Twenty-six Years of Cancer Control In Massachusetts

By HERBERT L. LOMBARD, M.D., M.P.H.

MORE THAN a quarter century of experience in cancer control is on the records of the Massachusetts Department of Public Health. With no precedent to follow, with no knowledge of the public health aspects of the disease, without even a clearcut idea that cancer was a public health problem, the State health department launched a cancer control program May 29, 1926.

At the 52d annual meeting of the American Public Health Association, Dr. Eugene R. Kelley, Massachusetts commissioner of public health, pointed out the need for: (*a*) determination by health department administrators of their proper niche in cancer control; (*b*) better statistical data on cancer facts and additional personnel and funds to enable health administrators to collect, collate, analyze, and diffuse these facts; (*c*) extended facilities for early diagnosis and stimulation of the professions to use these facilities fully; (*d*) better hospital facilities for the inoperable group of cancer patients; (*e*) new and efficient methods of arousing and retaining public interest in and understanding of the significance of cancer "whereby a large degree of success may be reasonably anticipated even with our present faulty weapons for combating the menace of malignancy."

Today about two-thirds of the States have some State-supported service or facility specifically for cancer patients (*1*). But the requirements of cancer programs discussed by the commissioner of public health of Massachusetts in 1923 are still not met.

The component parts of a cancer program are varied, and there is a tendency toward selection of program activity by different units of the population. Physicians often limit the scope of activity to the care and treatment of cancer; sociologists interest themselves in problems connected with the inadequacy of services for those in the lower economic levels of society; individuals interested in research consider this

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Recognition of cancer as a public health problem has led to the development of control programs in all of the States, and in the Territories and insular possessions of the United States. Some of these programs are relatively long established and have evolved not only valuable epidemiological data, but important techniques for coping with cancer as a disease of public health importance.

Effective cancer control programs are distinguished by certain policies and practices uniform to all, and by provisions for meeting the special requirements of the particular area concerned. Such a program is that of the Massachusetts Department of Public Health, described in the accompanying article. *Public Health Reports* from time to time hopes to present reviews of other cancer control programs. That of the New York State Health Department was described in our December 1952 issue.

—THE EDITORS.

the all-important field; women's organizations interest themselves in education; statisticians tend to worry over death rates, age distributions, and the like, often forgetting other factors in the cancer problem; and public health workers think of the application of public health methods to cancer control.

The Massachusetts program, consisting of research, hospitalization, diagnostic clinics, tumor diagnosis service, and education, is based on the accumulation of experience gained largely through trial and error. Since Massachusetts was compelled to pioneer, all procedures have been subjected to evaluation in order to gauge their effectiveness.

Statistical Research

The statistical approach is fundamental in a public health program. From statistical studies, the Massachusetts cancer program received its inspiration, determined its scope, evaluated its activities, changed its policies, and obtained new ideas for cancer control.

Our data for research and evaluation, as well as for statistical enumeration, are obtained from the death records, hospital records, clinic records, questionnaires to physicians, records of contacts with individuals concerned in the educational program, followup records, and personal interviews in house-to-house surveys. This material is transferred to punchcards, tabulated, and analyzed.

The findings of several studies conducted by this division, which were either original contributions or a confirmation of the work of other statisticians, demonstrate the scope and type of statistical activities in the program.

It was found that the logarithm of the adjusted cancer death rate increased with the logarithm of the density of the population up to densities of about 4,000 persons per square mile and from there on remained practically constant (*2*).

Later, the reason for this relationship to density was found to be the high cancer death rate of the foreign-born and their children, both of whom have more cancer than native-born with native grandparents. This was particularly marked for cancer of the stomach.

It has been shown that persons with skin cancers are predisposed to other cancers of the skin. Males with lip cancers are somewhat predisposed to multiple skin cancers. There is no evidence that skin cancer provides immunity to other primary cancers (*3*).

There was a definite association between cancer of the buccal cavity and the use of tobacco (*4*).

Incidence of cancer among the husbands and wives of cancer patients was found to be no greater than for men and women in the general population.

Cancer of the cervix is correlated with marriage before the age of 20, divorce or separation at any time, unrepaired lacerations, last child born to women before age 25, and syphilis (*5, 6*).

Cancer of the breast shows correlation with trauma, but the relationship may be more apparent than real.

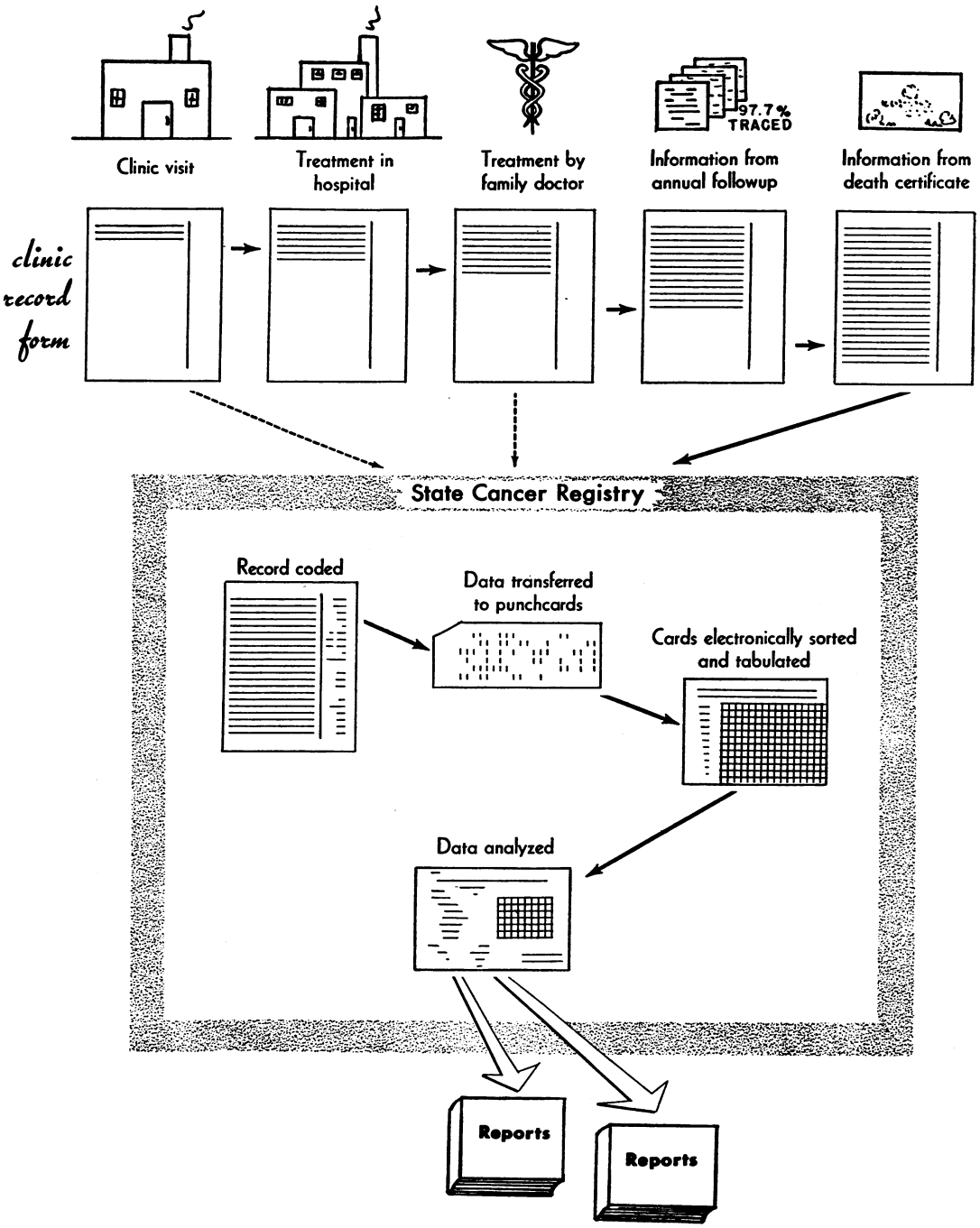
Hospitalization

The Pondville Hospital, with 139 beds, and the Monsignor Roche wing of the Westfield State Sanatorium, with 50 beds, furnish hospital facilities for patients with cancer or suspected cancer of all types and stages who cannot otherwise be adequately cared for, have lived in Massachusetts for 2 out of the preceding 3 years, and are certified for admission by a practicing physician or dentist. Both institutions maintain outpatient clinics.

In Massachusetts less than 5 percent of cancer cases are cared for in the 2 State cancer hospitals. The present thinking envisions more and more service on the local level, not only for patients with operable cancers, but also for those needing palliative care.

While present trends indicate that few State cancer hospitals will be established, and that adequate service for the patient can be maintained through local institutions, one outgrowth of the cancer hospital program in Massachusetts is pertinent. During the 25 years in which Pondville Hospital has operated, 163 physicians have received specialized training in the treatment of malignant neoplasms. All had had residencies in other institutions. At the conclusion of their stay they were not only proficient in the diagnosis and treatment of cancer

Evolution of the Cancer Clinic Record



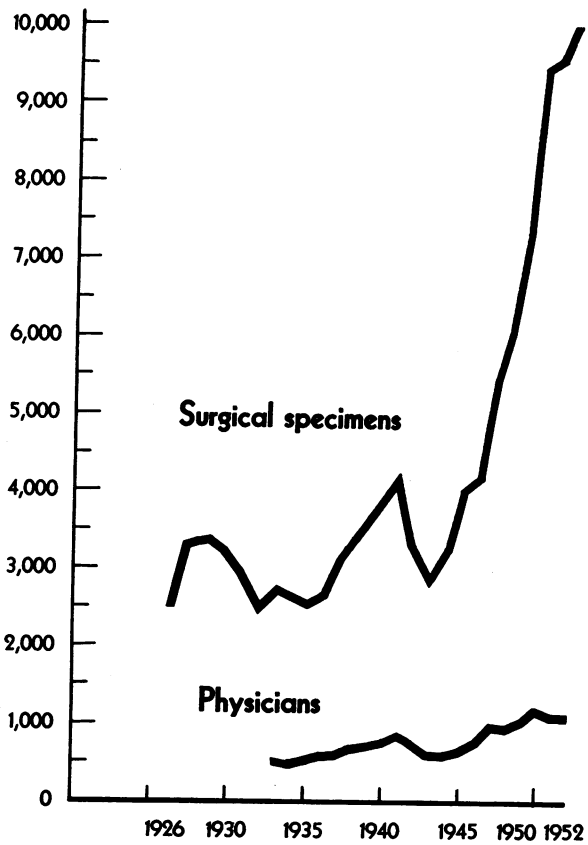
but most of them were interested in the entire control program. Nearly half of them have opened offices in Massachusetts communities and the remainder in 28 other States and 2 foreign countries. This increase in the number of trained cancer personnel augurs well for better cancer service.

Tumor Diagnosis Service

A free tumor diagnosis service is offered by the Massachusetts Department of Public Health in conjunction with the Cancer Commission of Harvard University. The service is purchased from the commission at $3 per specimen. Any physician or hospital may have suspected tissue examined pathologically. This service is used not only by those surgeons who do not have access to other facilities, but also by pathologists who desire confirmation of their diagnoses.

In the early 1930's approximately 2,500 specimens were examined yearly, and slightly over 500 physicians used the service. By 1940 these numbers had increased to 4,000 and 800, respectively. During the war years use of the service decreased, then increased rapidly, until in 1952 nearly 10,000 specimens were examined and 1,125 physicians used the service (see fig. 1).

Figure 1. Number of surgical specimens examined at the tumor diagnosis laboratory and the number of physicians submitting the specimens, 1926–52.



Clinics

At the present time, 20 hospitals are maintaining State or State-aided cancer clinics. The 18 State-aided clinics are administered by committees composed of physicians appointed annually either by the local medical society or by the staff of a hospital. The staff serves without compensation and the State purchases certain services for the care of "such persons who may be in whole or in part unable to support or care for themselves" (7). The clinics furnish group diagnosis for any individual in Massachusetts whose physician suspects cancer. Individuals may come directly to the clinics, but it is more satisfactory to have them referred by the family physician, who has a knowledge of the patient's previous condition. Any resident of the State may receive an opinion from a cancer clinic regardless of his financial standing. A standard fee of $10 is paid by the few who are not medically indigent. Medical social service consultation is available and followup service is maintained for all cancer cases from the first admission until death. Only 2.3 percent of the individuals with cancer have been lost to followup service. Among women with cancer of the genital organs and of the breast, the percentage of lost cases is even less—1.5 and 1.6, respectively.

During the 26 years of operation over a hundred thousand new patients have attended the cancer clinics. About one-third have cancer, the predominating sites of which have been skin, breast, female genitals, and mouth. Only 14 percent of the new cancer cases in the State are examined in the State and the State-aided cancer clinics.

In the first year of the clinics 20 percent of the persons who attended were referred by physicians; by 1950 this percentage had increased to 86 percent. In 1950, nearly 20 percent of

Percentage of persons admitted to cancer clinics who were referred by their family physicians, by years

Year	Percent	Year	Percent
1927	20. 1	1940	80. 8
1928	29. 2	1941	81. 4
1929	34. 0	1942	84. 4
1930	35. 8	1943	84. 5
1931	37. 9	1944	83. 8
1932	42. 6	1945	84. 4
1933	45. 0	1946	84. 0
1934	47. 4	1947	82. 4
1935	58. 2	1948	83. 2
1936	67. 2	1949	84. 8
1937	74. 1	1950	86. 3
1938	78. 1	1951	84. 0
1939	79. 8		

the persons having cancer came to a clinic within 2 months of the first recognizable symptoms. More than 80 percent of recommendations made at the clinics are now being carried out within 1 month of the clinic admission.

In the cancer clinics the median age of new patients with cancer of all sites except the urinary organs increased from 61.5 in 1930 to 66.0 in 1950. The percentage increase in the median age among women was over twice that among the men.

The clinic attendance greatly exceeds the number of new cases, since each year there are nearly 25,000 return visits of former cancer patients. Studies have shown that the presence of a clinic in a city increases the number of individuals seeking advice for cancer in the physician's private office.

The cost per patient "serviced" by the State-aided clinics at the present time is $4.30. (Patients "serviced" include those examined at the clinic, cancer patients who returned for checkups, and former cancer patients visited in the home by a social worker.)

Education

Cancer education of the physicians is accomplished largely through cancer clinics. The State health department issues an abstract bulletin four times a year which is sent to all physicians who request it. In 1940, and again in 1950 the department purchased and presented to every registered Massachusetts physician a 300-page book, "Cancer, a Manual for Practitioners," published by a local committee of the American Cancer Society.

In 1932, one of the most far-reaching events in medical education in the whole cancer clinic program occurred—the establishment of the first of the cured-cancer clinics. Patients who had been treated for cancer and had been free of disease for 5 years or longer agreed to be present at a clinic at which their case histories were reviewed. The diagnosis of each individual included as a "5-year cure" was verified by a reexamination of the original slide by three pathologists. Practically every site of cancer was represented and more than 150 5-year cured cases were shown.

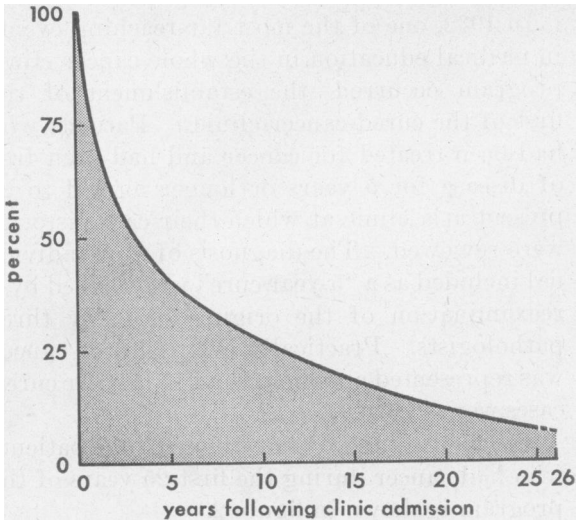
The percentage of surviving clinic patients who had cancer during the first 25 years of the program is shown in figure 2.

This cured-cancer clinic was followed by teaching clinics, which have enabled the general practitioner to see many more cases of cancer than he would have seen otherwise. Men experienced in cancer diagnosis and treatment, from Boston, New York, and other cities, have conducted these clinics, and the general medical practitioner has been invited to attend the clinic nearest his home. Many physicians who have found it difficult to spend 1 or 2 days in Boston can easily arrange to spend 2 or 3 hours at the local clinic. Between 1933 and the present time, 490 teaching clinics have been held with an attendance of 12,661 physicians.

A cancer institute for nurses is held twice yearly. This institute consists of a concentrated 2-week period of instruction and observation at Pondville Hospital, the State-aided cancer clinics, and various institutions. The course includes discussion of the various sites of cancer from the surgical, pathological, radiological, and nursing points of view, and seminars on the public health aspects of cancer control. The number of nurses attending the institute is limited in order that each nurse may be given individual attention.

Other methods of cancer education have included instruction of medical students, lectures to professional groups, such as nurses, doctors, and public health workers, the distribution of literature and posters, radio broadcasts, and instruction in the schools. The Massachusetts

Figure 2. Survival of clinic patients with cancer during 25 years of Massachusetts program.



Department of Public Health also has published several pamphlets of interest to both the medical profession and the laity.

Between 1935 and 1948 the health department carried on a program of cancer education for the laity through the organization of a cooperative cancer control committee in every city and town in the State. These committees were composed of representatives from all organizations in each community and were formed for the purpose of stimulating each organization to devote one meeting a year to a talk on cancer by a local physician. In 1948, the American Cancer Society assumed the greater part of cancer education of the laity.

Since 1948, the State health department has limited its efforts in lay education to the continuation of evaluative studies of educational methods. A public knowledge survey conducted in Waltham, Mass., in 1949 (*8*) revealed that nearly three-quarters of the population believed that cancer could be cured. Over four-fifths of the population believed that the disease was not contagious; 81.6 percent knew that surgery, X-ray or radium were accepted treatments for the disease; and 87.5 percent would be willing for the public to know that cancer existed in their families. A little more than half were convinced that the children of cancer patients were in no more danger of developing cancer than the children of noncancer patients. Nearly one-half of the persons in the survey knew none of the seven danger signals of cancer; about one-third knew one of them; and about one-fourth knew two or more. Young adults are better informed concerning cancer than those who are older; individuals in well-to-do circumstances are better informed than the poor, and women have a slightly better knowledge of the disease than men.

Lectures were reported to furnish the most valuable source of information regarding cancer, followed, in the order given, by pamphlets, books, posters, magazine articles, moving pictures, newspapers, personal contact, and the radio.

Problems

In reviewing the accomplishments and the failures during the past 26 years, certain problems relating to knowledge of the disease, attitude of the public, and administration of the program have arisen. At the inception of the program, administrative problems in clinic organization predominated.

The establishment of diagnostic clinics at strategic points throughout the State posed innumerable problems. Some medical societies were reluctant to take the initial step although each had its band of enthusiasts. Many physicians wanted to reserve judgment until the effectiveness of the plan was demonstrated. Others were skeptical and suspicious of this entrance of public health into the realm of cancer. Still others were unaware of the imminence of the program so engrossed were they in their own practices.

The law originally read that these clinics should be established "with or without the consent of the medical profession." This dangerous authority was never invoked, but has been mentioned in the literature on several occasions, the most recent being by Anderson (*9*, *10*, *11*). The general practitioner's fear of governmental control of medicine had to be overcome by constantly reiterating that the purpose of the program was to augment the facilities of the individual practitioner, not to supplant them.

In some communities the same group formed the personnel of the clinic throughout the year; in other communities rotating service was used.

Some clinics were maintained in a single hospital; others were divided among several hospitals. In one community a Boston specialist was hired to conduct the clinic each month. In another, each 1 of 7 hospitals wanted a share in the clinic, which met in a rotating service in each hospital. Patients who attended the clinic at one hospital and were advised to return for observation pending diagnosis would wait until the clinic again met at that hospital.

A policy of attempting to convince the medical profession of the value of the program rather than of forcing its acceptance has been followed. In the beginning, group diagnosis was difficult. For example, the dean of medicine in a community was frequently regarded as preeminent, either because of his diagnostic acumen or because of the deference accorded him by younger and less prominent practitioners. Also, after election of new officers in a medical society, sometimes the entire clinic staff was replaced by men who previously had shown no interest in the clinic. These problems have all been overcome gradually.

Many factors regarding malignant disease are a deterrent to program planning, particularly of educational programs. These could be better planned if answers were available to questions such as the following:

In addition to those already known, what occupations or other activities subject the individual to carcinogenic agents?

Is there a constitutional factor in cancer etiology?

Is the constitution of the individual a factor that will influence his response to therapy?

What are the reasons for the relationship between economic status and cancer?

Is the milk factor of importance in human cancer?

Why does early marriage predispose to cancer of the cervix?

What habits of the individual predispose him to cancer?

How much of a factor is heredity in the etiology of human cancer?

What differences in morbidity exist in various geographic areas?

Fear and superstition, as well as ignorance and poverty, have hindered the satisfactory consummation of the program. The cancer administrator is constantly beset with lack of qualified personnel; lack of sufficient funds; lack of accurate tests for the early detection of all cancers; lack of sufficient accurate data concerning such factors as incidence of cancer and results of treatment; and lack of general understanding that control requires the combined energies of clinicians, radiologists, pathologists, research workers, and public health personnel. Even though he realizes the temporal limitations of this twofold objective, the administrator visualizes the time when individuals will seek medical attention at the first danger signal, and when the medical profession will be equally alert to furnish the necessary therapy.

Evaluation

The importance of evaluating a cancer control program cannot be overemphasized. Appraisals enable persons in charge of the program to evaluate their efforts. Those portions of the program which do not achieve results commensurate with the time and money expended should be replaced by other types of endeavor. Methods for appraisal cannot be stereotyped and must be altered according to the type of program.

In appraising its program, the Massachusetts Department of Public Health has used as measurements increasing attendance at cancer clinics and hospitals, willingness of the public to listen to cancer lectures, increasing number of magazine articles on cancer, number of individuals willing to work for cancer control, number of other States which have used the Massachusetts program as a pattern, and, probably the most important, the changing death rate. In the early part of the century the age-adjusted cancer death rates for both sexes were rising about 2 percent per year in both the Registration Area of 1900 and in Massachusetts. Shortly before this country entered World War I the increase in cancer death rates among females lessened, somewhat more in Massachusetts than in the Registration Area. Beginning in 1926, the annual percentage increase in the cancer death rate for males was only about one-half that recorded previously, for both Massachusetts and the Registration Area. In the middle

1930's, a downward trend in the rate for females was noted in Massachusetts and a few years later (*12*) a similar drop occurred in the Registration Area of 1900. The change in the adjusted cancer death rate offers data for speculation as to what part of it may be attributed to cancer control activities and what part to other causes.

The delay between first symptoms and the first consultation with a physician, and between the first consultation and the first visit to a clinic, have been reduced by one-half since inauguration of the program. In the first year the delay between appearance of the first symptoms and the first visit to a physician was 6.5 months; in 1951 it was 3.9 months. The delay between first visit to a doctor and first visit to a clinic in 1927 was 5.4 months; in 1951, 2.3 months.

Over an 11-year period in the Massachusetts cancer clinics, marked improvement in survival rates has been noted for cancer of many sites. For breast cancer, the 10-year survival rates have increased 100 percent; for cancer of the female genitals, 50 percent.

An evaluation of a cancer detection center was made, supported in part by a grant from the Public Health Service (*13*). Among the conclusions drawn were the following:

The small number of cancers found among asymptomatic subjects would have been greatly increased if applicants with symptoms had been accepted by the center.

The place for examination of persons with symptoms is the private physician's office or a cancer diagnostic clinic rather than a detection center.

The few cancers found among asymptomatic persons, as well as the high cost of each examination, precludes large-scale financing of cancer detection centers by either governmental or voluntary agencies.

Many of the procedures carried out at the detection center probably could be done by the general practitioner if proper instruments were available to him at a reasonable cost and if he were willing to spend sufficient time in taking a history and making an examination.

A 6-year experimental study, financed in part by the Commonwealth Fund, was inaugurated in January 1945 by the Massachusetts Department of Public Health to evaluate, from an administrative standpoint, the use of vaginal smears in the diagnosis of uterine cancer (*14*). The incidence of uterine cancer among women without gynecologic symptoms was found to be less than 1 percent; among those with bleeding, over 30 percent; and among those with other gynecologic symptoms, about 10 percent. If questionable smears were considered positive, since they indicate the need for further study, the overall error among symptomless subjects would be at least 4 percent, and among those with bleeding, at least 16 percent. The percentage of questionable diagnoses was about 4 times as great among those with bleeding as among those who did not mention bleeding. It does not seem feasible for a State health department to offer this test on an extensive scale for women without gynecologic symptoms, since the cost would be prohibitive and the number of cancers found would be relatively few.

Perhaps the outstanding feature of the Massachusetts cancer control program is the feeling of personal responsibility that has been generated. The program, while technically a State health department activity, has so stimulated other agencies, other groups, other individuals, that it is as much a Massachusetts project as a health department activity. The cancer unit of the Harvard School of Public Health, the American Cancer Society, Massachusetts Division, Inc., the Cancer Committee of the Massachusetts Medical Society, and individuals from many walks of life have contributed to the success of the program. The interchange can be visualized best by noting the composition of the advisory committee of the program, together with the two ex officio members. These 7 physicians have the following affiliations: 5 are directors of the American Cancer Society; 3 are members of the Cancer Committee of the Massachusetts Medical Society; 4 are teachers at the Harvard School of Public Health; 6 are teachers at medical schools; and 1 is on the faculty of a dental school.

This epitomizes cancer control in Massachusetts during the last quarter century. One cannot postulate that all of the improvement has been due to the Massachusetts cancer program. The American Cancer Society has functioned

for over a quarter of a century. The American College of Surgeons has been extremely active in cancer control and in the last few years the Federal Government has inaugurated an extensive cancer control program. There may even be forces at work of a biological nature of which we have no knowledge. However, it seems reasonable to assume that a part of this improvement is due to the tireless efforts of those groups of individuals who have participated in the Massachusetts cancer control program.

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Undersecretary of Health, Education, and Welfare

The presidential appointment of Nelson A. Rockefeller as Undersecretary of Health, Education, and Welfare was confirmed by the United States Senate on June 10, 1953.

Mr. Rockefeller, Assistant Secretary of State in charge of relations with the American Republics from December 1944 to August 1945, was Coordinator of the Office of Inter-American Affairs from 1940 to 1944. In 1950, he was chairman of the International Development Advisory Board, charged with recommending general policy toward underdeveloped areas.

In November 1952, President-elect Eisenhower appointed Mr. Rockefeller chairman of a committee to review studies for streamlining the executive branch of the Government. The committee was given official status as the President's Advisory Committee on Government Organization by President Eisenhower's first executive order.

At the time of his appointment, Mr. Rockefeller was president of the International Basic Economy Corporation (IBEC) and president of the American International Association (AIA) for Economic and Social Development. He was also chairman of the board of the IBEC Research Institute and chairman of the IBEC Technical Services Corporation.

IBEC is engaged in joint business enterprises, chiefly in Venezuela and Brazil, to produce and distribute essential goods. AIA, a nonprofit organization established to help raise living standards in underdeveloped areas, provides educational services for improving agriculture and rural life. The IBEC Research Institute is a nonprofit corporation which conducts research in tropical agriculture. IBEC Technical Services provides technical services to foreign countries in the fields of public works and economic development.