Long-Range Studies of Mental Hospital Patients: An Important Area for Research in Chronic Disease

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THE RESOURCE THAT I SHOULD LIKE TO DISCUSS IS the mental hospital. Since mental hospitals are not usually operated by the department of health and the admission and follow-up of discharged mental hospital patients are usually not functions of the health department, I will spend a few minutes describing the characteristics of the populations of these institutions. This discussion, I am sure, will show that the hospitalized mentally ill constitute a major chronic disease problem, and merit a comprehensive research effort.

In the United States there are 207 state, 50 county and city, 225 private hospitals for mental disease as well as the 34 VA neuro-psychiatric hospitals. The persons admitted to these hospitals are those with the more serious mental diseases, primarily the psychoses. They constitute a major illness problem for the nation because of their large numbers and the amount of care they require. The cost of their hospital care is prodigious. Combined, these hospitals spend more than $500,000,000 annually for maintenance and care of patients.

Mental hospitals serve a dual function. Their primary functions are treatment and cure. If treatment fails, the hospital acquires the function of a domicile for the chronic patient. Emphasis is usually placed on the intensive treatment of newly admitted patients since they represent the most hopeful cases. However, an increasing amount of attention is being paid to the chronic patient and it has been shown that intensive treatment of this group can also be considerable. The chief stumbling block to intensive treatment for all types of patients is the extreme shortage of medical and nursing personnel in these institutions.

TABLE 1

Resident Patients at End of Year in Hospitals for the Prolonged Care of Psychiatric Patients, by Type of Control of Hospital, and Rates per 100,000 Population: United States, 1941–1950

| Year | Resident Patients at End of Year | | | | | Percent of Total[1] | | | | Rate[2] | |
	Total	State Hospitals	Veterans' Hospitals[3]	County and City Hospitals	Private Hospitals	State Hospitals	Veterans' Hospitals	County and City Hospitals	Private Hospitals	Total	State Hospitals
1950	577,246	489,930	51,553	21,687	14,076	84.9	8.9	3.8	2.4	384.3	326.2
1949	564,160	478,003	52,380	[4]419,859	13,918	84.7	9.3	3.5	2.5	382.5	324.0
1948	554,454	469,500	52,619	[4]419,240	13,095	84.7	9.5	3.5	2.4	381.6	323.1
1947	540,987	452,464	52,505	23,643	12,375	83.6	9.7	4.4	2.3	379.2	317.2
1946	529,247	445,561	48,235	23,150	12,301	84.2	9.1	4.4	2.3	382.4	321.9
1945	518,018	438,864	42,204	23,850	13,100	84.7	8.1	4.6	2.5	371.1	344.3
1944	506,346	434,209	38,623	21,259	12,255	85.8	7.6	4.2	2.4	366.7	343.2
1943	500,564	430,958	35,953	21,297	12,356	86.1	7.2	4.3	2.5	366.7	338.2
1942	497,938	432,550	32,348	21,256	11,784	86.9	6.5	4.3	2.4	369.8	330.5
1941	490,506	417,315	30,443	31,812	10,936	85.1	6.2	6.5	2.2	368.2	317.2

[1] Per cents may not add to 100 because of rounding.

[2] Number of resident patients per 100,000 of the estimated population as of July 1 of the specified year. Base for total rate, years 1941–1945, is total population. Base for all other rates is civilian population.

[3] Veterans' hospital data for the period 1941 through 1945 referred primarily to patients in VA neuropsychiatric hospitals. In 1946 and 1947, the data included patients in all types of VA hospitals and in other federal hospitals. In 1948 through 1950, coverage was reduced somewhat to eliminate duplicate counting by excluding VA patients in "other federal hospitals." The bulk of these patients were in St. Elizabeths Hospital, Washington, D.C., and are therefore included in data for state hospitals.

[4] Excludes patients in Iowa county homes. Also one hospital was transferred from city to state auspices in 1948.

As of June 30, 1950, there were 577,000 patients or 3.8 per 1,000 population resident in all hospitals for the prolonged care of the mentally ill in the United States (Table 1). In addition there were 94,000 patients on extra-mural care. These patients, although not resident in the hospital, are still under supervision of the hospital.

In a single year the movement of patients in and out of these hospitals is considerable. For example, as of July 1, 1949, there were 656,000 patients on the books and in the following twelve months there were 263,000 admissions, 188,000 discharges, and 47,000 deaths. Thus there were over 900,000 patients under the care and supervision of mental hospitals during that year. This is about equal to the combined populations of the states of New Hampshire and Vermont.

The characteristics of patients admitted for the first time to long-term hospitals, especially to the state mental hospitals, are well known. The first admission rate to the state hospitals rises from a low of 22 per 100,000 for persons under 15 years of age to 78 at 30–34 years, levels off between 80 and 90 for persons 35 to 59 years, rises to 100 at ages 60–64 years, and climbs rapidly to a high of 278 at ages 70 and over (Figure 1).

These rates also give us information about age differences in first admissions for different types of disorders. For example, in the age range 15–44 years, schizophrenia and manic-depressive psychoses predominate. During the next decade of life the involutional psychoses, general paresis, and alcoholic psychoses attain considerable importance. In the sixties, psychoses with cerebral arteriosclerosis and senile psychoses assume prominence, and these mental diseases of the senium continue to rise in frequency until the end of the life span.

About 85 per cent of the resident patients are in the state mental hospitals. One quarter of these have been hospitalized for more than sixteen years, one-half for more than eight years, and three-quarters for more than two and a half years. Although admissions of senile cases have increased greatly in the last decade, the resident population of most mental hospitals consists largely of a slowly accumulated residue of schizophrenic patients who are admitted during youth or early maturity and stay, in many cases, for the rest of their lives. The turnover of senile cases is very rapid because of their high death rate. These facts are illustrated in Tables 2 and 3 which show the percentage distribution by selected diagnoses and duration of hospitalization for patients resident in mental hospital systems of seven states at the end of 1950. The median duration of
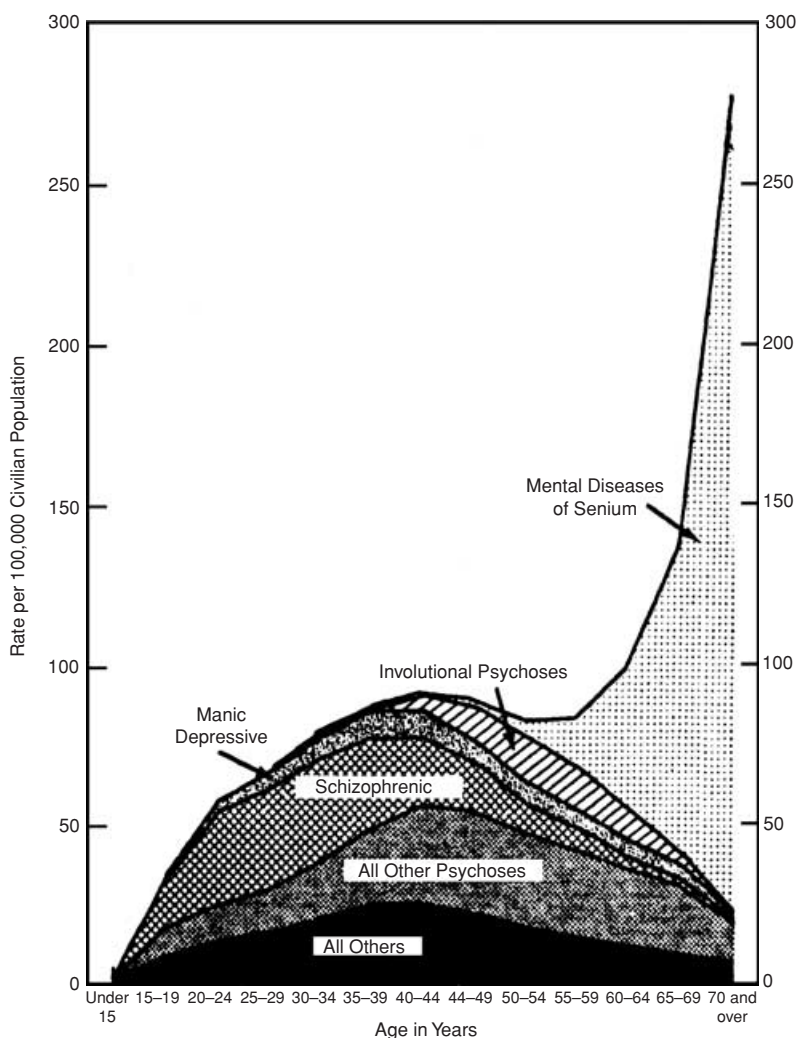
FIGURE 1. First Admission Rates for Selected Diagnoses, by Age, to State
Hospitals for Mental Disease, United States, 1949

hospitalization for schizophrenics—who constitute 47 per cent of the
resident population and about 20 per cent of first admissions—was
10.5 years while that for patients with mental diseases of the
senium—who constitute 11 per cent of the resident population and
27 per cent of first admissions—was 2.4 years.

TABLE 2

Per Cent Distribution of Length of Stay of All Resident Patients at End of Year in State Hospitals for Mental Disorder, By Mental Disorder, Selected States,[1] 1950

Mental Disorder	Total Resident Patients	Per Cent Distribution of Length of Stay (in Years)						Median (in Years)	Mean (in Years)
		Total	Under 1	1–4	5–9	10–14	15 & Over		
Total	128,982	100.0	14.2	25.5	17.5	14.4	28.4	7.9	11.1
All Psychoses	120,584	100.0	13.0	25.7	17.7	14.7	29.0	8.2	11.3
Syphilitic	9,109	100.0	10.1	29.0	24.5	18.6	17.8	7.2	9.2
Alcoholic	3,279	100.0	21.3	28.3	16.6	11.6	22.1	5.1	9.2
Mental Diseases of the Senium	14,249	100.0	26.9	48.4	14.7	6.3	3.8	2.4	4.1
Involutional	3,720	100.0	22.4	30.1	21.3	13.9	12.3	4.5	7.1
Manic–Depressive	10,574	100.0	11.1	17.8	16.5	15.2	39.4	11.5	13.9
Schizophrenic	61,201	100.0	10.0	21.5	17.1	15.8	35.6	10.5	13.1
With Mental Deficiency	6,770	100.0	7.0	20.0	18.4	17.2	37.4	11.3	13.6
Other, Undiagnosed, and Unknown	11,682	100.0	14.1	25.6	18.6	14.9	26.8	7.8	10.7
Psychoneurosis	1,345	100.0	33.7	23.5	14.0	11.5	17.3	3.5	7.3
All Other Mental Disorders	7,053	100.0	30.7	22.7	14.7	10.9	21.0	4.2	8.4
Epilepsy	288	100.0	18.7	29.9	18.7	11.5	21.2	5.4	8.8
Mental Deficiency	3,472	100.0	7.8	21.2	19.6.	16.6	34.9	10.4	13.0
Alcoholism	1,598	100.0	69.7	18.5	3.7	2.9	5.2	0.3	2.5
Other and Unclassified	1,695	100.0	42.8	28.7	14.2	6.7	7.7	1.8	4.7

[1]Data available from California, Louisiana, Michigan, Nebraska, Ohio, Pennsylvania, and Virginia. (Ohio does not include receiving hospitals.)

TABLE 3
Per Cent Distribution of All Resident Patients at End of Year in State
Hospitals for Mental Disorder, By Mental Disorder and Length of Stay,
Selected States,[1] 1950

Mental Disorder	Total Resident Patients	Per Cent Distribution by Length of Stay (in Years)				
		Under 1	1–4	5–9	10–14	15 & Over
Total Resident Patients	128,982	18,305	32,875	22,519	18,519	36,690
Total	100.0	100.0	100.0	100.0	100.0	100.0
All Psychoses	93.5	85.7	94.2	94.6	95.0	95.3
Syphilitic	7.1	5.0	8.0	9.9	9.1	4.4
Alcoholic	2.5	3.8	2.8	2.4	2.0	2.0
With Mental Diseases of the Senium	11.0	20.9	21.0	9.3	4.8	1.5
Involutional	2.9	4.6	3.4	3.5	2.8	1.2
Manic-Depressive	8.2	6.4	5.7	7.7	8.7	11.4
Schizophrenic	47.4	33.4	40.0	46.4	52.0	59.4
With Mental Deficiency	5.2	2.6	4.1	5.5	6.3	6.9
Other, Undiagnosed, and Unknown	9.1	9.0	9.1	9.7	9.4	8.5
Psychoneurosis	1.0	2.5	1.0	0.8	0.8	0.6
All Other Mental Disorders	5.5	11.8	4.9	4.6	4.1	4.0
Epilepsy	0.2	0.3	0.3	0.2	0.2	0.2
Mental Deficiency	2.7	1.5	2.2	3.0	3.1	3.3
Alcoholism	1.2	6.1	0.9	0.3	0.3	0.2
Other and Unclassified	1.3	4.0	1.5	1.1	0.6	0.4

[1]California, Louisiana, Michigan, Nebraska, Ohio, Pennsylvania, Virginia. (Ohio does not include receiving hospitals.)

There is an extensive literature on the characteristics of admissions to long-term hospitals, such as the studies of Malzburg (1) and Dayton (2). There have also been a series of ecological studies on psychoses in which admission rates to mental hospitals have been studied in relation

to various socio-economic factors. The best known of these is the study of Faris and Dunham (3) on hospitalized mental disorders in the Chicago area.

However, these studies have only scratched the surface. Much more remains to be done. I shall mention two areas in which additional studies are needed. The first has to do with admission rates to mental hospitals. The second is concerned with longitudinal studies of patients to extend our knowledge as to what happens to them during their hospitalization and following their discharge back to the community.

Studies of Admission Rates

As our mental health programs develop and, hopefully, as research turns up methods for preventing and controlling mental disorders, indices will be needed to determine whether the incidence, prevalence, and course of specific mental disorders have been altered. First admission rates, long regarded as an incidence index for the psychoses, have been used to answer questions on whether there has been an increase or decrease in the incidence of specific disorders. Such studies, however, no matter how carefully done, suffer from the limitation that the relationship existing between the number of persons hospitalized for a given disorder and the number of persons in the population with the same disorder who never reach a mental hospital is not known. Hospitalization rates are a resultant of the incidence of mental disorder and a series of factors that determine the number of persons who are eventually admitted to mental hospitals, such as: availability of mental hospital beds, availability and usage of other community resources for diagnosis and treatment of mental disorder (for example, general hospitals with psychiatric treatment services, psychiatric clinics and private psychiatrists), and public attitudes toward hospitalization. Thus, to understand more fully the distribution and course of mental illness in the population it is necessary to study hospitalization rates in relation to these factors. The solution to this problem is difficult, since it is dependent primarily upon development of practical case finding methods and standardized diagnostic procedures for detecting various mental diseases in the general population.

A project in this category is in progress in Syracuse, New York, under the direction of Dr. Ernest M. Gruenberg of the New York State Mental Health Commission (4). This study deals specifically with psychoses

associated with the aging process. These disorders are a serious problem for the mental hospitals, since the rates of admission have been increasing continuously over the years until now they constitute close to 30 per cent of first admissions. A major objective of the Syracuse project is development of case-finding methods for detecting unhospitalized persons with senile psychoses, and relating this number of cases to the number of cases actually committed. Relationships between the hospitalized and nonhospitalized senile cases will be studied according to various social and economic factors. A further step will be the development of clinical and preventive services in the community to learn what effect adequate services can have on reducing the incidence of mental illness among the older residents. The starting point for this study is the records of the admissions of residents of Onondaga County to New York State civil and licensed mental hospitals for the period 1935–1944.

Additional studies of this type are needed, taking as their starting point other major mental disorders.

Follow-Up Studies on Cohorts of Admissions to and Discharges from Mental Hospitals

The concept of the mental hospital merely as a place of custody is no longer acceptable. To make these hospitals effective in their modern role, we must learn more about the patient, what happens to him in the hospital, and what happens to him upon his return to the community.

Mental hospital populations constitute an ideal group to which to apply life-table methods for describing their hospital experience. They consist of large groups of patients hospitalized for periods of time varying from a few days to many years. Their dates of admission to and separation from the hospital (either alive or dead) are known along with other data that are routinely reported such as sex, race, birth date, diagnosis, types of therapy. Despite the availability of these kinds of data, there have been very few studies designed to answer such questions as: Of patients admitted in a given year, what proportion remain in the hospital, are on convalescent care, discharged, or dead within six months, one, two or three years following admission? How are discharge and death rates related to diagnosis, sex, race, age at admission, therapy, and other relevant factors?

To illustrate how useful the cohort method of analysis is in determining what has been happening to patients in mental hospitals over a long period of time, an attempt was made to answer the question: "What is the current experience of patients during the first year following admission in terms of the per cent remaining in the hospital, out of the hospital, or dead, within the twelve-month period following their admission? How does the current experience compare with that of some earlier period?"

The mental hospital systems of seven states were asked to follow each patient admitted for the first time in 1948 for a full twelve-month period and to determine at the end of that time how many, by diagnosis, were still in the hospital, out of the hospital, or dead. "Out of the hospital" was defined as release to convalescent care or direct discharge, whichever came first. A similar set of data were found for patients admitted for the first time to New York State civil hospital system in 1914. It is believed that these data provide a reliable base line for comparison because of the outstanding quality of care the New York State hospitals have always provided. Table 4 compares the combined experience for seven states with that of New York State in 1914. It is realized that such comparisons are rather hazardous to make, especially when rates are unadjusted for age, sex, comparability of diagnoses, and many other factors. Unfortunately more refined statistical data are unavailable so that it was not even possible to compare even one state in this series with itself over a long period of time. Nevertheless it is felt that this particular illustration is worth-while to indicate the importance of life-table methods in the study of mental hospital populations.

The data in Table 4 *suggest* that there have been important changes in the hospital experience of different types of mentally ill patients during their first year of hospitalization. To name only a few, the proportion of schizophrenic patients out of the hospital within twelve months is now 56 per cent as compared to 33 per cent in 1914. The proportion of involutional psychotics out of the hospital has increased from 35 per cent to 70 per cent and there has been a striking decrease in death rate from about 22.5 per cent to 4 per cent. On the other hand, many more patients with mental diseases of the senium (42 per cent as against 27 per cent) are in the hospital at the end of the first year, a result of the striking decrease in mortality rate (from 56 per cent to 42 per cent). These findings are all in accord with the experience of most mental hospital administrators.

This table emphasizes that a mental hospital provides care for people with a variety of disorders, each of which has its own prognosis. It also

Morton Kramer

TABLE 4

Comparison of Patient Years[1] of Care Needed within First Year of Admission, by Selected Diagnosis in 1914[2] and in 1948[3] and Estimate of Savings for First Admissions to State Hospitals, United States: 1948

Diagnosis	Per Cent						Patient Years of Care per 100 First Admissions Needed within First Year Following Admission			First Admissions to All State Hospitals 1948	Net Changes[4] in Patient Years of Care Needed within First Year, State Hospitals, 1948	Net Gain or Loss[5] in Cost of Maintenance during First Year
	Remaining in Hospital		On Trial Visit or Discharged		Died		1914	1948	Difference		$11 = 9 \times 10/100$	$12 = 11 \times \$659$
	1914	1948	1914	1948	1914	1948	(7)	(8)	$(9) = (7) - (8)$	(10)		
	(1)	(2)	(3)	(4)	(5)	(6)						
Schizophrenia	65.5	41.4	33.0	56.3	1.5	2.3	82.8	70.7	12.1	19,429	2350.9	$1,549,548.72
Involutional Psychosis	42.5	25.5	35.0	70.4	22.5	4.1	71.3	62.8	8.5	4,220	358.7	236,429.93
Alcoholic Psychosis	27.0	24.9	67.0	70.4	6.0	4.7	63.5	62.5	1.0	4,650	46.5	30,649.55
Psychosis with Mental Deficiency	46.5	44.1	47.0	51.5	6.5	4.4	73.3	72.1	1.2	2,396	28.8	18,982.94
Manic-Depressive Psychosis	20.0	21.4	70.0	75.0	10.0	3.6	60.0	60.7	−0.7	5,662	−39.6	−26,101.55
Syphilitic Psychosis	35.0	42.6	23.8	36.8	41.2	20.6	67.5	71.3	−3.8	4,817	−183.0	−120,620.79
Mental Diseases of the Senium[6]	26.5	41.8	18.0	16.5	55.5	41.7	63.3	70.9	−7.6	26,050	−1979.8	−1,304,945.57

[1] Patients discharged or dying were each credited with one-half patient year.
[2] Results based on data from New York civil state hospitals reported by H. Pollock, *Mental Disease and Social Welfare*, p. 156-169.
[3] Results based on unpublished data submitted by Arkansas, California, Louisiana, Michigan, Nebraska, Ohio, and Virginia.
[4] Where 1914 patient years needed exceeds that of 1948, the result is positive; it is negative where 1948 patient years exceed that of 1914.
[5] Based on a per capita maintenance cost in state hospitals in the United States in 1948 of $659.13.
[6] Includes psychosis with cerebral arteriosclerosis and senile psychosis.

emphasizes the need for carefully planned studies of the life histories of mental hospital patients designed to show the effects of changes in patterns of treatment and care on eventual outcome.

In this connection, it is important also to follow up patients released from the hospital. On a nation-wide basis, we have only the crudest data about discharged patients. We need information such as the following: Of patients who have been discharged, how many relapse and how soon? How are relapse rates related to diagnosis, sex, age on admission, length of hospitalization, therapy? Furthermore, we should like to know what social and environmental factors encountered by discharged patients are related to relapse or successful readjustment. Follow-up studies of patients discharged from tuberculosis sanatoria have proven very profitable in our understanding of that disease. There is no reason to suppose that such studies would be less valuable in the study of mental illness. Accurate follow-up data on discharged mental patients can serve as the basis for "discharge prediction" techniques, weighting significant factors in the patient's life history, diagnosis, clinical course in hospital, degree of improvement, and expected family and community environment. Furthermore, better understanding of relapse factors would greatly aid the development of rehabilitation programs for patients, while they are still in the hospital and later when they have returned to the community.

Summary

The hospitalized mentally ill constitute a major health problem. Large numbers of persons are involved and their disability creates a serious economic problem for themselves, their families, and society. There is a vast amount of research that must be done on the etiology, epidemiology, and treatment of mental disorders. The results of such research should lead the way to the development of more effective methods for prevention, control, treatment, and rehabilitation. Because of the complexity of the problems involved, many of the research projects must be interdisciplinary, combining the skills and knowledge of the psychiatrist, specialists in other branches of medicine, the psychologist, social scientist, the epidemiologist, and the statistician, to mention only a few. I have elaborated on only two types of studies that are needed, studies of admission rates and follow-up studies of cohorts of admissions and discharges. Others are needed, for example, studies related to the impact

of mental illness on the family—i.e.—to the ways in which the roles, attitudes, and interpersonal relations within a family change following the hospitalization of one of its members, and to the frequency with which major illnesses, both mental and others, occur in the families of the mentally ill. But time does not permit me to elaborate further. However, I hope that this discussion has emphasized my belief that mental hospitals are an important resource to be tapped for long-range studies of chronic illness.

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