

Measurement of Discontinuity of Psychiatric Inpatient Care

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CONTINUITY of psychiatric care is often said to have special virtue. What is meant by such continuity, however, needs clarification. For example, a recent publication of the National Institute of Mental Health (1) relative to community mental health centers contains these statements:

"Since the elements of the center need not be under one roof, nor even under a single sponsorship, the administration of the various components must be done in such a manner that the goal of smooth continuity of care is achieved."

"In some community centers, such as Colorado's Fort Logan State Hospital, emphasis is placed on maintaining continuity of therapists."

"Since the object is to provide a complete circle of treatment for patients at the community level . . ."

The third idea—"to provide a complete circle of treatment"—has a somber sound, and the first two suggest restless bedfellows.

The present study, in an effort to define and quantify continuity of care, at least in a negative way, determines lack of early continuity of

care among inpatients new to mental hospitals—in other words, determines the frequency of discontinuity of care.

Two measures are used. One is the rate at which all persons newly admitted to psychiatric inpatient care had a second inpatient experience in a psychiatric facility other than the facility of initial entry. The second is confined to those patients who had another admission. The first measure gives an estimate of the risk of discontinuity of psychiatric inpatient care, while the second describes the pattern of discontinuity when it occurs.

Clearly, even if a patient resumes treatment in the same hospital, there are definitions of discontinuity of care with which the regimen might conform. For example, in the same hospital the second episode might involve different caretaking personnel and a different immediate physical environment. It is presumed here, however, that a different hospital does commonly result in some type of discontinuity and that the measures proposed provide minimum estimates of its frequency. Quantitative studies by others bearing directly on continuity or discontinuity of psychiatric inpatient care were not found.

Material

The data derive from the 7,982 patients 15 or more years of age with a Massachusetts address who were first admitted to a universe of 29 Massachusetts mental hospitals during the year

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October 1, 1958–September 30, 1959. Among them were 2,264 patients who had a second admission within 3 years of the date of beginning their first. For 1,314 patients, the second admission was in the same hospital as the first; for 950, it was in a different one. Among the 950, were 384 who transferred to the second hospital on the day of leaving the first and 566 who entered the second hospital after a lapse of time. Thus, there were 1,880 patients (1,314 plus 566) whose second admission was not by transfer from the first hospital.

Assurance that a hospitalization was the patient's first admission was gained by search of the central files of the Massachusetts Department of Mental Health, which contain information on admissions and discharges of individual patients back to the year 1889. Ascertainment of the second admission was made in the same files. The 29 mental hospitals included the 17 public hospitals (13 State and 4 Veterans Administration) and the 12 private hospitals licensed by the department. Public hospitals subsume State and Veterans Administration facilities, and private hospitals include both proprietary and nonprofit hospitals throughout the paper. The diagnoses used are those reported by the first hospital.

Findings

Risk of discontinuity for all new inpatients. Table 1 shows risks of discontinuity of inpatient care according to the type of the first mental hospital and shows the interval between exit from the first hospital and entry into the second. The denominators are the numbers of new inpatients. The numerators are the patients who had a second hospitalization in a hospital not the same as the first. Within the 3 years of observation, new inpatients had a 4.8 percent chance of moving directly to another mental hospital by transfer and a 7.1 percent chance of later discontinuity. The total risk of discontinuity during the 3 years was 11.9 percent. For patients first entering private hospitals, the risk (14.9 percent) was significantly greater than that for patients first entering public hospitals (10.6 percent). The excess of discontinuity among patients whose first hospital was a private one was due to the very high risk of discontinuity (11.0 percent) among those with second admissions after a lapse of time. The chance of trans-

fer for initially private patients (3.9 percent) was significantly lower than for patients whose first hospital was public (5.2 percent).

More than half the risk of transfer for patients whose first hospital was public may have resulted from administrative practices. By regulation, persons resident in Boston for less than 12 years, even if they first came to inpatient care in the large State hospital located there, were not eligible for continued care in that hospital. In addition, all State hospitals were urged to transfer newly admitted ex-servicemen promptly to Veterans Administration facilities. With these two practices taken into account, the risk of discontinuity by transfer for patients beginning their inpatient experience in public mental hospitals became 1.9 percent instead of 5.2 percent—less than the 3.9 percent for patients first entering private hospitals—and the total risk of discontinuity by transfer dropped from 4.8 to 2.6 percent.

Table 2 presents the type of the patient's second hospital in relation to the type of the first. The risk of transfer of patients between public hospitals (4.6 percent) was much larger than that between private hospitals (0.7 percent). When allowance is made for the administrative practices of the State hospitals, the risk for patients first entering public hospitals is reduced from 4.6 to 1.2 percent, a rate close

Table 1. Risk of discontinuity of inpatient care in mental hospitals among new inpatients: type of first hospital and interval between exit from first and entry into second

Interval	Rates (in percent) of discontinuity among patients whose first hospital was—			P
	Public (N=5,653)	Private (N=2,329)	Total (N=7,982)	
Transferred same day	5.2	3.9	4.8	<0.020 <.001
1 day to 3 years	5.4	11.0	7.1	
Total	10.6	14.9	11.9	<.001

NOTE: P values are from chi-squared tests, 1 degree of freedom.

Table 2. Risk of discontinuity of inpatient care in mental hospitals among new inpatients: type of second hospital in relation to first and the interval between exit from first and entry into second

Second hospital and interval	Rates (in percent) of discontinuity among patients whose first hospital was—		P
	Public (N=5,653)	Private (N=2,329)	
Same type as first:			
Same day, by transfer-----	4.6	0.7	< 0.001
1 day to 3 years-----	4.2	4.1	
Other type than first:			
Same day, by transfer-----	.6	3.2	< .001
1 day to 3 years-----	1.2	6.9	< .001
Total with second elsewhere-----	10.6 (N=602)	14.9 (N=348)	< .001

NOTE: P values are from chi-squared tests, 1 degree of freedom.

to the 0.7 percent for initially private patients. The later discontinuity between hospitals of the same type was almost identical for public and private patients (4.2 for public and 4.1 percent for private).

Discontinuity between the two types of hospital, rather than within a given type of hospital

shows a uniform direction in table 2. The chances of private patients going next to a public hospital, either by transfer or later in the 3 years (3.2 and 6.9 percent), were significantly greater than those of public patients next entering a private hospital (0.6 and 1.2 percent). The uniform excess of private patients going next to public hospitals, then, accounts for their overall higher discontinuity (14.9 percent compared with 10.6 for the initially public patients).

Patients with a second hospitalization. The findings which follow are restricted to patterns of discontinuity among new inpatients who also had a second, separate hospitalization. The denominators used to form percents of discontinuity include both the numbers of patients with first and second hospitalizations at the same hospital and the numbers with the second hospitalization at a different hospital—that is, all patients with two separate hospitalizations. The numerators are patients with their second episode of inpatient care at a hospital other than the first. Transfers are excluded so as to remove from consideration the influence of the administrative practices cited earlier.

Patterns of discontinuity among patients having two separate hospitalizations are found in table 3. The patients are arranged by type of first hospital and the interval between exit from bed occupancy in the first hospital and entrance into the second. The rows of the table show that for each interval, patients whose first hos-

Table 3. Discontinuity of inpatient care in mental hospitals among patients having a second, separate hospitalization: type of first hospital and interval between exit from first and entry into second

Interval	Type of first hospital						P
	Number of patients			Percent of patients with discontinuity			
	Public	Private	Total	Public	Private	Total	
1-365 days-----	767	497	1,264	26.2	34.2	29.4	< 0.010
1 to 2 years-----	298	118	416	25.8	41.5	30.3	< .010
2 to 3 years-----	118	82	200	26.3	46.3	34.5	< .010
Total-----	1,183	697	1,880	26.1	36.9	30.1	< .001
P-----				0.99-0.98	0.10-0.05	0.50-0.30	

NOTE: Transfers are excluded. P values are from chi-squared tests; 1 degree of freedom for rows, 2 for columns.

pital was private had significantly more discontinuity than patients first entering public mental hospitals (P values less than 0.010). The columns, however, show that the interval between exit and second admission had no statistically significant relation to discontinuity, either for initially public or for initially private patients. For all patients having two separate hospitalizations, the proportion with discontinuity of hospital was 30.1 percent.

Table 4 shows the relation between discontinuity and the psychiatric diagnosis as determined at the first hospital. From the columns of the table, it is evident that the frequency of discontinuity between diagnostic groups was not homogeneous, either for patients first entering public mental hospitals or for patients first entering private ones. Among persons entering inpatient psychiatric care by way of a public hospital, patients with other personality disorders and other psychoneuroses had a high proportion of discontinuity (37.2 percent), and those with senile and cerebral arteriosclerotic brain syndromes and other brain syndromes had low proportions (14.5 and 18.8 percent). Patients entering care through a private hospital, however, had remarkably high proportions of discontinuity in the senile and cerebral arteriosclerotic brain syndromes group (76.9 percent) and in the other brain syndromes group (91.7 percent).

The rows of the table show a consistently higher proportion of discontinuity among patients whose first hospital was private than among those first hospitalized in a public institution. In four of the six diagnostic groups, the higher percent of discontinuity among patients entering by way of private hospitals is statistically significant. The rationale for arranging the diagnoses into the six groups shown may be found elsewhere (2).

Table 5 presents data on a degree of discontinuity of psychiatric inpatient care which may be viewed as extreme. To be counted as having discontinuity of this kind, a patient whose first episode of care took place in a public mental hospital must have had the second hospitalization in a private hospital, and a patient who was first in a private hospital must have had the second hospitalization in a public one. Changes in the type of hospital effected by transfer are excluded.

Within the columns of the table, one finds that the frequency of change in type of hospital differed between diagnostic categories, both for patients who were initially in public hospitals and for those initially in private ones. Among the patients who had first been in public hospitals, change in type of hospital was excessively frequent for those with alcoholic disorders (10.5 percent) and infrequent for those with schizophrenia (3.4 percent), senile and cerebral

Table 4. Discontinuity of inpatient care in mental hospitals among patients having a second, separate hospitalization: diagnosis and the type of first hospital

Diagnosis at first hospital	Type of first hospital				P
	Number of patients		Percent of patients with discontinuity		
	Public	Private	Public	Private	
Affective psychoses and psychoneuroses.....	206	279	20.3	35.1	< 0.001
Alcoholism and alcoholic brain syndromes.....	238	227	25.6	32.6	.20-.10
Schizophrenic reactions.....	323	109	22.9	35.8	< .010
Senile and cerebral arteriosclerotic brain syndromes....	62	13	14.5	76.9	< .001
Other brain syndromes.....	48	12	18.8	91.7	< .001
Other personality disorders and psychoneuroses.....	306	57	37.2	43.9	.50-.30
All diagnoses.....	1, 183	697	26.1	36.9	< .001
P			< .001	< .001	-----

NOTE: Transfers are excluded. P values are from chi-squared tests; 1 degree of freedom for rows, 5 for columns; in rows, Yates' correction was used when an expected number was less than 10.

Table 5. Discontinuity of inpatient care by change in type of mental hospitals among patients having a second, separate hospitalization: diagnosis and the type of first and second hospital

Diagnosis at first hospital	Number of patients and type of first hospital		Percent of patients with change in type from—		P
	Public	Private	Public to private	Private to public	
Affective psychoses and psychoneuroses.....	206	279	8.7	19.0	<.010
Alcoholism and alcoholic brain syndromes.....	238	227	10.5	22.9	<.001
Schizophrenic reactions.....	323	109	3.4	26.6	<.001
Senile and cerebral arteriosclerotic brain syndromes....	62	13	1.6	53.8	<.001
Other brain syndromes.....	48	12	0	41.7	<.001
Other personality disorders and psychoneuroses.....	306	57	6.2	15.8	<.050
All diagnoses.....	1, 183	697	6.2	22.2	<.001
P.....			<.010	<.050	

NOTE: Transfers are excluded. P values are from chi-squared tests; 1 degree of freedom for rows, 5 for columns; in rows, Yates' correction was used when an expected number was less than 10.

arteriosclerotic brain syndromes (1.6 percent), and other brain syndromes (0 percent). Among patients initially in private hospitals, change in type of hospital was especially common for those with senile and cerebral arteriosclerotic brain syndromes (53.8 percent) and for those with other brain syndromes (41.7 percent).

The rows of the table show that an excess of change in type of hospital among patients entering through private hospitals was present for each of the six diagnostic groups and that the excess is statistically significant in every instance. The absolute difference was exceedingly large for patients in three diagnostic categories—schizophrenia (26.6 percent for private hospital patients compared with 3.4 for public), senile and cerebral arteriosclerotic brain syndromes (53.8 percent compared with 1.6), and other brain syndromes (41.7 percent compared with 0).

Discussion

Two of the findings merit particular attention. First—and possibly not limited to Massachusetts—administrative practices can have considerable influence on continuity of psychiatric inpatient care. Removal of the requirement of long-term Boston residence as a requisite for continuing an episode of inpatient care in the large Boston State hospital of initial admission

and reversal of the policy of promptly sending ex-servicemen first entering State mental hospitals to Veterans Administration facilities could have substantially reduced the discontinuity of inpatient care resulting from transfer between public mental hospitals.

Second, there were consistently higher rates of change by transfer and after a lapse of time from private to public mental hospitals compared with the rates of change by transfer from public to private. Here, economic considerations are an obvious explanation. If the illness of a patient requires long-term care or if the financial capacities of a household are on the wane, the size of the weekly bills presented by private mental hospitals must often force a change from the private mental hospital to the public. In support of this line of thought, the two diagnostic categories in which patients had the greatest excess of change from private to public hospitals were schizophrenia and senile and cerebral arteriosclerotic brain syndromes (table 5). Patients with schizophrenia are well known for having protracted incapacity, while those with senile and cerebral arteriosclerotic brain syndromes are commonly well past middle life, an age after which the median annual income progressively declines (3).

The data presented do not cast light on whether continuity of therapist or of physical

environment is, or is not, of greater benefit to patients than discontinuity. The methods do, however, provide a means for determining whether an increase in the number of community mental health centers—an increase expected soon—has an influence on the continuity of inpatient care.

Summary

Rates of discontinuity of inpatient care are presented for 7,982 patients new to Massachusetts mental hospitals. During a 3-year follow-up, 11.9 percent of the patients had a second mental hospital experience in a hospital other than the first, 4.8 percent by transfer and 7.1 percent not by transfer. Administrative practices of the State hospitals appeared to account for almost half of the rate of transfer.

Among 1,880 patients who had two separate

hospitalizations (transfers having been excluded), 30.1 percent had their second hospitalization in a different hospital. The change from private to public mental hospitals uniformly exceeded that from public to private. This differential was especially marked for patients with schizophrenia and those with senile and cerebral arteriosclerotic brain syndromes.

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Computers To Detect Neurological Disease

The National Center for Chronic Disease Control, Public Health Service, is developing a computer system that will pick up inaudible speech changes in persons with early neurological disease, before other symptoms are evident, and will give an immediate warning of their condition. The system is scheduled to be ready for use in multiphasic disease-detection programs in 3 years.

The first phases of the project are being carried out under the National Center's Neurological and Sensory Disease Control Program contract by the Cleveland Hearing and Speech Center, an affiliate of Western Reserve University, Cleveland, Ohio.

Researchers at the speech center are studying the speech characteristics of persons with diagnosed neurological disorders, such as Parkinson's disease and cerebral arteriosclerosis. They hope to determine, over a period of more than 2 years, what speech characteristics, such

as rate of speech, stress, inflectional pattern, and intensity are affected by which diseases.

When the speech center has selected the most significant speech changes produced by the various neurological diseases, it will be possible to "build" these changes into existing electronic equipment capable of detecting them in speech before they are audible to the human ear.

The most immediate application of the technique will be in multiphasic disease-detection programs. Persons undergoing physical examinations will have their speech recorded on magnetic tape, which will be fed into a special-purpose computer. The computer will analyze the complex speech signal, break it down to its most significant components, and return a printed diagnosis within 10 seconds.

Only electronic analysis can spot the pathological speech changes of neurological disease at such an early stage in the disease process.