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Prediction of hospitalization within a psychiatric community care system – a five-year study

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Summary. Within a comprehensive community care system, we examined which patients became hospitalized during long-term treatment. We studied 60 consecutively admitted, and mainly chronic psychotic patients over 5 years. Full and partial hospitalizations were assessed by means of a hospitalization index. This index was significantly lower in the 2nd to 5th years after admission than in the 1st year. Sociodemographic and clinical characteristics failed to predict hospitalizations during the 1st year. Patients' age, gender and last occupational status were related to hospitalizations in the following 4 years. A better prediction of hospitalizations was allowed by treatment data obtained during the 1st year. It is suggested that long-term prognosis should be based mainly upon experience with a patient in a given care system, rather than on a patient's history and characteristics as known before treatment.

The psychiatric deinstitutionalization movement has been aiming at minimizing hospitalizations and at maximizing periods in which the patient is as independent from institutional care as possible. Chronic psychotic patients in particular should be enabled to live outside psychiatric hospitals, supported by a comprehensive care system (Häfner and van der Heiden 1983). However, experience shows that some patients still require hospitalization during long-term treatment in community care. Research into relapses has recently focused upon "frequent users of in-patient services" (Casper and Donaldson 1990). From that research it is concluded that "a high number of previous admissions is the only factor that correlates with a patient's tendency to return to the hospital" (Rosenblatt and Mayer 1974). Yet studies in this field are difficult to interpret, because usually little information is given about out-patient services. Few studies have been carried out in areas with a comprehensive community care system and with consideration for how patients use treatment settings other than in-patient services. Observation periods of 1, 2, (Lavik 1983; Tansella et al. 1986), or 5 years (Blumenthal et al. 1988) were used. In community care, reduction of in-patient treatment may be gained by a disproportional increase in partial hospitalizations (Bolm et al. 1989).

Processes similar to the "revolving door" in hospitals are likely to develop in partial hospitalization programmes. Therefore, analyses of hospitalization periods should also consider periods spent in day and night clinics.

In this study, long-term patient careers were evaluated in a comprehensive community care system, a model institution built up by the Department of Social Psychiatry at the Freie Universität, Berlin. The catchment area is a central district of Berlin (Berlin-Charlottenburg) and has 180000 inhabitants. The system provides long-term treatment for patients who are between 18 and 65 years of age and have severe psychiatric disorders. It includes three partial hospitalization programmes (a day hospital, a therapeutic printing shop for vacational rehabilitation, and a night clinic), a day-care centre with a long-term care programme, a drop-in centre, single and group community living apartments, and an out-patient clinic. In-patient care is provided in cooporation with psychiatric hospitals. The institutions are linked by one multiprofessional team. Continuity of care is guaranteed by a clinical case management programme in order to meet the needs of chronic patients (Intagliata 1982; Harris and Bachrach 1988). Each patient has two case managers: a psychiatrist and a social worker, who follow the patient's pathway through the institutional network and are in charge of therapeutic decisions.

Three questions were the subject of this study:

A. In the initial stage of treatment in our community care system (1st year), are frequency and length of hospitalizations, including partial hospitalizations, different from those in subsequent years (2nd–5th years)?

B. Can sociodemographic variables or data from patients' histories predict hospitalizations during the 1st or the following 4 years of treatment?

C. Can treatment characteristics from the 1st year predict hospitalizations in the subsequent 4 years?

Table 1. Hospitalization index (HI) and periods of hospitalization for the 1st year and the 2nd–5th years after admission to the community care system

	HI 1st year	HI 2nd–5th years		
	Mean	Mean	*t*-value	*P*
HI	0.97	0.46	6.46	< 0.001[a]
Full hospitalization (days per year)	33.3	26.9	0.88	NS
Partial hospitalization (days per year)	126.1	43.5	6.41	< 0.001

[a] All *t*-tests were two-tailed; NS, not significant

Materials and methods

We examined 60 patients who were consecutively admitted to our community care system and who were continuously treated for at least 5 years after admission. There were no other inclusion criteria.

Hospitalizations were assessed using a "hospitalization index" (HI) reflecting degree and length of hospitalizations. The HI – a modification of indices used by Lavik (1983) and Tansella et al. (1986) – includes both periods of full and periods of partial hospitalization (total number of days of full hospitalization multiplied by 3, plus days of partial hospitalization multiplied by 2 and divided by the total number of days in the observation period). The HI was calculated for two observation periods: for the 1st year following admission to the community care system and for the subsequent 4 years.

Sociodemographic variables (age, gender, marital and family status, professional qualifications, occupational status, adequacy of last occupation in relation to qualification, economic situation, and accommodation), data from clinical history (duration of illness, number of previous hospital admissions, total length of previous in-patient treatment, and quality of previous out-patient treatment) and characteristics of treatment during the 1st year (frequency and duration of sessions with case managers, frequency of home visits, of contacts with other therapeutic and non-therapeutic institutions and of contacts with relatives, full and partial hospitalizations within the 1st year, occupational status and accommodation after 1 year, and psychiatric diagnosis) were tested as predictors.

Results

We examined 34 women and 26 men. Their ages ranged from 20 to 55 years (mean = 35). According to ICD-9, 73% were diagnosed as schizophrenics, 19% had other psychotic disorders and 8% had non-psychotic disorders. On average, the duration of illness was 7.5 years (range = 0–36), and the frequency of previous hospital admissions was 3.9 (range = 0–13). All but two patients had been referred from mental hospitals to the community care system. The patients included 23% who were married, and in 40%, a clear deterioration in the social situation had occurred because of the illness.

HIs and periods of full and partial hospitalization for the 1st year and the subsequent 4 years are shown in Table 1. During the 1st year, patients spent, on average, approximately 1 month in full (range = 9–246 days) and 4 months in partial hospitalization (range = 0–365 days). In the subsequent 4 years the mean periods of partial hospitalization were reduced to approximately 6 weeks per year (range 0–277 days). Periods of in-patient treatment did not significantly change. During those 4 years, 20 patients received no in-patient treatment, and 9 of them were treated only in out-patient facilities with no partial hospitalization. Owing to the reduction in partial hospitalizations, the HI was clearly lower in the 2nd to 5th years than in the 1st year.

None of the sociodemographic or clinical variables tested allowed significant prediction of the HI in the 1st year, although younger patients tended to have higher HIs during this time. However, three of the variables known at admission were significantly related to the HI in the subsequent 4 years: women, older patients, and those patients whose last occupation was adequate to – and not below – their qualifications, had significantly lower HIs during that time. Table 2 summarizes how patients' age, gender, last occupational status and frequency of hospital admissions, as well as total length of previous in-patient treatment, were related to HIs in the first and the subsequent 4 years.

As shown in Table 3, some characteristics of the 1st year of treatment within the community care system turned out to be good predictors of hospitalizations during the 2nd to 5th years.

Patients' HIs were lower in subsequent years when case managers did the following: spent less time with the

Table 2. Patient characteristics predicting HI for the 1st and 2nd–5th years after admission to the community care system

	HI 1st year			HI 2nd–5th year		
	Mean	*t*-value	*P*	Mean	*t*-value	*P*
Gender female/male	0.84/1.14	1.63	NS	0.34/0.61	2.07	< 0.05
Last occupation below qualification yes/no	1.19/0.95	0.98	NS	0.96/0.38	3.73	< 0.001
	r		*P*	*r*		*P*
Age	–0.24		< 0.07	–0.34		< 0.01
Frequency of previous hospital admissions	–0.13		NS	–0.18		NS
Total length of previous in-patient treatment	0.09		NS	0.11		NS

r, Pearson correlation coefficient

Table 3. Treatment data from the 1st year predicting the HI for 2nd–5th years of treatment within the community care system

	HI 2nd to 5th year		
	Mean	*t*-value	*P*
Occupational functioning after 1 year working/not working	0.27/0.69	3.07	< 0.01
Contacts with non-therapeutic institutions during the 1st year no/yes	0.34/0.75	2.92	< 0.01
	r		*P*
Time spent on therapeutic activities within 3 weeks of admission	0.32		< 0.05
Frequency of contacts with significant others within the 1st year	0.28		< 0.09
HI in the 1st year	0.55		< 0.001
Partial hospitalization within the 1st year (days)	0.40		< 0.01
Full hospitalization within the 1st year (days)	0.31		< 0.05

patients during the first 3 weeks after admission; had fewer contacts with patients' significant others in the 1st year; and did not contact non-therapeutic institutions on behalf of the patients during the 1st year. While frequency or length of hospitalizations prior to admission to our community care system had no predictive value for future hospitalizations, the HI in the 1st year of treatment allowed a prognosis to be made for further hospitalizations in the same care system. Moreover, the patients' working situation after 1 year of treatment was found to predict hospitalizations in the 2nd to 5th years fairly well. Patients working at that time – regardless of the sort of job they were doing – had significantly lower HIs in subsequent years.

A multiple regression analysis with the HI during the 2nd to 5th years of treatment as a dependent variable was calculated including all predictors. Owing to the small size of the sample and to intercorrelations among predictors of up to $r = 0.49$, results were not reliable. However, a tendency for the HI in the 1st year to allow the best prediction of further hospitalizations was seen. Inclusion of more predictors did not significantly improve this prediction.

Discussion

We assessed the length of partial and full hospitalizations within a community care system by means of a hospitalization index (HI). The HI during the 2nd to 5th years was clearly lower than in the 1st year. This difference seems to justify our research design, with a distinction between those two periods of time. The HI in the 1st year was relatively high and could not be predicted from data in patients' history. This may be partly explained by a sort of "standard care" that many patients receive in the initial stage of treatment within the community care system, regardless of individual differences. This standard care includes a period of partial hospitalization at first, to allow patients to warm to their case managers, diagnostic procedures, and planning of long-term rehabilitation goals and treatment methods. Only hospitalizations during long-term treatment (2nd–5th years) could be significantly predicted from patients' characteristics at admission. An important predictor was age. Older patients had distinctly shorter hospitalization times. This was not due to a better prognosis in patients with a longer duration of illness, since this variable had no predictive value for hospitalizations.

The best predictors of long-term outcome were treatment data from the 1st year and even from the first 3 weeks. It may seem surprising that more intense therapeutic activity of case managers with patients themselves, with significant others and with other institutions were related to more hospitalizations in the following years. In some patients an over-involvement of case managers might even be harmful and lead to an unfavourable outcome. In most cases it would presumably be the other way round: patients who turn out to be difficult in the long term are difficult in the beginning and require more input from case managers. It remains questionable whether such intensified therapeutic activity has any effect on the long-term outcome.

Prediction of hospitalization in long-term treatment remains difficult for any individual patient. However, initial therapeutic success within our system – as indicated by a low HI in the 1st year and the fact that a patient is working after 1 year – was associated with further success in long-term treatment.

Conclusions

Since the HI during the 2nd to 5th years was significantly lower than that in the 1st year and predictable in a different way, studies evaluating treatment within a comprehensive community care system should always examine periods that are considerably longer than just 1 year. A distinction between the initial and later stages of long-term treatment seems to be useful for studies of this kind.

In contrast to the findings of Rosenblatt and Mayer (1974), previous hospitalizations and other clinical data known at admission did not predict hospitalizations during treatment within the community care system. Our results suggest that therapeutic success gained under different treatment conditions, does not allow a prognosis for treatment in a community care system. However, the HI in the 1st year of treatment in community care was significantly predictive of the HI in the subsequent 4 years. It may be concluded that Rosenblatt and Mayer's finding – that past hospitalizations predict further hospitalizations – only applies when the treatment system is held constant.

When patients are admitted to community care, prognosis should be based on experiences gained in therapeutic interaction with the patient in the given system rather than on an assessment of the patients' history prior to admission. Thus, more attention should be paid to this initial interaction, to the activities of case managers, and to initial therapeutic success. Treatment settings may have to be modified, particularly for those patients who require

more therapeutic intervention and have more frequent or longer hospitalizations during the 1st year.

References

Blumenthal F, Bell V, Neumann NU, Schüttler R, Vogel R (1988) Die Wiedereinweisung ersthospitalisierter psychiatrischer Patienten - Verlauf und prädiktive Einflüsse nach fünf Jahren. Psychiatr Prax 15: 96–101

Bolm W, Bosch G, Lehmkuhl D (1989) Zur Reduktion vollstationärer Behandlung durch ein System teilstationärer, ambulanter und komplementärer Dienste. Psychiatr Prax 16: 199–206

Casper ES, Donaldson W (1990) Subgroups in the population of frequent users of in-patient services. Hosp Community Psychiatry 41: 189–191

Häfner H, Heiden W van der (1983) The impact of a changing system of care on patterns of utilisation by schizophrenics. Soc Psychiatry 18: 153–160

Harris M, Bachrach LL (eds) (1988) Clinical case management. New Directions of Mental Health Services, 40

Intagliata J (1982) Improving the quality of community care for the chronically mentally disabled: The role of case management. Schizophr Bull 8: 655–674

Lavik NJ (1983) Utilisation of mental health services over a given period. Acta Psychiatr Scand 67: 404–413

Rosenblatt A, Mayer JE (1974) The recidivism of mental patients: a review of past studies. Am J Orthopsychiatry 44: 697–706

Tansella M, Micciolo R, Balestrieri M, Gavioli I (1986) High and long-term users of the mental health services. Soc Psychiatry 21: 96–103

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