

# Psychiatrist and Patient Responses to Suspected Medication Nonadherence in Schizophrenia Spectrum Disorders

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**Objective:** Long-term results in schizophrenia treatment continue to be unsatisfactory, with many patients nonadherent to treatment and relapsing frequently. This study aimed to examine how perceived nonadherence leads psychiatrists to implement adherence-enhancing measures and to identify barriers and facilitators for the implementation of adherence-enhancing measures. **Methods:** A cross-sectional survey was conducted with German hospital psychiatrists and their inpatients who had a diagnosis of schizophrenia or schizoaffective disorder. **Results:** Interviews were conducted with 121 psychiatrists or resident psychiatrists and their 213 inpatients. Psychiatrists recognized nonadherence as an important factor for hospital admission only when directly asked about it. Psychiatrists implemented a plethora of adherence interventions that in many cases constituted only intensive talks and no structured interventions. Of four core interventions addressed in the survey—depot administration of medication, psychoeducation for patients, psychoeducation for relatives, and arrangement of first follow-up visit—the implementation rates were surprisingly high for depot prescription of antipsychotics (>30%) and psychoeducation for patients but dramatically low for arrangement of follow-up visits and psychoeducation for relatives. Patients with poor previous adherence (according to the physician's estimate) received more adherence measures. In addition, patients with involuntary admission were more likely to receive depot medications, and psychoeducation was more often implemented for younger patients and for patients at university hospitals. **Conclusions:** Treatment nonadherence is often underestimated by psychiatrists. Obstacles to the implementation of adherence-enhancing interventions occur in routine daily care. Integrated-care programs addressing adherence issues, communication between inpatient and outpatient treatment, implementation of adherence measures, and better involvement of patients in clinical decisions may help to overcome these barriers. (*Psychiatric Services* 65: 881–887, 2014; doi: 10.1176/appi.ps.201300322)

Long-term results in schizophrenia treatment continue to be unsatisfactory, with many patients relapsing soon after hospital discharge (1,2), and up to 50% of patients readmitted within 18 months of discharge (3). The main reason for the high rates of relapse and hospital readmission is nonadherence to long-term antipsychotic medication. The literature suggests that up to 70% of patients with schizophrenia do not fully comply with their antipsychotic prescription (partial nonadherence) or generally refuse to take antipsychotic medication (absolute nonadherence) (4). Reasons for nonadherence vary but most often concern lack of insight about the disorder, medication side effects, and irregular drug intake because of complicated drug regimens or financial burden (5).

The World Health Organization (6) and many other experts regard nonadherence as one of the most important problems in health care. What makes the problem worse is the fact that the magnitude of nonadherence is very much underestimated by clinicians and other stakeholders (2). This underestimation is one of the reasons why many adherence-improving interventions (such as psychoeducation and depot medication) are rarely implemented and financed in regular care. Scientific evidence shows that significant improvements in medication adherence can be achieved if multimodal adherence-improving measures are implemented (including, for example,

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organizational, psychosocial, and behavioral interventions, as well as an increased use of depot medication). Important interventions in schizophrenia treatment include enhancement of the interface between inpatient and outpatient treatment (7), a thorough implementation of psychoeducation (8), and more widespread use of depot formulations (9). It is unclear, however, why these adherence-improving measures still have not been implemented in routine care (10). Long-term results are thus poorer than what could be achieved for patients with schizophrenia.

The objective of our survey was to identify concrete cases and solicit the views of both patients and physicians to answer the following two questions: How does perceived nonadherence lead to implementation of adherence-enhancing measures? And what are the barriers and facilitators to the implementation of adherence-enhancing measures?

## Methods

We used semistructured interviews to gather information from inpatients with schizophrenia or schizoaffective disorders as well as from their treating physicians.

### Participants

We recruited physicians and psychiatrists from participating psychiatric hospitals across Germany while they were working on wards where patients with schizophrenia are regularly treated. Every physician was asked to recruit two patients who met the following inclusion criteria: a diagnosis of schizophrenia or schizoaffective disorder (ICD-10 codes F20, F23, or F25) and age 18–65 years, scheduled for discharge within the next week, and provision of written informed consent. There were no exclusion criteria.

### Data and measures

We interviewed psychiatrists and their patients within the week before hospital discharge. Interviews started with general (open-ended) questions and later addressed specific aspects of the respective topic. Psychiatrists were first asked about the main reasons for their patient's current hospital admission (open-ended question that was

repeatedly posed to broadly cover aspects that likely led to hospital admission). Psychiatrists rated adherence of the patient in the weeks before hospital admission. They estimated nonadherence to antipsychotic medication as the reason for admission on a 5-point scale that ranged from 1, no role, to 5, the most important role.

Regarding adherence-enhancing measures, we first posed the open-ended question "What did you do during the hospital stay to improve your patient's adherence?" and then asked about the implementation of four core interventions: depot antipsychotic treatment, psychoeducation for patients, psychoeducation for relatives, and arrangement of a first outpatient follow-up visit. We chose these measures because they should be available at all German psychiatric hospitals. If any patient did not receive these measures, we asked why they had not been implemented. Finally, physicians were asked for general barriers to the implementation of adherence measures.

In the interviews with patients, we addressed the reasons for hospital admission from the patient's view and posed several questions about communication between physician and patient, such as which therapies and interventions had been discussed and implemented.

### Recruitment and interviews

The study was approved by the institutional review board of the Technische Universität München. Recruitment took place in several regions in Germany (the city of Hamburg and urban and rural areas of both Bavaria and Saxony) at state as well as university hospitals. Interviews were performed face to face by specially trained interviewers.

### Statistical analysis

Means and standard deviations were calculated for continuous measures, and categorical data are presented as absolute and relative frequencies. For group comparisons chi square tests for categorical variables were used. Linear logistic regression analysis was used to predict the implementation of adherence measures. A  $p$  value  $<.05$  was considered significant.

## Results

### Participants

Recruitment took place from August 2011 until December 2012 in 22 psychiatric hospitals in three areas of Germany. A total of 121 physicians (66 women and 55 men; mean  $\pm$  SD age =  $35.9 \pm 8.7$  and work experience =  $5.9 \pm 7.6$  years) were interviewed about 213 inpatients with either schizophrenia or a schizoaffective disorder. As shown in Table 1, many patients had a chronic course of the disease with a considerable number of inpatient stays, which often were involuntary.

### Reasons for hospital admission

Among the most frequently cited reasons for hospital admission (both from patients and physicians) were symptoms (for example, "I heard voices again" and "She stopped eating because she felt poisoned"), social reasons (such as "I lost my flat and became ill again"), suicidal tendencies or suicide attempts, nonadherence (for example, "did not show up for depot injections"), and drug abuse (Table 2).

### Adherence before hospital admission

Most patients were prescribed antipsychotics before hospital admission (physician report,  $N=181$ , 85%; patient report,  $N=174$ , 82%), and only a minority (including patients experiencing their first episode of psychosis) did not receive prescriptions or refused psychiatric treatment. Physicians judged the patients to have taken on average  $68\% \pm 37\%$  of the medication prescribed, whereas patients gave a slightly more positive estimate of their own adherence ( $75\% \pm 39\%$ , pairwise  $t=2.79$ ,  $df=143$ ,  $p=.006$ ).

If one judges a medication intake ratio of  $\geq 80\%$  as adherent (2), then 96 out of 181 patients must be judged nonadherent, according to the physician report, resulting in a nonadherence rate of 53%. According to the patients' own estimate, 69 out of 174 patients would be judged nonadherent, resulting in a nonadherence rate of 40%. Again, compared with patients' estimates, physicians' estimates seemed to reflect more skepticism about adherence ( $\chi^2=145.7$ ,  $df=4$ ,  $p<.001$ ). The

role of nonadherence in the present inpatient stay was rated  $3.2 \pm 1.7$ .

### **Actions taken to improve patients' adherence**

Physicians spontaneously reported using a variety of measures to improve patients' future adherence. The most frequently used measure was one-to-one discussions with patients in which physicians explained the necessity of regular drug intake; interventions such as depot medication were rarely cited (Table 3).

Afterward, patients as well as physicians were interviewed about four specific adherence-enhancing measures (depot medication, psychoeducation for patients, psychoeducation for caregivers, and arrangement of a follow-up appointment). Responses of patients and physicians were congruent with regard to who was prescribed depot medication. As for the other measures, there was a tendency for physicians to report higher rates of implementation than patients. Physicians reported that 69 patients (32%) received depot medication, 86 patients (40%) received psychoeducation (patient report  $N=76$ , 36%), relatives of 18 patients (9%) received psychoeducation (patient report  $N=10$ , 5%), and follow-up visits were arranged for 39 (18%) patients (patient report  $N=34$ , 16%).

### **Setting-related predictors of use of adherence measures**

As a first step, setting variables were tested (region, university versus state hospital, age, gender, and experience of treating physician). Logistic regression analyses could not identify significant predictors for depot prescription and follow-up arrangement, whereas analyses indicated that psychoeducation for patients and for relatives was offered significantly more often in university hospitals compared with other settings ( $p < .001$  for patients;  $p = .04$  for relatives). In addition, linear regression analysis did not show any significant predictors for the use of all adherence-enhancing measures as named by the treating physicians.

### **Patient-related predictors of use of adherence measures**

Using regression analysis, we studied whether patient-related variables (age,

gender, education, native language, number of previous hospitalizations, voluntary versus involuntary admission, and adherence before hospital admission according to the physician's judgment) predicted the number of adherence-enhancing measures implemented by the psychiatrists. Here, patients' adherence before admission ( $B = -.52$ ,  $p < .001$ ) as well as their native language ( $B = .47$ ,  $p = .005$ ) significantly predicted the number of implemented adherence measures ( $R^2 = .17$ ), with poor adherence and having a native language other than German predicting use of a higher number of measures.

For the single measures studied (depot medication, psychoeducation for patients and relatives, and arrangement of a follow-up appointment), we performed logistic regression analyses with the same independent variables as above. For depot treatment, an involuntary admission status of the patient ( $B = .75$ ,  $p = .047$ ) was a significant predictor for use of depot prescription ( $R^2 = .11$ ). For psychoeducation of patients, the admission status of the patient and the number of previous hospitalizations (more psychoeducation for voluntary patients,  $B = -.92$ ,  $p = .019$ ; less psychoeducation for patients with more hospitalizations,  $B = -.07$ ,  $p = .048$ ) proved to be significant predictors. No significant predictors were found for use of psychoeducation with relatives ( $R^2 = .09$ ). Patients' age ( $B = .04$ ,  $p = .029$ ) was a significant predictor of arrangement of a follow-up appointment ( $R^2 = .09$ ), with older patients being more likely to have their follow-up arranged.

### **Physicians' reasons for not using adherence measures**

For all patients for whom one of the four specific adherence-enhancing measures was not implemented, physicians were asked to state reasons for the lack of implementation.

The most frequent reasons for not prescribing depot medication were a positive estimate of the patient's adherence with an oral drug, the lack of a depot formulation of the drug needed by the patient, or the patient's refusal (Table 4).

The most frequently cited reasons for not offering psychoeducation to patients were lack of psychoeducational groups, a patient's previous participation

**Table 1**

Characteristics of 213 inpatients with schizophrenia or schizoaffective disorder

Characteristic	N	%
Age ( $M \pm SD$ )	39.8 $\pm$ 12.1	
Gender		
Male	121	57
Female	92	43
Native language		
German	177	83
Other <sup>a</sup>	36	17
Family status		
Single	144	68
Married	29	14
Divorced or widowed	40	19
Education		
<10 years	89	42
$\geq 10$ years	120	56
Work status		
Working	31	15
Student or in training	5	2
Unemployed or retired	139	65
Sheltered employment	9	4
Other	29	14
Duration of illness ( $M \pm SD$ years)	11.8 $\pm$ 9.0	
Lifetime hospitalizations ( $M \pm SD$ )	6.4 $\pm$ 6.0	
ICD-10 diagnosis code		
F20 (schizophrenia)	170	80
F23 (schizophreniform disorder)	2	1
F25 (schizoaffective disorder)	41	19
Current treatment status		
Voluntary	165	77
Involuntary	48	23
Previous experience with involuntary treatment <sup>b</sup>		
Yes	104	50
No	105	50
Legal guardianship		
Yes	105	49
No	108	51

<sup>a</sup> All patients spoke German well enough to understand the interviews.

<sup>b</sup> Data missing for 4 inpatients

in a psychoeducational group, organizational reasons (currently no groups offered), and that doctors saw no indication for first-episode patients. For relatives' psychoeducation, physicians frequently cited unavailability of psychoeducation groups. Other important reasons included an absence of relatives to participate and the patient's desire that relatives not be engaged in his or her treatment.

Finally, follow-up appointments often were not arranged because the exact day for discharge was not yet

**Table 2**

Reasons for hospital admission of 213 patients with schizophrenia or schizoaffective disorder<sup>a</sup>

Reasons cited	Patient report		Physician report	
	N	%	N	%
Symptoms	162	76	196	92
Social reasons	34	16	30	14
Suicidal attempt or suicidal ideation	18	8	34	16
Nonadherence	9	4	29	14
Drug abuse	9	4	14	7
Other	29	14	25	12

<sup>a</sup> Multiple answers were possible.

known, because the follow-up physician was unknown, or because the physician expected the patient to make his or her own arrangements (Table 4).

### **Barriers to implementation of adherence-enhancing measures**

Finally, physicians were asked a more general question about the most frequent barriers to the implementation of adherence-enhancing measures. The most frequently cited barriers were poor patient cooperation and limited resources at the hospital (Table 5), but the physicians' own laxness was also cited as a common reason for the lack of implementation of adherence measures. Consequently, many physicians responded that more resources and a better organizational structure in the hospitals were needed to facilitate the implementation of adherence measures (data not presented).

### **Discussion**

Physicians' awareness of potential nonadherence of their patients was rather low when they were generally asked for reasons for hospital admission but rose when directly asked about potential nonadherence. Psychiatrists implemented a plethora of interventions that in many cases merely constituted intensive talks, not structured interventions. Of the four core interventions examined in our survey, the implementation rates were surprisingly high for antipsychotic depot prescription (>30%) and psychoeducation of patients but low for the arrangement of a follow-up visit and psychoeducation for relatives.

Patients with poor previous adherence (according to physicians' estimates) received more adherence measures. In addition, patients with involuntary admission were more likely to receive depot medication, and psychoeducation

was more often implemented for younger patients and for patients at university hospitals.

### **Physicians' estimate of nonadherence**

Patients' nonadherence was cited for only about 15% of patients as a reason for hospital admission. However, when physicians were directly asked to estimate their patients' adherence to medication before hospital admission, they rated nonadherence as an important factor for hospital admission. Given empirical data (2) that have shown that physicians regularly underestimate patient nonadherence, patients in our sample might in fact have had even greater problems with adherence than judged by the psychiatrists.

Finally, psychiatrists rated many patients as partially adherent but did not see this as a potential reason for hospital admission. Therefore, they probably underestimated the impact of small gaps in therapy that led to increased relapses (11).

### **Implementation of adherence-enhancing measures**

Physicians reported implementing a variety of measures to improve their patients' adherence. The most frequently taken action was talking to the patients. Because physicians did not specify any of the techniques they used, we can only speculate as to what these talks addressed and how they were undertaken. Communication generally is a good thing (12), but specific techniques, approaches, and content might be required to convey information, motivation, and support (13). Whether or not the physicians in our study had specific communication skills training is questionable because only five of them named a specific approach (shared decision making).

Although depot medication has been shown to be superior to oral treatment (9), psychiatrists have been reticent about using it (14). The proportion of our sample receiving depot treatment (32%) was surprisingly high (15) and may indicate a very positive view of German hospital psychiatrists toward this treatment option. In our sample, circumstances indicating an "obvious necessity" for receiving depot medication—specifically, a patient with

**Table 3**

Actions physicians took to improve patients' adherence after discharge<sup>a</sup>

Action taken <sup>a</sup>	Example	N	%
Intensive talks with patient		85	29
Psychoeducation for patients		48	16
Intensified outpatient care	Specialized walk-in clinic	21	7
Prescription or offer of depot medication		20	7
Talks with patient's relatives		20	7
Psychosocial interventions planned	Day treatment center	19	6
Interventions regarding housing		18	6
Legal guardianship	Initiation of guardianship; meeting with guardian	13	4
Psychotherapeutic interventions		9	3
Shared decision making		5	2
Psychoeducation for relatives		3	1
Other		33	11

<sup>a</sup> Actions (N=294) were identified from spontaneous quotations. Multiple answers were possible.



proven nonadherence and involuntary hospitalization—served as a potent facilitator, whereas supposed adherence or nonavailability of a depot-appropriate compound (clozapine, for example) and patients' refusal served as barriers. We could not determine whether patients indeed refused treatment or whether physicians anticipated or assumed refusal without really communicating about adherence issues. Nevertheless, patients' refusal may be a result of suboptimal communication, which could be overcome by enhanced communication strategies. Nondirective approaches, such as shared decision making (16) or motivational interviewing (17), may be helpful strategies in avoiding refusal.

Psychoeducation for patients is especially popular in Germany (18) and is seen as an effective way to improve patients' adherence. Therefore, it is not surprising that many patients received this intervention. Nevertheless, there are groups of patients who still do not benefit from psychoeducation, especially those being admitted to closed wards of state hospitals. In view of promising results of family interventions (19), the low implementation rate of psychoeducation for patients' family members is disappointing. We must also note that a considerable minority of patients do not have relatives or do not have a connection with them.

For both psychoeducational approaches, variables concerning patients' setting and resources seem to play an important role. If patients were in university hospitals, psychoeducation was more likely to be used. In addition, psychoeducation is, for whatever reason, only seldom offered to patients on closed wards.

Finally, many psychosocial measures were implemented (including day treatment centers, legal guardianship, and intensified outpatient care) that may in fact enhance adherence. Evidence for the effectiveness of these interventions is limited because research in this area very much depends on health care system issues.

Nevertheless, the fact that physicians reported that the next outpatient visit was arranged for only 18% of the patients cannot be explained by

**Table 4**

Physicians' reasons for not implementing four specific adherence-enhancing measures

Measure and reason <sup>a</sup>	N	%
Depot medication (N=136)		
Good adherence with oral drug	45	33
Patient's drug not available as depot	38	28
Patient refused depot injection	23	17
Depot inappropriate for first psychotic episode	13	10
Forgotten or not yet discussed	8	6
Inappropriate treatment phase	10	7
Side effects under previous depot therapy	7	5
Other	13	10
Psychoeducation for patients (N=83)		
No groups available	29	35
No group while patient on the ward	9	11
Patient had participated before	14	17
Not necessary because first-episode patient	12	14
Patient refused	9	11
Patient too ill	6	7
Not yet participated, but participation planned	5	6
Other	3	4
Psychoeducation for relatives (N=133)		
No groups at all available	33	25
Patient has no relatives	35	26
Barriers for relatives (time, language)	17	13
Relatives do not want to participate	16	12
Patient does not want relatives to be involved	10	8
Relatives have already participated	6	5
Relatives have mental illness	8	6
Other	15	11
Arrangement of follow-up (N=138)		
Specific discharge day not yet known	55	40
Follow-up physician unknown	18	13
Patient makes own arrangement	18	13
Referral to day clinic	18	13
Forgotten or not yet done	16	12
Patient will get an appointment automatically	12	9
Other	5	4

<sup>a</sup> Multiple answers were possible.

a lack of scientific evidence but suggests suboptimal discharge planning. The most frequently cited barrier to an arrangement of the next outpatient visit was the lack of an exact discharge date. Thus the physicians in our

sample obviously did not schedule discharge planning for their patients but rather practiced a kind of "sudden discharge" to free up beds for new, emergency admissions. Because patients who are linked to outpatient

**Table 5**

Physicians' views on general barriers to implementing adherence-enhancing measures<sup>a</sup>

General barrier	N	%
Patient does not accept adherence measure, has poor insight about mental illness	74	37
Patients' relatives do not accept adherence measures	8	4
Poor therapeutic relationship prohibits implementation	7	3
Limited hospital resources (lack of time, staff shortages)	68	34
Limited outpatient resources (lack of time, staff shortages)	24	12
Neglect or laxness of physician	21	10

<sup>a</sup> N=117 physicians. Multiple answers were possible.

treatment clearly have higher rates of treatment adherence (20), physicians risk higher relapse rates among their patients because of insufficient discharge planning.

#### *Are the findings generalizable to other health systems?*

Physicians' underestimation of (the impact of) their patients' nonadherence has been shown in various health care contexts (2) and therefore may be generalizable to other health care systems. Physicians' responses toward suspected nonadherence obviously may be influenced by the resources available in different health care systems.

Depot treatment for schizophrenia is available worldwide, although implementation rates vary considerably (15). For this measure, our data may be only partly generalizable to other health care systems because setting variables may vary, including cost containment and availability of medical staff to give the injections (15). However, the most frequently cited reasons for not using depot medication in our study (such as assumed good adherence and patients' refusal) are well known from other studies (15).

We are aware that psychoeducation is viewed less optimistically by mental health professionals in the United States and elsewhere compared with Germany (21). However, psychoeducation may be seen as a proxy for any psychosocial intervention that is viewed favorably in the respective context (here, German psychiatry) but consumes time and resources when thoroughly implemented. In addition, the positive effect of these interventions pays off only in the long run.

Finally, arrangement of a follow-up appointment is generally seen as very important to guarantee an uninterrupted flow of services (22). It may serve as a proxy for any organizational factor that could be done easily and does not necessarily consume additional resources.

#### *Opportunities to improve management of nonadherence*

The main barriers to a more intensive response to patient nonadherence are physicians' underestimation of the

"adherence problem," organizational deficits (such as no proper discharge planning), and limited resources (such as staff shortages). In addition one might speculate whether or not psychiatrists address the issue of adherence properly when talking to their patients in order to avoid patients' refusal of adherence interventions.

In order to reduce unawareness of adherence problems, a structured appraisal of the patient's adherence (including objective measures such as plasma levels) might help physicians to become more aware of this problem.

Physicians' citation of limited resources may reflect true staff shortages or be an excuse for suboptimal organization. If, for example, psychoeducational groups take place at a specialized ward in one hospital and not in the acute ward, then sessions might be organized in such a way that acute ward patients could visit the group session on the neighboring ward. In addition, moderators of psychoeducational groups may be recruited from different professional groups (including nurses) or be performed by specially trained peers to compensate for potential shortages of physicians or psychologists (23,24).

All three barriers may be addressed and overcome within so-called integrated care programs (25–28) that in many cases specifically address adherence issues, foster the communication between inpatient and outpatient treatment, facilitate the implementation of adherence measures, and encourage involvement of patients in clinical decisions.

#### *Limitations*

We focused on subjective measures of adherence and responses on these measures and did not implement objective measures, such as plasma levels. Our measures of adherence might therefore underestimate the number of patients not taking their medications regularly. We aimed at reaching a representative sample but may have included physicians with a higher awareness of adherence problems and patients more open to study participation. Thus, although recruitment took place in various hospitals and regions, our sample was not necessarily

fully representative of German hospital psychiatrists.

#### **Conclusions**

Treatment nonadherence is often underestimated by psychiatrists. Obstacles to the implementation of adherence-enhancing interventions should be identified in routine daily practice and can be overcome by implementation of integrated care programs.

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