



CLINICAL CENTER

POM

of the NATIONAL
INSTITUTES of
HEALTH

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service • National Institutes of Health



The Clinical Center, shown near the center of this aerial photograph of the National Institutes of Health, is the tallest building on the 300-acre reservation in Bethesda, Maryland.



Foreword

We hope that this Clinical Center brochure will give you a view not only of the modern structure and patient-care facilities of this closely integrated laboratory and hospital, but also of people with a mission—research for better health.

Among these people, our patients are all-important members of the research team and deserve a great share of credit for helping today's research become tomorrow's routine.

THOMAS C. CHALMERS, M.D.
Director, Clinical Center

"Pools of Bethesda" on either side of main entrance to the Clinical Center were inspired by the biblical passage in St. John 5, which describes the healing of the lame man near the pool called Bethesda in Jerusalem.

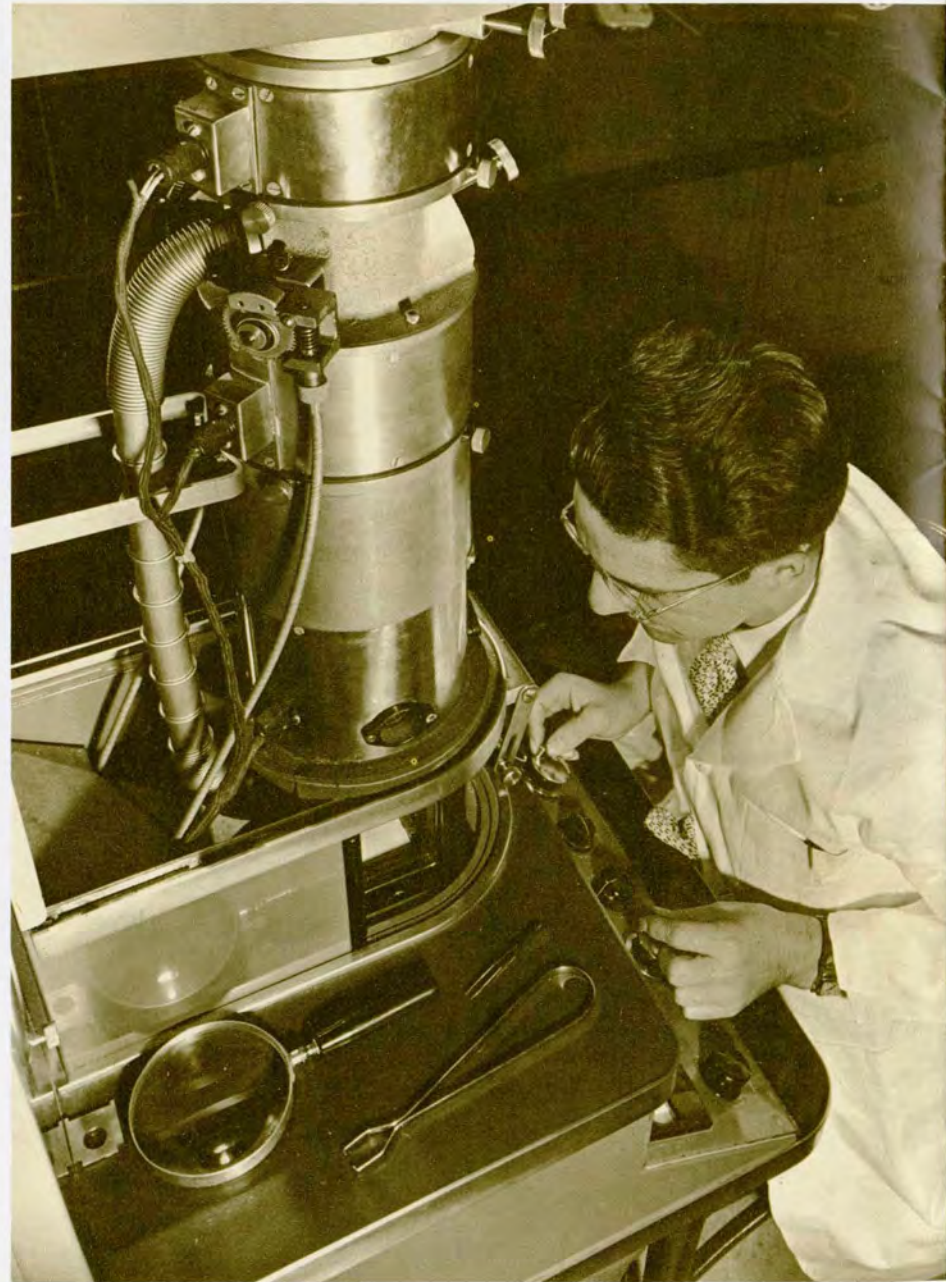


(Right) Technicians in Clinical Pathology Department examine Gram's stained smears.



(Above) Young patient held by surgeon is surrounded by staff members who contributed to his care—this is the research team.

(Right) This electron microscope, one of several in use at the Clinical Center, permits visualization of objects, such as viruses, too small to be observed with ordinary optical microscopes.



THE CLINICAL CENTER

The Clinical Center is a 14-story, 516-bed research hospital located in Bethesda, Maryland, just outside Washington, D.C. It is part of the National Institutes of Health, the Federal government's primary medical research agency.

The Center is designed to bring scientists working in 1,100 laboratories into close proximity with clinicians caring for patients so bench investigators and physicians may collaborate on problem diseases. Twice as much space is devoted to laboratories as to patient areas and Clinical Center patients receive immediate benefits from new advances in medical care techniques.

Thus, the Clinical Center is sometimes called the place for the complete look at the whole problem.

MISSION: STUDY PREVALENT DISEASES

The primary mission of the Clinical Center is to provide the specialized forms of hospital care necessary for Institute studies.

The illnesses under study are the ones all too common in people throughout the Nation. Ranging from the common cold to cancer, the widespread maladies being investigated reflect a *public health* mission—to accomplish the most for the greatest number.

Many years ago, Federal medical research was largely devoted to investigations conducted at the sites of epidemic outbreaks of infectious diseases. Now, the programs conducted in the Clinical Center by the various Institutes within NIH and by the National Institute of Mental Health are concerned with allergy and infectious diseases, arthritis, metabolism, and digestive diseases, cancer,

child health and human development, dental research, heart and blood vessel diseases, mental illness, vision problems, and neurological diseases and stroke.

Each of the Institutes is responsible for planning and conducting its own research in the Clinical Center. When an aspect of a disease is selected for study, the methods of approach are determined by a research team, which may include scientists from more than one Institute and from other research organizations.

PATIENTS ON THE TEAM

Over the years, the research approach to medical problems has changed. Early disciples of medical scientists such as Koch and Pasteur made significant advances using individual skill alone.

Some investigators still work that way, but most research today depends upon teamwork for the most consistent progress. In studying the way drugs react within the body, for example, the research patient is a member of a team that includes not only his physician and nurse, but also the biochemist, pharmacologist, physiologist, radiotherapist, rehabilitation therapist, and others.

Each year when the Institutes report to Congress on research progress, a share of the credit for the year's accomplishments always goes to the patients of the Clinical Center who participated in certain of the studies mentioned. When new drugs effective against antibiotic-resistant forms of staphylococci were developed, Clinical Center patients took part in final tests to demonstrate the efficacy of these compounds.

(Right) Technician in Clinical Pathology Department inserts serum sample into an autoanalyzer, a semi-automated system for detecting and measuring blood lipids that sometimes accumulate and may contribute to heart disease.

(Below) Small patient provides a blood sample.



Clinical Center patients participated in trials of drug therapy of certain forms of cancer. These drugs have shown some promise in such cancers as choriocarcinoma, a rapidly growing form that develops in the uterus after pregnancy, and lymphosarcoma and Hodgkin's disease, two cancers of the lymph system. Other Clinical Center patients participated in research demonstrating that up to 90 percent of patients with early Hodgkin's disease can be successfully treated with massive doses of radiation.

Still other patients helped NIH scientists at the Clinical Center demonstrate that BCG, an immunity boosting substance, may be helpful in treating patients with inoperable melanoma, a cancer made up of dark-pigmented cells.

Clinical Center patients have taken part in the search for a human cancer virus. Using leukemia cells from a Center patient, a National Cancer Institute scientist demonstrated that a drug called rifampicin could inhibit a tumor-related enzyme in test tubes. This enzyme has been associated with cancer-produced tumors in animals.

Clinical Center patients enabled NIH scientists to make the first direct measurements of the rate at which human tissues manufacture antibodies against diseases; studies of this vital "defense factory" still continue. Patients also enabled scientists to demonstrate for the first time, that transfusions of type-matched lymphoid cells are successful in treating candidiasis, a systemic fungal disease.

A method of diagnosing hyperlipoproteinemia, a condition sometimes leading to heart disease, was developed in studies involving Center patients. Still other patients participated in studies that uncovered a drug to treat the neuromuscular disease called periodic paralysis.

However, the Clinical Center is not a place to expect miracles. The gaining of new knowledge is gradual and seldom dramatic.

(Left) Physicians in the Nuclear Medicine Department check for abnormalities of a patient's spleen and liver using a scintillation counter which assesses the function of these organs by measuring the amount of a previously injected short-life isotope collected there.



HISTORY AND DESIGN

As far back as 1911, it was recognized that lack of a clinical facility especially designed for research was hampering the effectiveness of Federal medical research. Changing national health patterns led Congress to initiate in 1947 a large expansion of funds for both Federal and non-Federal medical research; the parallel and progressive strengthening of research activities at NIH made facilities for clinical study essential.

Design and construction of the Clinical Center were begun in 1948. The first patients were admitted in 1953.

A typical floor of the Clinical Center has two nursing units of 13 rooms, each room accommodating 2 patients. The nursing stations and facilities are in the main portion of the building between two wide corridors. Along the south corridor are the patients' rooms, and along the north corridor, the clinical research laboratories. Studies not directly involving patients are conducted in the building's several wings. Special facilities for heart and brain surgery are provided in a circular-design surgical wing.

The typical floor has space for approximately a hundred laboratories. The number and dimensions of these laboratories can be varied as the need arises, since full use has been made of removable partitions and interchangeable standard equipment. While proximity of laboratory and patient areas is maintained, the patients are sufficiently separated from the laboratories to give maximum comfort and privacy. For example, parallel corridors and separate banks of elevators effectively separate traffic to the patient and laboratory areas.



(Above) Physical therapist exercises young patient in Hubbard Tank.

(Below) All patients' rooms are planned to accommodate two patients.



PATIENT ADMISSION PROCEDURES

Authorized by Congress specifically for medical research purposes, the Center does not offer general diagnostic and treatment services in the same sense as do most hospitals. Patients are selected—after referral by their physicians—solely because they have a precise stage of an illness needed in a particular study being conducted by one or more of the Institutes.

The number of beds available for a particular study and the length of the waiting list of qualified patients are important in determining if and when an individual can be admitted. Research on a particular disease may be such that only one or two patients can be studied at a given time.

Most of the research at the Clinical Center is concerned with the more common serious diseases. For this reason, the Center seldom admits patients with rare and unusual diseases or those with conditions which physicians have been unable to diagnose.

Although the Center was established and is operated solely for research purposes, the welfare of the patient takes precedence over every other consideration. Methods of treatment are substantially the same as those accepted and used by well-qualified physicians everywhere.

Everything possible is done to make the patients' stay as pleasant as possible and in this way to encourage them to stay throughout the entire period of a research project. They can, of course, leave at any time they wish—however when the patients are admitted the general outline of the study is explained to them, the importance of their role is emphasized, and their cooperation for the duration of a study is enlisted.

When participation in a study is completed and their condition permits, patients are returned to the care of their own physicians; periodic followup examinations or treatments may be given for months or years.

The important principle of admission is that it is based upon a physician-to-physician communication. Patients can be admitted only when recommended by their own physicians. The Clinical Center periodically circulates to interested physicians throughout the Nation descriptions of research currently being pursued. This information in the form of announcements, and a brochure "Cur-

(Right) Book cart from the Patients' Library provides service to bed patients.

(Below) The environmental chamber shown here is employed to measure respiration and perspiration of a Clinical Center normal volunteer patient at rest.

(Below right) Every patient gets a birthday cake.

(Opposite page) A young patient is going home.





rent Clinical Studies and Patient Referral Procedures," is available only to physicians. It is sent to those who have referred patients in the past, or who request to be placed on the Center's mailing list.

A leaflet entitled "Patient Admission Procedures" is available from the Clinical Center for people who are interested in being considered as study patients.

NORMAL VOLUNTEER PATIENTS

To provide basic information about healthy people to compare with ill patients, the Clinical Center has a normal volunteer patient program. Selection of normal volunteer patients is determined by research needs and, for the most part, volunteers are recruited through special arrangements with certain universities, colleges, church organizations, and civic groups with whom NIH has contracts. Reimbursement to volunteers is paid to the organization that sponsors them.

Research involving normal volunteers is carefully screened to protect the volunteer's safety and welfare, and the major complaint of volunteers is boredom.

However, many volunteers receive vocational training while at the Clinical Center. College students have an opportunity to receive training and experience in various health-related disciplines. On occasion, a young college graduate who learns research procedures while participating in the normal volunteer program remains to accept a full-time position with one of the research laboratories.

Other volunteers may gain experience in a craft or trade.

SPECIAL FACILITIES

Because many patients participate in long-term studies, special consideration has been given to their comfort and happiness. A solarium is available to patients on each floor; the Center operates a library exclusively for patients; there is a recreation hall with space for rolling beds and chairs; a chapel has a revolving altar for different faiths; and special attention is given to occupational, recreational, and physical therapy as part of a broad program of rehabilitation. There are dining rooms, a pleasant cafeteria, barber and beauty shops, automated postal center, and even a bank.



(Bottom right) Nurse attends services in Clinical Center chapel.

(Top right) In Rehabilitation Department's kitchen "proving ground" physically handicapped patient learns to peel an apple using one hand and a specially designed cutting board with prongs to hold the apple in place.

(Left) Donor in the Clinical Center Blood Bank is giving whole blood for leukemia patients. Platelets will be removed for transfusion, and the red cells will be returned to donor. The plasmapheresis process makes this possible.



SUPPORTING SERVICES ARE RESEARCH ORIENTED

The research mission of the Clinical Center guides the activities of the supporting services beyond levels customary in most hospitals. These services include nursing care, clinical pathology, nutrition, social work, diagnostic radiology, anesthesiology, pharmacy, rehabilitation, medical records, blood bank, and others found in a large, modern hospital.

Every department of the Clinical Center is affected by the primary research mission and provides examples of progressive medicine; the utilization by anesthesiologists of heart-lung-bypass, hypothermia apparatus, and advanced instrumentation as aids to monitoring when giving anesthetics in the surgical suites; use of closed-circuit television as a diagnostic tool as well as a teaching tool for professional education; advanced types of radiologic perception in use of radioisotopes for "brain scans"; advanced computer systems for laboratory procedures in clinical pathology; application of electromyography as a dependable tool in evaluation of patients with neuromuscular disorders; formulation of radioactive pharmaceuticals for diagnosis and treatment; the use of plasmapheresis (the removal of blood for the purpose of obtaining specific blood components rather than whole blood and plasma and returning the balance of the blood to the donor) for the supportive treatment of children with leukemia; development of new nutritional procedures for revised treatment of some metabolic diseases; the application of advanced environmental sanitation measures to protect against hospital infections and other hazards.

Findings related to improved hospital care and utilization of facilities are sought by each department.

For example, at the Clinical Center nurses find the time, equipment, instruction, and guidance to function as effective members of the research team. Nursing research is an integral part of day-to-day patient-care activities. This type of study has helped in assessing the value of the latest, specially designed electronic monitoring systems for patients requiring close and constant physiological observations and in developing laminar air flow rooms that provide a sterile environment for patients especially susceptible to infections.

The Social Work Department, also, is involved in the total clinical research program. Increasingly, clinical investigators request social workers' collaboration in the study and treatment of the social components of chronic diseases.

Blood Bank investigators developed the test for hepatitis-associated antigen linked to the form of liver disease spread by transfused blood. Consequently, all blood used for transfusion at the Center is tested prior to use and the incidence of post-transfusion hepatitis in the patient population has decreased dramatically. Clinical Center investigators were instrumental in promoting the test for use in hospitals throughout the Nation.

Information concerning such developments is communicated broadly as members of the Clinical Center staff lecture and publish frequently. The Center itself has a large auditorium which is almost constantly in use for national and international medical meetings, lectures by world-renowned scientists, the showing of medical motion pictures, or the presentation of combined clinical staff conferences.

An average of 4,000 persons with medical, scientific, and paramedical interests visit the Clinical Center each year; of these, about 25 percent are from foreign countries.

In addition to the permanent staff, there is a constantly fluctuating population of guest scientists, clinical fellows, clinical associates, research associates, medical students, consultants, advisors, lecturers, and visitors, representing literally every professional category in the world of clinical medicine and biologically oriented science. Clinical fellows, for example, are appointed to those Institutes and professional departments where residency programs approved by an American Specialty Board have been developed—in anatomical pathology, clinical pathology, dental public health, medical oncology, and others.



(Left) In the Nuclear Medicine Department, a gamma camera is used to perform a brain scan. Abnormalities in the flow of isotopes through the blood stream are recorded and can aid in diagnosing diseases of the brain.

(Below left) Pharmacist prepares a sterile medication. Sterility tests are performed on all injectable drugs prior to administration to Clinical Center patients.

(Below) Baker in Center's Nutrition Department kitchen carefully weighs each ingredient so that exact content of patient food is recorded.





(Above) Heart-lung machine (far left) aids surgeon performing open-heart operation in Surgical Wing. Recording room in central position contains physiological monitoring and other electronic equipment to help the operating team.



(Above right) Nurse and technician are shown in operating room of Surgical Wing. Dome of visitors' gallery may be seen in background.

(Below left) This sundeck, 14 stories high above the rolling hills of Bethesda, Maryland, is enjoyed by many patients.



(Below right) Regular conferences provide for in-service professional education.



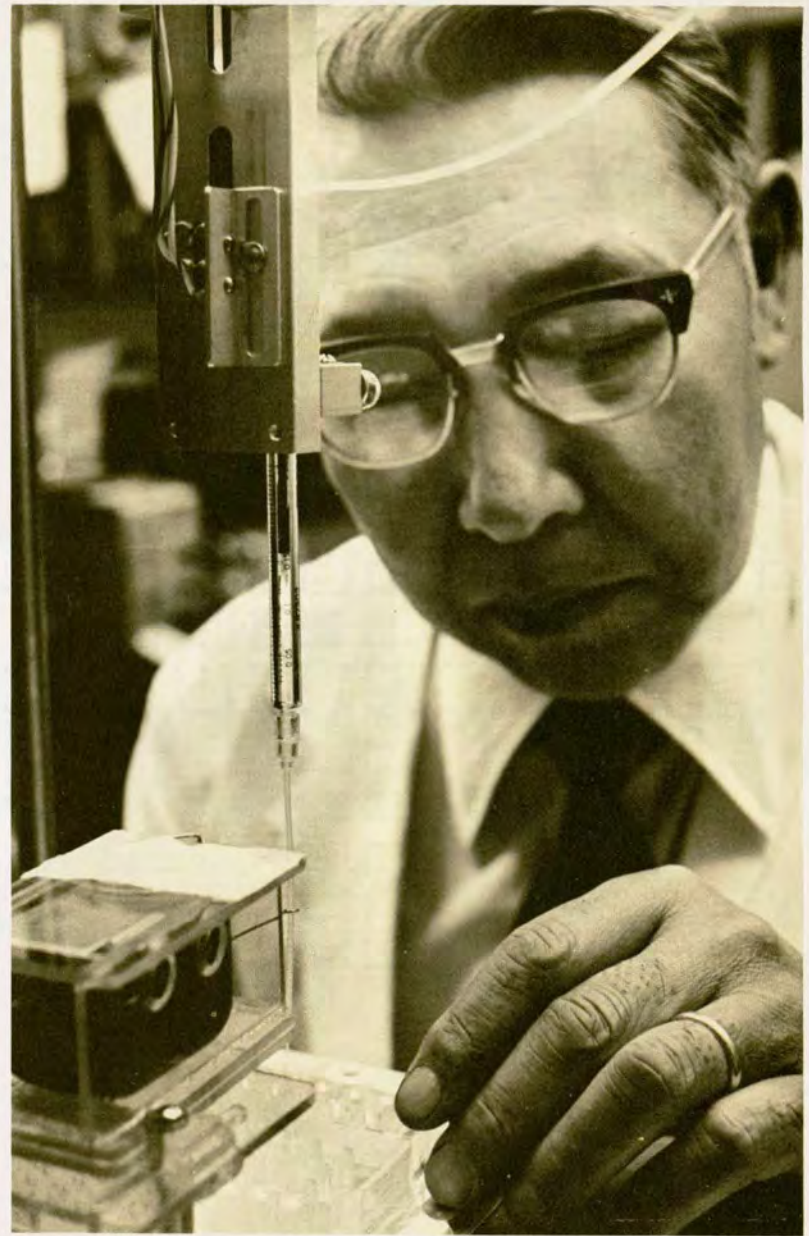
A PERSPECTIVE ON PROGRESS

A visit to the 14th floor sundeck where patients like to relax is always included in a tour of the Clinical Center. This vantage point provides a helicopter-type view of the 300 acre NIH campus and includes the skyline of the Nation's Capital just a few miles away.

However, a view of the Clinical Center's mission is much broader in perspective than this; it may be seen as a part of a great surge of medical progress in which all citizens have a share; the Clinical Center looks out upon the Nation and the world.

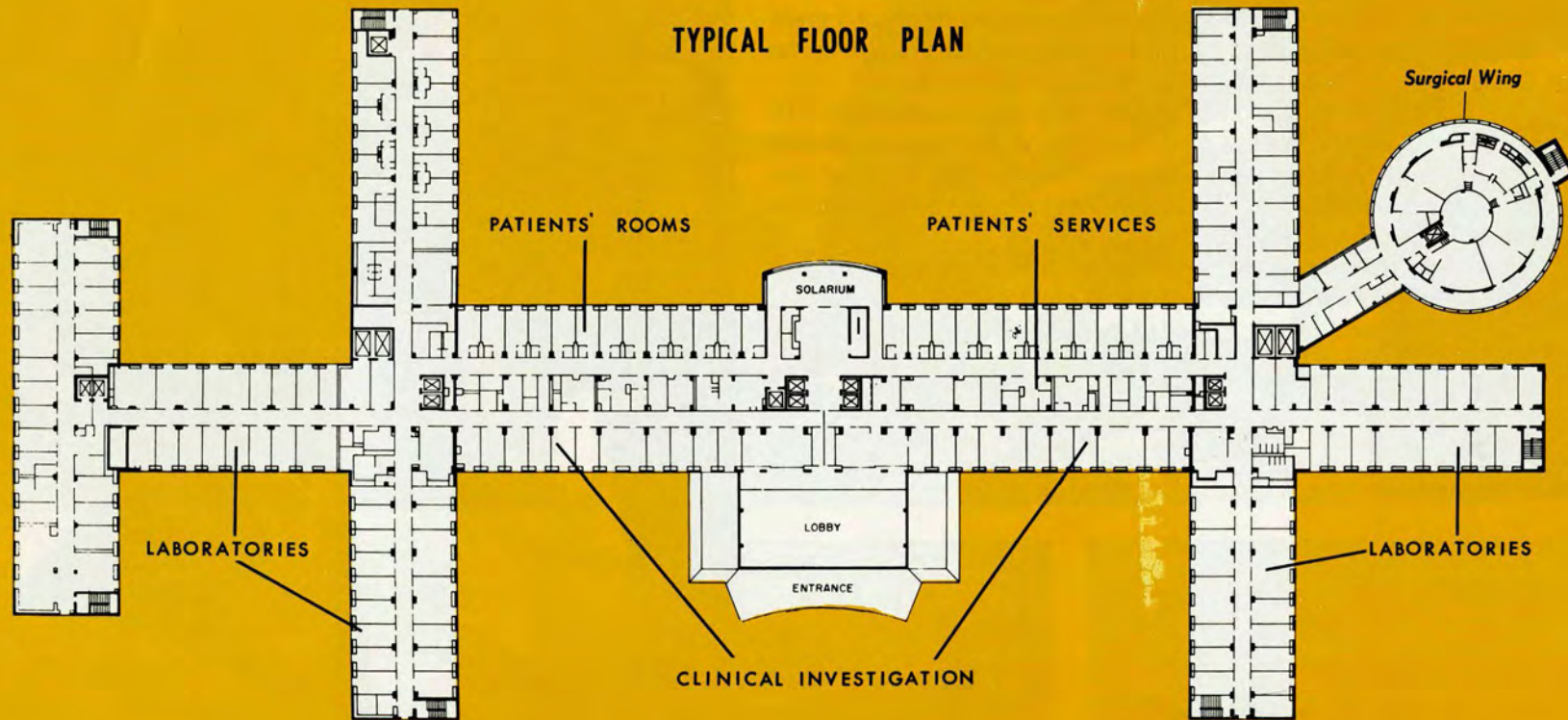
Neither the brick-and-mortar-type statistics concerning its 516 beds and 1,100 laboratory modules, nor the precise instruments that detect a millionth part of a chemical in a drop of blood, for example, or instantly total the number of cells in a sample, is the heart of this research program.

When research patients have proven that a new drug can cure a disease never before curable; when a child walks out of the hospital, his life and health extended through surgery that couldn't have been done just 10 years ago; that is the essence of the Clinical Center's mission.

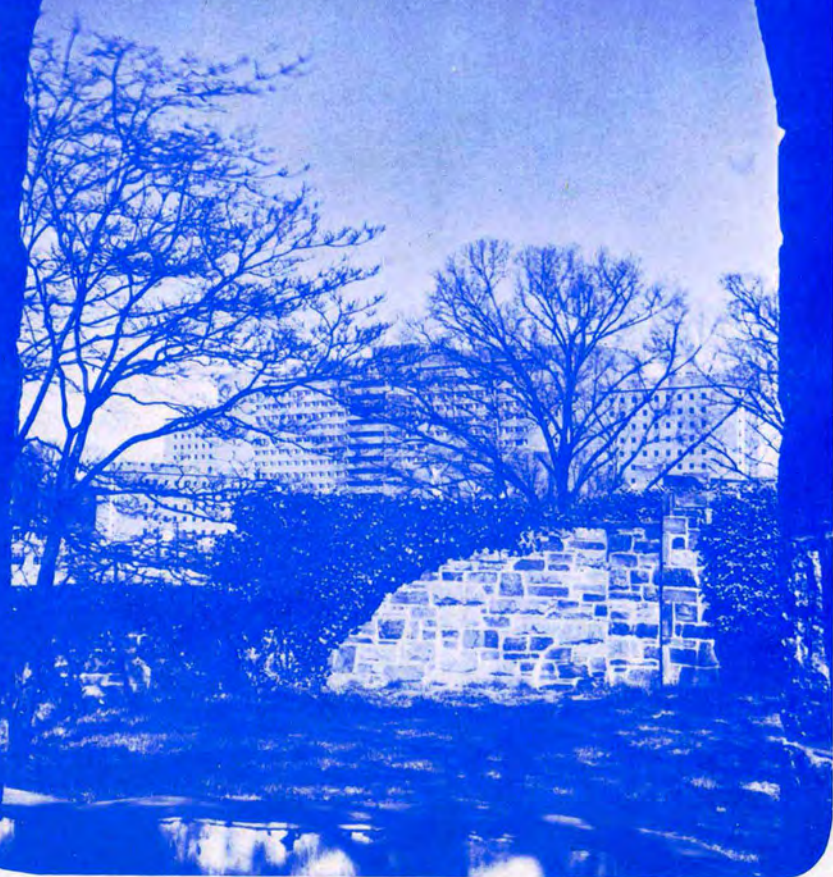


"Research for health" is the Clinical Center's mission.

TYPICAL FLOOR PLAN



Clinical Center is seen from
arched wall of rose garden at
Stone House, original building on
estate donated for NIH use.





National Institutes of Health

National Cancer Institute*

National Institute on Aging

National Institute of Allergy and
Infectious Diseases*

National Institute of Arthritis,
Metabolism, and Digestive
Diseases*

National Institute of Child Health
and Human Development*

National Institute of Dental
Research*

National Institute of Environmental
Health Sciences

National Eye Institute*

National Heart and Lung Institute*

National Institute of General Medical
Sciences

National Institute of Neurological
and Communicative Disorders
and Stroke*

The Clinical Center

National Library of Medicine

Division of Computer Research and
Technology

Division of Research Grants

Division of Research Resources

Division of Research Services

John E. Fogarty International
Center

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Public Health Service
National Institutes of Health

DHEW Publication No. (NIH) 75-214
1975

* Conducts clinical research at the Clinical Center (The National Institute of Mental Health, Health Services and Mental Health Administration also conducts research at the NIH Clinical Center)