication because everyone knows one's neighbors and sees them regularly in other activities. RHA administrators "know" the community and therefore "know" the patients' view of RHA even if it is often only a rumor.

The measuring instruments used for this variable are the opinions of the prepaid members of the Board of Trustees and the number of patients' complaints. The goal is of course fewer complaints and a favorable view of RHA, especially as expressed by an increase in the prepaid population. Fee-for-service patients are also measured through their complaints, since they are free to go somewhere else for service. A decline in their visits to the clinic could indicate unhappiness as well as healthiness. Any major shifts in income or visits could prompt action with a goal to understanding the reasons and increasing income and/or visits.

The information available about new satellites and patient service is informal, based on who the solo practitioners practicing in the area are and an RHA physician perception of need. The impetus for the opening of a satellite comes generally from the physician and possibly from a number of community members who also see a significant need for more health care. The population in the area is reviewed and this will

be done more formally with the new planning committee so that satellites will be integrated into the long-term objectives of the RHA physicians.

The problem is how to measure the providers necessary to service a satellite and even when to set up a new one altogether. Once it is established, the important long-run measure is that the service is cost justified to the extent that it does not jeopardize the long-run viability of RHA as a whole. However, no measure is made of the income generated for the Farmington facility by referrals from the satellite, although operating costs are measured. Also, no measure is made of the income drawn off by a satellite compared to that generated when the patient previously was treated in Farmington.

The goal of this variable is to provide as much quality and comprehensive care to as many people as possible.

Information about new practitioners is spread very quickly by word of mouth. Then the RHA physicians soon meet the new physician at the hospital or in community activities. Referrals may be made back and forth, providing continuing informal input. Some formal communication is maintained through the Board of Directors; however, the larger share of information seems to come informally. Income lost is one measurement of new providers in the area---the goal is of course no loss of income. Another measure of control would be the referrals that go both ways between RHA and the private physicians. The goal, however, is economic viability of RHA while delivering quality care and maintaining good relations between all physicians in the area.

The information about the relationship to the hospital is

informal and passed on in face-to-face interactions. The liaison committee is a formal effort to provide a channel of communication and will deal with any area of mutual concern with pertinent information provided at that time. This would also be true for the more formal interactions involving emergency room coverage, sharing of radiologists, or building a new facility on the hospital grounds. The goal is better relations, but RHA is intent on maintaining its independence and delivering of health care in its own way. This goal is measured by the personal views of hospital staff and the RHA physicians.

The formal reports available for management control are the budget, budget variances (monthly financial statement), balance sheet, and cash flow. The reports available for the prepaid plan are costs compared to income, population, number of salaried personnel, enrollee encounter by type, hospital utilization, and quarterly revenue and expenditures, with actual figures compared with projected figures.

For the prepaid plan, additional statistical information is sent to Systemedics, Inc., in Burlington, Mass., after which a report is produced and sent to HEW with an extensive number of utilization breakdowns. This report is not used by RHA in planning and control.

f. Motivation

The personal motivation of the Executive Director to help deliver quality and comprehensive health care to the community provides the central push for the management control of all the other key variables. While the measurement of the major variable is difficult, the others are more readily measured.

When he spends one day a week on the HSA agency in personal and political interaction, the amount of influence on the agency's actions and his position in it are highly visible and satisfying and therefore become strong motivators. The motivation to control the efficiency of the operations is simply that without an economically viable organization this kind of quality and comprehensive health care could not be available to the community. The measurement of this variable is specific and response is made quickly.

While the measurement of his other key variables is generally informal and by word of mouth, the information is reliable enough so that the Executive Director is highly successful in seeking out new projects and programs for development. He is personally highly motivated to be the patients' advocate, bring in extra funding, and apply new techniques so that his personal objectives are met.

The management control system has been less motivating to the other support personnel. While the tasks were clearly defined and the information readily available for control, there was not always the best communication as to how this relates to the goals of the programs and sub-programs. The creation of a personnel advisory committee by the Director of Operations and Planning and the development of a formal performance rating scale have helped greatly to alleviate this problem. The employees now have an opportunity to express their goals and to understand those of the organization-----a development which has increased their motivation.

g. Implementation

This management control system is generally implemented



personally by the Executive Director. He first ensured the efficiency of the operations and now that the system is relatively formal and structured, he can delegate the responsibility to others. He now concentrates on the quality of health care and still is highly personally involved in the unstructured decisions about governmental regulations and new programs.

C. Southboro Medical Group

1. Overview

In 1972 the Southboro Medical Group (SMG) was founded by three physicians who saw a need for high quality health care in a community that had little care. Citizens were forced to travel to surrounding, even distant communities often at some inconvenience. The physicians believed that group practices generally delivered higher quality of care, so they formed a group practice organized as a nonprofit corporation.

They are presently housed in part of a modern brick professional building in the suburban Boston community of Southborough. Southborough is surrounded by a number of other large communities growing at a rapid rate, at least until the economic depression of the early 1970s. There are major highways in the area providing reasonable access into downtown Boston. There is relatively little industry in Southborough; rather it is characterized as a "bedroom" community.

At present the group with fifteen physicians provides care in eight specialty areas (see Table 4). In addition it utilizes a nurse coordinator.

Table 4

Medical Specialties at SMG

<u>Specialty</u>	<u>Number *</u>
Internal Medicine	4
Pediatrics	3
Obstetrics-Gynecology	2
Optometry	1
Podiatry	2 (3 & 1/2 days/week)
Urology	1 (1 day/week)
Psychiatry	1 (2 eve./week)
Radiology	<u>1</u> (2 eve./week)
	15
Nurse Coordinator	1

With a patient population of 25,000 the group processes about 12,000 billing transactions per month. While there is a lack of hard data as to the potential population, SMG views its patient community as that encompassed by roughly a ten-mile radius around Southborough. At present it is expanding rapidly, at a rate of 300 new patients per month.

2. Seven Critical Areas for Diagnosis

a. Objectives

The objectives of the SMG have not been explicitly written down but the implication is that it wants to provide high quality medical care to an area where it was not readily available before. Another objective is to grow large enough to support a comprehensive range of health care services. Finally, an objective is to provide physicians' salaries

---

\* The total time of the physicians available to SMG is equal to 10 full-time equivalents.

comparable to those of physicians in the area. This is to ensure a sufficient supply of qualified providers. The physicians have only recently felt the need to state their objectives more explicitly and will do so in the near future.

b. Strategy

The strategy of SMG is also generally implicit because the rapid growth of the group has forced it to react both medically and as a business organization to the flood of patients coming through the door, to solving the day-to-day problems as each crisis arises. Thus there is little energy left over for strategic planning. The strategy that has evolved is to grow to meet existing demand. The physicians and the administrator accomplish this by the physicians concentrating on the practice of medicine and the administrator managing the business and day-to-day activities including some supervision of the medical support staff. Both the physicians and the administrator are involved in an aggressive recruitment procedure to obtain highly qualified physicians whose objectives are compatible with those of SMG.

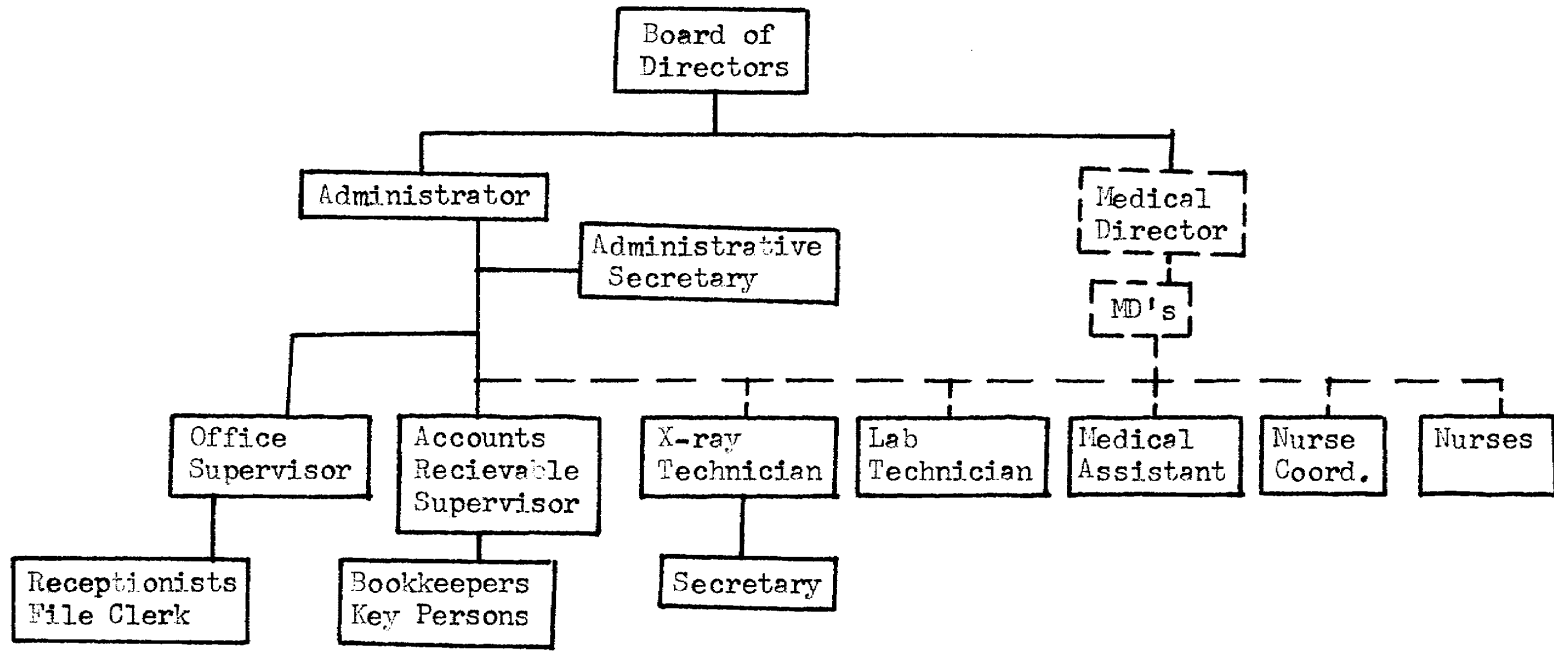
c. Organization

SMG is organized as a nonprofit corporation and has six salaried physicians who practice only through the group. The remainder of the fifteen physicians contract with the corporation for space and administrative services and may practice only part-time with the group.

The group's straightforward, highly centralized structure (see Figure 8) facilitates strategy by providing for a clear delineation of responsibility and for rapid communication of both the medical and the

Figure 8

Organizational Chart for Southboro Medical Group



support staff. As would be expected in a health care organization, there are two lines of authority, one involving the Medical Director, the physicians, and the medical support personnel, the other involving the administrator and both the nonmedical support staff and the medical support staff. The Board of Directors coordinates or integrates these two responsibility lines and their activities. The board is composed of the administrator and all of the physicians. The day-to-day operational decisions are made by the administrator, and the strategic and policy decisions are made by the Board of Directors.

The managerial style of the administrator is aggressive and controlling. New to the job, he thrives in the rather crisis-ridden atmosphere, learning from experience and readily seeking solutions and information from outside sources. He is also experienced in the use of computers and open to new technology and business methods in general. Considering the broad number of activities that he is responsible for, his style fits SMG well, especially so at this stage of rapid growth.

The resources available to the group are limited, however, by a lack of income to cover the personnel needed to make the operation less reactive. Financial resources at this time also are lacking because of the high start-up costs of a new group like this, reflected in a relatively high overhead figure. The administrator anticipates an increase in resources as income increases and utilization of the costly medical and business equipment and techniques are more fully realized. With greater resources the administrator will then devote more time to formal planning and control rather than to management and operational control with the

accent on day-to-day operations. He especially anticipates the opportunity to attend to possible strategy decisions such as physical location of the clinic, the services provided, and community and patient demands for health care. With the expected lowering of the overhead there will be enough increase in efficiency of operations to support these expanded administrative functions. For example, with support personnel—provider ratio of only 2, well below the national average of 3.5, additional personnel could be cost justified to support the necessary formal planning and control system for a larger and more complex organization.

The recruitment of skilled and qualified human resources, especially support staff at SMG, is limited partly by the level of salaries paid and partly by the large demand for their services from the enormous number of health care institutions in the Boston area.

In the Boston metropolitan area, high quality health care resources have produced an abundance of sophisticated technology. The SMG, even in its start-up stages, has availed itself of these resources through the use of expensive medical equipment and through the adoption of an on-line computerized accounts receivable and billing system by way of a commercial vendor, Systems, Inc., in Framingham, Mass. SMG is utilizing this technology, knowing that although it results in high overhead at this time, it permits delivery of quality care to an expanding patient population today. Furthermore it will not have to make these capital expenditures in the future.

The environment in which SMG operates has proved both beneficial to its objectives and detrimental. It found a "hole" in a market segment and has been extremely successful as a result. This market segment's

Health care demands are for physicians who deliver quality care and provide comprehensive health services within a reasonable commuting distance. In an effort to define this market segment more specifically, the administrator initiated a recent study to gather demographic data, number of patient visits in the surrounding communities, and percent of physicians and other health care providers for the population.

A problem in the external environment, however, is that the physicians in the surrounding communities are apprehensive of too much competition from a group practice and are reluctant to refer their patients to a physician in SMG because "they may not come back." These physicians, having practiced in the surrounding communities for some time, have fulfilled community needs for services such as special clinics and school physicians. They also dominate the local hospital and make practicing there sometimes difficult for competitors. As the SMG matures, further formal surveys of the area and patient population are anticipated to enable it to focus on the communities where their patients reside and aim its efforts toward serving those communities' health needs.

The internal environment is characterized by a need on the part of the physicians for a group practice setting wherein they can easily interact with each other and which provides business and administrative services, freeing them to concentrate on practicing medicine.

d. Key Variables

As would be expected with this new and rapidly growing organization, the administrator's most important control variable is efficiency of operations. The principle measuring instruments are the budget and the profit and loss statement (income is measured on a cash basis and

expenses are on an accrual basis). The goal is income equal to or greater than expenses.

Another measuring instrument is the collection procedure, which involves not only the encouragement of payment at the time of service but split-balance billing whereby the patient is billed for his portion of the service while the third party is being billed. One measure is the collection ratio (97 percent) or its converse, bad debt write-off (3 percent). The percent of aging is also calculated, i.e., the percent of accounts receivable that are 30 days overdue, 60 days overdue, and 90 days overdue. The goal is an improvement in any of these measurements.

Also especially important, being on both a cash and an accrual basis, is the net income per month divided by the gross billings per month to measure whether the cash flow or income is adequate to meet expenses. Another measure of efficiency is the change in income divided by expenses. The goal again is to have a positive change in income as related to expenses.

The accounts receivable ratio is also calculated (previously on a daily basis but now only intermittently) by dividing total accounts receivable by average total net billings. The goal is to reduce this ratio. It is important to note that the administrator perceives changes in the measurement over the long term as more important than setting a specific ceiling or absolute goal.

Another important measure is the number of patient visits per physician, reported daily. Here again, a specific number of visits is not as important a goal as are trends indicating that the extent to which



a physician is booked up in advance is enough to justify another physician full or part-time.

An especially important measurement for SMG is the calculation of costs to deliver a particular service, including some measure of administrative overhead. These figures are needed because the physicians on contract are charged a fee for the services performed for them by SMG, such as billing, provision of office space, general administration, and bad debt write-offs. Accurate measuring of the costs is required since each specialty area uses differing amounts of services; for example, obstetrics gynecology would use 30 percent of the overhead and urology would use only 18 percent. The goal is accuracy with the least expenditure of resources to obtain that accuracy.

The second key variable for management control of this administrator is staffing mix. His concern is how to recruit qualified personnel, how to organize them, define their tasks, and supervise them where there is a mix of widely differing skills and training. The measurement of this variable is turnover and performance, for which a formal rating scale is used. The goals are low turnover, superior performance, and high morale plus the paying of competitive salaries.

Government regulation is viewed as important and relatively uncontrollable. It is monitored, and the administrator attempts to exercise some influence through his participation in the Massachusetts Medical Group Management Association. One member monitors all pertinent state agencies and legislation and calls for association members to come and lobby legislators or speak at hearings when necessary. One future method of control anticipated by the administrator is bargaining by the physicians

as a group with the governmental agencies for such things as the setting of fees. The goal is as much control or influence over the regulatory decisions as is possible.

The patients' view of the practice is a key variable that is of concern to the administrator but there has been little time to measure it. Tentative plans are to conduct a waiting-room survey or some such measurement in the near future. Interestingly, one way of reducing patients' questions and complaints over their bills was the use of the split-balance accounts receivable system. This system reduced complaints by a significant percent.

A way of influencing the patients' view of the group is to provide attractive physical facilities. This is presently facilitated by modern offices and a waiting room that is large and elegantly furnished, like a private living room. Part of the waiting-room survey would certainly question a patient about his view of this room.

The relationship to the community is not as important a key variable as it might be because the administrator views it as largely uncontrollable at this time. SMG's measures are based on the number of referrals to them, the school programs are "locked up," and there is little demand from the community for special clinics or courses. The goal is to improve this relationship, since the group wants to provide comprehensive coverage and needs to know potential demand.

The relationship of SMG to the hospitals is also viewed as relatively uncontrollable. The SMG physicians practice in the Marlboro, Framingham, and Beth Israel (Boston) hospitals with varying amounts of

interaction and satisfaction. Measurement is basically obtained through the physicians' complaints and comments, very little through interactions between the administrator of SMG and those of the hospitals. This variable is not so critical as in other group practices where there is only one hospital in the community and by necessity a close interaction.

e. Reporting and information system

The information available for the SMG's key variable, efficiency of operations, is formal and relatively structured as would be expected of financial and business information.

The budget, drawn up by the administrator is based principally on last year's budget and then approved by the Board of Directors. The budget is then compared to the structured information provided in the income statement.

The other principal source of information is the computerized billing and accounts receivable system. The information is literally programmed or structured, and management control is exercised only when the information shows significant deviations. The information is also used as a basis for the calculation of collection ratios, aging of accounts, and income-expenses ratios. This information is supplemented by that collected manually by the bookkeepers for general ledger accounts, profit and loss statements, and cost accounting.

The remainder of the information necessary for the other key variables is basically informal and collected intermittently with the exception of the association's monitoring of governmental information. Information was collected when a strategic decision had to be made about

opening a satellite clinic. However, the demographic data are not routinely collected and there is sometimes a lack of explicit information about the external environment, although the recent study has helped to remedy this. At present there is also a lack of explicitness in the objectives of the physicians themselves for strategic planning as well as management control - due to a lack of resources, not a lack of awareness on the part of the administrator.

The reports available are the usual manual financial reports of budgets, income (cash basis) and expense (accrual basis) statements, and budget variances. In addition, an extensive reporting system as output from the computerized accounts receivable and billing system includes accounts status reports (ledger breakdowns by credit balance, delinquency ledger, over-90-day ledger, aged trial balance, etc.); insurance reports (Blue Shield, Medicare assigned, Medicaid and outstanding claims); production statistics reports (breakdown by doctor by month, write-off by doctor, and payments by doctor); and special reports such as the kinds of procedures that a particular physician performed during a particular period of time. The number of special reports is extensive because the group depends on the variation in a number of parameters set by the user of reports.

f. Motivation

The administrator is highly motivated by the need to keep operations efficient while SMG is growing so rapidly. The problems come to him and he must select the most important to deal with. In the past he calculated the accounts receivable ratios regularly; now that they are

under control he finds it necessary to do this only occasionally. At present the administrator is concentrating on the staffing problem because of its present critical nature. In other words, the motivation of management control is basically due to external pressures from problems that must be solved.

The administrator also has a great deal of internal motivation, however, because he is aggressive and eager to solve problems in this dynamic atmosphere. Also he gains personal satisfaction in providing a viable organization that meets the objectives of the physicians for quality and comprehensive health care. It is a challenge that is highly motivating.

The support staff are motivated by the management control procedures at SMG because the goals are mostly specific for the key variable, efficiency of operations. Also there is close supervision by the administration because of the limited number of personnel. As the practice grows this may change and then more formal procedures will be needed to ensure that employee goals are compatible with those of the organization.

g. Implementation

Management control and the necessary information systems are readily used and adapted by the administrator and his staff as they work for an efficient operation. The implementation, while generally successful, has been characterized by some minor setbacks due to a lack of experience by the administrator, but he has readily learned from his experiences, sought outside advice, and made the necessary adjustments. The institu-

tion of the split-balance system is an example of such an adaptation, reducing the collection clerks' telephone time and increasing the cash flow to a significant degree.

The information-gathering system for the management control of external key variables has been less well implemented. It is characterized by intermittent and informal efforts when pressures are increased from the external environment, e.g., community, governments, patients, and hospitals. This situation has occurred not because of lack of motivation or understanding by the administrator but rather because his critical success factor is the efficiency of operations, and that takes the majority of his time. The administrator is anticipating the institution of more formal information systems as a structured planning and control system evolves at SMG.

### III. EVALUATION

Each of the group practices will be evaluated separately by comparing the administrator's actual model of planning and control with Anthony's and Rockart's normative models or frameworks of analysis. A comparison among the three actual models follows to define the significant similarities and differences of their planning and control systems.

When evaluating these medical group practices it is important to keep in mind the unique characteristics of the nonprofit health care industry and its organizations as opposed to for-profit businesses and corporations. The most significant characteristics are that it is highly labor intensive, professionals dominate the organization, payment is not direct, quality evaluation of the product is difficult, the consumers are generally uninformed, there are multiple goals, and the constituency to be served is widely diverse in its needs. While many of these characteristics are beginning to change, their influence has given the present health care industry its uniqueness.

#### A. Keene Clinic

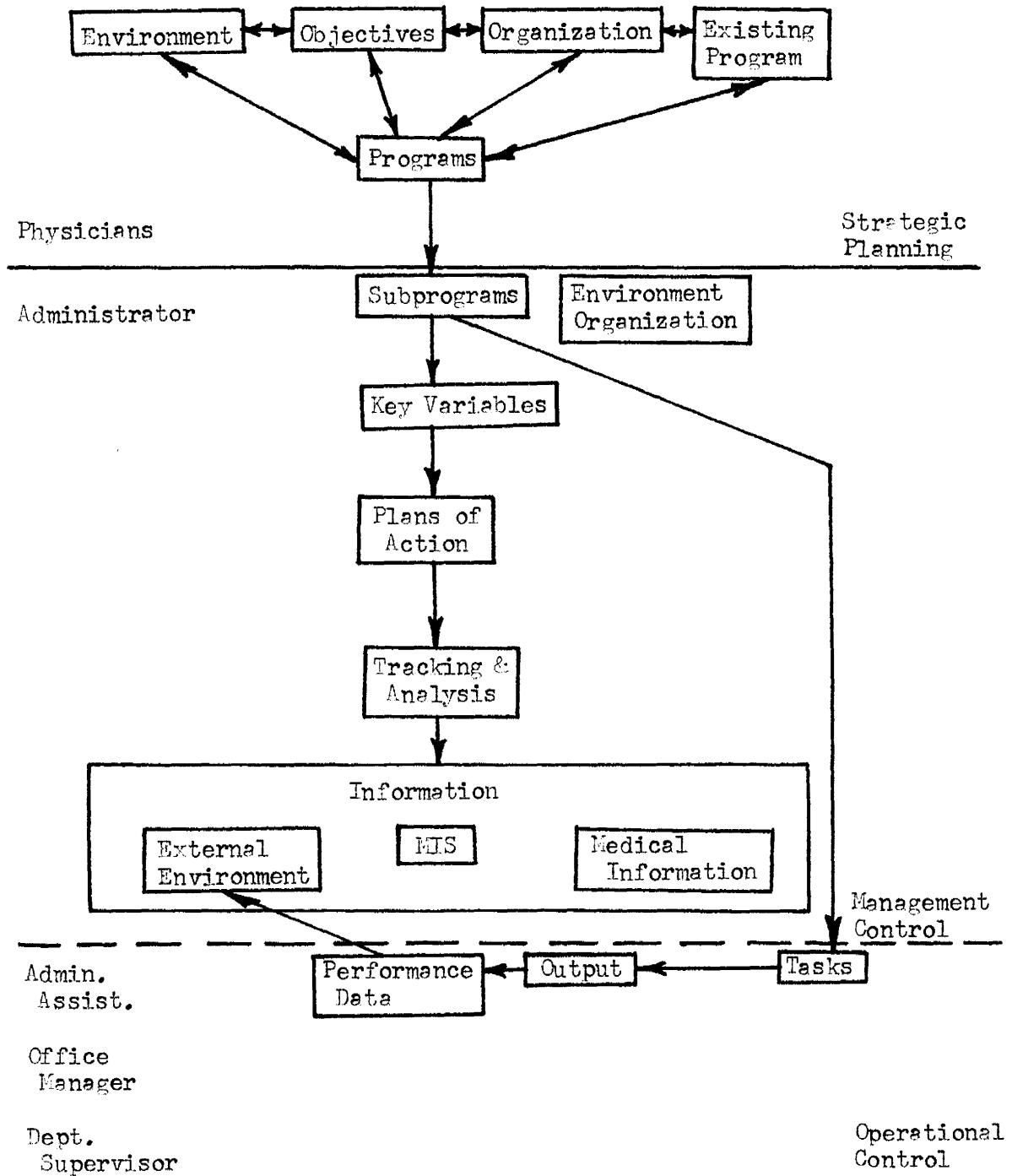
##### 1. Actual Model

The model of planning and control at Keene Clinic (see Figure 9) is formal, with the components defined in relatively explicit detail, and it closely parallels Rockart's Planning and Control Component Model. The significant characteristics of the Keene model are as follows.

a. The physicians or stockholders do the strategic planning with assistance and information from the top administrator.

Figure 9

Actual Model of Planning and Control  
Keene Clinic





b. The programs consist of one major program, the delivery of quality health care (ongoing operations), and intermittent programs, such as recruiting physicians for a new specialty or acquiring new physical facilities.

c. In management control the subprograms come directly from strategic planning or the administrator and/or the Board of Directors define subprograms which will improve their present strategy and ongoing operations. For example, one subprogram is the computerization of the accounts receivable and billing system. The administrator, with the major influence, defines the specific objectives, scans the environment, and considers his present organization and programs. The objective ---- the greatest benefits for the lowest cost----is determined and then alternative computer systems are considered. A specific system is chosen and then an implementation plan is defined and initiated.

d. The key variables fall into two major categories, internal and external control factors. The internal involve principally the ongoing operations of the organization, the remainder of the key variables concern external people or organizations (e.g., governmental agencies, patients, communities, and hospitals).

e. The administrator develops the plans of action for each of the subprograms. In the computerized system, for example, this consists of a series of steps: gathering information on all the significant systems available, defining the costs, studying reactions of other users, selecting a system, implementing and evaluating it once it is initiated. The majority of the plans of action are determined by the administrator

and involve changes in the ongoing flow of activities around day-to-day operations. Often these are adjustments to the existing system rather than major changes in systems or direction. Also some plans of action involve the administrator's responsibility for and control of the medical support staff. For example, the administrator has instituted a time clock system for this staff to help him utilize their time more efficiently.

f. The tracking of the key variables by measuring the progress toward the goals set may be a formal procedure conducted regularly (actual expenses compared to budgeted) or an informal and intermittent procedure, such as calling another clinic manager to solicit his input concerning government regulations.

g. Feedback is immediately used to make adjustments in the plans of action and subprograms or given to the physicians for strategic changes in the programs even though it is not yet time for the formal yearly strategic planning procedure.

h. The information available for management control includes external environmental information, management information (all business and financial data), and medical information. Both the environmental and the medical information comes from outside sources over which the administrator has limited control, yet this information is necessary for measuring his key variables. For example, he will receive rumors of pending legislations, patients' complaints, and the physician's diagnosis of service performed for a particular patient.

While for clarity's sake the information component in Figure 9 is drawn as one large box or data bank, the information in actual fact

informally resides in the administrator's head and is also in formal paper and computer storage records. Generally the decisions for internal key variables (efficiency of operation) are structured with routine rules and procedures and the information is specific and collected routinely, The decisions for the external key variables (governmental regulations) are much less structured and are based on information that often consists of estimates and even rumors.

i. Communication within the model is direct and occurs rapidly through one-to-one interactions.

j. The line between management control and operation control is not explicitly defined. Certain tasks and activities in the organization, which can be defined as operational control activities, are delegated to the administrative assistant, the office manager, and the department supervisors. Management control activities are generally the responsibility of the administrator but there no conscious decision to divide the activities according to Anthony's definitions.

k. Certain activities carried out within the organization are excluded from this model:i.e., the actual delivery of health care of the patient and medical provider interaction. Those are essentially not under the administrator's control although the purpose of his management control activities is ultimately to provide an environment within which the service is performed.

## 2. Actual versus Normative Models

The definitions of the major management activities at Keene are not as explicit as Anthony has recommended. Strategic planning is defined

but the major responsibility for it lies with the physicians, not with the top administrator, although he is involved in the process. Management control and operational control are not defined explicitly; however, they are clearly separated in the administrator's priority of activities those in which he participates and those for which he has specifically delegated responsibility to others in the organization.

Using Rockart's framework (see Figure 1) and his seven critical areas for diagnosis of a planning and control system in comparison with the Keene model, it can be seen that there are major similarities to the successful planning and control system at Keene.

The objectives of the Keene physicians are explicitly stated and reached only with consensus among all the physicians. They are reviewed periodically through a formal procedure. The physicians' strategy has been successful in that their objectives have been met; most notable are the recent recruitment of a number of new physicians in new specialty areas and the construction of a new facility which has helped them improve the quality of health care and at the same time provide more comprehensive care.

The organizational structure facilitates the operations of the organization by providing clear lines of authority and responsibility and yet allows two very different activities (medical and support) to function with interactions where necessary. Matrix characteristics are revealed in the use of physician committees and dual reporting by some of the medical support staff. There is a great deal of input to the physicians from the environment and to the administrator from the patients, hospital personnel,

and community leaders, so that the organization can respond to external needs.

The administrator selects the key variables with the objectives of the physicians clearly in mind. He then sets the goals from past experience and external and internal information. These goals are clear and specific when they can be for a variable such as efficiency of operations, less so when the variable is external and less controllable such as governmental regulations.

The information is as specific and structured as possible, providing the administrator with valid input for control of efficiency of operations and allowing for more structured decisions. At the same time, in less structured decision-making situations, the administrator readily relies on the informal one-to-one channels of communication. He is, however continually moving toward structured decisions such as taking action when the accounts receivable reach a certain limit.

The motivation of the administrator is high since he clearly understands the objectives of the physicians and his goals in helping them realize those objectives. It is important to note that he not only clearly understands the objective to deliver quality health care but is also personally committed to this objective. In addition, he has direct control over the plans for the subprograms and selection of the key variables with a great deal of freedom to do as he sees as best. He can then implement his plans with a real sense of control, with instant feedback, and with adjustments in his plans of action and programs in consultation with the physicians. All this is highly motivating since the objectives for health

care and for efficient operations are under his effective control.

Some of the significant differences between the actual and the normative models are: first, the physicians or stockholders have the major responsibility for strategic planning as contrasted with corporate or divisional vice presidents in a large multidivisional corporation.

Second, the management activities of strategic planning, management control, and operational control are not as clearly defined in the minds of the administration or the physicians although this is changing as the clinic grows larger and more complex and as the external pressures from the environment necessitate more long-range planning.

Third, the feedback and adjustments in the programs, subprograms, and plans of action of the organization are carried out in an informal procedure. Changes will be made rapidly as the need arises rather than being held for a formal strategic planning process.

Fourth, the communication for these planning and control activities at Keene occurs most often in direct one-to-one interactions among a few people who know each other well. This is in contrast to larger and more formal business organizations where there are specific channels of communication and prescribed modes such as weekly memos.

### 3. Summary

The administrator and the physicians of Keene Clinic have developed a model for planning and control that is very similar to those models or frameworks developed for private profit-making businesses. There are differences or modifications due to situational factors, size of the organization, service delivered, predominance of professionals at the top of the

organizational structure, and the severe pressures from the external environment, principally governmental regulations. They have used the essential components in the normative model, however, and have created a dynamic and ongoing organization while reaching their major objectives.

## B. Rural Health Associates

### 1. Actual Model

The model of planning and control at RHA (see Figure 10) is less formal and explicitly defined than at Keene although there is a definite movement toward a formal system, specifically the adoption of a formal yearly planning system. In fact the commitment to such a system has led to recent changes in the organizational structure and changes in areas of responsibility for members of the top administration.

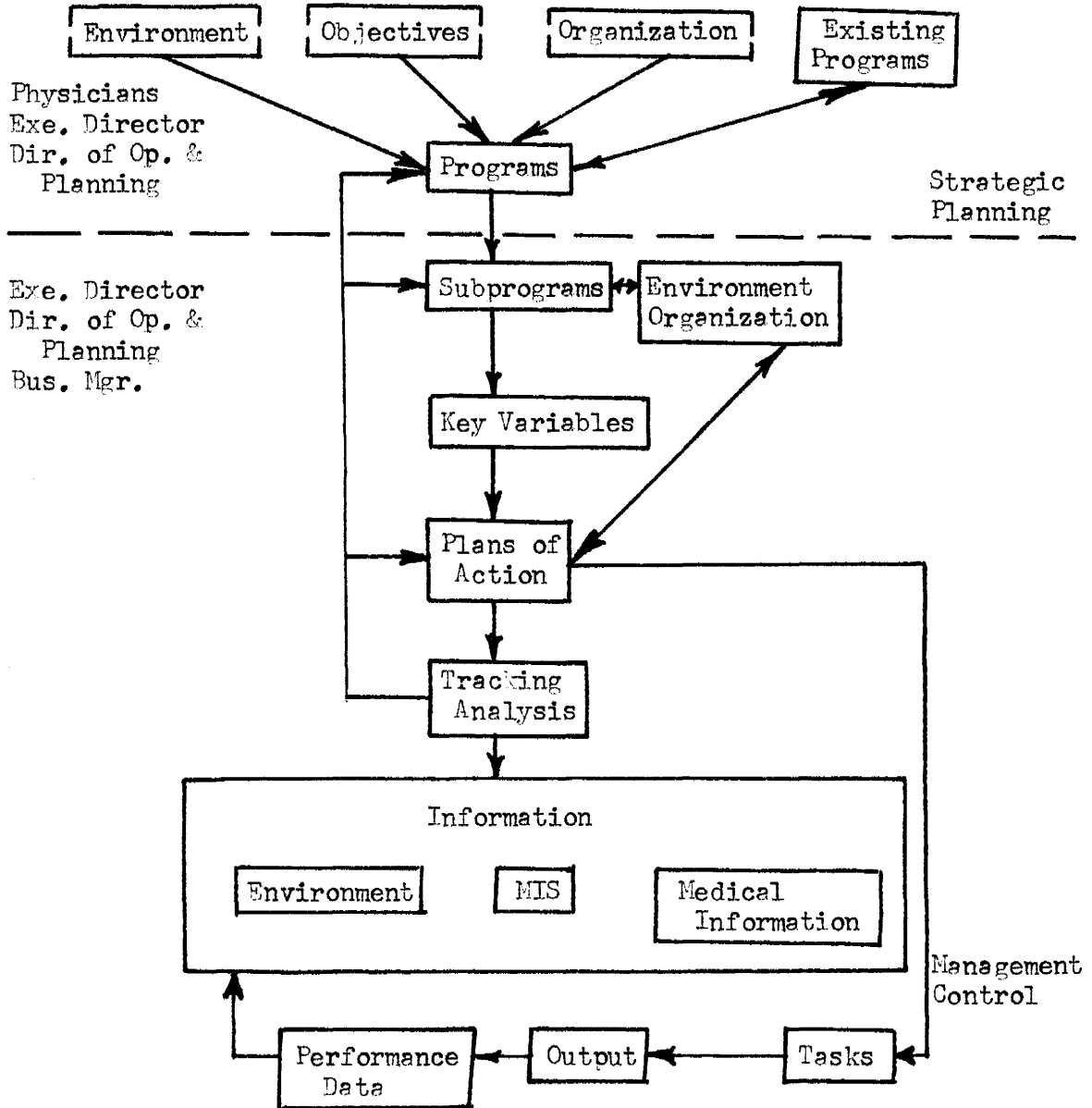
The significant characteristics of the RHA model are:

a. The Executive Director has a greater involvement in the informal strategic planning procedure than the administrator at Keene, since he views himself as the patients' advocate (based on the original OEO charter) and feeds in their needs when the programs are set or modified by the physicians.

b. Strategic planning (indicated by the dashed-line boxes in Figure 10) is not a formal process that is conducted according to a set schedule. Rather it is an intermittent process usually prompted by response to the physicians or to outside pressures such as governmental laws and regulations. At that time the objectives and the organization may or may not be considered. The Director of Operations and Planning is at present developing a formal planning system. No distinction has been

Figure 10

Actual Model of Planning and Control,  
Rural Health Associates





made as yet as to whether its purpose is strategic planning or long-range planning.

c. There is a major program of ongoing operations but there are also specific programs which are developed by both the physicians and the Executive Director. They might include the extension of the prepaid plan or institution of a new specialty area.

d. The top administrator, the Executive Director, has ultimate responsibility for management control. He has delegated some of this, however, to the Director of Operations and Planning and the Business Manager. The Director of Operations and Planning is responsible for day-to-day operations (operation control), some management control, and some planning. The Business Manager is responsible for some management control and some operational control.

e. There is a greater separation of activities among the top administrators; however, there is matrix coordination between the top administration and the medical staff through joint committees. They are set up to coordinate information and decision-making in the various functional areas, policy operations, and education.

f. The boundary between strategic planning and management control is not clearly defined at RHA. Therefore the planning and control activities are not separated into functional categories for which certain people are responsible. Rather the result is that the Executive Director, the physicians, and the Director of Operations and Planning are involved in both strategic planning and management control activities. While the physicians are responsible for strategic planning with the Executive Director, they also would have considerable say in a subprogram such as

opening a new satellite clinic facility while the Executive Director would have more influence on a subprogram such as building or leasing a new clinic facility. The Director of Operations and Planning with the others would have considerable influence on a subprogram that affected the ongoing operations such as the institution of a computerized financial accounting system.

g. The selection of the key variables is influenced not only by the Executive Director but also by the Director of Operations and Planning and the Business Manager. Each feeds in information from his experience and expertise, e.g. in regard to external environmental relations, development of new programs, operations, planning and business matters. There is, however, mutual agreement on the key variables in the final selection.

h. The key variables are tracked by the three who select the variables. The Executive Director is alert to all significant variances from the goals both at the monthly Operations Committee meetings and as they arise in actual practice. The tracking procedures are formal, with business and financial information provided routinely, and informal, with an administrator intermittently scanning the environment.

i. Feedback is immediate and informal. Programs, subprograms, and plans are changed as the need arises rather than through a formal planning procedure.

j. The information pool includes environmental information, management information, and medical information. Here again information comes in from the external environment (Washington, D.C., and university

research for example), from the physicians as they see their patients, and from the more formal business and financial systems within the clinic.

k. The boundary between management control and operational control is not specifically defined except that the Director of Operations and Planning is responsible for the day-to-day operations and oversees the supervisors.

## 2. Actual versus Normative Models

Here again the three major management activities as defined by Anthony are not explicitly stated. There is a movement toward this kind of definition; however, the activities are still divided into categories based on the interest and experience of the administrators rather than on their similarities for decision-making. Physicians often influence much of this activity since there is a less clear separation between management and medical spheres of influence.

In a detailed analysis using Rockart's seven critical areas, it appears that while RHA's planning and control system is often informal and not explicit, the critical activities do get carried out and the organization is viable, growing, and meeting its objectives. Some of the important similarities to Rockart's model or critical areas for success will be discussed followed by the significant differences.

The objectives are not explicitly written down except in the OEO charter. The physicians' objectives are implicit and result from the original purpose for organizing RHA and their decision to join the group. The clarity of the implicit objectives is due to the fact that these people joined the organization because they had a personal commitment to the original "mission" of RHA, i.e., to deliver quality and comprehensive

health care in rural Maine. The result is that they are providing the kind of health care demanded by the community and so personal and organizational objectives are in congruence.

The strategy at RHA to use outside funding for poorer patients, provide the latest medical technology and services, and be efficient in utilizing limited resources has been particularly successful in helping this group to fulfill its objectives.

The organizational structure is dynamic. Though it is often changing, it helps the staff to meet new needs and problems while providing for the integration of various activities and strategies at the top of the organization through a number of committees. Furthermore, the administrators are responsive to pressures from the external environment. The Executive Director is especially successful in responding to governmental pressures such as federal funding and agencies such as the HSA. He and the Director of Operations and Planning are particularly sensitive to the community and the patients' needs. The Executive Director oversees the overall internal needs, the Business Manager is particularly responsive to the business and financial needs, and the Director of Operations and Planning is sensitive to the needs of the support personnel and the demands for an ongoing operation. This integration of organizational structure and managerial styles and interests of the administrators is a major factor in the success of RHA.

The key variables are not defined as such, but there is a clear understanding in the mind of the Executive Director as to what must go right for RHA to be successful. This understanding is also shared by the

Director of Operations and Planning. The organizational structure and the administrators' interest and expertise are particularly helpful in tracking specific key variables since they have to some extent divided the responsibility. Thus each may have one or two variables that he concentrates on although he is aware of the others.

The information available to these administrators for the tracking, including that collected formally and informally, is adequate for the making of planning and control decisions. The external information gathered informally appears to be particularly relevant and accurate, even though it often consists of rumors, political opinions, and community feelings. The more formal internal information system is found to be lacking at times since it sometimes takes too long to get the information and problems reach a greater magnitude than they should before being solved. For example, budget variances are sometimes not available for the monthly meeting of the Operations Committee. The information is there, but it is a tedious and painstaking process to gather accurate figures. This problem they anticipate will be solved by computerization some time in the future.

The planning and control system certainly motivates the administrators since they hold the objectives of the organization and are so intimately involved in the establishment of the system as well as in its functioning. The system is particularly successful in integrating all the demands of the various constituencies: prepaid plan patients, fee-for-service patients, the community, the physicians, the government, and the support staff, including the administrators. These demands are met even though there are problems of limited resources, geographical constraints,

and traditional attitudes.

The implementation and scope of the planning and control activities are moving toward a formal procedure. The administrators are intimately involved in the development of the system and therefore do not need specific education about its workings. They use the system extensively while changing it readily as they see a need. It is an ongoing implementation or a process of adaptation to a changing environment, both external and internal. For example, the organizational structure was recently altered to reflect different responsibility areas since there was an increased need for tracking governmental regulations. In fact future changes are already anticipated as the group moves to new facilities and new programs are added. Not only will there be changes in the organizational structure but also there will continue to be increased pressures to motivate the integration and implementation of a whole formal planning and control system as RHA must respond to increased scope of services delivered and to governmental control of health care.

Some of the significant differences between the actual and the normative models are: first, the physicians (as "production workers") and the members of the Board of Trustees have significant input in strategic planning and the setting of broad policy. The top administration also has considerable input but must respond not only to the physicians but to the prepaid plan members. Here again this is in contrast to the strategic planning in a corporation, usually handled by corporate or divisional vice presidents.

Another difference is that the activities of strategic planning and management control are not specifically defined in the minds of the adminis-

trators, the physicians, or the Board of Directors, even though they are ultimately responsible for these activities. There is some movement toward a formal planning system, but it is not yet clear whether that will be strategic or ongoing long-range planning.

The feedback and adjustment process is another difference, since it involves rapid changes in all levels of programs, subprograms, and plans of action. This flexibility is essential for the survival of a small organization. The procedure is informal, based on meetings arranged as the need arises rather than waiting for a formal long-range planning process.

### 3. Summary

The functions of planning and control have been carried out informally and successfully at RHA in the past. The actual model is moving toward the normative model as the group responds to pressures both from the physicians and especially from the external environment. For continued success there will be a need for integration of strategic planning, management control, and operational control activities into a more explicit and formal system. Of critical importance is the clarifying of subobjectives under the delivery of quality and comprehensive health care of the major constituencies. This clarification plus the formal system will enable the subprograms to be provided with the best control variables and information, given the demands of those groups and a limited amount of resources. The group is especially committed to expanding services, and a systematic approach will enable it to better reach their overall objectives.

### C. Southboro Medical Group

#### 1. Actual Model

The SMG is a rapidly growing organization with an administrator

who is relatively new. His model of planning and control (see Figure 11) is still in a major state of flux and therefore informal and incomplete. The important characteristics are:

a. There is no separation of strategic planning, management control, and operational control either implicitly or explicitly.

b. At the level of strategic planning the physicians' implicit objectives of providing quality and comprehensive health care via a group practice led them originally to establish their organization in Southborough. They chose this community because it needed providers. Thus they could maintain a financially sound organization that was ongoing as well as one that could continue to grow both in the number of patients and the service provided.

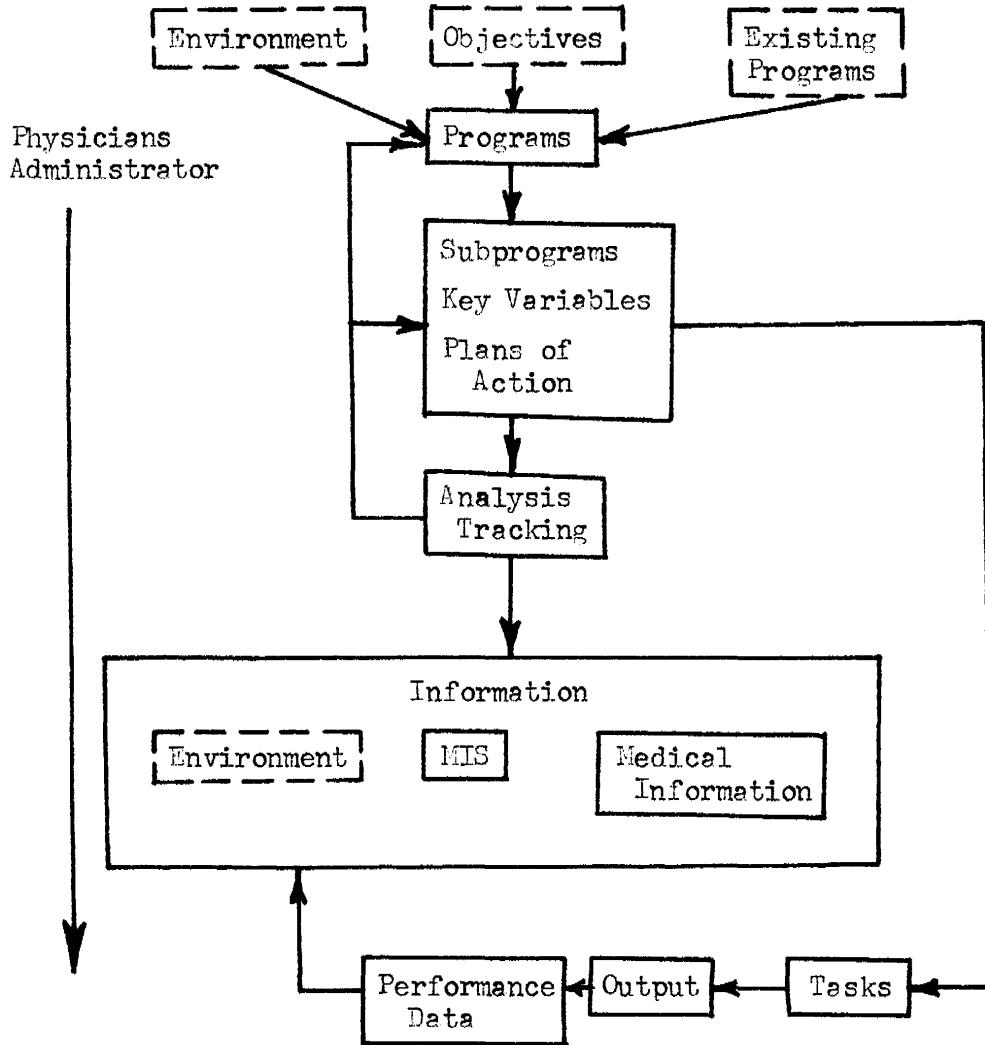
c. The environment provides information basically at the program and subprogram levels by patients demanding care, physicians' interest in joining the group, and the cooperation or lack of cooperation from other providers in the area.

d. The administrator is responsible for the subprograms and the plans of action in management control. He selects the key variables based on his experience and the experiences of other groups. Needed information is gathered basically from the Massachusetts Medical Group Management Association and the national Medical Group Management Association. The subprograms and the plans of action are essentially set at the same time by the administrator, especially those concerning the efficiency of the ongoing operations. The practice is expanding so rapidly that efficiency is the primary concern in this organization; thus much responsibility has been given by the physicians to the administrator for the



Figure 11

Actual Model of Planning and Control,  
Southboro Medical Group



ongoing operations.

e. The tracking of performance involves principally the efficiency of the operations and the staffing mix and is done formally, based on information collected internally.

f. The decision-making takes place at monthly board meetings of the owner-physicians and the administrator. Decisions include those involving strategy planning as well as some management control and operational control. It is important to note that the management control decisions by the administrator are relatively structured since they revolve principally around the efficiency of operations and are based on rather specific information gathered through a formal system. These decisions are based on rules or procedures that necessitate interference by the administrator only when major variances or trends are indicated. For example, the ledger breakdowns may be examined to determine the average accounts receivables and action taken only if they exceed some critical ceiling.

g. Feedback from the performance tracking is communicated especially quickly and adjustments are made immediately, as would be expected since there are so few people involved and because a great deal of responsibility and authority has been delegated to the administrator for the ongoing operations.

h. The information provided for measuring the key variables comes principally from the administrator's management information system which he is still developing and perfecting. It includes not only the computerized bill and accounts receivable information, the general ledgers, and the financial statements, but also a detailed cost analysis for the purpose of setting the overhead charges for contracting physicians. The

administrator receives information from the medical staff that is necessary for bill and management control, such as diagnosis and services performed.

The amount of information from the external environment is relatively small, because of a lack of resources and time available to the administrator for gathering it. Ongoing scanning of the environment is also not as extensive as in some other areas because there is no real need for the information at this time. For example, the community health programs are pretty well covered by other providers in the area and there is little opportunity for change in the near future. The information that is available, however, principally comes from the experiences of other administrators and the MMGMA. Some valuable information comes from the computer service company because it makes possible an exchange of information among their users about mutual problems.

i. The reports that are available are especially extensive for a group of this size. It uses a sophisticated computerized system and it is necessary to keep strict financial control since a large number of the physicians are charged rent for space and administrative services, which include a complex, strict accounting of income, uncollected accounts receivables, or write-offs and the resources consumed.

j. The administrator is rather closely involved in the day-to-day operational control activities, defining tasks and measuring the output and performance of the medical support staff as well as all the non-medical support staff. This involvement is especially important in his decisions about an adequate staffing mix and its control, and arises from the small number of support staff and the relative newness of the organization.

## 2. Actual versus Normative Models

Anthony's categories of management activities are not defined in any formal or informal system. There is an implicit awareness of the need for planning as well as control and the administrator expects to do this when the pressures of management control and operational control are less. These two activities are seen not as separate but as an integral part of running an efficient and effective operation especially in regard to rapidly increasing patient populations.

Comparison of planning and control at SMG to Rockart's normative model indicates that many of the critical activities are being carried out. There is, however, a lack of a formal system with specific definitions and procedures.

The objective of SMG, although implicit, seems clear to the physicians and the administrator because there is a limited number of people involved and communication is direct. The strategy to maintain a viable and growing organization to meet demand while SMG physicians practice quality and comprehensive care is a successful one. The organizational structure is simple and straightforward, with clear lines of authority and responsibility, one well suited to meet the needs of the environment from the point of view of patient demand and physician supply.

The key variables, while few in number, are clearly focused to meet the strategy of maintaining an ongoing viable organization. The information for the key variable, efficiency of operations, is readily available from formal systems. Although the information for the other key variables is less structured and not as comprehensive as the admin-

istrator would like, efforts are being made to improve this, especially as resources are expanded.

The management control activities at SMG are highly motivating because they focus principally on one key variable which can be measured by the attainment of specific goals. These measurements allow for immediate feedback and adjustments since they usually involve only one or two people. The "tight" control by the administrator is highly motivating, as it moves him towards his personal objective of good management of the organization so that the service will be of high equality.

The system is being implemented with some difficulty because it is still such a rapidly growing organization and the administrator is still gaining experience. The implementation up to this point, however, has been successful since the SMG is meeting the objectives of the physicians.

### 3. Summary

While planning and control at SMG is informal and often fragmented, it is providing for the successful management control of a new and rapidly growing group. The information available is adequate to meet the needs for control and any significant lack of information is due more to a lack of resources for its collection rather than to a lack of foresight on the part of the administrator. There promises to be improvement in the development and implementation of a planning and control system since the administrator feels the need for it and is readily open to adoption of new methods.

#### D. Comparison of the Three Actual Models

When comparing these planning and control models, some characteristics emerge as significant and common to all three models. These are:

1. The objectives of the physicians and the administrators are clearly

understood, even though they are not explicitly written down. As the need for a formal system arises due to the complexity and size of the organization and the external pressures on the organization, the objectives become more explicit. There is a trend toward the explicit setting of objectives as the first step in a formal initiation of a strategic planning system.

The clear understanding of the objectives seem to be due to two separate factors. One is that organizations like these draw physicians who are personally more committed to delivering quality health care than merely to earn a sizable income. They are drawn to providing care within a group so that there is easy opportunity for consultation and time for further education. They are willing to leave the business aspects to someone else in order to free up more of their time for health care. In other words, they have the same objectives personally as those of the organization itself.

Another reason for the clear understanding of objectives is that the physicians work together in close proximity and at the same time are interacting at board meetings or "stockholder" meetings where they get to know each other well and to decide on the policy and board business matters of the organization as well as the medical matters. Their objectives are discussed as part of these decisions.

In addition, the administrators gain a knowledge of the physicians' objectives at these meetings and in informal one-to-one discussions as they carry out their management activities. They add the information from these discussions to their management control activities and gradually to the development of a planning model as strategic planning becomes a necessity engendered by external and internal pressures.

The administrators are also personally committed to the delivery of quality and comprehensive health care--- a commitment that helped draw them to this kind of organization in the first place. Their basic objective is to maintain an efficient and effective organization so that the "total staff" can deliver quality care.

2. Another characteristic is the amount of formal and systematic procedures, in other words, the number of components of the formal model and how well they are defined. This characteristic is basically determined by the maturity of the organization, and that, in turn, is determined by the number of years of existence of the organization, its size, the complexity of the organizational structure, the years of experience of the top administrator, and the relation between the physicians and the administrator.

As the organization continues to function and grow the income can support more people to carry out those activities that the administrator himself may do at first. It frees up the administrator to look outward and forward to other problems which he can plan for rather than react to, that is, he can begin to institute a formal system for planning and control. The Keene Clinic which has existed the longest has a rather formal system, RHA has a less formal system but is expanding its use of resources to move toward one, and SMG, with high initial overhead and limited resources, has an informal system.

At the same time the complexity of the organizational structure, by more lines of reporting and more levels, demands a more formal system, as communication is not so rapid and the information needed and available is much greater. Here again, Keene and RHA are the most complex, SMG is

simple and more direct.

As the administrator becomes more experienced he can choose the key variables, set their goals, and select the measuring instruments more quickly and accurately. He gains time and the necessary knowledge for a broader view of his job and of the organization itself. The years of experience of the three top administrators at Keene, RHA and SMG bear this out.

The administrator needs time to build a relationship with the physicians, which means that first he must show them that he can manage an efficient operation for them. Then he can begin to justify further expenditures of his time and their money for a formal planning and control system for all their future benefits.

These are all factors in the "maturity" of the organization resulting in a very formal planning and control system in Keene, a less formal one in RHA, and an even less formal one at SMG. The more formal the actual model the more closely it resembles Rockart's normative model.

3. A critical characteristic of the management control portion of the model is the selection of the key variables (see Table 5). The three administrators choose similar variables, yet they vary in importance over time.

The administrators are well aware that there are certain critical variables that they must track to be successful. Which key variables (the administrators' variables will be labeled "key" for the purpose of this discussion) they select at any one point in time is dependent on situational factors. These factors vary over time and from group practice



Table 5

The Administrators' Key Variables

(most im-  
portant)

	<u>Keene</u>	<u>RHA</u>	<u>SMG</u>
	Governmental Regulation	Quality and comprehensive care	Efficiency of operations
	Efficiency of operations	Federal funding	Staffing mix
	Patients' view of practice	Governmental regulation	Governmental regulation
	Relation to hospital	Efficiency of operations	Patients' view of practice
	Malpractice insurance effects	Patients' view of practice	Relation to community
	Relation to community	Satellites vs. patient service	Relation to hospital
		Other providers in Community	
		Relation to hospital	

(least im-  
portant)

to group practice. The important factors are the objectives of the organization, the needs of the patients, the personal managerial style, the maturity of the organization, and the external pressures on the administrator and the organization.

Any one of these factors may prevail over the others or two or more may interact to determine which key variable will be selected. While all the groups have an objective provision of high quality care, in one group the objective to provide comprehensive care is so important to the group and the top administrator that it becomes his major key variable.

The needs of the patients are important enough so that the patients' view of the practice is a key variable but it is of low priority since the objectives of the organization and the maturity of the organization are more important.

As the organization matures the top priority key variables change from internal to external. A new organization must be concerned with developing an efficient operation. Only after this has been achieved can the administrator really look outside the organization to such matters as governmental regulation.

External pressures also help to increase this outward perspective. For health care providers in the future, new governmental regulations may force them to examine the external variables more quickly and even before they are operating efficiently because such regulation will intimately affect their ability to operate efficiently (e.g., the setting of physicians' fees).

The managerial style of the administrator may influence the other

situational factors since he will or will not focus on a particular variable depending on how he reacts to the other factors. His style may be to manage by maintaining tight control through formal systems and procedures. In that case he would probably select efficiency of operations as his top key variable although other situational factors would support turning to the quality of care or the relations to the hospital.

In Table 5 the key variables are arranged in a hierarchy; the most important one for each administrator is different. All three men indicated that the variables change over time. For example, the key variable at Keene a couple of years ago was the construction of a new building, but this now does not appear on the list.

The variables influence each other to a large extent. For example, the patients' view of the practice is influenced by the efficiency of the operations, the quality of care is influenced by the efficiency of the operations and governmental regulation influences the efficiency of the operations, and so on.

The variables are viewed as falling on a continuum of controllable to uncontrollable. Relations to the hospital were viewed as relatively uncontrollable, so that only limited resources were directed to it. While governmental regulation was also difficult to control, it was so important that a significant effort to control or at least influence it had to be made. The ways of controlling varied widely from an administrator's becoming a member of a governmental agency to personal and group lobbying efforts.

Those key variables for which there was specific information such as efficiency of operations were viewed as controllable. This one is so critical to the success of the organization that it had to be tracked regularly by very formal procedures.

Variables were chosen even though they were often difficult to measure, The administrators were willing to rely on subjective information and vague goals when they felt that a variable was important, like governmental regulation or the patients' view of the practice.

4. An important characteristic underlying these models is the managerial style of the administrator. All administrators particularly enjoyed and thrived on the dynamic nature of managing a medical group practice with its different activities and daily crises. They took great pride in their performance and were good negotiators with the physicians, gaining authority as they "proved" themselves. They were open to change and their models changed even as this study was conducted.

At the same time the models are different, reflecting the managers' style. At Keene the administrator, whose background was as a controller, had long ago begun a formal planning system as necessary for him to maintain control of a large group practice. At RHA the Executive Director was more interested in innovative programs and procedures and therefore delegated planning and much of the management control to others. At SMG the administrator, even while facing high initial start-up costs and daily crises, instituted advanced business techniques for management control like cost analysis, computerized financial systems, split-balance billing, and studies of professional staff mix task groups.

These characteristics, the clarity of the objectives, the amount

of formal procedures, the selection of the key variables, and the managerial style were critical to the success of planning and control in these three organizations. All three groups are successful in meeting their objectives because they have clearly understood objectives, an adequate and changing organizational structure, clearly defined key variables, and dynamic and aggressive managerial styles.

#### IV. CONCLUSIONS

This study has examined three medical group practices, using models from the profit-making businesses for analysis. While the sample is small and the research technique is scientifically less rigorous, some tentative conclusions for planning and control in small health care organizations can be made. These conclusions are:

1. Management activities are not generally seen as falling into Anthony's three categories---strategic planning, management control, and operational control. In other words, in the minds of the administrators the activities are not grouped according to particular functions. The necessary management control and operational control activities are carried out, although strategic planning is often not done adequately and even ignored for long periods of time.

2. This lack of definition is also true for the concept of key variables. There are factors that the administrators track, but they do not define them as critical success factors or key variables. The factors that they do select include those that are monetary and nonmonetary, are highly controllable and less so, and are changing in importance over time. Their selection is dependent on the organizational objectives, the particular community that the organization serves, the maturity of the organization, and the personal objectives and commitment of the administrator himself. The information gathered for tracking each variable may be highly specific, coming from a very formal and structured system, or may be estimates and rumors gathered informally from intermittent and unstructured situations. As might be expected, those variables that arise

internally are supported by more formal systems, while those arising externally are supported by much less formal procedures.

3. As the group practices grow and become organizationally complex, more of the components of Rockart's normative model will be formally defined and adopted.

4. The objectives of these organizations are well understood by both the physicians and the top administrators. This is due both to compatibility of the peoples original reasons for joining the organization and to the small size of the organization, where communication is open and immediate.

5. The managerial styles of the administrators of these dynamic service-oriented organizations are characterized by aggressiveness and openness to change and new ideas, especially if they can be cost justified. They are also eager to accept the responsibility for the efficiency of the operations and take particular pride in this efficiency while delivering a crucial quality service, one they are personally committed to.

6. A formal strategic or long-range planning system was something that the administrators were aware of, although not all had begun to institute it formally. The actual initiation of the system or plans to do so was in response to the growth of the organization both in number of patients and in the areas of service delivered. More recently it was in response to governmental regulation, especially the National Planning and Resources Development Act of 1975.

7. These groups were successful in meeting their objectives although they did not have complete formal planning and control systems. They did,

however, do well in Rockart's seven critical areas of analysis. The objectives were clear, the strategy was appropriate, the organizational structure provided for both the medical and nonmedical functions, key variables were defined, the information systems were adequate although incomplete, motivation was very high, and implementation was carried out quickly with plenty of room for rapid feedback and adjustments. It would appear that the most critical area was their ability to make rapid adjustments when things went awry. All the administrators commented ruefully on how much they had learned from past experience.

8. There is a definite need for greater anticipation of problems and needs for health care. Much more formal procedures will be required for medical organizations so that alternative programs and solutions can be examined before the crisis is upon them. This anticipation will enable them to act instead of react and lessen the reliance on learning by past and often painful experience. It will also allow them to look at a portfolio of programs and subprograms and then select alternatives with a view to integrating them into the whole organization---something that has rarely been done in the past. This need is especially pressing in the area of utilization of financial resources. Health care costs are soaring at the same time that demand for health care is ever increasing. The communities will be demanding not only equal access to care but also that these medical group practices must supply comprehensive care, including patient education and such social health care services as alleviation of pollution and treatment of drug abuse.

In addition, formal planning and control systems will be needed in group practices to ensure that the physicians and the administrators can



control and influence the effect of governmental regulation. Input must be provided to balance the strong and growing governmental and consumer influence, especially if the **physicians** want to meet their personal objectives and if the organization is even to survive. A strong planning and control system would ensure that hard facts are available to allow all sides to make the best judgment as to how to utilize limited resources and yet provide everyone with adequate health care.

9. Finally, the planning and control systems appropriate to private, for-profit businesses are also appropriate to health care organizations. These groups are in fact already using many aspects thereof and can benefit from further adaptations of the experiences and research results in the for-profit sector. Systematic planning and control is essential in ensuring that high quality and comprehensive health care is delivered efficiently.

REFERENCES

1. Trends Affecting the U. S. Health Care System, A Preliminary Draft prepared by Cambridge Research Institute, 15 Mount Auburn Street, Cambridge, Mass., September 22, 1975.
2. Anthony, Robert N., Planning and Control Systems: A Framework for Analysis, Division of Research, Graduate School of Business Administration, Harvard University, Boston, 1965.
3. Rockart, John F., Planning and Control Component Model, unpublished class notes, Sloan School of Management, MIT, Cambridge, Mass., 1975.
4. Rockart, John F., An Analytical Sequence: Seven Critical Areas to Note in the Diagnosis or Design of Planning and Control Systems, unpublished class notes, Sloan School of Management, MIT, Cambridge, Mass., 1975.
5. Lorange, Peter, Formal Planning Systems: The State of the Art, Sloan Working Paper, Sloan School of Management, MIT, Cambridge, Mass., October 1974, p. 5.
6. Anthony, op. cit., p. 16.
7. Ibid., p. 17.
8. Ibid., p. 18.
9. Vancil, Richard F., and Peter Lorange, "Strategic Planning in Diversified Companies," Harvard Business Review, January-February 1975.
10. Ibid., pp. 42-46.
11. Lorange, Peter, and Michael Scott Morton, "A Framework for Management Control Systems," Sloan Management Review, Fall 1974, p. 42.
12. Simon, H. A., The New Science of Management Decisions, New York: Harper and Row, 1960, pp. 5-6.
13. Anthony, Robert N., John Dearden, and Richard F. Vancil, Manage-

ment Control Systems, Homewood, Ill.: Richard D. Irwin, Inc., 1972, pp.  
153-154.

BIBLIOGRAPHY

- Ackoff, Russell L., A Concept of Corporate Planning, New York: John Wiley & Sons, Inc., 1970.
- Allison, Robert F., "The Role of the Medical Group Manager," Medical Group Management, January/February 1975.
- Anthony, Robert N., Planning and Control Systems: A Framework for Analysis, Division of Research, Graduate School of Business Administration, Harvard University, Boston, 1965.
- Anthony, Robert N., and Regina Herzlinger, Management Control in Nonprofit Organizations, Homewood, Ill.: Richard D. Irwin, Inc., 1975.
- Anthony, Robert N., John Dearden, and Richard F. Vancil, Management Control Systems, Homewood, Ill.: Richard D. Irwin, Inc., 1972.
- Arrow, K., "Uncertainty and the Welfare Economics of Medical Care," American Economic Review, December 1963.
- Bailey, Richard M., "A Comparison of Internists in Solo and Fee-for-Service Group Practice in the San Francisco Bay Area," Bulletin of the New York Academy of Medicine, November 1968.
- Bower, Joseph L., "Planning and Control: Bottom Up or Top Down?," Journal of General Management, vol. 1, no. 3, 1974.
- Cyert, Richard, and James March, A Behavioral Theory of the Firm, Englewood Cliffs, N.Y.: Prentice-Hall, Inc., 1963.
- Donabedian, Avedis, "An Evaluation of Prepaid Group Practice," Inquiry, September 1969.
- \_\_\_\_\_, "Evaluation of Medical Care Programs," Bulletin of the New York Academy of Medicine, February 1968.
- Fetter, Robert B., Planning Models for Health Care Systems, unpublished

paper, Yale University.

Financial Planning in Ambulatory Health Programs, Boston Consulting Group, Inc., Boston, Mass., HEW Publication Number (HSM), 73-3027.

Forsyth, G. C., and D. Glyn Thomas, "Models for Financially Healthy Hospitals," Harvard Business Review, July-August 1971.

Fuchs, V., "Health Care and the U.S. Economic System," Milbank Memorial Fund Quarterly, April 1972.

Gilmore, Frank F., "Formulating Strategy in Smaller Companies," Harvard Business Review, May-June 1971.

Gorry, G. Anthony, and Michael Scott Morton, "A Framework for Management Information Systems," Sloan Management Review, Fall 1971.

Hall, William K., "Strategic Planning Models: Are Top Managers Really Finding Them Useful?," Journal of Business Policy, Winter 1972/1973.

Herzlinger, Regina E., and Gordon T. Moore, "Management Control Systems in Health Care," Medical Care, September-October 1973.

Jantsch, Erich, "Technological Forecasting in Corporate Planning," an unpublished paper prepared for a National Conference on Technological Forecasting, University of Bradford, July 1968.

Katz, Daniel, and Robert L. Kahn, "The Concept of Organizational Effectiveness," The Social Psychology of Organizations, New York: John Wiley & Sons, Inc., 1966.

Lave, Judith, and Lester Lave, "Medical Care and Its Delivery: An Economic Appraisal," Law and Contemporary Problems, Spring 1970.

Likert, Rensis, and Stanley E. Seashore, "Making Cost Control Work," Harvard Business Review, November-December 1963.

Lorange, Peter, "Evolution of Long-Range Planning Systems: Maintaining

Strategic Effectiveness over Time," unpublished preliminary draft, Sloan School of Management, MIT, Cambridge, Mass., May 1975.

\_\_\_\_\_, Formal Planning Systems: The State of the Art, Sloan Working Paper, Sloan School of Management, MIT, Cambridge, Mass., 1974.

\_\_\_\_\_, A Framework for Strategic Planning in Multinational Corporations, Sloan Working Paper, Sloan School of Management, MIT, Cambridge, Mass., 1976.

\_\_\_\_\_, Improving the Effectiveness of Long-Range Planning in Smaller Companies, Sloan Working Paper, Sloan School of Management, MIT, Cambridge, Mass., 1976.

Lorange, Peter, and John F. Rockart, A Framework for Application of Computer-Based Models in the Long-Range Planning Process, Sloan Working Paper, Sloan School of Management, MIT, Cambridge, Mass., April 15, 1976.

Lorange, Peter, and Michael Scott Morton, "A Framework for Management Control Systems, Sloan Management Review, Fall 1974.

Lorange, Peter, and Richard F. Vancil, What Kind of Strategic Planning Do You Need?, Sloan Working Paper, Sloan School of Management, MIT, Cambridge, Mass., 1976.

Malm, Allan, A Framework for Design of Planning Systems, University of Lund, Sweden, 1975.

Newman, William H., Constructive Control, Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1975.

Principles and Concepts of Financial Management in Ambulatory Health Care Administration, Center for Research in Ambulatory Health Care Administration, MGMA, Denver, Col., 1974.

- Rhenman, Erik, Organizational Theory for Long-Range Planning, New York: John Wiley & Sons, Inc., 1973.
- Riesing, Thomas F., Cognitive Measures of Planning and Control Systems, Harvard Business School Working Paper, Harvard Business School, Cambridge, Mass., 1972.
- Rockart, John F., An Analytical Sequence: Seven Critical Areas to Note in the Diagnosis or Design of Planning and Control Systems, unpublished class notes, Sloan School of Management, MIT, Cambridge, Mass., 1975.
- \_\_\_\_\_, Planning and Control Component Model, unpublished class notes, Sloan School of Management, MIT, Cambridge, Mass., 1975.
- Rockart, John F., and Jerome Grossman, A Managerial Perspective on Information Systems in Medical Care Organizations, Sloan Working Paper, Sloan School of Management, MIT, Cambridge, Mass., 1975.
- Rockart, John F., Eric Herzog, and Mary G. Peters, Guidelines for Budgeting and Reporting in Cultural Organizations, unpublished discussion draft, Sloan School of Management, MIT, Cambridge, Mass., November 1975.
- Schiff, Michael, and Arie Y. Lewin, eds., Behavioral Aspects of Accounting, Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1974.
- Simmons, A., Medical and Hospital Control Systems, Boston: Little, Brown and Co., 1972.
- Simon, H. A., The New Science of Management Decisions, New York: Harper and Row, 1960.
- Steiner, George, Top Management Planning, New York: Macmillan Publishing Co., Inc., 1969.

Trends Affecting the U. S. Health Care System, A Preliminary Draft prepared by Cambridge Research Institute, 15 Mount Auburn Street, Cambridge, Mass., September 22, 1975.

Tyler, Ralph S., "Computer Models Assist Long-Range Planning," Medical Group Management, May 1972.

Vancil, Richard F., "What Kind of Management Control Do You Need?," Harvard Business Review, March-April 1973.

Vancil, Richard F., and Peter Lorange, "Strategic Planning in Diversified Companies," Harvard Business Review, January-February 1975.

Webber, James B., and Martha A. Dula, "Effective Planning Committess for Hospitals," Harvard Business Review, May-June 1974.

Willemain, Thomas R., and Gordon T. Moore, "Planning a Medical Practice Using Paramedical Personnel," Health Services Research, Spring 1974.