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The Dynamics of Insight in the Prodrome of Schizophrenia

By Robert G. Bota, MD, J. Stuart Munro MD,
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ABSTRACT

Introduction: Schizophrenia is characterized by diminished insight, which fluctuates with disease progression. Insight deterioration in the prodrome of schizophrenia is poorly understood. Despite pharmacologic treatment, including early interventions, there is a high risk of relapse and need of acute care in schizophrenia patients.

Objective: To study if insight deterioration occurs during the prodrome and if insight preservation early in the illness might predict a better prognosis.

Methods: Data was collected retrospectively from the records of 24 patients initially diagnosed with schizophrenia during a 2-year period. Patients' progress was then tracked over a 3-year period. Insight was determined by a physician's subjective evaluation, patient interest and

Needs Assessment

Schizophrenia is an illness characterized by diminished insight, as reported by the World Health Organization. To date, there is no model for the normal development of insight. In this article, we suggest that insight decline begins in the prodromal phase of schizophrenia and has prognostic value.

Learning Objectives

At the end of this activity, the participant should be able to:

- Recognize the various domains of insight.
- Understand that insight can be modified with pharmacologic interventions and therapy.
- Recognize and describe possible patterns of insight dynamics in the prodrome of schizophrenia.
- Describe the concept of insight and clinical implications of impairment or preservation of various insight domains in schizophrenia.
- Recognize recent clinical and research developments regarding interventions to modify insight.

Target Audience: Neurologists and psychiatrists

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This activity has been peer-reviewed and approved by Eric Hollander, MD, professor of psychiatry, Mount Sinai School of Medicine. Review Date: April 10, 2006.

To Receive Credit for This Activity: Read this article, and the two CME-designated accompanying articles, reflect on the information presented, and then complete the CME quiz found on pages 397 and 398. To obtain credits, you should score 70% or better. Termination date: May 31, 2008. The estimated time to complete this activity is 3 hours.

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participation in treatment planning, and patient accuracy in reporting behaviors and symptoms when compared with reports from collaterals.

Results: Ten patients were determined to have insight regarding the developing illness at different presentations at the hospital. Insight preservation correlated with less need for emergency visits and fewer hospitalization days ($P < .005$). It was also associated with more depressive and anxious mood ($P < .000$). Patients and family members described early, ego-dystonic perceptual disturbances followed by diminished insight. Awareness into the illness, symptoms, and attribution of symptoms to the illness fluctuated at different presentations in the insight group. In the other group, insight was nil at each presentation after the psychotic debut.

Conclusion: Most patients maintain insight during the perceptual disturbance phase. Insight diminishes as the early delusional phase sets in. Higher levels of preserved insight seem to correlate with less need for acute treatment. Further research in this area is warranted for determining if early insight oriented interventions in the prodromal phase can improve the prognosis of schizophrenia.

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INTRODUCTION

Of the factors influencing schizophrenia's disease course, family environment, substance abuse, and duration of untreated psychosis,¹⁻⁸ are the most important modifiable predictors of outcome. Early detection can reduce the duration of untreated psychosis^{4,6,8-11} and predict more favorable outcomes¹² although some studies¹³⁻¹⁵ fail to support this hypothesis.

For research and clinical purposes, insight is defined along five dimensions: one's awareness of having a mental disorder, the social consequences of the illness, the need for treatment, the symptoms in particular, and the relatedness of symptoms to the disorder.¹⁶ However, reflective capacity in one domain does not predict

reflective capacity in other domains.¹⁷ The Scale to Assess Unawareness of Mental Disorder,¹⁸ the gold standard in the field, addresses such issues. Lack of awareness in various aspects of the illness specifically correlates with degree of impairment in cognitive, affective, and psychotic symptoms.¹⁹ Sevy and colleagues²⁰ proposed that lack of insight into the symptoms correlates with severity of illness, poor insight into consequence of illness correlates with positive symptoms, and poor insight into the need for treatment correlates with poor cognition.

Insight preservation in these domains is important because it predicts quicker resolution of symptoms with less hospitalization in the period of time leading to relapse.²¹ Schizophrenia is characterized by diminished insight, which fluctuates with illness progression. Overall, patients have more insight regarding the negative rather than the positive symptoms of the illness.²² Insight impairment is associated with cognitive and executive declines in multiple domains and is common in early schizophrenia.^{23,24} Also, schizophrenia patients with poor insight into the illness show decreased volume of the right dorsolateral prefrontal cortex on magnetic resonance imaging (MRI) when compared with patients with good insight.²⁵ Good insight correlates with symptoms of depression, paranoia,²⁶ and anxiety.²⁷ In one study,²⁸ no difference between males and females in insight scores was reported.

The period of time leading to the first episode of psychosis in schizophrenia is characterized by non-specific symptoms described as schizotaxia,²⁹ the pre-prodromal period, and the prodrome.³⁰ Insight deterioration in the pre-schizophrenia period is poorly understood. It can be hypothesized that insight declines during the late prodromal phase with the debut of incipient delusional systems and that is influenced by growing affective disturbances. While the correlations described above refer to level of insight in persons with schizophrenia,^{16,31} there is currently no data regarding insight in the prodromal period (Figure 1).

Various interventions have been shown to improve insight in patients with schizophrenia. Aguglia and colleagues³² reported improvement in insight in patients diagnosed with schizophrenia who were switched from conventional to atypical antipsychotic medication. Nieznanski and colleagues³³ reported that patients that had 12 sessions of performing cognitive tasks or receiving psychoeducation had increases in the

insight scores. Furthermore, Rusch and Corrigan³⁴ proposed that motivational therapy with specific modification for persons with schizophrenia can improve insight and compliance with treatment, allowing the patients to take a more active role in their treatment. Siver advocates the use of insight-enhancing psychotherapy for patients with schizophrenia as a tool for improvement in medication compliance.³⁵

METHODS

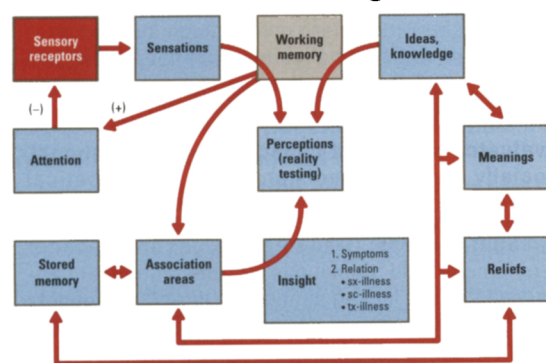
For this study, we selected all the records for patients with first diagnosis of schizophrenia at a publicly funded state hospital over a period of 2 years. Their progress was then tracked over a 3-year period.

Patients with mental retardation, pervasive developmental disorders, documented moderate to severe central nervous system damage, and patients with degenerative neurological

disease and other medical conditions that may induce psychotic symptoms were excluded. The study cohort was composed of 24 patients who met *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Text Revision*³⁷ (DSM-IV-TR) schizophrenia diagnosis. All were diagnosed for the first time at our facility.

To evaluate insight at each presentation in our emergency department (ED), the following data was used: the physician assessment documenting the patient's awareness of a mental disorder, chief complaint of the patient in terms of relatedness to identified problem (awareness of symptoms), and patient behavior in terms of awareness of the need for treatment. Scores were assigned to each evaluation of patients as follows: 0, 1, 2 and 3 for no, minimal, fair and good insight (Table 1) regarding

FIGURE 1.
Theoretical Model of Insight*



* The selected information from sensory receptors is transformed in primitive awareness (stepping on a branch in the dark and reacting as if it would be an immediate threat). Some of these sensations are processed through working memory and referred to stored reference information through the association areas becoming perceptions. The perceptions are closely correlated with awareness of the symptoms. They are further processed mostly through working memory and lead to knowledge (a posteriori). This can be understood as fostering the understanding of the relation between symptoms as contributors to illness. Through repetition, ideas are incorporated into meanings and beliefs. This is the basis of cognitively higher levels of insight, such as awareness into complex relations between the social consequences, need for treatment and illness. Some beliefs are not based on reality (close systems—a priori thinking) such as bizarre delusions. Meehl³⁶ describes schizotaxia as “a conjectured neural integrative defect... penetrant for a parametric aberration in synaptic signal aberration (hypokrisia) (that) gives rise under ordinary social learning regiments to schizotypy, a personality showing ambivalence, aversive drift, dereism, autism, and cognitive slippage.” Therefore, we can hypothesize that deficits may happen with various degree of severity in these domains. This is suggested by the finding that insight in one domain does not predict insight in other domains.

sx=symptoms; sc=social consequence; tx=treatment.

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TABLE 1.
Emergency Department Evaluation of Awareness*

- **Awareness of a mental disorder:** The physician assessment documenting the patient's awareness that he or she has a mental illness. This can range from no insight (complete denial of present or past psychiatric illness), minimal and fair insight (vague entertainment of the concept of having an illness, and underestimating the seriousness) to good insight.
- **Awareness of symptoms (delusions, hallucinations, anhedonia):** Chief complaint of the patient in terms of relatedness to the identified problem, documentation of such behaviors indicating attribution of symptoms. Minimal and fair awareness will correspond to little awareness of the symptoms' presence and no insight corresponds to no distinction between psychotic symptoms and reality.
- **Awareness of the need for treatment and effect of medications:** Patient's treatment seeking behaviors, knowledge of medication effect on the illness, interest in participation in treatment review team meetings and requesting medication for symptoms of schizophrenia. These elements were documented by multiple examiners in specific forms.

* Directions: For awareness domains information was collected from several sources. First, from the structured form where there is a choice to mark poor, fair or good insight. Secondly, it was obtained from the initial medical and psychiatric examination describing patient behavior and reports regarding the presence of the illness, symptoms, and relation of medications to illness progression. Thirdly, from the initial nursing report the patient's stated reason for the visit can be contrasted with identified problem. All ratings were completed by the first author. In situations where the score was not clear, it was discussed with the chair of the program for further assessment.

The data was ranked in the following fashion: Unk=not rated, 0=no insight, 1=minimal awareness, 2=fair understanding, or 3=good insight.

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the presence of a mental disorder, awareness of the need for treatment and awareness of symptoms respectively (similar to the Scale to Assess Unawareness of Mental Disorder³⁸). Data regarding suicidal behavior was obtained from the standardized initial interview form and scores were attributed as follows: 0, 1, 2, 3 for no, suicidal ideation without plan, suicidal ideation with plan/suicidal gesture, and suicidal attempt. Similar scores were attributed to the elements of mental status examination: behavior, cooperativeness with assessment and interventions, grooming and hygiene, mood, affect, anxiety, attention, thought process, judgement, hallucinations, and delusions (Table 2). These scores from the assessments at each hospital visit

were compared with the scores from subsequent visits. The patients with a score of ≥ 1 per visit (for insight) on average were compared with the other patients in term of severity and nature of symptoms and need for acute care.

Data collected reflected psychiatrist assessment in terms of diagnosis, treatment history, symptoms, and clinical course as well as other team members' assessments reflecting psychological assessments, demographics, change in support system, and laboratory work. The clinical assessment tool used by psychiatrists allowed a variety of data collection and planning for research with the use of valid and reliable scales, including elements of the Brief Psychotic Rating Scale,³⁹ and

TABLE 2.
Other Measures Used

- **Suicidality:** Information was gathered from the patient. The presence of a plan was documented along with the severity of suicidal ideation ranging from no to mild, moderate and severe.
- **Depression:** This was self-reported from the patient. Severity ranged from no depression, mild (express feeling of sadness and hopelessness only on interview-on a separate rubric ranging from mild to severe), moderate (symptoms of sadness, pessimism, guilt feelings, and cannot be easily cheered up) to severe (severe depressive symptoms with major interference in motor and social functioning). In a separate rubric, there were choices including depressed, anxious, euphoric, irritable and other descriptions of mood.
- **Affect:** Was evaluated by observation of patient behavior in response to the interview. The choices presented were appropriate, inappropriate, labile, constricted, flat, and other.
- **Anxiety:** Referred to both the level of self-reported anxiety and behavior observed suggesting anxiety. Ranges were from absent to mild (patient expresses same worry and over-concern, without behavioral correlate), moderate (serious anxiety symptoms with behavioral implications), and severe (almost constant fear, phobias with marked restlessness or multiple somatic manifestations).
- **Attention:** After level of alertness and orientation was evaluated, attention was assessed by observing the patient behavior for signs of distractibility, and difficulties in attending to the examiner. Symptoms ranged from no impairment, limited concentration to no conversation can take place as result of marked distraction by internal stimuli. Serial sevens, the word "world" backwards or forward and backward digit span was performed (with the total of 12±3 considered normal).
- **Delusions:** Were documented as ranging from no delusional content identified, mild, moderate, and severe, where mild severity is entertain delusional themes, limited crystallization of the beliefs, and severe delusions would correspond to bizarre delusion.
- **Hallucinations:** Documented in structured form similarly as delusions, where mild hallucinations correspond to occasional hallucinations that patient can suppress and severe hallucinations correspond to responding to internal stimuli.
- **Evaluated** the patient capacity to make a rational, socially accepted decision about a hypothetical situation. This was tailored to patient education.
- **Thought process:** Graded as ranges from absent problems to mild (thinking is circumstantial, tangential and there is limited difficulty in directing thoughts toward a goal), moderate (patient present with frequent irrelevancies, looseness of association even when not under pressure), and severe (incoherence, marked looseness of associations or mutism).
- **Behavior:** Descriptive aspect looking at withdrawal, motor retardation, tension, motor hyperactivity, mannerism/posturing, and uncooperativeness. These symptoms were graded from normal, mild, moderate to severe. Also, general impression was described as cooperative, guarded, uncooperative, and other.
- **Grooming and hygiene:** Description with checkmark choices good, fair, poor, and other.

* The data is obtained mainly from assessment of the patient and observation of the behavior exhibited during the interview. These do not reflect level of awareness of patient into the symptoms. They reflect physician assessment of the patient during the interview.

The data was ranked in the following fashion: Unk=not assessed, 0=no symptoms or impairment in that domain, 1=mild symptoms/impairment, 2=moderate symptoms/impairment, 3=severe symptoms/impairment.

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Positive and Negative Symptoms Scale for schizophrenia,⁴⁰ including the Positive and Negative Symptoms Scale excited item embedded in it.

Patient report was compared with collateral reports, documented in standardized sections of the social worker comprehensive assessment and psychiatrist assessments in terms of accuracy and symptom progression. Data gathered were analyzed using Statistical Package for Social Sciences version 13 software for standard deviation and *t*-test (2-tailed, $P<.05$) analysis. The University of Missouri-Kansas City Health Science Institutional Review Board as well as the Missouri Department of Mental Health Institutional Review Board have approved the study annually since 2002.

RESULTS

Demographics

Average age at the initial schizophrenia diagnosis was 25 ± 9.4 years. Ethnically, 58% of these patients were Black, 24% were white, and the remaining were Hispanic and Asian. These patients had achieved an average 11.1 years of education and 29% (seven patients) were employed at the time of initial schizophrenia diagnosis. Ninety-two percent were never married, 58% ($n=14$) lived with their families, and 33% (eight patients) were homeless. Only 29% (seven patients) had medical insurance, out of which three had Medicaid.

This patient population was divided in two subgroups: patients with and patients without awareness in the illness. The group with better insight did have a statistically higher level of education (11.9 ± 1.7 versus 10.6 ± 2 years of education; $P<.005$, $df=9$, $t=21$) and were more often employed (six of 10 versus one of 14; $P=.005$, $df=9$, $t=3.3$).

Insight

Insight Influences on Duration of Hospitalization

Ten patients were determined to have insight regarding the developing illness. Their insight score fluctuated at subsequent visits and was 1.75 ± 0.42 for 10 patients with preserved insight, (1=minimal, 2=fair awareness of mental disorder) and was 0.25 ± 0.42 for the other 14 patients ($P<.0009$, $df=9$, $t=13$). Insight preservation correlated with less need for ED visits to the hospital 1.3 ± 0.4 versus 3 ± 2 visits over 3 years, ($P<.001$; Table 3). Also, insight preservation correlated with fewer hospitalization days over the same time period (14.5 days versus 38 days; $P<.001$, $df=9$, $t=4.5$).

Mood and Affect

The group with better insight had more complaints of depression ($P<.0009$, $df=9$, $t=16.5$) and more patients complained of anxiety symptoms ($P=.0002$, $df=9$, $t=4.4$) than the diminished insight group.

Attention

No differences between groups was found.

Delusions

Although both groups had similar percentages of patients with thought impairment, the better insight group had fewer patients with moderate to severe delusions than the poor insight group (five versus 10 patients; $P=.015$, $df=9$, $t=3$).

Behavior

The behavioral dimension of the two groups was examined in terms of referral mode, suicidal behavior, cooperativeness with assessments, disposition (involuntary versus other admission mode), and changes in residence upon discharge. The only differences between groups were noted in the increased frequency in involuntary hospitalizations in the poor insight group (nine versus three patients; $P<.0001$, $df=13$, $t=5$), and more patients in the good insight group were cooperative with assessments (eight of 10 versus eight of 14; $P<.002$, $df=9$, $t=4.4$).

During the hospitalizations there was no difference between the groups in numbers of group therapy that they attended ($P=0.18$). However, patients with poor insight received more PRN medication (antipsychotic and anti-anxiety agents were most frequently used for this purpose) for behavioral problems ($P=0.001$,

TABLE 3.
Indicators of Impact of Illness

	Insight group	Diminished insight	<i>P</i> value
N	10	14	
Employed (n)*	6	1	$P=.005$
Hospitalization days†	14.5	38	$P<.001$
ED visits‡	1.3 ± 0.4	3 ± 2	$P<.001$
PRN for agitation‡	3	7.4	$P<.005$

* At the initial presentation.

† Over a 3-year period.

‡ Controlled for the length of hospitalization.

ED=emergency department.

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$df=13, t=4.3$). The presence of insight predicted better judgment on psychiatric evaluation.

There was no difference between groups in the number of patients referred by either police or family. However, when examining the entire sample's pattern of presentations, while the patients' family referred them to the ED in the early stages of the prodromal phase of illness, the family became less involved when the patients were diagnosed initially with schizophrenia and at the subsequent presentations ($P<.0005$ and $P<.0003$). Also, the presentations at which the police referred patients increased at the time of schizophrenia diagnosis, and at the subsequent presentations when compared with the prodromal period ($P<.0055$ and $P<.0015$, respectively).

Retrospective Reliability of Information Regarding Prodromal Period

Patients and family members described early, ego-dystonic perceptual disturbances followed by diminished insight. This led to incipient delusion systems, usually paired with noticeable behavioral changes, which, in time, led to bizarre behaviors and delusions. When we analyzed the data for all the patients, the following timeline was identified: 44 months preceding the diagnosis of schizophrenia initial symptoms were reported and reported behavioral changes occurred on average of 19.4 months before the initial schizophrenia diagnosis. The timeline of symptoms was evaluated for the patients in the two groups (Figure 2). The patients in the good insight group

reported earlier initial symptoms, followed by initial behavioral changes, and then the first psychiatrist assessment. For the poor insight group, the initial symptoms were reported closer to the initial diagnosis of schizophrenia and behavioral changes were reported 18 months after the initial psychiatric assessment.

DISCUSSION

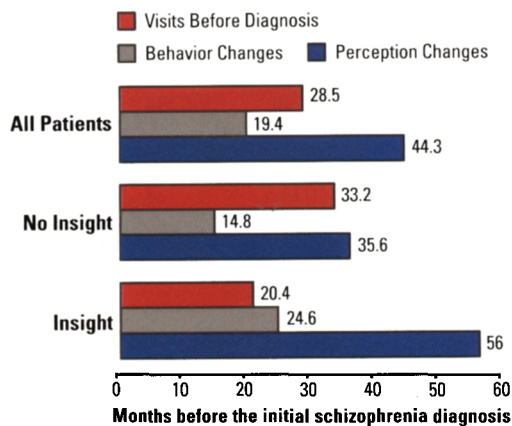
In our study, the better insight group had more complaints of depressive and anxious symptoms which did not correlate with a higher rate of suicidal behavior. They also had less severe delusions, fewer involuntary hospitalizations, and a greater tendency to be cooperative with the assessments than the poor insight group. Given this correlation between insight and better prognosis, researchers may find motivation to explore interventions that would preserve or improve insight in patients with impending schizophrenia.

The most striking difference between the groups was that the reported debut of incipient experiential symptoms, marking the debut of the prodromal period, and the debut of behavioral changes, were skewed toward shorter duration of the reported symptoms in the poor insight group, even though on average they had a psychiatrist evaluation earlier in the prodrome than the good insight group.

There are several implications of this finding. First, clinicians may underestimate the severity and duration of symptoms in the patients with poor insight because they must rely on self-report. Secondly, clinicians identifying prodromal symptoms in patients with poor insight may be prompted to treat these symptoms more aggressively. Finally, the selection of patients in the research studies may be skewed. For example, patient populations in the studies regarding the duration of untreated psychosis, may over-represent the patients that are aware of need for treatment by including more patients with better insight. This could alter the findings in terms of duration of untreated symptoms and prognostic value of treatment. This could explain, at least partially, the contradictory data in the literature about the correlation between the duration of untreated psychosis and prognosis.

Sevy and colleagues²⁰ reported that poor awareness into illness correlates with severity of the illness (established schizophrenia). In our study, it was difficult to assess if poor insight into the illness was the cause for the worse prognosis of the illness or merely an indicator of worse illness.

FIGURE 2.
Perception of progression of symptoms (months from the reported events to diagnosis of schizophrenia)



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Furthermore, we are unaware of other published data of insight into the illness in the prodrome of schizophrenia to provide additional information. In future studies, separate raters could independently evaluate insight and severity of illness. This would better address the issue of a causal linkage.

In schizophrenia, suicide is the leading cause of premature death.⁴¹ Although in this study there were differences between groups in terms of anxiety and depressive symptoms, no significant increase in suicidal ideation and suicidal behavior in the good insight group were found. Other studies^{42,43} also reported no correlation between the degree of insight and suicidality in patients with established schizophrenia. Suicidal behavior may correlate with certain aspects of awareness and not with others (eg, affective or cognitive domains associated with insight not evaluated here). Patients with awareness regarding symptoms (delusions, poor socialization, blunted affect, anhedonia) and need for treatment but lacking awareness into the general concept of having an illness may have a higher degree of suicidality.⁴¹ By contrast, Kim and colleagues⁴⁴ found that patients that scored higher on the items of the Schedule for Affective Disorders and Schizophrenia, reflecting insight in general, had more suicidal ideation and Crumlish and colleagues⁴⁵ suggests that recognition of mental illness in the first 6 months after diagnosis predicts suicide in the first 4 years following the schizophrenia diagnosis. Harkavy-Friedman and Nelson⁴⁶ suggests that an increase in suicidal behavior is associated with symptoms such as psychosis and depression. In summary, various insight domains are associated with suicidal behavior and it is difficult to predict suicidal behavior solely on the basis of insight. In a recent review,⁴⁷ it was suggested that working through the grief associated with facing the developing illness and attaining usable insight that integrates affective and cognitive components can reduce suicidal risk in this patient population.

One limitation of this study is typical of retrospective chart reviews, in that there was no control of gender, racial and other demographic factor distribution. A second limitation is small sample size. Also, it was difficult to determine from the medical records if interventions initiated by psychiatrists in other facilities were intended for treatment of prodromal symptoms or comorbid conditions. Furthermore, the mission of the hospital public mental health services targets a patient population with a high rate of uninsured patients

who tend to use services for acute inpatient treatment and outpatient-like services (eg, ED visits for medication refill). On the other hand, in another study, Bota and colleagues⁴⁸ found that 40% of the patients with an established diagnosis of schizophrenia for 8 years and treated in the same facility had a history of travel from state to state. Such a pattern was not observed in this cohort.

Patients experiencing prodromal symptoms frequently visit a physician (75% and 90% respectively) prior to the onset of psychosis,^{49,50} providing opportunities for identification of individuals at high risk of developing schizophrenia⁵¹⁻⁵³ and allowing for insight assessment and insight oriented interventions.

There was considerable variation in the duration of the prodrome across the studies reviewed. Huber and Gross⁵⁴ reported a duration of the prodrome at up to 6 years and Cornblatt and colleagues⁵⁵ treated patients with the prodrome for 3 years. In another study,⁴⁹ the duration was 44 months. This may reflect differences in selection of patients and definition of the prodrome. Overall, patients are believed that present for evaluation during a continuum in the prodromal period. However, there are phenomenological differences between different periods of the prodrome. In one study,⁵⁶ by plotting presentation time in relation to the time of schizophrenia diagnosis one sharp peak was observed at 7 months. The other patients' presentations had a bigger standard deviation and averaged at 32 months before the diagnosis of schizophrenia. Having an early presentation may not predict better insight into symptoms or illness as most of these evaluations were initiated by the families of the patients. It is possible that the insight into the illness and into the relation between need for treatment and illness predicts better prognosis regardless of presentation timeframe. However, this hypothesis needs to be studied. Furthermore, we suggest that prodromal evaluation of insight can give us clues regarding prognosis.

CONCLUSION

Previous research has shown that by using various interventions,³²⁻³⁵ insight can be improved in patients with schizophrenia. Further research in this area is warranted to determine if early insight oriented interventions in the prodromal phase can improve the prognosis of schizophrenia. The answer may lie in the interplay between the knowledge of the self and the knowledge of others. **CNS**

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