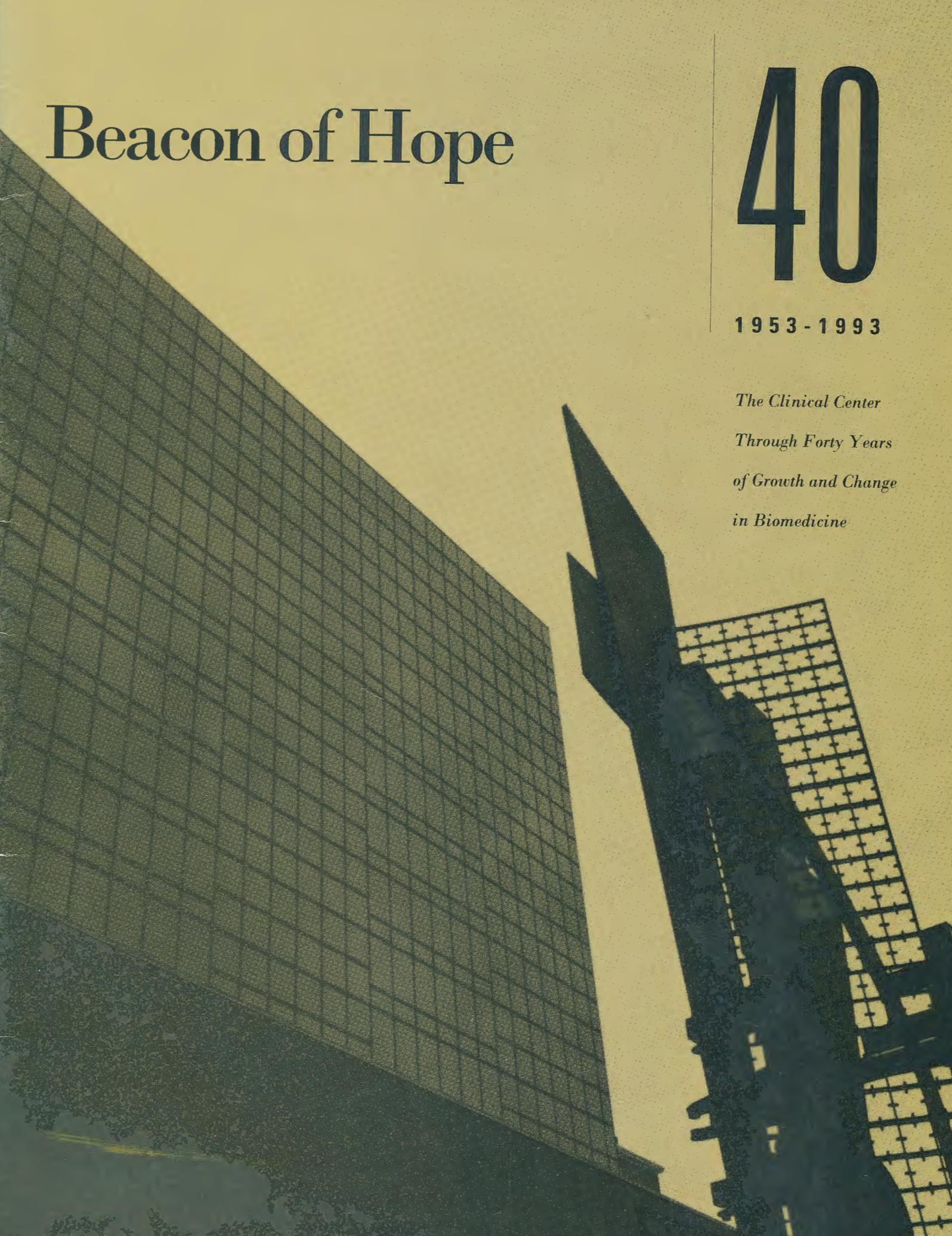


# Beacon of Hope



# 40

1953 - 1993

*The Clinical Center  
Through Forty Years  
of Growth and Change  
in Biomedicine*

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*Construction work gang rolling caisson toward Clinical Center excavation site. (Courtesy of the National Library of Medicine.)*



*President Truman at the cornerstone ceremony, June 22, 1951. Behind him are (l. to r.) NIH Director William H. Sebrell, FSA Administrator Oscar R. Ewing, primary contractor John McShain, and Surgeon General Leonard A. Scheele. (Courtesy of Sam Silverman.)*

## FOUNDING YEARS

1944 —1953

*This Committee unanimously, on both sides, without regard to party or politics or anything else, is supremely interested in this matter of providing proper clinical research facilities that will bring the sufferer, the human patient, into direct contact with the researchers. The time has come to recognize that we must provide trained people — clinicians and technicians and researchers — and at the same time giving to suffering humanity that has these diseases the opportunity to be studied . . . .*

*Rep. Frank B. Keefe, chair, House Appropriations Subcommittee, on the initial Clinical Center construction appropriation, January 16, 1948*

**T**he story of the Clinical Center has many beginnings. Although its origins trace back to a 1911 Public Health Service proposal for a research hospital,<sup>1</sup> the Clinical Center is actually a product of the dynamic growth in American biomedicine following the end of World War II. The postwar years saw unprecedented growth and change at the National Institutes of Health. Between 1945 and 1953, the reservation grew by 214 acres. From the fields and woodlots surrounding the original Georgian-style campus rose 14 new buildings, the last of which was the mammoth Clinical Center. This construction cycle tripled NIH laboratory and office space and swelled the work force from 2,245 to 7,145 by 1958, when the initial Clinical Center staffing was complete.<sup>2</sup> What was once a small in-house federal laboratory was thereby transformed into a world-class biomedical research establishment and the focal point of the nation's war on disease and disability.

Towering above the tree line "like the hull of a giant unfinished ship,"<sup>3</sup> the 514-bed hospital became emblematic of the era's extravagant hopes for the conquest of chronic diseases and its persistent insecurities about the threat of atomic destruction. "A 90-year life expectancy is possible within half a century," predicted *Collier's* magazine as the Clinical Center prepared to open in August 1952. A new era in scientific medicine was dawning in which basic science would reveal the causes of disease and clinicians would develop curative therapies. NIH was embarking on an epochal task, the magazine reported, to "put medicine back together again."<sup>4</sup> By bringing together physicians, biochemists, nutritionists, and pathologists, and by fostering emergent technologies such as chemical pharmacology and radiation diagnostics and therapy, the Clinical Center would be the stage for a new synthesis of medical knowledge, which would radically improve the prospects of human health.

## New Frontiers of Scientific Medicine

The war years had convinced Public Health Service (PHS) leaders that a clinical research facility larger than any then operating was vital to sustain the revolutionary advances in medicine and science that followed the development of penicillin in 1941.<sup>5</sup> Successful antibiotic and chemical therapies for malaria, pneumonia, and tuberculosis encouraged popular expectations of cures for infectious diseases in general. By war's end there was enormous public pressure through disease foundations, press and radio, and members of Congress to increase federal spending on hospitals and health care.<sup>6</sup>

Surgeon General Thomas Parran, committed to the New Deal vision of a universally accessible national health care system, used popular anxieties about disease cures to widen PHS mandates in disease control, hospital care, and scientific research.<sup>7</sup> His deeper appreciation that clinical research would govern the development of scientific medicine came from his own clinical experience with arsenical therapies for syphilis in the early 1930s. Clinicians discovered then that patients reliably recovered only when an optimal dosage was determined through clinical trials conducted by different investigators with different patient groups, all following the same protocol. Since dozens or scores of research subjects were needed for each therapeutic evaluation, separately funded research wards in teaching hospitals had to be used to establish each drug's viability.<sup>8</sup>

The arrival of sulfa drugs and penicillin in 1941 launched a revolution in clinical medicine, which tied laboratory science inextricably to the world of the clinician. Formerly bound only to diagnose and observe, practitioners of internal medicine were now free to treat patients with chronic diseases and to devise experimental therapies.<sup>9</sup> Diagnostic technologies proliferated, disease processes were illuminated, and human biology became the essential proving ground for developmental biochemistry and physiology. As Parran saw it, the implications for NIH intramural research were foretold by the pattern of extramural grants the National Cancer Institute made in 1946. Cures would come, he told the House Appropriations Subcommittee, only after intensive basic research

directed toward fundamental problems of cellular life, the interaction of groups of cells and organ systems in this most complicated of all chemical structures, which is man himself.<sup>10</sup>

With the successful elucidation of the structure of DNA in 1953, it became clear that molecular biology would be the new frontier of scientific medicine.

### Laying the Groundwork

The Clinical Center first appeared in PHS building plans in October 1944. Heading the 10-year PHS prospectus for postwar construction were proposals for a 500-bed Medical Center hospital and a 200-bed Neuropsychiatric Institute and hospital on the Bethesda reservation.<sup>11</sup> The 79th Congress was

averse to President Franklin D. Roosevelt's domestic spending programs and preferred to locate postwar research authority in a private body, which would contract clinical research to leading medical schools and university centers.<sup>12</sup> Temporarily blocked, Parran and NIH Director Rolla G. Dyer enlisted the services of Mary E. Switzer, Parran's superior in the Federal Security Agency, to write legislation authorizing the mental health clinical unit as well as a nationwide hospital building program, which Congress readily funded in August 1946.<sup>13</sup> The administration froze public works spending before considering the \$18 million PHS proposal to start the Bethesda expansion, but Parran managed to get the Bureau of the Budget to approve \$2.6 million for land purchasing and architectural services in December 1946. A building committee was hastily set up within the PHS, and in January Parran's staff submitted the first comprehensive plan for expanding the Bethesda reservation.<sup>14</sup>

Preparations for a dozen new buildings began in earnest in April 1947, after Parran established a symbiotic relationship with the new Republican chair of the House Appropriations Subcommittee, Frank B. Keefe of Wisconsin. With only a promise of \$22 million for construction expenses in 1948, an NIH research facilities committee chaired by Norman Topping plunged ahead with a 30-line site agenda projected to cost \$116,246,765.<sup>15</sup>

The catalyst of this new, full-speed-ahead political environment was extramural research. Requests for research funding from medical schools, academic departments, and hospital centers surged at the end of the war, but philanthropies and drug companies proved unwilling to invest enough capital to sustain the research boom. Moreover, the proposed National Science Foundation became mired in congressional debates complicated by the insistence of leading academic scientists that basic research be kept separate from agencies controlling research applications. Keefe and other key members of Congress decided that spring that the study sections and advisory councils Parran and Dyer had organized in 1945 and 1946 were the only effective instruments available to fund the wave of emergent medical technology.<sup>16</sup> In October, President Harry S Truman joined this consensus by accepting the Steelman Committee's recommendation that medical research spending be tripled quickly. The upshot was a resolution by the Federal Bureau of Hospitalization on November 4, 1947, authorizing construction of a "research hospital, together with ancillary structures," which would combine mental health and chronic/infectious disease research.<sup>17</sup>

After a whirlwind of planning activity between the NIH Director's Office and the Public Building Service, Representative Keefe on March 5 accepted a special appropriation request for \$31,830,000 to construct the main building.<sup>18</sup> The substructure contract was let in July, and in the fall steam shovels excavated the hillock behind Top Cottage, creating a mountain of spoil dirt, which dwarfed existing buildings. Behind the scenes the planning focus slipped, reflecting the abrupt dismissal of Surgeon General Parran in February and the need to accommodate within the organization two more categorical institutes, Heart and Dental Research, which Congress chartered at mid-year.<sup>19</sup>

Dr. Jack Masur, assistant director at Montefiore Hospital and a specialist in chronic care administration, was appointed director of the embryonic hospital staff on April 1, 1948. One of 55 consulting specialists to the planning committee, Dr. Masur used New York's Goldwater and Memorial Hospitals as institutional models in designing the Clinical Center. His leadership of the later planning phases diminished the importance of PHS traditions in both clinic and laboratory. Impatient with the lack of training and professional development in the Marine Hospital clinical service, which after 1944 was barred from using patients for research,<sup>20</sup> Masur set out to create new professional standards and to optimize patient care in the emerging world of scientific medicine.

### **Designing a Biomedical Community**

The hospital concept that unfolded as substructure construction proceeded during 1949 envisioned a self-contained medical community of clinicians, laboratory scientists, patients, and support staff, all focused on conquering chronic disease. Under the guidance of Dr. Masur, the Research Facilities Planning Committee designed provisions for patient care and research operations far more elaborate than at a typical teaching hospital. To offset the longer stays required of research patients, special amenity services such as communal dining and recreation, as well as facilities for physical and occupational therapy, were included. The building was to be fully air-conditioned and wired for bedside television, then seen as available within five years.<sup>21</sup>

The double-corridor design of the main building, or "headworks," allowed patients billeted in south-facing rooms to be brought into a central nursing area for treatment, and it also enabled clinicians to conduct diagnostic and other research services in north-facing laboratory modules across the corridor. The six protruding wings of the building were reserved for nonclinical laboratories, allowing clinicians to mingle with bench scientists and share emergent technologies, such as the radiation therapeutics housed in Wing C north. Support functions were to be located in satellite buildings, connected to the hospital by tunnels. Animal handling facilities, a power station and incinerator, shops and storehouses, as well as on-site housing for 300 nurses and 300 interns and trainees, were also projected.<sup>22</sup>

Initially, the hospital relied upon Washington-area physicians and the six area medical schools for patient referrals. To maintain harmonious relations with local doctors, Masur and Dyer established a "closed staff" system whereby Clinical Center physicians would not practice for pay in the Washington area, and interns would generally not be accepted from area medical schools.<sup>23</sup> In other aspects, interaction with outside practitioners was encouraged. Area specialists were invited to serve as consultants, and intramural investigators were largely recruited outside the Northeast, to ensure a national distribution. The resulting influx of leading clinicians and scientists in 1949 began a cycle of dynamic growth in clinical science.

## Framing Organizational Roles

A series of legislative enactments beginning with the National Heart Act in June 1948 had pluralized the NIH administrative structure, creating five autonomous research institutes modelled on NCI. The Heart Institute, backed by a \$5 million special appropriation and inheriting ongoing cardiovascular projects, began to reorganize the entire intramural program after Dr. James Shannon was appointed scientific director in April 1949. Shannon, who formerly led a highly regarded pharmacology clinic at the Goldwater Hospital, aggressively recruited key staff for newly vacated laboratories in Building 3.<sup>24</sup> He also presented Heart's expansion program to a gathering of institute directors in late October,<sup>25</sup> touching off two months of extended discussions, which produced an organizational model for clinical research still in use today.

An early version of the Easton retreats for key NIH staff in the present era, the Institute Directors' Conferences in December 1949 drew lines of authority strongly favoring the new research institutes over centralized hospital services. Apart from conducting laboratory investigations, institutes were made responsible for providing medical care to patients from admission to discharge, for professional supervision of nursing staff, and for staffing and fiscal support of centralized services such as surgery, clinical pathology, and outpatient services.<sup>26</sup> The directors stopped short of recognizing "six autonomous hospitals" within the Clinical Center, but they decentralized authority to the point where even laboratory services such as house-keeping and fire protection were kept out of the director's hands.<sup>27</sup>

The result was an extremely flexible administrative structure designed to maximize "the effective conduct of experiments," subject to patient welfare as a "controlling factor."<sup>28</sup> The institute directors were careful to separate special clinical services such as surgery, pathology, and radiology from research functions usually available to specialists in these areas, but they were also very supportive of dietary, social work, and employee health service departments as centralized services. Shannon also gained acceptance for a single model of institute administration giving precedence to laboratory heads over administrators.<sup>29</sup> The upshot was a pragmatic compromise reflecting the working requirements of clinical research, particularly the scientific investigator's need for freedom from administrative restraint.

## Korean War Uncertainties

The following two years proved difficult, however, for political reasons. The legislative environment for health issues turned adverse in 1949. Southern Democrats, who traditionally spearheaded health care extension, were disaffected by Truman's advocacy of civil rights in 1948. The anticommunist activities led by Senator Joseph McCarthy targeted the PHS as a subversive agent of "socialized medicine," and administration zeal for budget reductions produced a freeze in public building starts.<sup>30</sup> The Appropriations Subcommittee began looking askance at follow-on buildings in the Bethesda

expansion project. The Budget Bureau cut half of Masur's \$2.5 million request for Clinical Center housing in November 1949. Fearing that nonresident nurses would be unwilling to travel to the reservation for night duty, Dr. Dyer protested that the lack of on-site housing for nurses "may well impose an insuperable deterrent to adequate staffing of the Clinical Center operations."<sup>31</sup>

On January 4, 1950, work began on the \$16,814,200 contract for the superstructure of the hospital, but a combination of strikes and bad weather seriously delayed progress during the spring.<sup>32</sup> Dr. Masur's strong personal leadership style kept the project on track during the rest of 1950. When the mechanical contractor threatened to quit the job in June, Masur reminded the construction chiefs that the project would be "the major hospital center in the country or in the world," and that "there are 17 million square feet in this job and 17 million details," none of which would prevent completion.<sup>33</sup>

Masur's interest in renewed funding brought him into a PHS consensus in May, which attempted to secure new appropriations by offering to convert the Clinical Center to defense research. This gambit, inspired by atomic war planning within the National Security Council before the outbreak of fighting in Korea, was made more serious by Truman's July 27 order to cease funding public building projects not vital to national defense.<sup>34</sup> Anticipating emergency Defense Department requests for military research, NIH began investigations on biological warfare, shock, radiation defense, and thermal burns in the summer of 1950. Preparations were made to turn the Clinical Center into a "potential defense facility" in the event of an atomic attack on Washington.<sup>35</sup> In August, NIH supported separate attempts by Senators Warren G. Magnuson and Claude Pepper to add \$64 million and \$30 million to PHS's budget, to eliminate funding arrears and sponsor direct military research, but Congress voted down both measures.<sup>36</sup> The intramural project grew only modestly during the Korean War years, classified work was minimized, and administrators assured themselves that, "extensive conversion of the existing program would not, as a matter of fact, have contributed to national defense."<sup>37</sup>

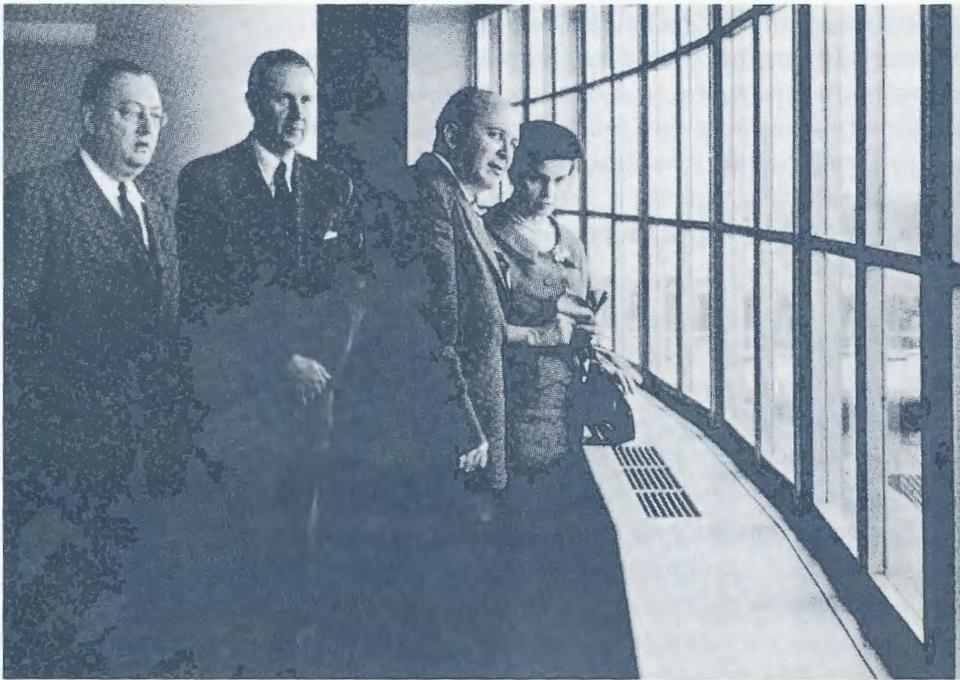
## Research as the Means to Health Security

If the failure to undertake defense research in the summer of 1950 demonstrated the organic limits of intramural research, Truman's visit to lay the cornerstone the following June was a reminder of its political limits. Truman had never forgiven the American Medical Association for thwarting his national health insurance program, and in the spring of 1951 he embarked on several whistle-stop tours promoting a compromise version, which would entitle Social Security recipients to hospital care financed by payroll deductions.<sup>38</sup> In dedicating the half-finished Clinical Center building on June 22, Truman had higher praises for public health work than for clinical research. "Medical care," he insisted, "is for the people and not just for the doctors—and the rich." Warning that the 75 million Americans then without health insurance would soon become a "medically indigent class,"

he challenged the scientific community to “translate the new knowledge gained by research into better care for more people.” Truman’s real target was the first Hoover Commission report, the new conventional wisdom among NIH’s administrators and congressional bill writers, which held that “research to prevent disease” was a better investment for federal dollars than “providing unlimited hospitalization to treat it.”<sup>39</sup> In Truman’s view, it was only a matter of time before the people or their representatives would claim a return on their research investment.

## The Primacy of Scientific Freedom

None of this dampened the spirits of the young scientists and clinicians hired by the six institutes in 1951 and 1952 before the hospital’s opening. “We are living through an exciting and, in some respects, awe-inspiring burst of creative energy,” Surgeon General Leonard A. Scheele noted in mid-1950.<sup>40</sup> The prospect of assigned patient beds for clinical research galvanized a plethora of investigations, and the lack of growth in intramural spending during the Korean War years seemed not to matter at all.<sup>41</sup> Dr. Masur, who left the director’s post in January 1951 to oversee the PHS hospital system, had successfully applied the Goldwater Hospital maxim, “Unity with diversity.” The pattern of flexible administration and scientific control of laboratories was the essential precondition of dynamic growth. Even before its doors were opened, scientific freedom had become the Clinical Center’s hallmark. What remained to be seen, as growth ensued, was whether clinician specialists and scientific investigators could find new elements of synthesis for their divergent interests at the frontiers of molecular biology.<sup>42</sup>



*Oveta Culp Hobby, soon to be designated Secretary of Health, Education, and Welfare, visiting the Clinical Center building on April 6, 1953. With her are (l. to r.) CC Director John A. Trautman, Surgeon General Scheele, and NIH Director Sebrell. (Courtesy of Parklawn Library, Public Health Service.)*



*In July 1953, Charles Meredith, a 67-year-old farmer, was admitted as the first patient. Under the care of Dr. Roy Hertz (rear), he underwent hormone therapy.*

*The very best definition I have ever found for a hospital is the old Quaker expression, "bettering house." It is a simple, honest term, which sums up the whole reason for being of all our health professions as they work together on the hospital team.*

*Jack Masur, speech to Washington State Hospital Association, Spokane, October 19, 1955*

## GROWTH YEARS

1953 — 1969

**A**s Dr. James Shannon remembered it, starting up the Clinical Center took "a very rough couple of years."<sup>43</sup> There was no established culture of medical practice supporting clinical research at Bethesda, no public funding commitment for basic science breakthroughs or for training the next generation of clinicians and scientists, and no clear paths to the next level of biomedical knowledge. The initial barriers were political. President Dwight D. Eisenhower took office in January 1953, determined to scale back federal health spending. His administration's budget for the PHS fiscal year 1954 was \$219 million, a reduction of \$51 million from the previous administration's projection.<sup>44</sup> The Clinical Center's incomplete professional staff complement of 245 scientists and clinicians was frozen, and the April 1 opening was postponed for budgetary reasons.<sup>45</sup> When Oveta Culp Hobby, the new Secretary of Health, Education, and Welfare, visited the building in April, she asked NIH Director William H. Sebrell whether the facility could be kept closed as an economy measure. Sebrell assured her that the political costs would be prohibitive, and the administration proceeded with plans to activate the first 150 beds on July 1.<sup>46</sup> Dedication ceremonies marking the opening of the first 26-bed nursing unit were held the following day in sweltering, 100-degree heat. In her remarks, Secretary Hobby invoked the promise of "cures as yet unthought of" and praised Congress for its nonpartisan willingness to fund medical research. "Scientific truth knows no politics," she averred, and dedicated the Clinical Center to "the open mind of research."<sup>47</sup>

### Getting Underway

Under the administration of the first operating director of the Clinical Center, Dr. John A. Trautman, patient admissions followed at a steady pace. By January 15, 1954, there were 115 occupied beds on seven nursing units.<sup>48</sup> The original patient cohorts were largely ambulatory and not acutely sick, reflecting Sebrell's desire that most "will leave the Clinical Center in better physical shape than when they entered."<sup>49</sup> Of 23 admissions to Patient Care Unit 12E in the first four weeks of activation, nine were cancer patients transferred from the endocrinology branch clinic at George Washington University Hospital, which NCI had set up under Dr. Roy Hertz in 1949. Six other admissions were involved in arthritis or diabetes studies conducted by the fledgling National Institute of Arthritis and Metabolic Disorders

(NIAMD), and seven others, all ambulatory, were Heart Institute patients participating in arteriosclerosis investigations.<sup>50</sup> Of these, one case of thrombotic occlusion surgically removed was presented as a “complete cure” at the first Combined Clinical Staff Conference on January 20, 1954.<sup>51</sup>

Medical policies in the fledgling hospital were set by the Medical Board, composed of institute clinical directors and chairs of the operating medical departments, who met to advise the Clinical Center director. Projecting the Clinical Center as “the ‘ideal hospital’ of the future,” the Board established broad responsibility for patient welfare. Study patients were to be considered members of the research team, entitled to “full understanding of the investigation contemplated” and to free care for the duration of the research. Investigators were enjoined from imposing citizenship or residence requirements. The Board also disallowed “any restriction based on race, creed, or color.”<sup>52</sup>

The political obstacles to Clinical Center growth were overcome at the close of Eisenhower’s first term, largely as a result of the Salk polio vaccine controversy and reemergent congressional pressure for biomedical research spending. NIH had limited its involvement to long-term, live virus studies until January 1953, when the private National Foundation for Infantile Paralysis announced a killed-virus cure and requested federal oversight for vaccination trials. Assistant Director Shannon and leading NIH virologists attempted to bring order to the precipitate rush to mass inoculation in 1954, but when faulty vaccine licensed by the NIH Laboratory of Biologics Control caused 209 new polio cases in April 1955, the administration convened a special, NIH-led committee to ensure the vaccine’s safety and to complete the program.<sup>53</sup>

Secretary Hobby took responsibility for the faulty vaccine and resigned. Her successor, Marion P. Folsom, disavowed the policy of retrenchment and resolved to step up the search for disease cures.<sup>54</sup> Director Sebrell, uncomfortable with new and more expansive national responsibilities,<sup>55</sup> retired in August 1955. NIH leadership passed to Dr. Shannon, who vigorously exploited opportunities for expanded research, administration, and funding.<sup>56</sup> Working closely with Senator Lister H. Hill, who chaired both the Appropriations Health Subcommittee and the full Labor and Public Welfare Committee, Shannon persuaded Congress to double the NIH budget in the spring of 1956. A new era of expansion was thereby inaugurated.<sup>57</sup>

## Cures and Breakthroughs

At the hospital, Dr. Trautman left the directorship in June 1954 to take charge of a 1,000-bed PHS facility in Fort Worth, Tex. His successor, Dr. Donald W. Patrick, had previously headed the PHS hospital in Baltimore, where the Heart and Cancer Institutes had operated clinical wards.<sup>58</sup> Under Dr. Patrick, the pace of patient referrals and admissions was slower than expected — only 332 beds had been activated by January 1955. At the same time, research interest intensified, and clinical advances began to proliferate. A National Science Foundation survey<sup>59</sup> conducted later that year showed

dramatic early results for clinical research, with curative therapies prominently featured. The National Institute of Arthritis and Metabolic Diseases (NIAMD) claimed a "spectacular clinical response" in 15 rheumatoid arthritis patients treated with the steroids prednisone and prednisolone. The Cancer Institute reported success in managing solid tumors with chemical agents and in inhibiting other tumors with intravenous androgen and estrogen. The Heart Institute developed an aortic valve prosthesis, and Mental Health determined the metabolic fate of LSD and other mind-altering drugs. Neurological Disorders and Blindness relieved seizures in 50 epileptic patients with glutamic acid treatments, while National Microbiological Institute clinicians restored sight to 25 patients with toxoplasmic uveitis. Dental Institute studies of the effect of ingested fluorides on human physiology allowed water fluoridation programs to go forward.

## Masur Returns

Despite the favorable prognosis for clinical advances and intramural funding, internal obstacles attributable to decentralization forced the hospital to restrict growth in 1957 and shift resources to the development of central services.<sup>60</sup> The major problem, which would recur throughout the next two decades, was an acute shortage of nurses. The patient load as of March 1, 1956, required 363 nurses, but only 269 full-time and 19 part-time nurses were on duty, reflecting a turnover rate of two resignations for every three hires.<sup>61</sup> Director Shannon went before Congress in February 1956 to explain that full operation — 510 activated beds — would not be reached for another year.<sup>62</sup> The actual situation on the wards was more serious, for the average daily census of occupied beds remained below 300 for most of fiscal year 1956.<sup>63</sup> The nursing services, at this point organized into a Nursing Department but still responsible to the institutes, were stressed by diagnostic regimens requiring five times as many tests as in general hospitals, and by a mushroom growth in follow-up examinations.<sup>64</sup> Seeking a more vigorous response, Dr. Shannon in October reappointed Dr. Masur as Clinical Center director.<sup>65</sup>

Remembered for his "endearing belligerence,"<sup>66</sup> Masur employed a leadership style that was at once strong-willed, pragmatic, and compassionate. During his 13-year tenure as director, he emphasized "traditions of excellence"<sup>67</sup> in clinical service to make the Clinical Center a national model. His frequent refrain, "This institution doesn't follow standards; it sets them,"<sup>68</sup> underscored his keen interest in pragmatic solutions to operational problems. Among his early credits were organizing the Clinical Associate alumni program and setting standards for the normal control program. He accurately perceived that a minority of NIH basic scientists resented the priority accorded to clinical applications and avoided participation in Clinical Center activities.<sup>69</sup> But he was less interested in achieving a synergy between scientists and clinicians than in building up clinical services and enforcing the discipline that researchers and staff needed to observe in a patient-care environment.<sup>70</sup>

## Meeting the Challenges

As the hospital reached full occupancy in 1958, a process of seasoning began. By adjusting to a variety of stresses and strains, the operating departments gradually perfected the delivery of clinical services.

The Nursing Department faced rising acute care requirements, particularly an influx of more critically ill patients and 234 major operations performed that year in the Clinic of Surgery.<sup>71</sup> In response, a postoperative care unit was planned and opened that year, and preparations were made to shift the nonprofessional work load from professional nurses to attendants and technicians.<sup>72</sup> The program did not cover the staffing gap, however, because of the curtailment of diploma schools and diminishing numbers of practical nurses. Actual nursing positions filled declined from 617 in 1961 to 479 in 1970, and average hours of care per patient per day dropped from 6.13 to 4.82 as the patient census rose steadily.<sup>73</sup> Quality care was maintained on the wards by "a greater understanding of mutual dependence" between physicians and nurses and by "increasing efforts of physicians to teach and interpret routines to nursing service personnel."<sup>74</sup> Under Chief Louise C. Anderson, active collaboration by nurses in research protocols became an important feature of nursing activities.

Clinical Pathology was beset by more complex operational difficulties in 1958. The test rate neared 30,000 per month, three times the planned rate at full activation. Technologists were performing 40 procedures daily, twice the normal work load, and the department chief, Dr. George Z. Williams, asked to limit intake.<sup>75</sup> A Medical Board Steering Committee declined to limit investigators' use of diagnostic services and put its faith in automatic instrumentation, while the institutes remained unwilling to reallocate nine modules of laboratory space.<sup>76</sup> Cast back on its own resources, the department under Williams undertook research to develop new analytic tests and to investigate areas of hematology, clinical chemistry, and microbiology bearing on analytic problems. This led in 1965 to early adaptation of computerized data processing for pathology procedures, a national leadership role Williams saw as essential to the Clinical Center mission. With the support of Congress in 1966, a model laboratory was developed.<sup>77</sup>

A similar reliance on developmental research and innovative diagnostic technology characterized the radiology and radiography services, housed before 1965 in the Diagnostic X-ray Department. Collaborative efforts with intramural technologists in 1964 produced two state-of-the-art apparatuses: a tomography system utilizing a moving x-ray, and a tetra scanner that delivered a complete brain scan in 22 minutes.<sup>78</sup> Radioisotope use quickly became generalized in clinical studies, and in 1966 the Department of Nuclear Medicine was set up alongside Diagnostic Radiology to develop and service new diagnostic modalities. By 1968, television applications of the gamma scintillation camera were allowing heart surgeons to monitor blood flow in occluded arteries.<sup>79</sup>

## A Revolution in Clinical Research

The clinical services flourished after 1960 largely because Congress was committed to raising health care spending nationwide to \$2 billion in 10 years. However, Director Shannon in 1958 and 1959 tried to enforce a no-growth budget on the Clinical Center, in the belief that, "The era of rapid expansion of intramural programs at Bethesda has come to an end."<sup>80</sup> Senator Hill and Representative Fogarty would not accept a no-growth strategy, and they succeeded in raising the NIH's budget by about \$150 million in 1960 and again in 1961. Under this fiscal sunshine the research revolution resumed.<sup>81</sup> Cancer chemotherapy studies received a large extramural appropriation, spurring intramural investigators who developed a four-drug cure for childhood leukemia and a "Life-Island" isolation system to protect debilitated patients from infection.<sup>82</sup> An upsurge in cardiovascular studies followed the opening of a new surgical suite in 1963. Heart Institute clinicians successfully tested alpha-methyl DOPA on patients with hypertension, and surgeons under Dr. Andrew Morrow performed thousands of operations relieving stroke symptoms in human patients and repairing congenital defects and atherosclerotic damage. The blood bank emerged as a separate department in 1965; a platelet separator was developed; and investigators Harvey Alter and Baruch Blumberg isolated the Australia antigen in leukemic blood samples.<sup>83</sup>

## Serving Unique Patients

Patient services became more intensive after December 1962, when bed occupancy reached 87% and average length of stay fell from 45 to 30 days.<sup>84</sup> Dr. Masur, who served a concurrent term as president of the American Hospital Association in 1961, sought to establish national standards for patient care at the Clinical Center. After the thalidomide controversy, Masur proposed a joint study with two other medical centers to build a data bank on adverse patient reactions to new drugs.<sup>85</sup> This project failed to materialize, but Masur's long-term interest in limiting therapeutic hazards for normal patients brought an end to prisoner testing at the hospital and established special consent procedures for volunteers in investigational drug trials.<sup>86</sup>

"We must strike a better balance between the wonders of technology and the wonders of human kindness," he told a Yale lecture audience in 1962.<sup>87</sup> The inpatient wards were actively serviced by Rehabilitation and Social Work therapists, with extensive recreation activities sponsored by Patient Activities and Red Cross volunteers. At the beginning of the peak period for inpatient services, 1965-1968, the annual report claimed that the hospital's highest achievement lay in creating an atmosphere of "personal warmth" for the research patient.<sup>88</sup> The effect was quite durable. When *Newsweek* columnist Stewart Alsop was admitted for treatment of subacute leukemia in 1971, he noted in his journal, "Amazing how nice almost everybody is."<sup>89</sup>

## Responding to Changing Times

In the years after 1965, expansion leveled off for NIH as a whole. A mature institution emerged, with a fresh overlay of training and education responsibilities added by the administration of Lyndon B. Johnson.<sup>90</sup> For the Clinical Center this meant growing interaction with regional clinical research centers, partially funded by the NIH Division of Research Resources, as sources for patient referrals and opportunities for clinical trials. Johnson reorganized the PHS to put NIH directly under White House control, and he also recruited Masur as a Great Society spokesman to promote the acceptance of Medicare and to push for a greater distribution of the fruits of medical research.<sup>91</sup>

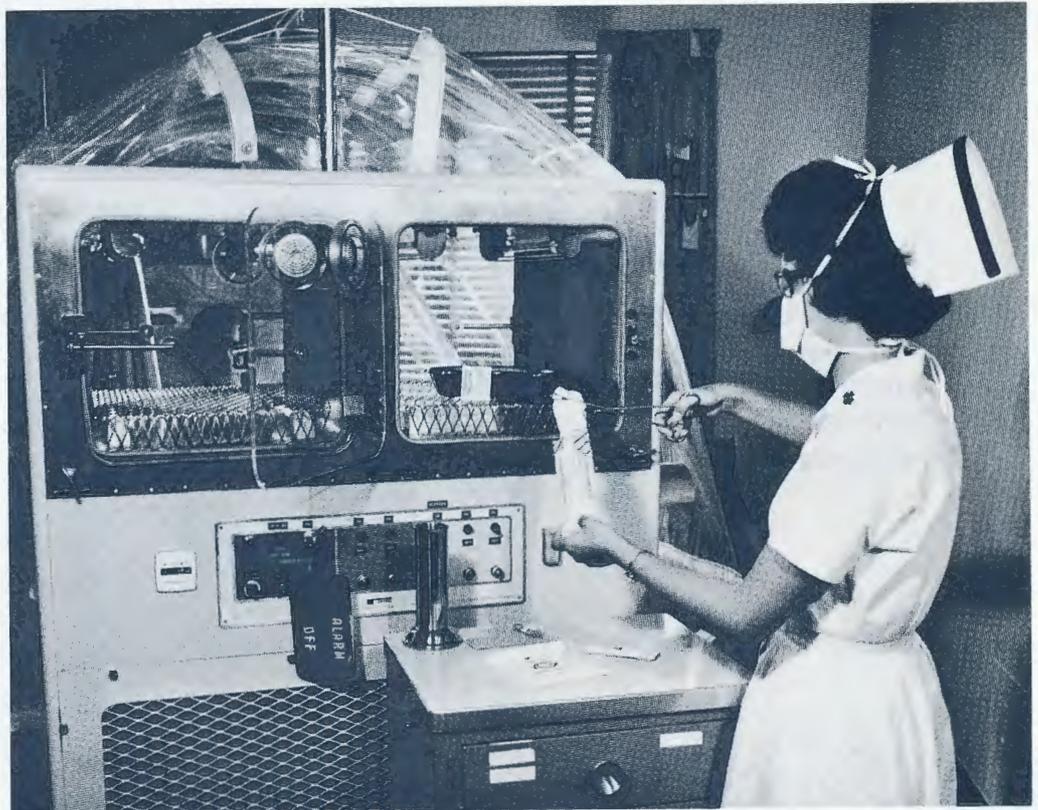
Visiting the Clinical Center on August 9, 1965, Johnson publicly signed the Health Research Facilities Amendments Act, which allocated \$230 million for research contracts and construction grants to regional medical centers.<sup>92</sup> Subtly, the Clinical Center adopted the administrative requirements involved in servicing the expanded health system. The 1967 mission statement promised "opportunities for young physicians and other professionals to prepare for careers in medical or related research."<sup>93</sup> The hospital continued to grow, as 24 beds were added for the new National Institute of Child Health and Human Development between 1966 and 1968. But some NCI patients were now housed in local motels, family-style meals were being replaced by tray service on the wards, and nurses noted "a great many more sick patients in the house."<sup>94</sup> Slowly the hospital was becoming more of a service center and less of a self-contained chronic care community.

The critical point in this transformation came in 1968, as the Vietnam War reached its crisis and President Johnson announced his intention to leave office. The administration could not fund its Great Society programs for fiscal 1969. In July the budget was reduced from \$30 billion to \$24 billion, and a 10 percent surtax was imposed to keep the government solvent. Masur's staff recognized that federal services would be reduced, that personnel vacancies at the hospital would go unfilled, and that a period of "lean years" lay ahead.<sup>95</sup> With the retirements of Dr. Shannon as NIH director in September and Senator Hill as chief sponsor of medical research in November, the federal science enterprise was for the moment a political orphan.<sup>96</sup> Dr. Masur's sudden death from acute myocardial infarction on March 8, 1969, was a tragic loss, which closed two decades of political good fortune, scientific brilliance, and clinical élan. No other director would style himself "superintendent of the hospital,"<sup>97</sup> and no other hand would influence as critically the institution's development and daily life. In a time of great turmoil in American society at large, his passing left the Clinical Center a future replete with both promise and uncertainty.



*Director Trautman and the Red Cross volunteers, valued for bringing a personal touch to patient service. (Courtesy of Parklawn Library, Public Health Service.)*

*Nurse attending a patient in Life Island, a bacteriologically controlled environment. October 1964.*





*Dr. Andrew Morrow in surgery, inserting dye into patient's heart with a bronchoscope, a technique developed at the Clinical Center.*

*Dr. W. French Anderson (l.), Dr. Michael Blaese (r.), and Dr. Kenneth Culver (c.) attending the first patient in the ADA gene therapy program, September 1990. The patient is undergoing apheresis.*



*In two patients we had seen tumors shrink, and in one case disappear, after our immunotherapy. After all the deaths, after all the years in the lab, we had found something that worked. For the first time I believed — rather than hoped — immunotherapy not only could work, but would work.*

Steven A. Rosenberg, M.D.  
The Transformed Cell

## YEARS OF CHANGE AND RENEWAL

1969 — 1993

**D**uring the era of President Richard M. Nixon, political turmoil engendered by the Vietnam conflict reverberated throughout the biomedical research world built by federal funding and NIH sponsorship in the previous decade. The Clinical Center had its antiwar demonstrations and counterdemonstrations, and civil rights issues led to a vigorous affirmative action program to widen the opportunities for minorities.<sup>98</sup> The war also brought demographic change within the hospital community. The end of the “doctor draft” in 1972 resulted in a steep falloff in Clinical Associate applications and jeopardized a critical source of new staff physicians. Normal volunteers were less often Mennonites and other conscientious objectors and increasingly were drawn from a national network of small colleges.<sup>99</sup>

The greatest challenge the Clinical Center faced came directly from the Nixon administration. In the name of budgetary restraint and managerial efficiency, the administration sought to curtail research spending, reduce federal support for biomedical education, and to phase out the PHS hospital system. Congress, however, wanted to redirect spending away from the war effort. A collision course was set in 1971 and 1972 when broad majorities in both houses voted massive new outlays to conquer cancer, heart, and lung disease. The administration supported these initiatives but insisted that offsetting cuts be made in other health areas. As a result, the budgets of NIH categorical institutes other than Cancer and Heart, Lung, and Blood registered absolute declines in 1973.<sup>100</sup> A personnel ceiling remained in place for NIH as a whole, so that while NIH funding rose \$946 million between 1968 and 1975, permanent staff lost 350 positions, and much of this burden fell on the Clinical Center.<sup>101</sup> Departments such as Clinical Pathology were able to contract out as much as half their work load, but others such as Nursing were forced to carry growing program commitments with fewer personnel. In 1972, its bleakest year, that department reported, “The quality of nursing care is obviously deteriorating, even though it is recognized that all personnel are doing their best.”<sup>102</sup> Demoralization was rife in scientific leadership as well. After three vetoes of the HEW budget and putative administration efforts to consolidate all the institutes into a single administrative structure, there was a real fear in the scientific community that the federal government might jettison commitments to support medical education, hospital construction, and basic research itself.<sup>103</sup>

## Reassessment and Renewal

For the Clinical Center, the task of renewal fell initially to Dr. Thomas C. Chalmers, a Harvard hospital director and gastroenterologist who was brought on as Masur's successor in February 1970. Although Chalmers lacked an NIH background or PHS status, his initial efforts to upgrade clinical services were strongly supported by the new NIH director, Dr. Robert Q. Marston, who blocked administration efforts to assess Clinical Center research patients for insurance reimbursement.<sup>104</sup> Chalmers modernized clinical practice by establishing guidelines for transplant operations and preparing for computerization of medical records.<sup>105</sup> To restore morale among Clinical Associates, he transferred the responsibility of blood drawing to technicians and nurses, reinstated patient-oriented clinical rounds, and pressed for formal residency training.<sup>106</sup> When the nursing staff shortage reached a crisis point in September 1972, Chalmers launched a drive to recruit 150 new nurses in eight months and to reorient the service in the long term toward acute care.<sup>107</sup> These goals were largely met by 1975, but Chalmers' efforts to centralize clinical research oversight ran up against the increasing interpenetration of NIH administrators into hospital operations. The Medical Board, since 1969 responsible to the NIH Deputy Director for Science, allowed research oversight to devolve to the institutes. Rather than develop its own standards, the Board followed the lead of congressional mandates for the extramural program.<sup>108</sup>

Dr. Chalmers' most ambitious modernization initiative was his 1970 proposal for an "ambulatory research center" to be built over the main entrance on the north side of the original building. Extending the main building floors into this area would provide space to relieve overcrowding and new therapy centers for the burgeoning Outpatient Department. But the most radical feature of Chalmers' concept involved expanding employee health care programs and using NIH personnel "for innovative research in preventative medicine" and "for research in diagnostic programs."<sup>109</sup> Congress appropriated planning funds through NCI at the end of 1971, and when these were reprogrammed Chalmers secured \$3.5 million the following year for architectural services.<sup>110</sup> The administration blocked the funds' release during 1973 while pressing again for insurance reimbursement from research patients. In January, Marston left the directorship, but his replacement, Dr. Robert S. Stone, a management professor at the Sloan School at MIT who had previously directed the New Mexico School of Medicine, also defended Clinical Center policy of not charging research patients.<sup>111</sup> As the Watergate investigation began to paralyze government in the fall of 1973, Dr. Chalmers quietly reduced the patient census and secured appointment as Dean of Mount Sinai School of Medicine in New York City in October.<sup>112</sup>

Chalmers' successor, Dr. Robert S. Gordon, Jr., was the first of four successive internal candidates to head the hospital after 1973. Clinical director for NIAMD since 1964 and Medical Board chairman for 1970, Gordon continued the work of reorganizing the hospital administration and upgrading clinical services after his appointment in January 1974. Convinced that a clin-

ical research resurgence would revitalize the operating departments and attract higher quality staff physicians, Gordon teamed up with NIH Deputy Director for Science De Witt Stetten, Jr., to campaign for intramural funding for the clinical service departments through the National Institute for General Medical Science. A special congressional mandate could not be arranged, and several of the departments preferred to specialize in support services while allowing senior physicians to augment their salaries by contract work with the institutes.<sup>113</sup> Gordon also tried to give the clinical directors a stronger role in ensuring the quality of patient care and providing research oversight.<sup>114</sup> While these traditional gambits of centralized clinician responsibility and categorically defined basic research were now less available, ever more sophisticated clinical applications emerged at this point as a clear trend. A contract was awarded in March 1975 for design of the addition to the Clinical Center, planned to accommodate 200,000 outpatient visits annually. Another was awarded the following June for the first hospital-wide computer system to process patient data, research information, and routine administration.<sup>115</sup>

## Growth and Expansion

The turning point in the renewal process came in the summer of 1975, as Dr. Donald Fredrickson took over as NIH director and Dr. Gordon retired from the PHS and announced plans to take an academic appointment. Determined to reassert and redefine the NIH's mission in the face of rising public demands on biomedicine and increasing fragmentation within disease categories, Fredrickson brought a new activism and vision to the political process, a willingness to overcome deficiencies and to engage state-of-the-art problems with the expectation of optimal results.<sup>116</sup> In short order Fredrickson secured a \$90 million construction appropriation for the Ambulatory Care Research Facility (ACRF), proposed a new agency focus on clinical trials, and called a three-day retreat at Easton, Md., to review clinical operations, address deficiencies, and assess emergent clinical research needs. Out of this January 1976 conference came decisions to create an intensive care unit and to centralize quality assurance under a strengthened Medical Board.<sup>117</sup> In July, hospital leadership passed to Dr. Mortimer B. Lipsett, an endocrinologist with previous service as branch chief in NCI and NICHD. Lipsett simplified research review and made it a Clinical Center responsibility by setting up institute panels monitored by the CC's Office of Planning and Policy Development. Lipsett also renewed Gordon's effort to obtain a separate congressional appropriation for the hospital. He formalized a mission statement for the Clinical Center that placed patient care ahead of research requirements and detailed for the first time ancillary responsibilities in the areas of bioethics, information dissemination, and in-house diagnostics and patient care research.<sup>118</sup>

From May 1977, when excavation began for the ACRF, until January 1982, when the first patients were moved in, construction was a constant feature of hospital life. Numerous areas of the old building underwent renova-

tion, and program modernization became endemic for a wide variety of activities. Lipsett registered efficiency gains by raising bed occupancy from 65% to 75% and by opening new services, particularly Critical Care Medicine. However the serving Clinical Associates still considered the Clinical Center "not a full service hospital."<sup>119</sup> Adverse political influences continued, particularly the recurrent demand to bill research patients and the reimposition of personnel ceilings in 1979, which threatened 250 positions out of 1,573.<sup>120</sup> Inflation prevented planned expansion of clinical trials in 1980 and 1981, but research conducted by the operating departments showed new promise. Investigators from the Blood Bank and NIAID identified "non-A, non-B hepatitis" as the source of 80% of transfusion-related cases.<sup>121</sup> This allowed comprehensive screening of blood and blood products, thus dramatically increasing safety of transfusion. Another significant innovation was positron emission tomography (PET), which the Nuclear Medicine Department began using to do brain scans in 1979 and to support early research into Alzheimer disease.

With the resumption of institutional growth and budgetary expansion in the Fredrickson era, prospects again seemed hopeful for new advances in clinical research. In 1982 three intramural researchers shared Lasker Foundation Awards for molecular-level discoveries with important therapeutic effects: Dr. Robert C. Gallo (NCI) for work leading to isolation of the human retrovirus; Dr. Elizabeth F. Neufeld (NIADDK) for identifying the enzyme defect causing mucopolysaccharide storage disorders; and Dr. Roscoe O. Brady (NINCDS) for demonstrating the metabolic causes of lipid storage diseases.<sup>122</sup>

In 1983 a comprehensive AIDS research program was announced, featuring 25 intramural investigators and focused on Critical Care Medicine patients. The following year Dr. Steven A. Rosenberg began Phase I trials in immunotherapy, and Dr. W. French Anderson initiated gene therapy experiments, which would lead, by decade's end, to a proliferation of genetic research and prospective cures for many metastatic cancers.<sup>123</sup> Also in 1984, Gallo's confirmation that the retrovirus HIV causes AIDS placed Clinical Center laboratories and researchers at the vital center of the emerging field of molecular medicine.

The challenge of reorienting hospital activities fell to Dr. John L. Decker, NIADDK clinical director, who was appointed Clinical Center director in August 1983. Faced with dramatic growth in outpatient services and Reagan administration actions to freeze staff positions and require payments from patients, Dr. Decker and his staff decided in January 1985 to contract out Anesthesiology and Surgical Services in order to increase outpatient staffing. Representatives Natcher and Dingell of the Appropriations Health Subcommittee prevented the patient-payments provision from becoming law in 1985, and in the following year Congress began to increase steeply NIH's budget for AIDS research.

Further readjustments were finalized at a second administrative retreat at Easton in January 1988. The hospital would continue to support "modest growth" in emergent areas such as bone marrow transplantation, and clinical expenses would be more closely regulated by putting institute funding of

central services on a more flexible, patient/day basis. When Dr. Decker retired in June 1990, his successor, Dr. Saul Rosen, focused hospital management on quality assurance and the restoration of clinician confidence in patient care activities.<sup>124</sup>

## **A New Research Revolution: Molecular Medicine**

During the past 10 years, the development of recombinant DNA technologies has stimulated a new research revolution, and the Clinical Center has continued to thrive. A growing stream of clinical research advances since 1989 has brought renewed distinction to its laboratories and added new mandates to its mission. In a series of four gene therapy protocols, begun in September 1990, NCI and NHLBI researchers demonstrated the cancer-killing potential of tumor-infiltrating leukocytes and through gene therapy restored the immune system in two young girls suffering from ADA deficiency, a rare genetic disease.<sup>125</sup>

Molecular medicine advances are now being reported in a widening circle of clinical fields. NHLBI researchers have used gene therapy techniques to transfer normal genes into airway cells of rats to correct the devastating symptoms of cystic fibrosis, and human trials are currently underway. The Clinical Center has also been a nationwide focus for AIDS research. NIAID and NCI researchers discovered zidovudine (AZT) and determined its efficacy for pediatric AIDS, and they have also played a leading role in establishing a national trials program. In fiscal year 1990, 22% of NIH intramural clinical trials funding was allocated to AIDS programs.<sup>126</sup>

In addition, the Nursing Department has opened day hospitals and conducts a growing array of clinical research projects in partnership with clinical services of the categorical institutes. Long-standing disparities in nursing salaries have been corrected, and a full staff complement is now a permanent feature of hospital operations.

The promise of prospective cures, which is endemic to this research, energizes scientists and clinicians today no less than in previous decades. The conquest of infectious disease announced by Surgeon General William H. Stewart in 1969 was premature, and the nation now faces a pandemic of HIV infection and the recurrence of old plagues, such as tuberculosis.<sup>127</sup> But these challenges to scientific creativity are the surest signs that the Clinical Center will continue to renew itself and to widen the perimeters of human health.

## Footnotes

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<sup>2</sup> *NIH Almanac*, 1992, NIH Publication 92-5, pp. 121-25, 116.

<sup>3</sup> Donald S. Fredrickson, ms, "Values and the Advance of Medical Science," *Proceedings of Conference on Integrity in Institutions*, University of Texas Health Center, May 25, 1989, p. 7.

<sup>4</sup> *Collier's*, August 30, 1952, p. 33.

<sup>5</sup> PHS proposed 10-year budget for NIH, October 23, 1944, exhibits H, I, in MS C 204, History of Medicine Division, National Library of Medicine (hereafter NLM); *The Reminiscences of Charles V. Kidd*, Columbia University Oral History Collection (hereafter CUOHP), 13-14; *Reminiscences of Norman H. Topping*, 17-18; *Reminiscences of Leonard A. Scheele*, 22-24; *Reminiscences of Vane M. Hoge*, 21, National Library of Medicine Oral History Collection (hereafter, NLMOHC).

<sup>6</sup> David P. Adams, "Wartime Bureaucracies and Penicillin Allocation: The Committee on Chemotherapeutic and Other Agents," *Journal of the History of Medicine and Allied Sciences*, 44:196-201, 209, 1989; Milton Wainwright, *Miracle Cure: The Story of Penicillin* Oxford: Blackwell, 1990, pp. 63, 122-27.

<sup>7</sup> Parran testimony, House Committee on Appropriations, 79th Congress, 1st Session, *Hearings*, Dept. of Labor/FSA, part 2, FY 1946 (April 18, 1945), pp. 269-77; NIH postwar program outline, National Advisory Health Council (hereafter, NAHC), agenda notes for June 19-20, 1945, meeting, in folder 0240, box 1, Accession 90-62A-490 [Records of the Public Health Service, Office of the Surgeon General], Washington National Records Center (hereafter WNRC), Suitland, MD.

<sup>8</sup> Minutes, NAHC meeting, September 28, 1945, box 1, Acc. 90-62A-490, WNRC; Harry M. Marks, "Notes from Underground: The Social Organization of Therapeutic Research," in Russell C. Maulitz and Diana E. Long, eds., *Grand Rounds: One Hundred Years of Internal Medicine*, Philadelphia: University of Pennsylvania Press, 1988, pp. 299-312, 319-20.

<sup>9</sup> Lewis Thomas, *The Youngest Science: Notes of a Medicine Watcher*, New York: Viking Press, 1983, pp. 27-35.

<sup>10</sup> Parran testimony, House Appropriations Subcommittee, 80th Congress, 1st Session, *Hearings*, Dept. of Labor/FSA part 2, FY 1948 (February 7, 1947), p. 477.

<sup>11</sup> MSC 204, History of Medicine Division, NLM.

<sup>12</sup> Allan Drury, *A Senate Journal, 1943-1945*, New York: McGraw-Hill, 1963, pp. 4-5, 395-410.

<sup>13</sup> Martha Lenz Walker, *Beyond Bureaucracy: Mary Elizabeth Switzer and Rehabilitation*, New York: University Press, 1988, pp. 112-17.

<sup>14</sup> Memoranda, Dyer to J.K. Hoskins, Asst. Surgeon General (SG), December 17, 1946, Buildings and Grounds File, Office of the Director, NIH; PHS building proposals, transmitted with Crabtree to W.E. Reynolds, Commissioner of Public Buildings, January 19, 1947, in Acc. 90-62A-490, box 1, PBA Correspondence. Of 45 projects proposed nationwide, 31 were to be located on the Bethesda site.

<sup>15</sup> House, *Report #178*, 80th Congress, 1st Session, March 21, 1947, pp.24-26; Agenda for July 30, 1947, SG Conference, attached to memoranda, Parran to Dyer, "Clinical Research Facility . . .," July 25, 1947, Buildings and Grounds File, Office of the Director, NIH.

<sup>16</sup> Daniel Fox, "The Politics of the NIH Extramural Program, 1937-1950," *Journal of the History of Medicine and Allied Sciences*, 42: 458-65, 1987.

<sup>17</sup> Truman statement, October 8, 1947, in *Public Papers of the Presidents, Harry S Truman, 1947*, Washington, DC: GPO, 1965, pp. 473-74; Federal Board of Hospitalization, Resolution 320, November 4, 1947, Official File, Harry S Truman Library (hereafter, HSTL); Summary of minutes, Federal Board of Hospitalization meeting, November 4, 1947, Acc. 90-62A-490, box 17.

<sup>18</sup> A. Siefert, planning review, 1952, Historian's Office Papers, History of Medicine Division, NLM; House, *Report #1519*, 80th Congress, 2nd Session, March 5, 1948, pp. 29-30.

<sup>19</sup> Oscar E. Ewing, memoranda to Truman, February 12, 1948, file 7B, Official Files, HSTL. Ewing – and Truman – believed Parran wanted reappointment in order to select his own successor, and this would have made the PHS too powerful. Ewing notes on four possible candidates, same file; minutes, NAHC meeting October 22-23, 1948, p. 4, in box 2, Acc. 90-62A-490, WNRC.

<sup>20</sup> Memoranda, Masur to Dyer and Parran, January 6, 1948, Research Facilities Planning Committee File (hereafter, RFPC), Office of the Director, NIH; Masur and N.P. Thompson, "A National Clinical Center for Chronic Disease Research," *Hospitals*, 1949 (November):1-2; Masur, *Reminiscences*, CUOHC, 19-22; Remarks of Dr. Otis L. Anderson, Chief, PHS Hospital Div., September 15, 1947, Conference of Medical Officers in Charge, U.S. Marine Hospitals, p.12, in box 18, Acc. 90-62A-490, WNRC.

<sup>21</sup> Masur and Thompson, *Hospitals*, 1949 (November): 3-10; FSA/PHS press release, June 29, 1948, NIH Historian's Papers, NLM; Memoranda, RFPC, December 31, 1948, Office of the Director, NIH.

<sup>22</sup> NIH press release, September 9, 1949; RFPC memoranda #245 and #248, September 21, 1948 and October 7, 1949, RFPC file; Norman Topping, "The United States Public Health Service Clinical Center for Medical Research," *Journal of the American Medical Association*, 150: 542-43 (October 11, 1952).

<sup>23</sup> NIH memorandum for reference, "Conference of Deans . . ." May 28, 1949, p. 6, attached to Masur to Rev. McNally, June 2, 1949, RFPC file.

<sup>24</sup> Robert Kanigel, *Apprentice to Genius: The Making of a Scientific Dynasty*, New York: Macmillan, 1986, pp. 11-30, 65-71; Shannon, *Reminiscences*, NLMOHC, pp. 22-30.

<sup>25</sup> Shannon to Masur, 10/31/49, RFPC file.

<sup>26</sup> RFPC memoranda, "Present Status of Organizational Planning for the Clinical Center," January 11, 1950, RFPC file.

<sup>27</sup> Minutes, Institute Directors Meetings, December 9, 1949, p. 6, and December 13, 1949, p. 5, RFPC file.

<sup>28</sup> RFPC memoranda, "Present Status . . ." January 11, 1950.

<sup>29</sup> RFPC memoranda, "Further Discussions at Conf. with Dr. Kaplan," September, p. 3-4; minutes, Institute Directors meeting, December 1, 1949, p. 1-12.

<sup>30</sup> Monty M. Poen, *Harry S Truman Versus the Medical Lobby: The Genesis of Medicare* Columbia, MO: University of Missouri Press, 1979, pp. 161-69.

<sup>31</sup> Memoranda #272 to PBA, December 13, 1949, RFPC file. Funding was also denied for an overpass on Rockville Pike and mechanical equipment for Building 10.

<sup>32</sup> Memoranda, W.E. Reynolds, Commissioner of Public Buildings, to SG Scheele, June 22, 1950, RFPC file; House, Committee on Appropriations, 81st Congress, 2nd Session, *Hearings*, FSA part 1, FY 1951 (January 11, 1950), p. 579.

<sup>33</sup> Minutes, PBS conference, June 27, 1950, Project 18-063, RFPC file.

<sup>34</sup> Memoranda, K. Nasi to SG, 5/18/50, PHS Building Committee files, folder 0245, Secretary Memoranda, box 1, Acc. 90-62A-490, WNRC; Masur to Nasi, May 24, 1950, "Assessment of Buildings . . ." RFPC file, Office of the Director, NIH.

<sup>35</sup> Memoranda, C.V. Kidd, "Assumptions Underlying NIH Defense Planning," August 2, 1950, and note to Truman, August 3, 1950, both in Office of Research Plans, NIH Director's Office, Subject Files, folder Defense, 1950-51, box 2, RG 443, National Archives.

<sup>36</sup> *Congressional Record*, 153: 96, August 3, 1950, pp. 11841-11860, 11876; Memorandum, "Justification of \$30 million," n.d., Office of Research Plans, Subject Files, box 2, folder Magnuson Amendment, RG 443.

<sup>37</sup> Defense Activities of the NIH, May 13, 1952, p.12, in OPR Subject Files, same folder.

<sup>38</sup> Poen, *Harry S Truman Versus the Medical Lobby*, pp. 188-92; Harry S Truman, *Memoirs*, Vol. II, *Years of Trial and Hope*, Garden City, NY: Doubleday, 1956, pp. 17-23.

- <sup>39</sup> First Hoover Commission Report, quoted in memorandum, Larsen to Kidd, May 13, 1952, RFPC file.
- <sup>40</sup> Speech draft, August 15, 1950, Office of Research Plans, Subject Files, 1948-1956, box 2, RG 443.
- <sup>41</sup> U.S. Dept. of Health, Education and Welfare, *The Advancement of Medical Research and Education*, Washington, DC: HEW, 1958, pp. 55-56.
- <sup>42</sup> Masur to Haas, September 1, 1949, RFPC file; N. Topping, *JAMA*, October 11, 1952, pp. 541-43.
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- <sup>44</sup> Rough notes on Scheele testimony, House Appropriations Subcommittee, March 3, 1954, attached to minutes, April 1, 1954, Institute Directors Meeting, in Subject File, Office of the Director, NIH, box 3, RG 443.
- <sup>45</sup> Topping, The United States Public Health Service Clinical Center for Medical Research, p. 544; NAHC minutes, February 20-21, 1953, Subject File, box 4, RG 443; memorandum, Sebrell to All NIH Employees, March 4, 1953, Historian's File, HMD, NLM.
- <sup>46</sup> Sebrell, oral history, pp. 57, 160.
- <sup>47</sup> Hobby speech text, July 2, 1953, Office of the Director, NIH, in Historian's Office File, HMD, NLM.
- <sup>48</sup> Minutes, Scientific Directors meeting, January 13, 1954, box 3, RG 443.
- <sup>49</sup> Minutes, Scientific Directors meeting, April 2, 1952.
- <sup>50</sup> *Washington Post*, August 9, 1953, 1B.
- <sup>51</sup> Typescript, *Proceedings of the Combined Clinical Staffs*, NIH Clinical Center, January 20, 1954, presentation by Dr. James Wyngaarden, in box Miles, Institutes, folder Clinical Center, 1953, HMD, NLM.
- <sup>52</sup> Minutes, Medical Board meetings, May 25, 1953 and June 6, 1953, and Report of Clinical Research Committee, May 25, 1953, Medical Board minutes file; statement, Admission and Discharge Policies for the Clinical Center, May 8, 1953 box 3, Subject File, RG 443.
- <sup>53</sup> Jane E. Smith, *Patenting the Sun: Polio and the Salk Vaccine*, New York: William Morrow, 1990, pp. 175-87, 248-60, 295-300, 359-68.
- <sup>54</sup> Congressional Research Service, *Congress and the Nation, 1945-1964*, pp. 1136-37.
- <sup>55</sup> Sebrell, oral history, pp. 96-97.
- <sup>56</sup> Minutes, NAHC meeting, 10/27-28/55, Supp. II, 2, 4, in box 3, Subject File, RG 443.
- <sup>57</sup> Shannon, *Reminiscences*, CUOHP, 35-39; *Congress and the Nation, 1945-1964*, p. 1125; Bruce Merchant, "Clinical Research in the National Institutes of Health," senior thesis, Nebraska Wesleyan University, 1957, pp. 19-20.
- <sup>58</sup> "Conference of the Combined Clinical Staff," 7/1/54, business session, pp. 3-6, NIH Library.
- <sup>59</sup> *Data Assembled for the Special Committee on Medical Research of the National Science Foundation*, Bethesda: NIH, 1955, NIH Library, no page numbers.
- <sup>60</sup> *Proceedings of the Combined Clinical Staff Conference*, April 11, 1957, pp. 1-2, NIH Library.
- <sup>61</sup> Memorandum, Executive Officer to Director, NIH, "Study of Nursing Activities . . .," March 1, 1956, Subject Files, folder Clinical Center Nursing Study, 1956, box 25, RG 443.
- <sup>62</sup> U.S. House, *Hearings*, 84th Congress, 2nd Session, Appropriations Subcommittee, Depts. of Labor/HEW, FY 1957, pp. 502-5.
- <sup>63</sup> HEW, "Program Operations Report to the Secretary," April-June, 1956, pp. 31-36, Subject File, box 20, RG 443.
- <sup>64</sup> Minutes, Medical Board, January 11, 1955, meeting, pp. 1-2; Merchant, "Clinical Research," p.37; HEW, "Program Operations," April-June 1956, p. 36.
- <sup>65</sup> Shannon, *Reminiscences*, CUOHP, p. 31.
- <sup>66</sup> Sebrell remarks, dedication ceremony, June 25, 1953, NIH Historian's Office papers, HMD, NLM.

- <sup>67</sup> *Proceedings of the Combined Clinical Staff Conference*, April 11, 1957, p. 7-8.
- <sup>68</sup> Informal notes, Medical Board, November 6, 1957 meeting.
- <sup>69</sup> Merchant, "Clinical Research," 68-69, citing December 11, 1956 interview. For the view-point of those scientists who feared clinical applications would misdirect basic science, see Arthur Kornberg, *For the Love of Enzymes: The Odyssey of a Biochemist*, Cambridge: Harvard University Press, 1989, p.128.
- <sup>70</sup> Masur, *Reminiscences*, CUOHP, 28-29. For the contrasting approach, see James A. Shannon, "The Relationship of Laboratory Research to Clinical Investigation," address delivered 5/21/59, in NIH Historian's Office File, HMD, NLM.
- <sup>71</sup> *Annual Report of Program Activities, Clinical Center, 1958*, Nursing Dept., pp. 1-5, NIH Library; Medical Board, "Professional Services Review," August 27, 1957, minutes file.
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- <sup>73</sup> *Annual Report of Program Activities, Clinical Center, 1966-67*, Nr 2, 4; Staffing figures attached to minutes, Clinical Directors meeting, January 19, 1970, box 3, RG 443, National Archives.
- <sup>74</sup> *Annual Report of Program Activities, Clinical Center, 1966-67*, Nr 4.
- <sup>75</sup> Minutes, Medical Board meeting, March 11, 1958; rough notes, same date, attached; memorandum, Williams to Shannon, November 28, 1958, "Estimate of Program Activities, FY 1961-1965," box 103, Task Force folder, RG 90, WNRC.
- <sup>76</sup> Steering Committee Report, May 13, 1958, with rough notes, Medical Board minutes file.
- <sup>77</sup> Jerome B. Block, Clinical Center Contributions to Research, November 20, 1972, Historical File, Clinical Center Communications Office; *Annual Report of Program Activities, Clinical Center, 1966-67*, CP-1.
- <sup>78</sup> *News From NIH*, publication of NIH Office of Research Information, March, 1965, Department of Diagnostic Radiation historical file; *Annual Report of Program Activities, Clinical Center, 1964-65*, serial 35, p. 1-3.
- <sup>79</sup> *Annual Report of Program Activities, Clinical Center, 1966-67*, NM 1-14; *Annual Report . . .*, 1967-68, OD 36.
- <sup>80</sup> Shannon to Institute Directors, January 14, 1958, "Means of Gradually Re-orienting Intramural Research Programs," Scientific Directors Meeting file, box 105, RG 90, WNRC: Report, Office of the Director, NIH, "Intramural Research Activities... to 1970," April 1959, box 104.
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