British Journal of Psychiatry (1989), **154**, 396–399

Lithium Prophylaxis and Expressed Emotion*

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Expressed emotion (EE) in key relatives of 21 patients with bipolar affective or schizoaffective psychoses was assessed by the CFI. All patients had been on prophylactic lithium for at least three years and were without psychotic symptoms at interview. The relationship between relatives' EE status and patients' course of illness was studied both retrospectively and prospectively. Two critical remarks designated high EE. The relatives' EE status was not related to number of hospital admissions or to severity and length of recurrences if the entire period of lithium treatment is considered as a whole. However, patients living with high-EE relatives showed a significantly poorer response during the three years before interview, and an even poorer response in the nine-month follow-up.

The key relatives' expressed emotion (EE) as assessed by the Camberwell Family Interview (CFI) was originally found to predict the relapse rate in schizophrenia (Brown *et al*, 1972; Leff & Vaughn, 1980; Falloon *et al*, 1984; Vaughn *et al*, 1984; Hooley, 1985; Hogarty *et al*, 1986). Further studies showed EE to predict the course of neurotic depression (Leff & Vaughn, 1980), major depression (Hooley, 1986; Hooley *et al*, 1986), and recent-onset mania (Miklowitz *et al*, 1987). In the depressive samples, the cut-off point in frequency of critical remarks for defining high EE was lowered from the usual six to two or three respectively.

The theoretical implications and the clinical value of the so-called EE construct still remain disputed (Koenigsberg & Handley, 1986; Hatfield *et al*, 1987; Kanter *et al*, 1987). In schizophrenia, prophylactic medication has been suggested to be particularly helpful for patients living with high-EE relatives in reducing the relapse rate during nine-month follow-up, while patients living with low-EE relatives would benefit from longer prophylaxis, of two years (Leff & Vaughn, 1981). Social interventions in such families have been shown to reduce both EE in relatives and relapse rate in patients (Leff *et al*, 1982; Falloon *et al*, 1982, 1985; Hogarty *et al*, 1986).

We studied a sample of patients with bipolar affective and schizoaffective psychoses, who had already been on lithium for at least three years. Prophylactic lithium leads to an overall reduction of frequency and severity of relapses in affective psychosis (Angst *et al*, 1970; Prien *et al*, 1984; Smulevitch *et al*, 1974), but even in patients who may be regarded as responders, protection is not always complete. This study investigated whether and in what way EE could affect response to lithium. We examined the relationship of the relatives' EE to the course of illness, both retrospectively and prospectively.

Method

In 1967, a special lithium clinic was established in this department. From this clinic we selected all patients with the diagnosis of bipolar affective or schizoaffective psychosis who had been on lithium continuously for at least three years, were free of any psychotic symptoms presently, and lived closely with a key relative. Of 34 such patients, six refused to take part in the study, and the relatives of a further seven were either reluctant to be interviewed or unavailable. These 13 patients not included in the sample did not differ significantly from those studied in sex, age, diagnosis, or duration of lithium treatment. All 21 patients studied had only one 'key relative': those 21 relatives comprised 16 spouses, two mothers, two sons, and a fellow nun of the patient.

All interviews were administered by the same interviewer (CW) in our department, and were rated by the same rater (SP) (who was trained and found sufficiently reliable by C. Vaughn in London). The rater was blind to the clinical features of the patients at the time of the rating and had no involvement in treatment. The course of illness was assessed by the frequency of hospital admissions and, in a more complex way, by a modification of the 'morbidity index', originally proposed by Coppen *et al* (1973), and widely used in longitudinal lithium research. Two different morbidity indices referring to severity and length of relapses were used. 'Morbidity index 1' is based upon hospital admissions only (number of days spent in hospital multiplied by three and divided by number of all days of prophylactic lithium treatment). 'Morbidity index 2' includes recurrences not resulting in admission (morbidity index 1 plus all days on which the psychiatrist notices symptoms of depression or hypomania, and/or an additional temporary antidepressive or neuroleptic medication is given, multiplied by two and divided by number of prophylactic treatment days). The two morbidity

*The findings presented here are part of the thesis of CW.

TABLE I

Age, duration of lithium treatment, mean serum levels throughout three years before CFI, and amount of face-to-face contact with key relatives per week for patients living with low- or high-EE relatives

	Patients living with low-EE relatives (n = 10)[1]		*Patients living with high-EE relatives (n = 11)*[2]	
	Mean	*s.d.*	*Mean*	*s.d.*
Age: years	45.2	7.2	50.1	7.4
Duration of lithium treatment: years	8.6	5.6	12.5	4.4
Mean serum levels of lithium: mmol/l	0.77	0.08	0.83	0.16
Face-to-face contact per week: hours	36.8	14.3	40.5	10.1

No significant differences between groups.
1. Eight women, two men.
2. Six women, five men (NS).

indices were calculated retrospectively for the whole time of lithium treatment, for three years and one year before the CFI, and prospectively for the nine months following interview. During that period, clinicians did not know either the content of CFIs or EE ratings. Patients continued to be treated in the usual way.

Results

The mean age of the 21 patients (14 female, 7 male) was 48 years (range: 37–61, s.d. = 7.5). In 18 patients, the diagnosis was bipolar affective psychosis, and in three, schizoaffective psychosis according to ICD-9 classification (World Health Organization, 1978). The patients had been on prophylactic lithium continuously for 3–19 years, on average for 10 years. The serum levels throughout the three years before interview varied between 0.51 and 1.10 mmol/l. A sufficient compliance to medication can be assumed for all these patients during that time.

In CFI, nine relatives made no critical remark, one relative made one critical remark, and four relatives made two critical comments. Four and seven critical remarks were each expressed by two relatives, and nine, 11, and 12 remarks by one relative each. Three relatives had a score of one or more on the hostility scale, and two (both mothers) scored three or more on the overinvolvement scale. The weekly face-to-face contact was 39 h on average (range 10–60 h).

Since we did not know beforehand how many critical remarks should classify a relative as high EE, we decided to take the median as first cut-off point. The ten relatives with no or one critical remark were allocated to low-EE status, and the 11 with two or more critical remarks to high-EE status. All relatives who scored on the hostility scale or had a score of three or more on the overinvolvement scale, were assigned to the second group, so that those scales did not need to be used for classifying a relative as high EE.

Table I shows that the basic characteristics of patients living with low- or high-relatives did not significantly differ. In Table II, frequency of hospital admissions and morbidity indices before the interview are summarised.

The number of hospitalised recurrences and morbidity indices for the whole period of lithium treatment do not differ significantly. Thus patients living with high-EE relatives had not had a more unfavourable course from first illness. However, for the three- and one-year periods before CFI, differences are apparent, although only the difference in morbidity index 2 for three years reaches statistical significance, being more than two times higher in patients living with high-EE relatives.

Table III shows morbidity indices and hospital admissions in the two groups of patients during a nine-month follow-up. The fourth row shows how many patients in each group had a morbidity index 2 of zero, indicating no recurrence of psychotic symptoms and no additional temporary medication during the nine months.

The difference between the two groups in morbidity indices are more obvious prospectively than retrospectively: morbidity index 2 is more than eight times higher in patients living with high-EE relatives. Of patients living with low-EE relatives, 70% remained free of any psychotic symptoms and did not need additional medication, while only 18% of patients living with high-EE relatives did.

If one changes the cut-off point in critical remarks for definition of high EE stepwise, morbidity indices are always higher in patients living with high-EE relatives. However, retrospectively, that difference reaches statistical significance only when one takes two critical remarks as threshold. Prospectively, the picture is slightly different. If one allocates all relatives with any critical remark to high-EE status, an even better prediction of course of illness during follow-up is possible. This is because the only patient living with a relative who made one critical remark was admitted for a recurrency. There was some evidence that this patient, like another one who also relapsed, had terminated lithium treatment some weeks before the relapse. Otherwise, the compliance during follow-up was thought to be satisfactory, according to serum levels, which are controlled seven to eight times per year on average. The number of face-to-face contacts per week was not related to morbidity indices retrospectively, nor could it contribute to the prediction of morbidity indices prospectively.

Discussion

The frequency of critical remarks in general, and subsequently the cut-off point for high-EE classification, seem to be comparatively low. This may be due to a consistent bias in rating or to general changes of critical attitudes during a mostly successful long-term treatment (Volk & Müller-Oerlinghausen, 1988). It should be taken into account that the EE index was introduced to assess a relative's attitude during or immediately after an acute episode of the patients' illness, and that its predictive value has been on this basis. If relatives of schizophrenic patients are reinterviewed nine

TABLE II

Frequency of hospital admissions and morbidity indices for whole period of lithium treatment, and three years and one year before CFI for patients living with low- or high-EE relatives

	Patients living with low-EE relatives (n = 10)	*Patients living with high-EE relatives (n = 11)*	
Whole period of lithium treatment: means ± s.d.			
No. of hospital admissions	3.9 ± 2.5	4.0 ± 2.4	NS
Morbidity:			
index 1	0.10 ± 0.07	0.07 ± 0.05	NS
index 2	0.15 ± 0.12	0.16 ± 0.08	NS
Three years before CFI			
Hospital admissions: yes/no	2/8	4/7	NS
Morbidity: means ± s.d.			
index 1	0.04 ± 0.07	0.06 ± 0.11	
index 2	0.10 ± 0.13	0.27 ± 0.21	$P<0.05$ ($t=2.25$; d.f. = 19)[1]
One year before CFI			
Hospital admissions: yes/no	0/10	1/10	NS
Morbidity: means ± s.d.			
index 1	0.00 ± 0.00	0.04 ± 0.12	NS
index 2	0.06 ± 0.11	0.22 ± 0.25	NS ($t=1.89$; d.f. = 19; $P<0.10$)[1]

1. All *t*-tests were two-tailed.

TABLE III

Hospital admissions and morbidity indices during nine-month follow-up for patients living with low- or high-EE relatives

	Patients living with low-EE relatives (n = 10)	*Patients living with high-EE relatives (n = 11)*	
Hospital admissions: yes/no	1/9	4/7	NS
Morbidity: means ± s.d.			
index 1	0.01 ± 0.04	0.15 ± 0.21	NS ($t=1.90$; d.f. = 19; $P<0.10$)[1]
index 2	0.04 ± 0.06	0.34 ± 0.20	$P<0.001$[1] ($t=4.62$; d.f. = 19)
Morbidity index 2 equal to or higher than zero	7/3	2/9	$P<0.05$[2]

1. All *t*-tests were two-tailed.
2. Fisher's exact test.

months later, while patients are in remission, they have been found to be less critical, and about 30% change from high- to low-EE status (Brown *et al*, 1972). In our study, relatives were interviewed while patients were free of symptoms. This may account for the low frequency of critical remarks and, therefore, the impact of very few critical remarks is likely to be different from in the original studies.

There is no generally accepted definition of 'response' towards lithium prophylaxis. However, most patients in this sample should be regarded as full or partial lithium responders–in absolute non-responders, lithium treatment would have been terminated after three years. Nevertheless, their key relatives' EE is obviously related to the course of illness. While patients living with high-EE relatives show higher morbidity indices, i.e. a poorer response in the immediate past, they are not simply more severely ill over the total period of lithium treatment, nor do they differ in basic clinical characteristics. Nevertheless, their risk of relapse is higher within the next nine months. Prospectively, EE is more closely related to relapses than retrospectively. This difference suggests a causal relationship between interactional patterns in the patients' families as indicated by EE and the course of illness.

This sample was highly selective and fairly small, and so the results cannot be generalised. A conclusion for prophylactic treatment of bipolar affective disorders might be that social interventions in the families at least of those patients living with high-EE relatives and being classified as only partial

responders, should be added to lithium medication. However, what form those interventions should take, and whether experiences with therapeutic interventions in the families of schizophrenic patients can be transferred, still remain open questions.

References

ANGST, J., WEIS, P., GROF, P., *et al* (1970) Lithium prophylaxis in recurrent affective disorders. *British Journal of Psychiatry*, **116**, 604–614.

BROWN, G. W., BIRLEY, J. L. T. & WING, J. K. (1972) Influence of family life on the course of schizophrenic disorders: a replication. *British Journal of Psychiatry*, **121**, 241–258.

COPPEN, A., PEET, M., BAILEY, J., *et al* (1973) Double-blind and open prospective studies of lithium prophylaxis in affective disorders. *Psychiatry, Neurology and Neurosurgery*, **76**, 501–510.

FALLOON, I. R. H., BOYD, J. L., MCGILL, C. W., *et al* (1982) Family management in the prevention of exacerbations of schizophrenia. *New England Journal of Medicine*, **306**, 1437–1440.

——, —— & —— (1984) *Family Care of Schizophrenia*. New York: Guilford Press.

——, ——, ——, *et al* (1985) Family management in the prevention of morbidity in schizophrenia: clinical outcome of a two-year longitudinal study. *Archives of General Psychiatry*, **42**, 887–896.

HATFIELD, A. B., SPANIOL, L. & ZIPPLE, A. M. (1987) Expressed emotion: a family perspective. *Schizophrenia Bulletin*, **13**, 221–226.

HOGARTY, G. E. (1984) Depot neuroleptics: the relevance of psychosocial factors – a United States perspective. *Journal of Clinical Psychiatry*, **45**, 36–42.

——, ANDERSON, C. M., REISS, D. J., *et al* (1986) Family psychoeducation, social skills training, and maintenance chemotherapy in the aftercare treatment of schizophrenia. *Archives of General Psychiatry*, **43**, 633–642.

HOOLEY, J. M. (1985) Expressed emotion: a review of the critical literature. *Clinical Psychology Review*, **5**, 119–139.

—— (1986) Expressed emotion in depression: interactions between patients and high- vs. low-expressed emotion spouses. *Journal of Abnormal Psychology*, **95**, 237–246.

——, ORLEY, J. & TEASDALE, J. D. (1986) Levels of expressed emotion and relapse in depressed patients. *British Journal of Psychiatry*, **148**, 642–647.

KANTER, J., LAMP, H. R. & LOEPER, C. (1987) Expressed emotion in families: a critical review. *Hospital and Community Psychiatry*, **38**, 374–380.

KOENIGSBERG, H. W. & HANDLEY, R. (1986) Expressed emotion: from predictive index to clinical construct. *American Journal of Psychiatry*, **143**, 1361–1373.

LEFF, J. & VAUGHN, C. (1980) The interaction of life events and relatives' expressed emotion in schizophrenia and depressive neuroses. *British Journal of Psychiatry*, **136**, 146–153.

—— & —— (1981) The role of maintenance therapy and relatives' expressed emotion in relapse of schizophrenia: a 2-year follow-up. *British Journal of Psychiatry*, **139**, 102–104.

——, KUIPERS, L., BERKOWITZ, R., *et al* (1982) A controlled trial of social intervention in the families of schizophrenic patients. *British Journal of Psychiatry*, **141**, 121–134.

MIKLOWITZ, D. J., GOLDSTEIN, M. J., NUECHTERLEIN, K. H., *et al* (1987) The family and the course of recent/onset mania. In *Understanding of Major Mental Disorder. The Contribution of Family Interaction Research* (eds K. Hahlweg & M. J. Goldstein), pp 195–211. New York: Family Process Press.

PRIEN, R. F., KUPFER, D. J., MANSKY, P. A., *et al* (1984) Drug therapy in the prevention of recurrences in unipolar and bipolar affective disorders. *Archives of General Psychiatry*, **41**, 1096–1104.

SMULEVITCH, A. B., ZAVIDOVSKAYA, G. I., IGONIN, A. K., *et al* (1974) The effectiveness of lithium in affective and schizoaffective psychoses. *British Journal of Psychiatry*, **125**, 65–72.

VAUGHN, C. E., SNYDER, K. S., JONES, S., *et al* (1984) Family factors in schizophrenic relapse. *Archives of General Psychiatry*, **41**, 1169–1177.

VOLK, J. & MÜLLER-OERLINGHAUSEN, B. (1988) Quality of interepisodic periods in manic–depressive patients under long-term lithium treatment. *Pharmacopsychiatry*, **21**, 426–427.

WORLD HEALTH ORGANIZATION (1978) *Mental Disorders: Glossary and Guide to their Classification in Accordance with the Ninth Revision of the International Classification of Diseases* (ICD-9). Geneva: WHO.

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