



DEVELOPMENT TRENDS IN HOSPITAL FACILITIES IN THE UNITED STATES\*

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It is axiomatic in hospital design that "form follows function". This fact is the basis of the architectural design of the modern hospital. It presents a challenge to the physician, the nurse, the pharmacist, the dietician, the administrator, the maintenance engineer, among a host of others who serve their fellowman through the hospital. The competencies of these health personnel must be translated in a word picture for the architect so that he can create a design which will be functional, realistic, economical and attractive.

The role of the hospital has emerged as one which is recognized today as that of the health center for the community. It has become the mobilization depot of the many essential and complex instruments of precision required by the medical and nursing staff for good patient care. In addition, it must also contain the elements and facilities for comfortable housing and adequate feeding of its patients and resident staff. To provide the proper blending of the facilities required for radioisotope therapy, surgical operations, oxygen tents, laboratory examinations, out-patient clinics, pneumatic tubes, comptometers, vegetable preparation, bake ovens, flower storage, chapels, generators, boilers, elevators, storage, dining rooms, staff lounges, ambulances, perhaps even a helicopter and other essentials is not an easy task. Nor is it a one man job. A well designed hospital represents the thinking and efforts of many people over many years. The hospital of today, unlike one period in its evolution, is much more than the springboard to eternity. It is the starting line of life; the place of repair for the ill and impaired; the health university for all of us; and the place where man can serve man to the fullest and in so doing serve his Maker.

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There are approximately 7,000 hospitals in the United States exclusive of Federal hospitals. We have nearly 1,100,000 acceptable beds and about 154,000 nonacceptable beds according to the respective State plans submitted under the Hospital Survey and Construction Program. Our national hospital bed deficit as reflected in these State plans is in excess of 800,000 beds.

The Federal agencies operating hospitals are the Army, Navy, Air Force, Public Health Service, Indian Service, and Veterans Administration. The latter three Federal agencies serve the civilian population and together have about 117,000 beds in operation today.

The development of hospitals in this nation has a broad sociological and economic impact as well as a technical aspect.

The passage of Public Law 725, 79th Congress, in August 1946, authorized the Hospital Survey and Construction Program. Under the provisions of this Act each of the 48 States, Alaska, Hawaii, Puerto Rico, the Virgin Islands and the District of Columbia has developed an over-all plan relating to hospitals and related health facilities within its borders. These State plans are in reality a documentation of existing health resources, a description of the need for additional or expanded facilities, and a plan to acquire facilities to meet that need. Federal funds have been made available on a matching basis of from one-third to two-thirds of the cost of the individual approved projects. The State in its own discretion establishes the rate of Federal matching. The program progress is as follows:

1. Number of Projects and Cost.

As of June 30, 1954, 2,283 projects have been approved, which will add 109,207 beds. These projects also include 483 health centers. Total cost of these projects represents one billion eight hundred fifty million dollars, of which the Federal Government is contributing nearly 618 million and the sponsors more than one billion two hundred million.

## 2. Categories.

Seventy-three (73) percent of all the projects (with 88,998 beds) are for general hospitals and general hospitals in combination with public health centers; 18 percent are public health centers; the remaining 9 percent (with 20,209 beds) are mental, tuberculosis, and chronic disease hospitals.

## 3. Construction Status.

There are 1,673 of these projects (or 73 percent), adding 72,684 beds, which are open and in operation; 521 (23 percent), which will provide 32,040 more beds, are under construction; the remaining projects with 4,483 beds are in preconstruction stages.

Of the projects which have been opened and are in operation, 1,225, or 73 percent, are general hospitals. These projects have added over 59,200 beds to our hospital resources. About 145 other hospital projects are open for use; these have added over 13,400 beds in tuberculosis, mental, and chronic disease categories.

## 4. New Facilities and Additions.

Fifty-nine percent, or 1,351, of the total number of projects are completely new facilities; additions or alterations to existing facilities comprise the remaining 41 percent.

## 5. Size of Communities.

Of the new general hospitals approved, the majority (59 percent) are located in communities of less than 5,000. Only 8 percent are in cities of 50,000 or more people. Additions and alterations to existing general hospitals tend to occur in the larger communities: 20 percent are in communities of less than 5,000 people; 31 percent are in communities of over 50,000.

## 6. Prior Availability of Facilities.

Of the 891 completely new general hospital projects, 500 (56 percent) are located in areas which had no hospitals prior to the Hospital Survey and Construction Program; 186 (21 percent) are located in areas which had only nonacceptable facilities; the remaining new facilities are being built in areas which were deficient in facilities prior to the program.

## 7. Regional Distribution.

The majority of approved projects are located in the Southern States. This census region has 1,181 projects, or 53 percent. The remainder are distributed as follows: 469 (22 percent) in the North Central States; 306 (13 percent) in the North East States; and 263 (12 percent) in the Western States.

## 8. Bed Capacity.

New hospitals are relatively small in bed capacity: 57 percent have fewer than 50 beds, 22 percent have from 50 to 99 beds, only 21 percent have 100 beds or more. Hospitals to which alterations or additions are being made are larger - 64 percent of these projects are hospitals with 100 or more beds.

The Medical Facilities Survey and Construction Act of 1954, (Public Law 482, 83rd Congress) amended the Hospital Survey and Construction Act to provide a greater inducement to the States and local communities to plan for and construct facilities for the care of the chronically ill and impaired. This Act authorized \$2,000,000 and it was subsequently appropriated, to assist the States, on a dollar for dollar matching basis to survey and plan four specific types of facilities. These types are (1) chronic disease facilities; (2) diagnostic centers, or diagnostic and treatment centers; (3) nursing homes; and (4) rehabilitation facilities. These facilities, like those general, tuberculosis, chronic, mental hospitals, public health centers, authorized by the original Act, must be non-profit in character, render a community service and not discriminate against race, creed, or color.

The 1954 amendments also authorized 60 million dollars for appropriation to assist in paying part of the construction of the approved facilities. Amounts authorized annually through 1957 fiscal year are: (a) \$20 million for chronic disease facilities; (b) \$20 million for diagnostic centers or diagnostic and treatment centers; (c) \$10 million for nursing homes; (d) \$10 million for rehabilitation facilities.

For fiscal year 1955 the Congress made available \$21 million for the new amendments and \$75 million for the older program.

In order to be approved for construction grants the project must be in accordance with the State plan, of high priority, and meet the minimum requirements as provided by law and the Federal and State regulations.

The Hospital Survey and Construction Program has provided a nation-wide program of planning for and the construction of hospitals and related health facilities through a cooperative relationship of local community, and State and Federal authorities to acquire better facilities and better patient care. In addition, the program has helped rural communities to attract and retain physicians; emphasized coordination and integration of hospitals on a State-wide basis; created an interest among the citizens of this and other countries in their health resources and facilities; stimulated construction of hospitals outside the program; stimulated a fusion between curative, preventive and restorative medicine to promote health maintenance for our people and, established the State agency as the administrative authority to which applicants must first go for approval in order to acquire subsequent Federal approval and financial assistance.

The developmental trends in relationship to the technical details of the hospital in serving the public are also outstanding. These trends are the direct result of the changes in medical care and the application of an ever growing body of knowledge concerning man and his relationship to his fellowman, to all other living and nonliving elements of our world and maybe of other worlds about which we may be in the process of learning. So at best the trends reflect our efforts to meet a state of flux which does not appear to show any inclination to stabilize.

The modern hospital is a better place in which to work and a better place in which to be treated for an illness than those of the past.

The physician has more complete adjunct facilities to assist him in his ministering to the ill, the impaired and the injured. For example, (1) operating rooms contain built-in x-ray units, television apparatus for teaching, and air conditioning; (2) larger pharmacies with facilities for bulk compounding and storage; (3) more physical therapy and rehabilitation equipment; (4) radioisotope laboratories; blood banks, encephalographic facilities; recovery rooms for post-operative patients; and, piped oxygen therapeutic facilities among other improvements.

There is a very definite movement toward the provision of total rehabilitation facilities for all patients varying in degree with the indications and need.

The character of medical practice today is requiring the development of out-patient departments.

Psychiatric units for the early care of the mentally ill and for short term therapy are existent in the general hospitals of larger size. Even in some smaller ones psychiatric units are available pending transfer of the mentally ill patient to a mental hospital.

Nursing units have been reduced from the open ward of a large number of patients to smaller numbers of patients in rooms. This aspect of the hospital's operation still needs considerable study.

Toilets adjacent to bedrooms are a common finding as contrasted with a unit facility serving many.

The use of color is being investigated as a therapeutic as well as decorative tool. Even in nonpatient areas the efficiency of staff and employees has been affected by the appropriate use of color.

Fire safety planning and construction are present in all new hospitals. Fire and life safety programs for patients and staff exist in the well administered hospital.

On-site parking, gift shops, fathers' rooms, snack bars and "baby sitter" rooms serve the visitors to patients.

Forced draft ventilation and air conditioning are more frequently found for the operating rooms and even total hospitals. This aspect of the ventilation of hospital buildings is receiving much study and great and new developments may be expected.

Sound proofing, heat control and appropriate lighting are all under investigation in regard to human physiology and we may in time benefit from these studies.

Inter-communication systems between patients and the nurses desks are effective features of the modern hospital. Radio and television are today quite common in patients' rooms.

New methods of food preparation and disposal such as infra red ovens, garbage grinders and many other newer mechanical features are making personnel efficiency greater.

The whole field of heat pumps, refrigeration, and lighting are the result of the application of the contributions of the physical scientist toward better patient care.

The many operation and maintenance studies and methods such as central stores, central sterilizing, with use of distributing food carts and linen carts may serve well for certain types of hospital design.

In time we may have moving corridor sections as well as our now utilized movable walls.

In general a hospital must be custom built to properly provide the demands made upon it. Too much standardization of room size, of design, of anything else will not be in the interest of the patient or the staff.

The hospital of today is truly the health center of the community. As health maintenance programs develop the public health center and the hospital



come closer together. In times of national or local emergency of a catastrophic or near catastrophic nature it is frequently the hospital and its laboratory which is called upon for health protective services in addition to its routine contribution to the health of the community.

In conclusion, the hospital is our health university and as such affects the lives of all of us in direct proportion to the way we use it.