

The California Tumor Registry

A Summary Report on the Cancer Experience in 36 Hospitals

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IN 1947 THE GROWING INTEREST in cancer in California led to the development of a central tumor registry in the State Department of Public Health. From its inception, the Registry has had the support of the Cancer Commission of the California Medical Association, the California Hospital Association, and the California Association of Medical Record Librarians. In accordance with a recommendation of the American College of Surgeons, and upon request of the State Director of Public Health, the California Medical Association established a formal Tumor Registry Advisory Committee in March 1956.

This report describes the purposes, organization and functions of the California Tumor Registry and presents brief excerpts of its findings.

PURPOSES OF THE CALIFORNIA TUMOR REGISTRY

Prior to the establishment of the California Tumor Registry, the data available on cancer in California were confined to mortality information and morbidity studies of special groups of patients, usually of a single hospital,² and the surveys made by the National Cancer Institute in the San Francisco Bay Area¹ in 1937 and 1947. Mortality data do not adequately describe the pattern of morbidity since successfully treated cases of cancer are not reflected in mortality figures. A central purpose of establishing the Registry was to provide more general data on cancer morbidity in California.

This body of information provides a means of studying the survival experience of cancer patients in the average general hospital and of evaluating the progress made in bringing the disease under control. Such survival information has not been available, particularly for nonteaching hospitals. It is needed for evaluation of individual hospital experience as well as for study of general trends. Data on the number and characteristics of persons afflicted with cancer are essential to evaluate cancer control methods, to advance knowledge of the epidemiology of cancer, to suggest leads for laboratory and clinical research, and to provide facts for professional and lay education.

In addition to providing statistical information, the Registry performs the basic function of bene-

• The California Tumor Registry was started in 1947. It consists of case abstracts of medical records on neoplasm patients seen in 40 hospitals in California and now contains data on more than 159,000 cases, with 15,000 new cases being added each year. Follow-up reports are requested annually on each case not known to be dead.

The Registry is designed to (1) promote the continuing care of the patient, (2) to evaluate cancer control methods, (3) to advance knowledge of the epidemiology of cancer, and (4) to suggest leads for laboratory and clinical research.

From a series of 110,628 neoplasm cases reported to the California Tumor Registry in 1942-1954, data are presented on 76,499 cancer cases initially diagnosed in reporting hospitals. Histopathologic confirmation, age, sex, stage, treatment, follow-up, and survival of cancer patients are discussed. Use of the Registry information for analyzing cancer experience for epidemiological study and for evaluation of treatment methods are also described.

The report is intended to illustrate the types of data that can be obtained from the California Tumor Registry. More comprehensive reports on specific aspects of cancer control will be forthcoming.

fitting the cancer patient by providing an effective system of follow-up, and thus aiding continuity of medical supervision.

METHOD OF OPERATION

The California Tumor Registry is a cooperative undertaking of a group of California hospitals and the State Department of Public Health, and is maintained on an entirely voluntary basis. In agreeing to participate, a hospital contracts to report every admission—inpatient or outpatient, public or private—with a diagnosis of reportable neoplasm; and to follow these cases until death.

The program originated as a pilot study in 1947 with three county hospitals and six private hospitals participating. Medical records of neoplasm cases with hospital discharge dates beginning January 1, 1942 were abstracted to establish a backlog of experience. From time to time other hospitals requested entry to the Registry. As of January 1957, 40 hospitals,* representing about one-third of the beds in general hospitals in California, reported 159,000

*Of these 25 are private, 12 are county, one is a large tumor clinic, one a state hospital, and one participant is a private pathologist.

cases of neoplastic disease. Approximately 15,000 new cases are now being added each year.

Each hospital maintains its own tumor registry. The registry worker in the hospital abstracts onto a standard abstract form the identifying, diagnostic, and treatment information from medical records of neoplasm cases seen in the institution. The information on this initial report form summarizes the data on the patient during the period of first admission to the reporting hospital for the reportable condition, and also during the three-month period following discharge in order to obtain any additional diagnostic and treatment data that may be available. One copy of the abstract remains in the hospital tumor registry; another is forwarded to and becomes a part of the California Tumor Registry.

The hospital follows each registered case at least annually. The Central Registry requests the hospital for a summary of the follow-up information, whether alive or dead, with or without the neoplasm present, on each case reported from that hospital. These requests for follow-up data are sent to the hospital during the patient's anniversary month of admission, which helps maintain an even work-load of abstracting and follow-up work in the local registry.

The Central Registry maintains close personal contact with the hospital registry workers. Statistical consultants in the central office advise the registry workers in each hospital on methods for completing the initial abstract and follow-up forms in order to insure uniformity of records. Upon receipt of the records in the central office, they are carefully edited for completeness and consistency, indexed, and then coded according to a classification agreed upon by the central and local registries. The Cancer Consultant of the State Department of Public Health guides the coding unit in the proper interpretation of the medical information contained in the tumor records. Thus the recorded information is uniformly interpreted regardless of what hospital the record comes from. Identifying, diagnostic, treatment, and follow-up information on each case is recorded on one tabulating card, which is used for statistical purposes and for initiating follow-up each year.

The California Tumor Registry is basically a hospital operation with the State Department of Public Health providing certain services such as records, consultation, workshops for hospital registry personnel, processing services, death clearance, statistical reports, and financial support. The California Tumor Registry also assists hospitals, both participating and nonparticipating, in the organization of a registry and in training registry workers. Two manuals, the *Guides to the Organization and Use of Tumor Registry Records* and the *Tumor Registry Handbook*, have been written, based on the experi-

ences of the California Tumor Registry with member hospital registries, and issued to many hospitals. The "Guides" outlines in detail a simple and efficient registry system that will facilitate abstracting, follow-up, and preparation of statistical reports. The "Handbook" describes a method for abstracting clinical material onto the abstract and follow-up forms and defines the terms used.

Since 1954, 78 additional hospitals have requested assistance and participation in the California Tumor Registry. They cannot become a part of the Registry at present because of budget limitations.

DESCRIPTION OF REGISTERED CASES

Cases Included in This Series

The data to be presented in this report pertain to cases admitted to 36 hospitals through 1954. There is an unduplicated count of 110,628 neoplasm cases in this series—104,430 malignant and 6,198 potentially malignant neoplasms. The following analysis is restricted to 76,499 cases with malignant neoplasms that were initially diagnosed in hospitals reporting to the California Tumor Registry; the remaining cases had been diagnosed elsewhere prior to admission to the reporting hospital, or this point was not clear from the records.

Approximately 80 per cent of the cases came from 19 hospitals which reported for the entire period 1942-1954; about 20 per cent from 17 hospitals which reported for only part of these years.

A study was made comparing the mortality pattern of the Tumor Registry cases with that of the entire state. The type, size, and geographic location of the hospitals in the Registry were also compared with the distribution of all hospitals. The study showed that the distribution of deaths by site and the hospitals in the Registry were generally representative of the state. It should be noted, however, that since certain sites of cancer, notably skin, may be diagnosed and treated to a considerable extent outside of hospitals, these data underestimate the frequency of such sites.

Histopathologic Confirmation

Microscopic examination is the decisive factor in the diagnosis of cancer. Not only the fact of malignancy but the type of neoplasm and grade of growth may best be determined by microscopic examination of a portion of the suspected tumor. Histopathology often has been used to guide the kind and extent of treatment which is given.

The proportion of diagnoses confirmed by histopathology roughly indicates the accuracy of diagnosis in a group of cancer cases. Confirmation by histopathologic examination ought to approach

TABLE 1.—Registered Cancer Cases Confirmed by Histopathology by Year of First Diagnosis, 1942-1954

Year of First Diagnosis	Total Cases	Confirmed by Histopathology	
		Number	Per Cent
Total	76,499	66,923	87.5
1942	3,463	2,769	80.0
1943	3,375	2,711	80.3
1944	3,436	2,716	79.0
1945	3,621	2,833	78.2
1946	4,192	3,424	81.7
1947	5,190	4,337	83.6
1948	5,216	4,440	85.1
1949	5,955	5,218	87.6
1950	6,709	6,027	89.8
1951	7,549	6,884	91.2
1952	8,246	7,539	91.4
1953	9,326	8,675	93.0
1954	10,221	9,350	91.5

TABLE 2.—Site* of Registered Cancer Cases Confirmed by Histopathology, 1942-1954

Selected Sites	Total Cases	Confirmed by Histopathology	
		Number	Per Cent
Total	76,499	66,923	87.5
Buccal cavity and pharynx	2,995	2,805	93.7
Stomach	4,928	3,518	71.4
Rectum	3,917	3,523	89.9
Trachea, bronchus and lung	4,255	3,452	81.1
Breast	9,476	8,713	91.9
Cervix uteri	4,820	4,476	92.9
Uterus, other than cervix	2,624	2,494	95.0
Prostate	4,381	3,315	75.7
Skin	7,870	7,409	94.1
Lymphatic and hematopoietic tissues	4,281	3,713	86.7
All other sites	26,952	23,505	87.2

*W.H.O., International Statistical Classification, Sixth Revision, used throughout text.

100 per cent. The use of microscopic study has increased during recent years in the hospitals participating in the California Tumor Registry, with 91.5 per cent of the cancer cases diagnosed in 1954 confirmed by histopathology (see Table 1).

Although more than 9,500 of the cases in this series were not microscopically confirmed, they are included in the analysis. This is a report on cases reported to the California Tumor Registry that are listed as cancer in the participating hospitals. One of the reasons for the lack of confirmation may be that some lesions appeared so positively cancerous upon clinical examination that microscopic examination was considered unnecessary. For example, 96.0 per cent of the localized cases were confirmed; for metastatic lesions it was only 80.4 per cent.

As might be expected, the proportion of microscopically proven cases varies fairly directly with the accessibility of the site (see Table 2). For example, more than 90 per cent of the cases with can-

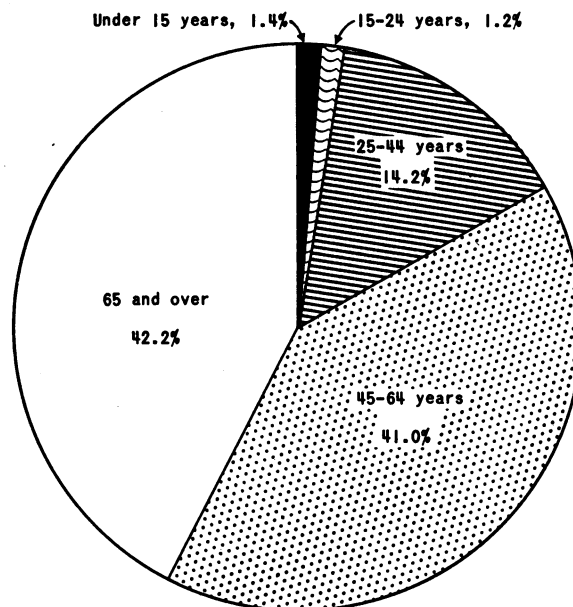


Chart 1.—Age distribution in registered cancer cases.

cer of the buccal cavity and pharynx, breast, uterus, and skin were confirmed by histopathology. Stomach and prostate showed the lowest percentages with microscopic diagnoses.

Age Distribution of Registered Cases

Although cancer is usually considered a disease of older people, it is by no means rare in children and young adults. Chart 1, which shows the age distribution of the cancer cases, reveals that cancer occurs at all ages. In this series 1,053 or 1.4 per cent of the total cases were children less than 15 years of age at diagnosis. Well over half of all cases affected were persons under 65 years of age.

The age of cancer patients varies considerably from one site to another, with a difference of 20 years in the average ages of cervix and prostate cases. The proportion of persons under 45 years of age at time of diagnosis are even more variable by site of cancer, as seen in the 0.5 per cent of prostate cases contrasted with the 36.8 per cent of cervix cases (Table 3).

Sex Distribution of Registered Cancer Cases

More female than male cancer cases were reported to the California Tumor Registry, the ratio being 1.2 to 1. The proportion of cases by sex varies considerably with site of cancer. The largest differences occurred for breast where 99.0 per cent of the cases were female, and for lung where 82.5 per cent were male.

The most common location of malignant neoplasms among females was the breast, which accounted for 22.8 per cent of all female cases. Cancer

TABLE 3.—Age Distribution of Registered Cancer Cases by Site, 1942-1954

Selected Sites	Average Age	Total Cases	Under 15	15 to 24	25 to 44	45 to 64	65 and Over
Total.....	59	100.0	1.4	1.2	14.2	41.0	42.2
Buccal cavity and pharynx.....	59	100.0	0.7	1.5	15.9	42.7	39.2
Stomach.....	65	100.0	....	0.1	6.0	39.7	54.2
Rectum.....	64	100.0	....	0.1	6.9	42.2	50.8
Trachea, bronchus and lung.....	61	100.0	0.1	0.2	8.0	55.0	36.7
Breast.....	57	100.0	....	0.3	21.4	46.8	31.5
Cervix uteri.....	51	100.0	....	0.8	36.0	44.5	18.7
Uterus, other than cervix.....	58	100.0	....	1.0	11.5	58.6	28.9
Prostate.....	71	100.0	0.2	....	0.3	20.2	79.3
Skin.....	64	100.0	0.4	0.6	9.3	31.1	58.6
Lymphatic and hematopoietic tissues.....	51	100.0	9.9	4.4	16.1	35.9	33.7
All other sites.....	58	100.0	2.1	2.0	14.8	41.5	39.6

of the uterus, the second most frequent site, constituted 18.1 per cent of the cases. Among males the largest proportion of cases 13.7 were of the skin; 12.4 per cent prostate; 9.9 per cent lung, and 9.2 per cent were of the stomach.

Stage of Disease at Diagnosis

The California Tumor Registry classifies a cancer as localized if, at diagnosis, the neoplasm appears to be confined to the organ in which it originated. If the cancer has spread to the regional lymph nodes or has progressed beyond the boundaries of the original organ by direct extension, it is considered to have regional and/or node involvement. A neoplasm which has spread to another organ by means of blood or lymph channels beyond the regional lymph nodes is defined as having distant metastasis. Tumors of the lymphatic and hematopoietic tissues are not assigned a stage classification because they are considered to be a systemic malignancy.

Since the stage of the disease is one of the factors which must be taken into account in studying the survival experience of cancer patients, it is important that the stage of the neoplasm be recorded in the tumor registry records. Stage was and still is poorly recorded in registry records of many hospitals. The Registry, by using the information contained in the hospital records, has helped to improve the quality of these records. In participating hospitals the recording of stage for all sites, excluding cases with cancer of the lymphatic and hematopoietic tissues, has improved from about 50 per cent in the time period 1942-1945 to more than 80 per cent in 1954.

With neoplasms of the lymphatic and hematopoietic tissues excluded, 27.5 per cent were localized, 17.4 per cent showed regional involvement, 24.0 per cent had distant metastasis, and 31.1 per cent of the cases did not have stage of disease recorded by the hospital tumor registry. At first glance Table 4 seems to show an increase in the proportion of cases that were first seen while in the localized stage. It is interesting to note however, that as the proportion of cases with stage not recorded decreased the pro-

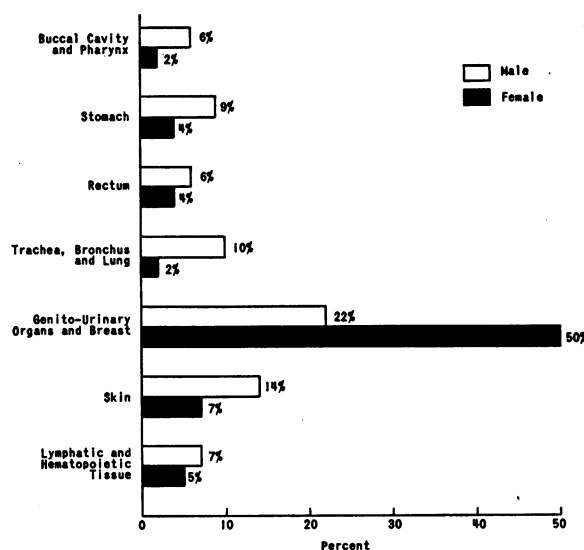


Chart 2.—Registered cancer cases by sex and site of cancer.

TABLE 4.—Stage of Disease of Registered Cases* by Year of First Diagnosis, 1942-1954

Year of First Admission	Total Cases	Localized	Regional Spread	Distant Metastasis	Stage Not Recorded
Total	100.0	27.5	17.4	24.0	31.1
1942	100.0	10.2	19.0	25.1	45.7
1943	100.0	10.8	16.5	23.7	49.0
1944	100.0	11.9	16.9	22.9	48.3
1945	100.0	12.0	17.3	22.9	47.8
1946	100.0	11.5	19.2	24.5	44.8
1947	100.0	15.2	17.5	23.6	43.7
1948	100.0	19.5	17.9	23.1	39.5
1949	100.0	27.0	22.2	21.5	29.3
1950	100.0	29.7	17.6	23.4	29.3
1951	100.0	39.4	15.1	25.2	20.3
1952	100.0	38.3	14.7	26.3	20.7
1953	100.0	38.7	15.4	25.0	20.9
1954	100.0	38.6	18.9	23.4	19.1

*Excludes 4,281 cancer cases of the lymphatic and hematopoietic tissues.

TABLE 5.—Type of Treatment Given During First Admission in Registered Cancer Cases by Site, 1942-1954

Selected Sites	Total Cases	Surgery	Radiation	Surgery and Radiation	Other or No Treatment
Total.....	100.0	45.2	12.8	4.5	37.5
Buccal cavity and pharynx.....	100.0	47.2	30.5	4.4	17.9
Stomach.....	100.0	33.4	0.9	0.1	65.6
Rectum.....	100.0	59.2	1.7	0.7	38.4
Trachea, bronchus and lung.....	100.0	16.5	11.7	1.3	70.5
Breast.....	100.0	73.2	4.3	11.5	11.0
Cervix uteri.....	100.0	16.3	62.7	4.5	16.5
Uterus, other than cervix.....	100.0	39.9	26.8	17.1	16.2
Prostate.....	100.0	58.1	1.1	1.3	39.5
Skin.....	100.0	49.1	19.1	2.9	28.9
Lymphatic and hematopoietic tissues.....	100.0	8.9	26.8	3.8	60.5
All other sites.....	100.0	47.9	5.4	3.9	42.8

portion of localized increased. There was little variation in the proportion of cases reported as first seen with regional involvement or distant metastasis.

Treatment

Treatment, as defined by the California Tumor Registry, includes all medical procedures directed toward destruction of the neoplasm during the first admission to the reporting hospital and the three-month period following discharge. Patients not treated (or with no record of treatment) during this limited period, as well as those which were never treated at all, fall into the "no treatment" category. Treated cases are classified as having received any one or combination of the following methods of therapy: Surgery, radiation, radioactive isotopes, chemotherapy or steroid therapy.

In this report cases treated exclusively by radioactive isotopes, chemotherapy, steroid therapy, fulguration, desiccation and curettage for skin and bladder tumors, and blood transfusions for leukemia have been grouped with "no treatment" cases into the category "other or no treatment."

The type of treatment given to a cancer patient is dependent upon the site of the cancer as well as other factors such as the stage of disease, the age, sex, and physical and emotional condition of the patient. Table 5 indicates that surgery, during the period of observation, was the main line of attack against most malignant neoplasms in the hospital cases studied. Radiation was the more common form of therapy for cancer of cervix uteri and the lymphatic and hematopoietic tissues.

Follow-up of Cancer Patients

Follow-up of the cancer patient serves two important purposes. It promotes continuing care of the cancer patient (one of the basic elements of a cancer control program). It also makes available a broad experience of survival data which can be analyzed with respect to site and type of tumor, stage of disease when first diagnosed, treatment given, and the factors of age, race, and sex of the patient.

Marked progress has been made in follow-up by the California Tumor Registry since the first attempt in 1950 when nine hospitals reported follow-up information on their cases. The over-all loss to follow-up (i.e., no information as to patient's status during the preceding year) among 20,511 cases reported by these hospitals was 11.8 per cent. In 1952 these same hospitals followed a total of 31,024 cases and lost only 6.3 per cent.

Results of the follow-up conducted by 27 hospitals in 1952 have been analyzed in some detail in Tables 6, 7, 8, and 9. This follow-up included 43,507 cancer cases seen during the nine-year period 1942-1950 in nine county hospitals and 18 private hospitals. Surprisingly little variation is apparent in the percentage of lost cases by year of admission (see Table 6). While there may be less chance of locating a living patient as the years pass after his first admission, there is at the same time a greater chance of the patient dying and obtaining follow-up information from death records.

Well over half of the cases in the group studied were found to be dead, either through death clearance by the Vital Records Section of the State Department of Public Health or by the hospitals, before follow-up was attempted. An additional 5 per cent of the cases were discovered to be dead by the hospitals in the course of follow-up (see Table 7).

Contact with the private physician, hospital admission, clinic visit, communication with the patient or other source gave evidence that 10,900 or 25.1 per cent of the original group were still alive in 1951 or 1952. The proportion of cases found alive was considerably greater for the private hospitals, probably owing to the greater number of terminal cases and patients of advanced age admitted to the county hospitals. The group of patients whose status was unknown was kept to a minimal 2.7 per cent by the county hospitals.

The source of follow-up information indicates the extent to which cancer patients are remaining under medical care. Seventy per cent of the 10,900 cancer

TABLE 6.—Results of Follow-up on Registered Cancer Cases by Year of Admission, 1942-1950

Year of First Admission	Total Cases	Status of Patient in 1951 or 1952			Per Cent Unknown		
		Alive	Dead	Unknown	All Hospitals	County	Private
Total.....	43,507	10,900	29,467	3,140	7.2	2.7	11.4
1942.....	3,412	417	2,740	255	7.5	2.8	12.4
1943.....	3,384	421	2,683	280	8.3	2.5	13.2
1944.....	3,505	481	2,769	255	7.3	1.8	12.3
1945.....	3,648	556	2,812	280	7.7	2.7	12.2
1946.....	4,212	763	3,136	313	7.4	3.1	11.6
1947.....	4,847	1,292	3,167	388	8.0	3.2	12.0
1948.....	5,463	1,492	3,579	392	7.2	3.0	11.1
1949.....	7,066	2,328	4,230	508	7.2	2.8	11.2
1950.....	6,497	2,849	3,226	422	6.5	2.4	9.6

TABLE 7.—Status of Patient on Follow-up, 1942-1950

Status of Patient	Number			Per Cent		
	All Hospitals	County	Private	All Hospitals	County	Private
Total.....	43,507	20,885	22,622	100.0	100.0	100.0
Dead before follow-up.....	27,176	15,662	11,514	62.5	75.0	50.9
Dead on follow-up.....	2,291	828	1,463	5.3	4.0	6.5
Alive.....	10,900	3,835	7,065	25.1	18.4	31.2
Unknown.....	3,140	560	2,580	7.2	2.7	11.4

patients found to be alive on follow-up had been examined by physicians during the preceding year.

The data on continuity of medical care, of course, do not take into account the number of patients upon whom follow-up data could not be obtained. Assuming that a substantial number of "lost" patients could be found alive, and that they would be less likely to be under medical care than those on whom a follow-up report had been obtained, the percentage of those seen by physicians would drop below 70 per cent.

The results of the 1952 follow-up varied somewhat by site. In general, the more fatal sites of cancer (digestive organs, respiratory organs, and lymphatic and hematopoietic tissues) had fewer lost cases for the reason that these cases do not survive as long after diagnosis as do other cancer cases, and therefore follow-up is terminated. The highest losses were among cases with neoplasms of the buccal cavity and pharynx, uterus (other than cervix), and skin.

Survival in Registered Cancer Cases

Analysis of the survival of cancer patients is based on 56,126 cases initially diagnosed in 1942-1952 in one of the 34 hospitals which reported follow-up information in 1954. The inclusion of only those cases first diagnosed in reporting hospitals provides a homogenous group for which survival rates may be evaluated. All such cases—whether treated or untreated, "interesting" or "routine," confirmed or not confirmed by microscopic examination of tissue—are included in Table 10.

TABLE 8.—Source of Follow-up Report

Source of Follow-up Report	All Hospitals	County	Private
Total	100.0 (10,900)	100.0 (3,835)	100.0 (7,065)
Examination	70.5	63.8	74.1
Physician's Office	30.1	4.0	44.3
Hospital	6.9	13.0	3.6
Clinic	33.5	46.8	26.2
Report	29.5	36.2	25.9
Patient or Relative	17.7	24.3	14.1
Other	11.8	11.9	11.8

TABLE 9.—Results of Follow-up on Registered Cases by Site

Selected Sites	Total All Cases	Status in 1951 or 1952		
		Alive	Dead	Unknown
Total	43,507	25.1	67.7	7.2
Buccal cavity and pharynx	2,212	33.0	56.3	10.7
Stomach	2,954	7.4	88.8	3.8
Rectum	2,394	20.0	74.8	5.1
Trachea, bronchus and lung	2,067	4.5	92.6	2.8
Breast	5,005	34.9	58.2	6.9
Cervix uteri	3,898	34.2	58.0	7.8
Uterus, other than cervix.....	1,443	38.9	49.7	11.4
Prostate	2,556	16.6	76.2	7.2
Skin	4,103	50.3	39.1	10.6
Lymphatic and hematopoietic tissues	2,704	10.9	84.9	4.1
All other sites	14,171	20.9	71.6	7.5

TABLE 10.—One, Three and Five-Year Survival Rates for Selected Sites of Cancer by Stage, 1942-1952*

Site and Stage of Disease	Number of Cases Reported	Survival Rate (Per Cent)		
		One Year	Three Year	Five Year
Total, all sites.....	56,126	56.1	38.9	30.8
Localized	12,561	83.9	69.2	58.8
Regional spread	9,339	56.3	33.9	25.1
Distant metastasis	12,950	25.7	11.5	7.8
Hemic or lymphatic origin.....	3,277	34.3	18.0	11.4
Stage not recorded.....	17,999	63.3	45.4	36.5
Stomach	3,940	25.2	11.6	7.9
Localized	245	57.2	38.9	31.8
Regional spread	880	30.8	12.0	7.0
Distant metastasis	1,729	13.2	3.7	2.4
Stage not recorded.....	1,086	33.0	18.2	12.7
Rectum	2,970	56.8	32.1	24.5
Localized	553	82.8	61.4	50.5
Regional spread	633	58.6	28.3	22.9
Distant metastasis	708	28.8	10.2	7.3
Stage not recorded.....	1,076	61.2	34.8	25.3
Lung	3,050	15.8	6.2	4.0
Localized	198	36.3	21.0	14.4
Regional spread	536	18.2	4.3	1.5
Distant metastasis	1,284	5.8	1.5	0.8
Stage not recorded.....	1,032	23.5	10.6	7.3
Breast	7,161	83.0	61.4	48.1
Localized	1,884	95.0	83.1	70.3
Regional spread	2,318	84.3	56.4	41.6
Distant metastasis	1,649	64.5	39.2	26.8
Stage not recorded.....	1,310	87.0	68.8	56.9
Cervix uteri	3,561	74.3	52.3	44.2
Localized	1,050	90.1	75.1	66.5
Regional spread	751	65.1	38.4	29.5
Distant metastasis	398	33.8	12.0	7.6
Stage not recorded.....	1,362	79.8	55.8	47.8
Uterus, other than cervix.....	1,953	77.8	63.9	56.5
Localized	578	93.1	81.9	76.6
Regional spread	228	67.3	50.2	40.7
Distant metastasis	238	36.2	19.7	16.2
Stage not recorded.....	909	82.0	68.0	59.3
Prostate	3,264	62.9	35.9	22.5
Localized	514	73.3	51.6	31.2
Regional spread	334	62.4	34.8	21.2
Distant metastasis	784	41.0	13.2	7.4
Stage not recorded.....	1,632	70.4	42.8	27.4

* California Tumor Registry, 34 hospitals.

The table shows the proportion of cases alive at one, three, and five years after diagnosis of cancer for selected sites by stage of disease at diagnosis.

The actuarial method which is designed to make use of all known information on each patient, was used to calculate survival rates.

In this series of cases 6.2 per cent were lost to follow-up within one year of diagnosis, 7.8 per cent within three years of diagnosis, and 9.0 per cent within five years. To establish a follow-up system and to enter each case into the system immediately upon discharge of the patient is highly important to the success of a registry. It is difficult to locate a patient if there has been a break in contact although it may be possible that some of those recorded as lost will later be found and reentered into the study as either alive or dead.

The number of years of survival of the cancer patient is dependent upon many factors, such as the site and type of cancer, the stage of disease at diagnosis, the type of treatment given, and the age and sex of the patient. Table 10, for example, shows that cancer cases diagnosed while still in the localized stage have almost double (58.8 per cent) the five-year survival rate as those for all stages combined (30.8 per cent). Five-year survival for the group which had metastatic cancer at diagnosis is only 7.8 per cent.

Survival rates also vary sharply according to site of disease. Of the seven sites for which rates are calculated, cases with cancer of the breast have the best chances for surviving five years, while lung and stomach cancer patients have the poorest prognosis.

Other Information Recorded on Each Case

In addition to the items described thus far, the following information is also recorded on the abstract form and punched onto a tabulating card for each case: Marital status, race, delay period from onset of chief complaint to first diagnosis, and type of admission to the hospital. Besides the fact that the patient received surgical treatment, the type of surgery performed is also recorded; i.e., simple or radical excision, partial, total or radical resection, partial or total amputation, or enucleation.

The diagnosis is coded according to two classifications: (1) World Health Organization, *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death*, Sixth Revision, Adopted 1948, and (2) American Medical Association, *Standard Nomenclature of Diseases and Operations*, Fourth Edition, 1952, which enables the production of data comparable to mortality statistics and data from other registries and also to have a detailed classification of site and type of cancer.

USES OF CALIFORNIA TUMOR REGISTRY DATA

While the hospital registry serves as a ready source of information to physicians in a single institution, the California Tumor Registry also now makes available the combined experience of 40 hospitals in the state. The accumulation of this great volume of diagnostic, treatment, and follow-up information makes possible statistical analyses of the extent and nature of the cancer problem in California on a scale not available in one hospital or one physician's practice.

Survival Rates of Cancer Patients

One of the more important features of the California Tumor Registry is the possibility of measuring survival for a comprehensive group of cancer cases. Determination of the course of the disease and the length of survival of the cancer patient through

continuous follow-up permits the evaluation of current control methods as applied in California.

For the Third National Cancer Conference, held in Detroit in June 1956, the Registry provided five-year survival data for the major sites and types of cancer by stage of disease at diagnosis and initial course of treatment. These were collated with similar data from other registries in the nation by the National Cancer Institute and the American Cancer Society who co-sponsored the Conference.

Another contribution of the California Tumor Registry will be to the Cancer Chemotherapy National Service Center of the National Cancer Institute. This organization is supporting research in the chemical aspects of cancer treatment. The major registries in the country will submit descriptive and survival data as well as cooperate in research studies in specific areas of the cancer problem.

The Registry also plans to publish data on one, three, and five-year survival rates of cancer patients distributed by site, stage, and sex, and adjusted for the probability of dying from causes other than cancer.

Epidemiologic Investigation of Cancer

Studies of the incidence of malignant neoplastic disease are fundamental to the knowledge of its epidemiology. The major limitation in using the California Tumor Registry for epidemiologic study is the lack of knowledge about the size and characteristics of the population from which the cases come. Thus, there is no base for the calculation of rates and direct measure of risk.

However, utilization of the material available can serve as the basis for the study of certain aspects of the epidemiology of cancer. By examining the relative frequency of various sites of cancer in selected groups of patients, existing hypotheses can be subjected to further tests and new hypotheses may be developed. For example, an association between cancer and socio-economic status has been suspected. By contrasting county and private hospital admissions, variations are observed in the site, age and survival of cancer patients. In the county hospitals, for instance, 16.4 per cent of the male patients age 45 to 64 had lung cancer, whereas in private hospitals the figure was only 8.6 per cent. Cancer of the stomach was also more prevalent among males age 45 to 64 in county hospitals. Conversely, a higher percentage of private hospital male cancer patients age 45 to 64 had skin cancer than county patients. The proportion of women with cancer of the cervix uteri was higher among county hospital female cancer patients than among private patients.

Studies on Special Groups of Registered Cases

The California Tumor Registry data have been used by staff members of Registry hospitals, the

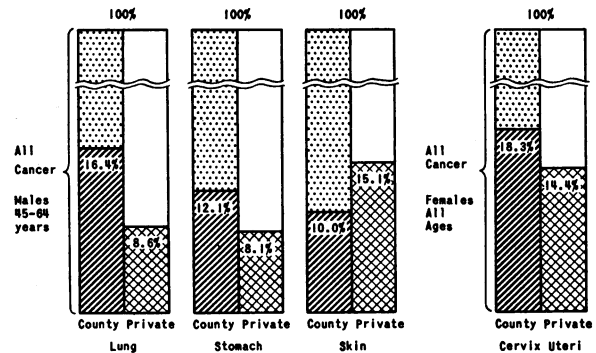


Chart 3.—Proportion of cancer cases of selected sites to total cancer in cases reported by county and private hospitals.

Cancer Commission of the California Medical Association, the State Department of Public Health, and others engaged in medical research.

The greatest interest expressed in these requests for data has centered around the question of cancer control of specific sites; mainly, breast, stomach, thyroid gland, and female genital organs. Other queries have pertained to epidemiologic investigations. The following are examples of the more than 70 questions that have been answered by Registry data:

- What proportion of all cancers are detectable by a dentist?
- Is carcinoid of the rectum a rare disease?
- What histologic types of cancer are found among children under 15?
- How long do women live after diagnosis of breast cancer?
- What is the effect of various types of treatment, or no treatment, on the survival of women with ovarian cancer?
- Taking treatment into account, how long do men with prostatic cancer live after diagnosis?
- What is the average years of survival of cases with cancer of the thyroid gland?
- What is the incidence of visceral cancer among persons with skin cancer?

Statistical Reports to Participating Hospitals

One of the Registry functions is to furnish the participating hospitals with annual reports on their experience with cancer patients. These reports consist of tables showing site, stage, diagnostic evidence, type of treatment, and follow-up. Periodically the Registry prepares for each hospital survivorship information for various sites of cancer by stage of disease. Because the physicians are interested in comparing their experience, summary data similar to the individual hospital tables are compiled for the entire Registry experience.

The data included in the tables are selected as holding the widest general interest: They by no means exhaust the information available from the Tumor Registry. These reports are intended to provide general data on the cancer experience of the hospital and to indicate the type of data which could be assembled from the Registry.

The California Tumor Registry encourages the physicians to analyze their own data. Diagnostic indexes have been prepared so that the hospital staffs may easily identify the cancer cases of the particular site they wish to study. Assistance is also given in setting up tables and in recommending methods of analysis.

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Postgraduate Education Courses for 1958 Annual Session

AN INNOVATION in C.M.A. meetings is being planned for the 1958 Annual Session. It is proposed to offer three postgraduate education courses of 12 hours each in connection with the scientific meetings. It is expected that official credit would be given for these courses.

As now planned, each of the three medical schools in Southern California would put on a course of three hours daily for the four days of the meeting.

Present plans call for University of Southern California to handle a course on liver diseases. U.C.L.A. Medical School would present a course on abdominal pain and College of Medical Evangelists would take charge of a series on management of trauma.

It is planned to make an admission charge for these courses, although the full details remain to be worked out.

Further announcements will be made when plans are completed.