ORIGINAL ARTICLE

A Program for Relapse Prevention in Schizophrenia

A Controlled Study

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Background: This study examined whether a program for relapse prevention (PRP) is more effective than treatment as usual (TAU) in reducing relapse and rehospitalization rates among outpatients with schizophrenia.

Methods: Eighty-two outpatients with *DSM-III-R* schizophrenia or schizoaffective disorder were randomly assigned to receive either PRP (experimental group, n = 41) or TAU (control group, n = 41) and were followed up for an 18-month prospective controlled study. Patients in both groups were prescribed standard doses of maintenance antipsychotic medication. Treatment with PRP consisted of a combination of psychoeducation, active monitoring for prodromal symptoms with clinical intervention when such symptoms occurred, weekly group therapy for patients, and multifamily groups. The TAU consisted of biweekly individual supportive therapy and medication management.

Results: Outcome rates over 18 months were 17% for relapse (7 patients) and 22% for rehospitalization (9 patients) in the PRP group, compared with 34% for relapse (14 patients) and 39% for rehospitalization (16 patients) in the TAU group ($P = .01$ and $P = .03$, respectively). Addition of age, sex, baseline Global Assessment Scale score, Positive and Negative Syndrome Scale scores (3 measures), and substance abuse to the proportional hazards regression models all yielded nonsignificant effects. The PRP teams were much more likely than the TAU psychiatrists to identify prodromal episodes before patients met objective relapse criteria or needed hospitalization.

Conclusions: The PRP was effective in detecting prodromal symptoms of relapse early in an episode. Crisis intervention including increased antipsychotic medication use during the prodromal phase reduced relapse and rehospitalization rates.

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SCHIZOPHRENIA is a chronic disorder usually characterized by relapses alternating with periods of full or partial remission. Although antipsychotic medication is effective in reducing relapse rates, 30% to 40% of patients relapse within 1 year after hospital discharge even if they are receiving maintenance medication.[1-3] Combining maintenance antipsychotic medication therapy with psychosocial approaches has been found to be more effective than pharmacotherapy alone in delaying or preventing relapse and/or reducing hospital days.[4-10]

It has been postulated that early intervention, consisting of close monitoring for prodromal symptoms and prompt clinical intervention with antipsychotic medication when they appear, would be effective in preventing relapse in schizophrenic outpatients.[11-14] This concept was first applied to determine whether early intervention for patients discontinued from maintenance antipsychotic medication (intermittent or targeted medication) would be as effective as maintenance medication therapy in prevention of relapse and/or hospitalization.[15-19] Results showed that maintenance medication therapy was superior to intermittent medication therapy for relapse prevention in most patients. However, there is some evidence that early intervention is effective in reducing relapse rates if patients are not taking antipsychotic medication. Relapse rates for patients receiving placebo in intermittent drug studies averaged 50% over 2 years compared with a relapse rate of 75% for patients receiving placebo in conventional drug placebo studies.[20]

A study of treatment with low-dose antipsychotic medication[21] found a significant advantage of supplementary oral fluphenazine hydrochloride over placebo at the appearance of prodromal symptoms in forestalling psychotic exacerba-

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SUBJECTS AND METHODS

SUBJECTS

An 18-month, prospective, controlled study was conducted at the Strong Ties Community Support Program of the University of Rochester Department of Psychiatry, which has a service area with a population of 750 000 in Monroe County, New York. Inclusion criteria were (1) age 19 to 60 years; (2) a diagnosis of schizophrenia or schizoaffective disorder based on an interview using the Structured Clinical Interview for *DSM-III-R*[24]; and (3) increased risk for relapse, defined as having at least 1 hospitalization within the past 3 years and 2 or more lifetime hospital admissions. Exclusion criteria were (1) evidence of organic mental disorder or mental retardation and (2) severe drug or alcohol dependence that required inpatient treatment and/or detoxification.

PROCEDURES

After identifying eligible patients through reviews of the medical records, therapists were asked to approve their recruitment into the study. If the therapist agreed, patients were approached, with almost all agreeing to participate. After a complete description of the study to each subject, written informed consent was obtained. By use of computer-generated cards stored in sealed envelopes, patients who met inclusion criteria and no exclusion criteria were randomly assigned to 1 of 2 treatment groups: the PRP (experimental) group (n = 41) or the TAU (control) group (n = 41). All but 2 patients were prescribed standard doses (300-1000 mg chlorpromazine equivalents)[10] of maintenance antipsychotic medication. One patient was prescribed less than a standard dose because of neuroleptic side effects, and a second patient was prescribed more than a standard dose because he was relatively neuroleptic refractory. Treatment teams for both PRP and TAU patients consisted of a psychiatrist, a master's-level nurse clinician or certified social worker, and a case manager. Different treatment teams were assigned to PRP and TAU patients to avoid contamination of the treatments.

In addition to standard doses of antipsychotic medication, the PRP treatment consisted of 5 components: (1) education for patients and family members about the process of relapse in schizophrenia and how to recognize prodromal symptoms and behaviors; (2) active monitoring for prodromal symptoms by treatment team members, patients, family members, and others in frequent contact with the patient; (3) clinical intervention, within 24 to 48 hours, when prodromal episodes were detected, with increased frequency of crisis problem solving, supportive therapy visits, and increased medication as needed; (4) 1-hour weekly supportive group therapy emphasizing improving coping skills or 30- to 45-minute individual supportive therapy sessions if patients refused group treatment; and (5) 90-minute multifamily psychoeducation groups that family members were encouraged to attend biweekly for 6 months and monthly thereafter.[5]

Treatment as usual (control) consisted of individual supportive therapy and medication management biweekly for 15 to 30 minutes. This is a higher frequency of treatment visits than is usual in many treatment settings. Control group treatment teams were instructed to provide their usual treatment approaches. Treatment in both groups was provided by a therapist in collaboration with the team psychiatrist. Cases were reviewed weekly in treatment team meetings. Case management services and meetings with individual families were provided for both groups on an as-needed basis. Assertive outreach (eg, home visits) was available for both groups when indicated. Fidelity of the treatment in both groups was monitored monthly by the project coordinator.

Psychiatrists for both groups were instructed to notify the research interviewers as soon as they noted that a patient was demonstrating early signs of relapse so that the interviewers could rate patients on the Positive and Negative Syndrome Scale (PANSS) and Global Assessment Scale (GAS). Psychiatrists for the TAU group were told to use their usual clinical judgment in making that decision, while PRP group psychiatrists and other team members received instruction about prodromal symptoms and the relapse process at the inception of the study. In addition, therapists for the PRP group monitored patients weekly for the emergence of prodromal symptoms using a shortened version of the Early Signs Questionnaire.[25] The Early Signs Questionnaire was administered to all patients at the beginning of each therapy group or individual therapy session. Psychiatrists for the PRP group patients had general guidelines for declaring a prodromal episode based on any of the following: a severe worsening of dysphoric symptoms, the emergence of mild psychotic symptoms, and/or a patient demonstrating behaviors that signaled previous relapses. The term "prodromal episode" is used in a broad sense, and includes severe nonpsychotic dysphoric symptoms and/or mild exacerbation of psychotic symptoms. When prodromal symptoms were

tions in well-stabilized patients. This was especially true during the second year of the study after clinicians were better able to recognize prodromal symptoms in their patients. That study did not report relapse and rehospitalization rates.

To our knowledge, there have been no controlled studies of outpatients with schizophrenia, maintained on a regimen of standard doses of antipsychotic medication, that compare an early intervention treatment strategy with usual care.

The program for relapse prevention (PRP, experimental group) combines standard doses of maintenance antipsychotic medication[10] with the same psychosocial treatment that was used in the Intermittent Medication Study,[17] which resulted in the lowest relapse rate (30%) after 2 years for placebo-treated patients of all intermittent drug studies. In addition to early intervention during the prodromal phase, PRP includes weekly group therapy for patients, because it was considered important to see them frequently to monitor prodromal symptoms in a cost-effective manner. Group therapy is probably at least as effective and perhaps more effective than individual therapy for many patients with schizophrenia in preventing relapse and rehospitalization.[22,23] The multifamily group component is included in the PRP because of evidence that multifamily group

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detected in an PRP group patient, the daily dose of antipsychotic medication was usually increased by approximately 20%. This dose was subsequently titrated according to the clinical needs of the patient, and reduced to the original maintenance dose 3 to 4 weeks after the return of symptoms to baseline.

MEASURES

The following baseline measurements reported in this article were obtained from patients and from family members who agreed to be interviewed: the Structured Clinical Interview for *DSM-III-R* (SCID)[24]; demographic data and illness history; the GAS rating[26]; the PANSS[27]; and the Early Signs Questionnaire,[11] which obtains patients' and significant others' perceptions of early symptoms and behaviors associated with prior relapses.

The Early Signs Questionnaire, PANSS, and GAS were administered at baseline, and at 2, 6, 12, and 18 months, and at each prodromal episode. Assessments were done by research interviewers who were master's-level mental health professionals, blinded as to patient group assignment, not associated with clinical care, and instructed not to inquire about a patient's treatment during interviews. The raters had prior experience using the rating scales. They were retested for reliability at study inception and at monthly intervals during the study to minimize drift in the ratings. Initial interrater reliability correlation coefficients between raters 1 and 2 were as follows: $r = 0.80$ for the GAS and PANSS-negative, $r = 0.89$ for the PANSS-general, and $r = 0.94$ for the PANSS-positive. A third rater was added later in the study with similar reliability of ratings.

The operational definition of relapse for the data analyses was based on PANSS and GAS ratings by research interviewers, generally made within 24 hours after being notified by the psychiatrist that a patient was demonstrating early signs of relapse. Date of relapse is recorded as the date of the research evaluation. Operational criteria for relapse were defined as an increase in any PANSS-positive psychotic symptom score to moderately severe or higher (≥ 5) and a GAS score of 30 or less. Patients remained in the study whether or not they relapsed or were rehospitalized and whether or not they were compliant with treatment. Attempts to maintain contact were made by telephone and/or home visits if patients did not appear for clinic visits.

Compliance was measured by therapists using a questionnaire with a 5-point scale (1 = always and 5 = never) designed for this purpose. Noncompliance was conservatively defined as a rating of 5 (never taking antipsychotic medication).

Patient outcomes for initial episodes were divided into 3 mutually exclusive categories. Patients who were stable throughout the follow-up were coded as "stable, with no episodes." Patients who had an identified prodromal episode that was either concurrent with or followed by relapse were coded as "relapse episode." That outcome was considered to represent a failure of the early identification program, since the extra assessment and treatment time failed to avert relapse. Finally, patients who were identified as having a prodromal episode that did not eventuate in relapse were coded as "prodromal only with no relapse." An increase in the number of prodromal only outcomes in the PRP treatment relative to relapse episode outcomes would represent a success of the PRP. An increase in prodromal only outcomes at the expense of stable outcomes would indicate false-positives or unnecessary intervention with patients who otherwise would have remained stable.

STATISTICAL ANALYSES

Equivalence of PRP and TAU groups at baseline was tested using P^2 tests for categorical variables. Equal-variance *t* tests were used to evaluate differences between groups in PANSS and GAS scores at initial episode. Relapse and rehospitalization outcomes were analyzed using proportional hazards survival regression models (Cox models: SAS PHREG; SAS Institute, Cary, NC) that included the PRP group and a dichotomous indicator variable for medication compliance. Additional survival regression analyses also included several descriptive-demographic measures (age, sex, history of substance abuse) and several measures of clinical status at baseline (GAS and 3 summary scales from the PANSS). Comparison of outcome categories was accomplished using polychotomous logistic regression (BMDP PR; BMDP Statistical Software Inc, Los Angeles, Calif). To examine outcomes for the first episode (stable, prodromal only, or relapse), prodromal only outcomes served as the reference category, yielding estimated odds ratios for each of the other 2 outcomes as a function of treatment group and compliance. As in ordinary logistic regression, the 2 sets of regression outputs (one for each of the other outcome categories) yield estimates of regression parameters divided by their SEs that can be viewed (approximately) as standard normal deviates (z, with 1.96 being the 2-tailed $P = .05$ level). The criterion for considering results stastistically significant was at $\alpha = .05$ (2-tailed).

therapy is at least as effective as individual family treatment in preventing relapse and rehospitalization,[5] and is more cost-effective.

The present study compares the effectiveness of PRP with treatment as usual (TAU, control group) in preventing relapse and rehospitalization in schizophrenic outpatients who are maintained on a regimen of standard doses of antipsychotic medication.

RESULTS

There were no statistically significant differences in baseline sociodemographic variables (**Table 1**). Baseline PANSS ratings were also comparable, but the mean GAS score was somewhat lower in the TAU group at baseline (TAU group = 43.1 vs PRP group = 48.2; $t_{79} = 1.99$, $P = .05$). Although that might suggest a better prognosis in the PRP group, the opposite bias results from the fact that a significantly greater percentage of TAU patients were receiving decanoate antipsychotic medication at baseline (27% vs 12%; $\chi^2_1 = 4.0$, $P = .05$), ensuring medication compliance. However, neither baseline GAS score nor receiving decanoate antipsychotic medication predicted outcome (relapse and/or rehospitalization). The actual total number of outpatient contacts over the 18-month study period were as follows: TAU group indi-

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vidual visits, 924; PRP group individual visits, 1049; and 876 group visits. Attrition rates after 18 months were low in both groups, with 12% of PRP and 15% of TAU patients not completing the study ($\chi^2_1 = 0.10$, $P = .75$). Two TAU patients and 7 PRP patients were noncompliant with maintenance antipsychotic medication and psychosocial treatment throughout the study.

RELAPSE AND REHOSPITALIZATION OUTCOMES

Outcome rates over 18 months were 17% for relapse (7 patients) and 22% for rehospitalization (9 patients) in the 41 patients in the PRP group, compared with 34% for relapse (14 patients) and 39% for rehospitalization (16 patients) in the 41 patients in the TAU group ($P = .01$ and $P = .03$, respectively). Treatment group assignment and medication compliance were significant predictors of both outcome variables in the proportional hazards survival regression analyses. **Table 2** presents the overall (likelihood ratio) χ^2 value for each model, the separate regression parameters (and SEs), significance levels, and the estimated risk (odds) ratios associated with being in the TAU group and being noncompliant with medication treatment. Assignment to TAU increased the risk of rehospitalization and relapse on the order of 3- to 4-fold (see relapse survival curves in the **Figure**). Noncompliance with medication treatment was an even more powerful risk factor than treatment assignment for relapse and rehospitalization outcomes, but estimation of the risk ratios associated with that variable was compromised somewhat by the relatively small numbers of noncompliant patients in both groups. Both of the 2 noncompliant TAU patients (100%), and 4 (57%) of the 7 PRP patients relapsed and were hospitalized. Addition of age, sex, substance abuse, and GAS and PANSS (3 separate summary measures: general, positive and negative symptoms) scores at baseline all yielded nonsignificant effects.

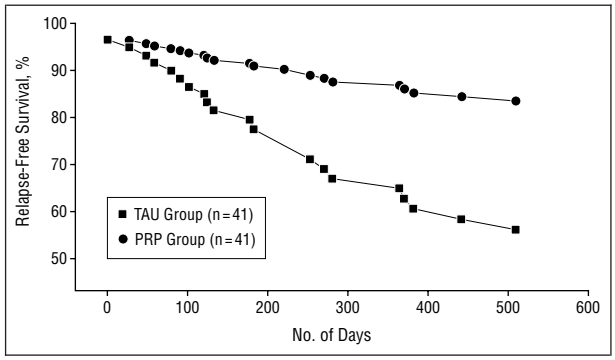
Table 1. Baseline Comparisons*

Variable	PRP Group (n = 41)	TAU Group (n = 41)	Test	P
Age, mean (SD), y	33.3 (8.8)	26 (9.3)	$t_{80} = 1.01$	.31
Male sex, No. (%)	27 (66)	26 (63)	$\chi^2_1 = 0.05$	.82
Ethnicity, No. (%)			$\chi^2_2 = 1.41$	.49
White	27 (66)	25 (61)		
African American	10 (24)	14 (34)		
Other	4 (10)	2 (5)		
Marital status, No. (%)			$\chi^2_2 = 2.25$	.33
Never married	34 (83)	30 (73)		
Married	2 (5)	1 (2)		
Other	5 (12)	10 (24)		
Education, No. (%)			$\chi^2_1 = 0.61$	.44
High school or less	23 (56)	19 (46)		
Some college	18 (44)	22 (54)		
Employment, No. (%)			$\chi^2_2 = 0.99$	.61
Full-time	3 (7)	2 (5)		
Part-time	4 (10)	2 (5)		
Unemployed	34 (83)	37 (90)		
Previous hospitalizations, mean (SD) No.	2.27 (1.29)	2.64 (1.28)	$t_{78} = 1.29$	.20
Baseline clinical status, mean (SD) score				
GAS	48.2 (12.0)	43.1 (10.7)	$t_{79} = 1.99$	.05
PANSS-general	2.36 (0.54)	2.39 (0.60)	$t_{79} = 0.29$	.77
PANSS-positive	2.50 (0.91)	2.50 (0.79)	$t_{79} = 0.01$	.99
PANSS-negative	2.56 (0.97)	2.61 (0.98)	$t_{79} = 0.22$	.82

*PRP indicates program for relapse prevention; TAU, treatment as usual; GAS, Global Assessment Scale; and PANSS, Positive and Negative Syndrome Scale.

EARLY DETECTION OF THE ONSET OF THE RELAPSE PROCESS BY PRP TEAMS

A key issue for the PRP group was whether prodromal symptoms heralding impending relapse could be detected early. Such detection is necessary to trigger a clinical intervention that could prevent a progression to full relapse. When the earliest symptoms of the relapse process were first detected in this study, 7 (35%) of 20 patients in the TAU group had already met our criteria for full relapse (GAS scores ≤30 and any PANSS-positive symptom ≥5), while only 1 (4%) of 24 PRP patients' episodes met full relapse criteria ($P^2_1 = 6.97$, $P = .008$). Furthermore, when these episodes



Relapse-free survival curves for the program for relapse prevention (PRP) and treatment as usual (TAU) groups. Cox proportional hazards regression $\chi^2_1 = 6.43$, P = .01. Survival functions are estimated at sample mean compliance rate (89%).

Table 2. Cox (Proportional Hazards) Regression Models for Relapse and Rehospitalization*

Outcome	Independent Variable	β (SE)	Risk Ratio	χ^2†	P
Relapse	PRP (n = 41) vs TAU (n = 41)	1.30 (0.51)	3.7	6.43	.01
	Medication compliance	2.17 (0.55)	8.7	15.25	<.001
	Overall model	. . .	. . .	15.28	<.001
Rehospitalization	PRP (n = 41) vs TAU (n = 41)	1.00 (0.45)	2.7	4.84	.03
	Medication compliance	1.69 (0.52)	5.4	10.52	.001
	Overall model	. . .	. . .	10.85	.004

*PRP indicates program for relapse prevention; TAU, treatment as usual.
†Note that df = 1 for independent variables; df = 2 for tests of overall model. Both independent variables were dichotomies coded 1, 0.

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were first detected, 8 (40%) of 20 TAU patients but only 2 (8%) of 24 PRP patients were already hospitalized (P^2_1 = 6.23, P = .01). Control group treatment teams were usually surprised that their patients had decompensated and had been hospitalized. The need for hospitalization was determined by staff members in the hospital emergency department. They made independent judgments and were not connected with the study. It should be noted that 1 PRP and 1 TAU patient were hospitalized because of major depressive episodes and did not meet our criteria for psychotic relapse.

Psychiatrists treating the PRP patients attempted to intervene early in the process of relapse, during the prodromal phase. Prior to initiating the study, the question arose whether they might declare episodes too frequently, resulting in false-positive episodes. Since early intervention usually involves increasing doses of antipsychotic medication at each episode, numerous false-positives could result in PRP patients receiving too much antipsychotic medication.

According to **Table 3**, for the first episode relative to the TAU patients, many more PRP patients were coded as prodromal only, with corresponding decreases in the incidence of relapse and stable outcomes. Treatment with PRP was associated with increased rates of prodromal only outcomes at the expense of stable outcomes with an estimated odds ratio of 4.7 (z = 2.66, P = .008, 95% confidence interval = 1.5-14.5). These presumably represent false-positives. However, there was an even larger increase in prodromal only outcomes relative to relapse episodes, with an estimated odds ratio of 50.9 (z = 3.42, P<.001, 95% confidence interval = 5.3-484.9). Both of the odds ratios were significant. This analysis suggests that PRP's balance of successful early intervention to false-positives is a favorable one, particularly since the cost of relapse is probably greater in most cases than the cost of extra attention in both financial and human terms.

Regarding the use of antipsychotic medications, when measured at baseline and 18 months, the average daily dose of antipsychotic medication in chlorpromazine equivalents actually decreased for PRP patients from 665 mg to 425 mg but remained the same for TAU patients, from 557 mg to 559 mg. This decrease in medication use was significantly greater for the PRP than for the TAU group (t_{70} = 2.01, P = .05, 2-tailed).

TREATMENT PARTICIPATION

Regarding the percentage of patients and families receiving different treatment modalities, 59% of PRP patients attended patient groups while 41% preferred individual therapy. There was no difference in relapse rates between patients seen individually and those treated in groups. Only 29% of PRP patients' families actually attended multifamily groups. It is of interest that only 1 patient from these families relapsed and was hospitalized, even though one half of these patients experienced at least 1 prodromal episode. That result is not statistically significant since the absolute numbers are small. Single family sessions on an as-needed basis were used by 65% of PRP group families compared with 54% of TAU group families (χ^2_1 = 0.88, P = .35).

Table 3. Outcome Categories: First Episode*

	Outcome Categories, No. (%) of Patients		
Treatment	Stable	Prodrome Only	Relapse
PRP (n = 41)	17 (41)	21 (51)	3 (7)
TAU (n = 41)	21 (51)	6 (15)	14 (34)

*PRP indicates program for relapse prevention; TAU, treatment as usual.

COMMENT

This was a controlled study of a program for relapse prevention over an 18-month period for a representative sample of outpatients with schizophrenia maintained on therapy with standard doses of antipsychotic medications. It should be noted that inclusion criteria were broad to reflect the population of individuals with schizophrenia being treated in the community. For example, substance abusers and patients with histories of treatment noncompliance were not excluded. Furthermore, there had to be at least 1 hospitalization in the past 3 years and 2 or more lifetime hospitalizations. Patients were retained in the study whether or not they were treatment compliant. The program includes several key components: maintenance pharmacotherapy, close monitoring for prodromal symptoms with prompt clinical intervention when they are detected, weekly outpatient groups (or individual therapy if a patient refused group participation), and multifamily groups.

Results showed that monitoring for prodromal symptoms with the use of crisis supportive problem-solving therapy and increasing antipsychotic medication doses as indicated when such symptoms were detected were effective in reducing the rates of relapse and rehospitalization in schizophrenic outpatients. Optimal monitoring for prodromal symptoms involves frequent and regular evaluations and active partnership with the patient, family members, and other persons in contact with the patient. The TAU group had more frequent visits than is typical in most clinical settings. Even so, when TAU group episodes were first detected, 35% of patients had already relapsed compared with only 4% relapsed in the PRP group. Since the time between the onset of prodromal symptoms and relapse can be less than 1 week in some cases, we recommend weekly monitoring initially during the first year with later adjustments in frequency of visits based on clinical judgment on a case-by-case basis. Group therapy is a clinically effective and cost-effective treatment for this purpose.

We made the decision to attempt to treat all patients who entered the study whether or not they were compliant with treatment, believing that some clinical contact was better than none. Attempts to engage these noncompliant individuals in any treatment including antipsychotic medication were unsuccessful despite many outreach attempts. Generally, they denied illness and need for treatment and had little or no contact with family mem-

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bers. As a result, these patients had a high likelihood of relapse.

Only 29% of PRP patients and their families were involved in multifamily groups. One of these patients relapsed and was hospitalized, even though 50% had at least 1 prodromal episode. Family members who attended multifamily groups were most cooperative in collaborating with the treatment team, and patients benefited from this involvement. It appears that the major therapeutic effect of these family members was to help patients identify prodromal symptoms and offer support when they occurred since there was no difference in the number of prodromal episodes for patients whose families participated and those whose families did not. We believe that attempts to engage families and others in close contact with patients in the treatment process should be carried out routinely. Multifamily groups using the McFarlane[5] model have been found to be clinically effective as well as cost-effective. It is important to note that 71% of PRP patients had no family, were alienated from their families, or lacked involvement with them and thus lacked that social support system. The number of families that participated in individual family sessions on an as-needed basis, usually in times of crisis, was approximately equal in both groups.

Possible limitations in evaluating the results of this study should be recognized. First, the core component of close monitoring for prodromal symptoms on a weekly basis with prompt clinical intervention when they appeared was effective in detecting these symptoms earlier and thus reducing relapse rates in PRP patients. However, it is not clear how essential other components of the program were in relapse prevention such as weekly patient groups and multifamily groups. Second, blindness of research interviewers to treatment group could not be completely assured since the study was not placebo controlled, with the possibility that research interviewers favored the PRP group. However, since there was regular monthly recalibration of their ratings on the PANSS and GAS, this seems unlikely. Third, the TAU was actually more frequent (sessions every 2 weeks) than in most treatment settings, thus favoring a more positive outcome for the control group as compared with usual treatment in the community. Fourth, while contamination of treatment was a possibility, ie, the TAU treatment teams would act more like the PRP treatment teams over time, this did not appear to occur, since there was close monitoring for treatment adherence by the project coordinator.

Some investigators[28,29] have questioned the clinical value of monitoring for prodromal symptoms with prompt clinical intervention when they occurred since it could lead to many false-positives. On the other hand, studies have shown that relapse is almost always preceded by prodromal symptoms and behaviors.[11,30-37] In the present study, the small number of increased false-positives in the PRP group was more than outweighed by the greatly reduced PRP relapse rate, thus supporting those who have argued in favor of frequent and regular monitoring for prodromal symptoms.[11,12,38,39]

Treatment with PRP can easily be adapted for use in outpatient clinics and community mental health centers. It is not meant to replace other treatment and rehabilitative programs that may be indicated in the course of a patient's treatment and rehabilitation. In fact, such programs as social skills training could be flexibly integrated into PRP treatment.

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