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HEALTH CARE ENVIRONMENT: THE USER'S VIEWPOINT

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The Health Care Environment: The User's Viewpoint

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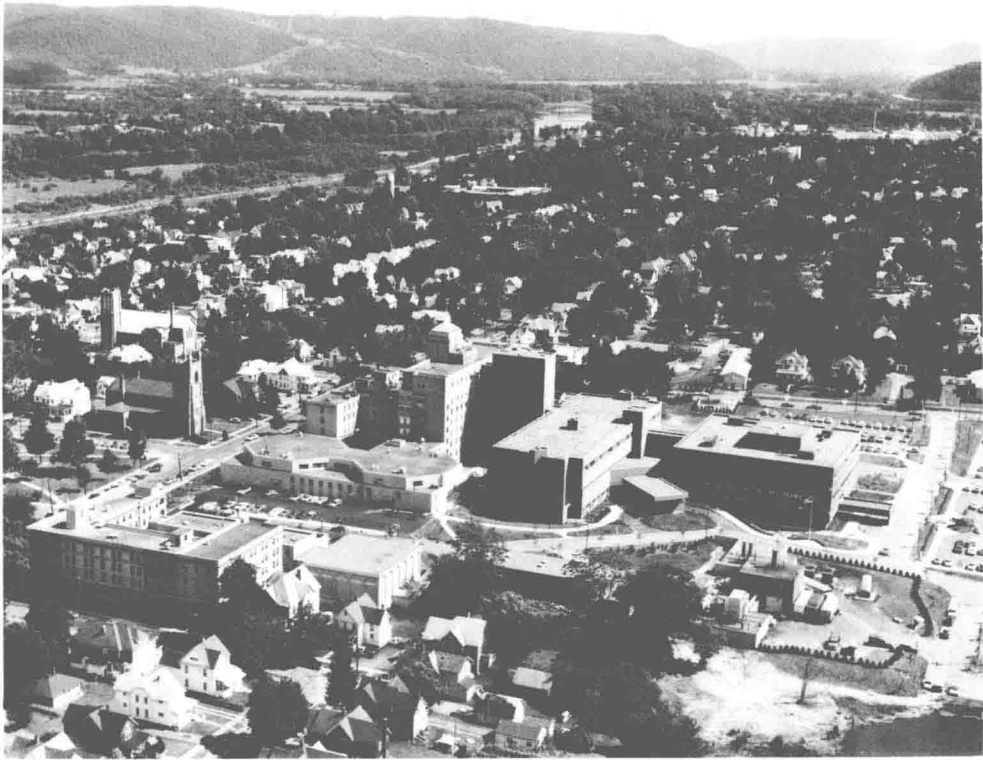
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The frontispiece depicts a regional medical center located in rural northeastern Pennsylvania in the Borough of Sayre. This medical center is comprised of the Robert Packer Hospital, a fully accredited 323-bed, nonprofit facility; the Guthrie Clinic, a multispecialty group practice of over 90 physicians representing 34 different medical specialties; the Robert Packer Hospital School of Nursing, and the Donald Guthrie Foundation for Medical Research. This medical center is a growing, regional, tertiary care, medical complex devoted to providing comprehensive services to a 40-county area of northeastern Pennsylvania and south-central New York State. The Foundation is an active component of the medical center, conducting ongoing basic research programs and supporting various educational activities.

The long history of patient care, education, and research at the medical center make it a leader in sophisticated rural health care delivery systems.

PREFACE

It is not easy to define exactly the user of a health care facility. Obviously, there are many. Their functions within its walls are not only different but sometimes they are in conflict. The ultimate consumer is obviously the patient. But to properly serve his best interests, it often is necessary to discommode him. It may actually be necessary to cause him pain and suffering to secure ultimate health and comfort.

To best achieve a favorable outcome for the patient, a large variety of other users of the facility must be given due consideration, so that they can perform most effectively, efficiently, and safely. These primarily include the professionals, physician, nurse, and their aides. Modern health care has, however, enlarged this coterie of professions to include the clinical engineer as well as a burgeoning of paraprofessional technologists who not only introduce new therapies, but also complicate the professional requirements in space, mechanical, and functional design.

Additionally, there is a large variety of nonprofessional users whose ministrations to and for the patient can create an environment both safe and cheerful for the sick and handicapped such as housekeepers, volunteers, candy-stripers, etc. Also not to be overlooked are the family members and visitors whose moods may influence the patient toward a favorable reaction to his surroundings.

The relative weight which the planner must assign to each of these user's needs or demands is dictated by the mission of the specific health care institution and the funds it has available. The relative merit of a list of essentials is not the same for an extended care unit as it is for a facility providing tertiary care. The former may provide purely a domicile for a patient recuperating from a bout of pneumonia, while the latter may involve the care of a patient whose heart is being repaired or even replaced. The facilities must obviously be designed to best serve the functions to be performed. The decision of whose needs are most important must be determined for each institution and for each part of that structure. Furthermore, compatibilities between desires must be sought. Too often one or another is given preference without consideration of alternates. All must be analyzed within the economic capabilities of the provider. If possible, future capability for change in facilities, growth, therapeutic and technologic modifications, as well as disease should be given consideration. We live in an ever changing world.

In this dissertation, we have avoided any attempt to suggest relative weight for any of the desires or needs of the various users. We have simply attempted to describe their desires. We have obtained views of users by the use of interviews, questionnaires, and our interpretation of their own statements. In the illustrations we have shown some of the attempts at solutions. The individuals we have asked to assist us are people whose opinions and taste we have learned to respect, not alone through personal contact, but also by reading their publications or seeing the results of their productions.

Unfortunately, Mildred Chase has passed away since writing her manuscript. Several years ago, one of us had the opportunity of being a member of the faculty of one of the courses for executive housekeepers at the Catholic University in Washington, D.C. It was a revelation to us to see not alone the education and overall quality of her students, but also to observe the level of course content and to judge her great understanding of this important phase of preserving hospital safety and comfort. They were even taught bacteriologic techniques.

Mrs. Ford, Mr. Korach, and Professor Styne have won the respect of their professions by the many hospitals and nursing facilities they have created. Mr. Hargest's abilities as a clinical engineer have won our respect, particularly as he functioned in the Association for the Advancement of Medical Instrumentation (AAMI) where he has shown his great knowledge of adapting engineering principles to medical problems.

Professor Becker has written extensively on the subjects of environmental evaluation, and teaches this subject in the College of Human Ecology of Cornell University. Mrs. Cleary from our own hospital staff has revealed her concern for the productivity of our own nursing graduates who repeatedly show that "they care". To do so requires an understanding of their working environment.

We are particularly grateful to our secretarial staff, Mrs. Viola Ciotti, Mrs. Helen Kelley, and Mrs. Jayne Herman who have revealed a remarkable facility in deciphering our longhand, spread over many yellow, legal-length, ruled pages which just served to keep our scrawlings in parallel lines.

Most of all we would like to thank Elisabeth King of CRC Press who has proved to be an indulgent coordinating editor dedicated to the production of what we all hope will be a useful document.

William C. Beck
and
Ralph H. Meyer

THE EDITORS

William C. Beck, M.D., F.A.C.S., was born in Chicago, Illinois, and educated at the University of Wisconsin and Northwestern University (B.A., M.D.). He practiced as a general surgeon in Chicago, following residency training in Frankfurt am Main, West Germany. He was on the staff of the St. Joseph and St. Vincent hospitals in Chicago as well as the Cook County and Illinois Research Hospitals. He taught at the University of Illinois until entering the U.S. Army with Cook County Hospital Affiliated 297th General Hospital in World War II. He also served, with a rank of Colonel, as Chief of the Surgical Services with the Syracuse University Unit and at Gardiner General Hospital. After the war he went to the Guthrie Clinic in Sayre, Pennsylvania, eventually becoming Chief of the Department of Surgery at that hospital and clinic.

Dr. Beck's research interests during and since his residency have been largely in the area of surgical infection control, and the other elements in the surroundings of the hospital such as lighting, air currents, and air conditioning. He has published more than 300 articles as well as five book chapters. Currently, he is President of the Guthrie Foundation for Medical Research, President of the Association for the Advancement of Medical Instrumentation, Chairman of the Health Facilities Committee of the Illuminating Engineering Association, and a member of committees of AAMI, American National Standards Institute, American Society for Testing and Materials, and Chairman of the Committee on Operating Room Environment of the American College of Surgeons. He has been advisor to the technical standards committee of the Association of Operating Room Nurses.

Ralph H. Meyer was born in Madison, Wisconsin to the well-known internist Ovid and Lyda Meyer, he grew up in an atmosphere of medicine. He decided to become a hospital administrator, and did his undergraduate work at Syracuse University and postgraduate work at the University of Michigan.

During his residency in Hospital Administration in Kalamazoo, Michigan, he met and married his wife of 18 years, Carol Shaw. They have raised a son and daughter now into their teenage years.

After a five-year tour in the Air Force, which included a three-year stay at Torrejon Air Force Base just outside of Madrid, Spain, he spent six years in Hershey, Pennsylvania, as the Associate Administrator, helping build and equip the hospital of the Milton S. Hershey Medical Center of the Pennsylvania State University.

In 1974 he moved to Sayre, Pennsylvania. As President of the Robert Packer Hospital, he has assumed a leadership role in the growth and development of the Sayre medical facility, a 320 bed hospital which is connected with the Guthrie Clinic and its 90 physicians. He has had many articles published and is a member of several management and/or hospital organizations. He is a member of the Board of Directors of the Chemung Canal Trust Company in Elmira, New York, as well as a member of the Board of Governors for Notre Dame High School, also in Elmira, New York. He has recently taken up distance running for relaxation and has entered several local races.

Dedicated to

**Jane Murray Beck
and
Carol Ann Meyer**

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THE ADMINISTRATIVE FUNCTIONS

Chapter 1

INTRODUCTION

W. C. Beck

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I. THE PAST

The first hospital recognized by modern medical historians existed in the fifth century before the birth of Christ, in Epidaurus. The Asklepieion which is now recognized to have served medical, surgical, and psychiatric patients seems to have taken the patient's environment into consideration by providing a milieu of artistry and beauty. The patient's communion with his fellow sufferers as well as his deities was obviously designed to be enhanced by the visual surroundings. Also the auditory senses were assuaged by the use of the sound of running water by constructing a small aqueduct over the patient's sleeping and dreaming area.

This attention to the sensibilities of patients, and even of those who attend them within the hospital was, with the advances in both diagnosis and therapy, relegated to a secondary role. Hospital design and planning was for centuries aimed only toward providing bare shelter. This shelter was available almost entirely in the monasteries of Europe, many of which contained infirmaries. Thompson and Goldin¹ suggest that the Abbot of Cluny "faced the problems of modern administrators when they have to expand architecturally around an irreducible patient population".

In the early Middle Ages, the sensibilities most challenging to the hospital population was the defecatory one. Necessaria or privies were constructed, often most conveniently situated and accessible from each patient's bedside. Running water maintained a semblance of sanitation. Ventilation was achieved by the use of windows and vents in ceilings or in domes and low towers built on the roof. Convection currents were used to enhance this ventilatory system by the use of stoves or fireplaces in the center of the large wards.

The Knights Hospitallers combined the hostel for pilgrims as well as the hospital for the sick and injured. They encouraged the sisterhood to care for the sick within them. Not only did this serve to associate the religious orders with the care of the sick, but it also might be considered the initial effort of hospital planning as an entity. Moreover, we observe in this planning a conscious effort to insert a design for privacy for the upper classes, separating them from the common man who was housed in large crowded halls. To this day this social grace of privacy is a basic tenet of hospital design. In addition, the Knights of St. John added luxury to the hospital scene, particularly in food, such as white bread. They recognized the professionalism of physicians and surgeons who ate their meals with the Knights.

We find, therefore, that the environment of the hospital through the Middle Ages gave consideration to the visual milieu, the sanitation, the ventilation, and the concept of privacy to the congregation of the sick in common facilities.

To these ecologic influences, Florence Nightingale added observation and control. The so-called "Nightingale Ward" still is in use in many parts of the world, although it has been often modified by subdivision into open bays and alcoves. A partial, flexible privacy is achieved by the use of curtains — first employed in medieval hospitals.

II. THE PRESENT

The evolution of the hospital went through a variety of phases. At first it was an annex to the housing of the hospital attendants; the religious orders. Thompson and Goldin describe them as derived from monasteries, palaces, estates, prisons, or barracks. Our original hospital (The Robert Packer) was derived from the home of its original donor. Thompson and Goldin also describe the designed hospital in which an attempt was made to fashion the hospital to serve its special nursing and therapeutic function. Our original hospital in Mr. Packer's home was partially designed by the addition of wards and a surgical suite.

About a century and a half ago, planning for function took place. Architects and medical professionals began to study the functioning organism. Research teams came into being and a scientific literature initiated. The pavilions were probably designed in France and England as responses to the great epidemics. The military hospitals particularly seemed to accommodate well to the pavilion configuration. Indeed the general hospitals of World War II were of this type of architecture. They also adapted well to the growing use of specialists and the segregation of patients by the manner of care that they required. Large hospitals, such as Cook County in Chicago and small, such as the Robert Packer, were designed and built as specialized pavilion institutions.

As early as 1905, in Chicago, Albert J. Ochsner, a prominent surgeon, foresaw the real estate problems of the growing urban hospitals and envisaged their vertical configuration. The hospital skyscraper was a product of this century. Within these confines horizontal growth gave way to vertical growth with departments waxing and moving by encroaching and replacing their neighbors.

The most significant contribution of the current era probably is the concept of progressive medical care. The movement of the patient from zone to zone within and without the hospital; from critical care, through normal, minimal, and eventually extended care has been instituted to make a maximum use of facilities, and also for economic employment of both expensive facilities and expensive manpower. The "private duty nurse" needed by both rich and poor but affordable only by the wealthy, gave way to the critical care unit; democratically dedicated to all of the very ill.

This progressive medical care has created new problems for the hospital planner and designer. The professional requirements vary as considerably as do the needs for the various tasks. Moreover, the tasks are constantly changing in response to scientific and technical progress. They are responding in geometric progression to quantum technologic advance and the continuing contributions of research.

The challenge of progressive change creates demands upon facilities with such rapidity that even flexible arrangements cannot keep pace.¹ However, the specialized units of progressive care provide modules which are most easily rearranged to suit the new demand of the diagnostic and therapeutic methods.

All of the hospital facilities may need replanning, even support services. Let us cite a few illustrations. In our hospital, additives to intravenous solutions were reoriented from a ward activity to a pharmacy locale several years ago. A clean bench was installed in the pharmacy. Within a span of only three years, with the more general acceptance of intravenous hyperalimentation, this activity now has demanded completely separate facilities with specialized personnel, three clean benches, and a centralized dedicated computer capability so that the requirements may be anticipated.

A second example is the medical library whose requirements for shelf space increases annually despite the disposition of most serials after ten years, relying upon interlibrary loans for older reference issues, and computerized telephonic searches for current title. The speed of this phenomenon is that the library of medicine will soon search the literature only for the last two years, relegating older contributions to scientific limbo.

Each modification creates a new demand upon design. An additional allocation of space means restriction for another facility. It may be achieved only by relocation of the surrendering area which, in turn, may dislocate previously carefully designed relationships. Similarly, accommodation of all of the accouterments of planning including ventilation, lighting, decor, communication, etc.

In most hospitals, who handles these considerations? It varies greatly! For major changes, the demands may become a part of a fallible long-range plan.³ Or they may be *ad hoc* following investigation by the administration. A variety of consultants, planners, architects, and others may create statements of need, block designs, preliminary plans, and final plans and specifications. Cooperating in this effort will be planning

groups representing the ultimate users. The trustees of the hospital are responsible for adjusting all of these to the available or attainable dollars. Governmental assessment to avoid duplication follows.

Lesser modifications will be weighed and put into plans and eventual fruition by similar, but often less formal mechanisms. As change is ever present, larger hospitals may have a full-time planning team. Even middle-sized hospitals should have an organization capable of studying such changes.

Thus, the present time might be characterized by calling it the era of integrated and progressive care. Incidental to this has come the democratization with leveling the care of the economic means of all patients. These elements have reduced privacy and even segregation by sex; as one sees men and women side by side in the critical care units. Moreover, there appears, at present, an emphasis upon cure rather than care; which seems to be beginning to wane.

III. THE FUTURE

Implicit to all of this discussion is the development of master plans for the institution. Can one use the tools developed from institutional history and geographic demography. Without question these are significant and can produce useful information. But these guides are influenced in a major way by scientific progress, technical innovation, and actual changes in the disease processes.

Diseases which demanded hospital care are themselves changing. Acute appendicitis was a disease of youth and far greater in frequency two decades ago, while much less frequently represented by its dangerous complication, rupture of the inflamed organ. Infantile paralysis once occupied the major bed complement of the orthopedic section. Mastoid disease made the pediatric otology require a bed complement. Tonsillectomy was a frequent operation.

Today the orthopedic beds are populated by the patient with an inserted new artificial joint. The surgical bed is occupied by the patient with a reconstructed heart, a replaced aorta, or a patient being nourished entirely by vein. The hernia patient is no longer bed-confined for a postoperative week and a hospital stay of ten days; he returns to his home on the day following the operation.

The ancillary hospital sections from anesthetic rooms to the laboratory and the X-ray sections are all changing from the time that the plans are being created to the time of first occupancy with such rapidity that the newest hospital is antiquated when it opens.

Recently, Morss³ has called to the attention of hospital trustees problems associated with designing the structure for growth. He said "The limited vision of the master plan is almost always doomed to fail, because it is simply impossible to make concrete predictions for the future." To this we would add that the future is constantly coming closer to the present, so that the only predictable part of a master plan is that it will constantly change. Historically, changes have been one of the most costly parts of new construction. This challenges all of those involved with new facilities or remodeling of existing ones. Obsolescence is taking place at an ever accelerating rate.

Basic design, as Morss suggests, can include flexibility. Plans can be created so that areas can be expanded or contracted as demands change. We have suggested mechanisms for flexibility which can be employed even during the construction phase.

Also we are beginning to see in our health care institutions a resurgence of the phenomenon of caring. Care does not preclude the scientific applications designed for curing. In fact, it may actually enhance recovery. The milieu for this approach within the constraints of cost should be the goal of the designer, the engineer, the architect, and the institutional provider.