

**Western University**

---

From the SelectedWorks of Amresh Srivastava

---

April 2010

# Effects of Duration of Untreated Psychosis on Long-term Outcome of People Hospitalized with First Episode Schizophrenia

Contact  
Author

Start Your Own  
SelectedWorks

Notify Me  
of New Work



Available at: <http://works.bepress.com/amreshsrivastava/85>



# Indian Journal of Psychiatry

OFFICIAL PUBLICATION OF THE INDIAN PSYCHIATRIC SOCIETY

ISSN 0019-5545

Volume 52, Number 2

April-June 2010

Now indexed  
with PubMed

## EDITORIAL

Innovative approaches to treatment-refractory depression: The ketamine story

T. S. SATHYANARAYANA RAO,  
CHITTARANJAN ANDRADE

97

## GUEST EDITORIALS

Cognitive neurosciences: A new paradigm in management and outcome of schizophrenia

AMRESH K. SHRIVASTAVA, MEGAN E. JOHNSTON

100

Boundary Debates: The new challenge of Psychiatry:

PHILIP JOHN

106

## PERISCOPE

Medical errors – I : The problem

G. SWAMINATH, R. RAGURAM

110

## PRESIDENTIAL ADDRESS

Preserve and strengthen family to promote mental health

AJIT AVASTHI

113

## REVIEW ARTICLE

A tale of two comorbidities: Understanding the neurobiology of depression and pain

MEERA NARASIMHAN, NIOAKA CAMPBELL

127

## ORIGINAL ARTICLES

An epidemiological study of dementia under the aegis of mental health program, Maharashtra, Pune chapter

D. SALDANHA, MAJ RAGHUNANDAN MANI,  
KALPANA SRIVASTAVA, SUNIL GOYAL,  
D. BHATTACHARYA

131

New evidence on Iron, Copper accumulation and Zinc depletion and its correlation with DNA integrity in aging human brain regions

T. S. SATHYANARAYANA RAO, K. S. J. RAO

140

Understanding family functioning and social support in unremitting schizophrenia: A study in India

NEENA S. SAWANT, KAMAL S. JETHWANI

145

Screening for depression in elderly Indian population

ANKUR BARUA, NILAMADHAB KAR

150

Psychiatric morbidity in adult Kashmiri migrants living in a migrant camp at Jammu

RAKESH BANAL, JAGDISH THAPPA, H. U. SHAH,  
ARSHID HUSSAIN, ABHISHEK CHOWHAN,  
HARNEET KAUR, MALA BHARTI, SUSHANT THAPPA

154

Cognitive dysfunctions in intensive cardiac care unit

MANISH BATHLA, K. KRISHNA MURTHY,  
SHALU CHANDNA

159

## BRIEF RESEARCH COMMUNICATION

Effects of duration of untreated psychosis on long-term outcome of people hospitalized with first episode schizophrenia

AMRESH SHRIVASTAVA, NILESH SHAH, MEGAN JOHNSTON, LARRY STITT, MEGHANA THAKAR,  
GURUSAMY CHINNASAMY

164

## CURRENT THEME

Indian research: Focus on clozapine  
SANDEEP GROVER, ALAKANANDA DUTT,  
AJIT AVASTHI

168

## CME

Management of anorexia and bulimia nervosa: An evidence-based review  
KAUSTAV CHAKRABORTY, DEBASISH BASU

174

## PG CME

Lithium, trifluoperazine and idiopathic leucopenia: Author and reviewer perspectives on how to write a good case report  
CHITTARANJAN ANDRADE, DATTATREYA N. MENDHEKAR

187

## PSYCHIATRIC PEARLS

Emil Kraepelin: A pioneer of scientific understanding of psychiatry and psychopharmacology  
ANDREAS EBERT, KARL-JÜRGEN BÄR

191

## LETTERS TO EDITOR

Comment on Prayer and healing: A medical and scientific perspective on randomized controlled trials

ABRAHAM VERGHESE

193

Prayer, randomized controlled trials and healing: A response to Prof. Abraham Verghe

CHITTARANJAN ANDRADE, RAJIV RADHAKRISHNAN

193

Undergraduate clinical posting in Psychiatry: Are we paying enough attention?

SHIVANAND KATTIMANI

194

Spontaneous recovery in Autistic Spectrum Disorders - A myth?

M. N. HELAL, I. MUSHTAQ, S. SANKAR

195

## Authors' reply

PRABHAT SITHOLEY, VIVEK AGRAWAL,  
AMOL PARGAONKAR

195

## BOOK REVIEWS

Textbook of Psychiatry

VINOD K. SINHA

197

Communication Skills in Palliative Care

B. R. RAVI SHANKAR RAO, NALINI RAO

198

The Joy of Mental Health

DR. SANDEEP GROVER

199

## OBITUARY

Remembering Professor S.M. Channabasvanna:  
PROF. S.K. CHATURVEDI

200

## HIGHLIGHTS IN THE FORTH COMING ISSUES

201

## EVENTS AND HAPPENINGS

196

Online at

[www.indianjpsychiatry.org](http://www.indianjpsychiatry.org)

Published by

Medknow Publications

## Effects of duration of untreated psychosis on long-term outcome of people hospitalized with first episode schizophrenia

Amresh Shrivastava, Nilesh Shah<sup>1</sup>, Megan Johnston<sup>2</sup>, Larry Stitt<sup>3</sup>, Meghana Thakar<sup>4</sup>, Gurusamy Chinnasamy<sup>5</sup>

Department of Psychiatry, Schulich School of Medicine and Dentistry, The University of Western Ontario, London, Ontario, Canada; and Lawson Health Research Institute, London, Ontario, Canada. <sup>1</sup>LTMG Hospital, University of Mumbai, Sion, Mumbai-400 022, Maharashtra, India. <sup>2</sup>Department of Psychology, University of Toronto, Toronto, ON, Canada, <sup>3</sup>Department of Epidemiology and Biostatistics, Schulich School of Medicine and Dentistry, The University of Western Ontario, London, Ontario, N6A 5C1, Canada. <sup>4</sup>Mental Health Foundation of India (PRERANA Charitable Trust) and Silver Mind Hospital, 209 Shivkripa Complex, Gokhale Road, Thane, Mumbai-400 602, Maharashtra, India, <sup>5</sup>novaNAIT - Centre for Applied Research and Technology Transfer, The Northern Alberta Institute of Technology, 10504 Princess Elizabeth Avenue, Edmonton, Alberta, Canada T5G 3K4.

### ABSTRACT

Duration of untreated psychosis (DUP) has emerged as a reliable predictor of outcome but continues to remain under scientific scrutiny. The present study examines the effect of differential periods of DUP on long-term outcome of first episode schizophrenia at Mumbai, India. This research was a prospective, 10-year follow-up naturalistic study. Hospitalized patients of first episode schizophrenia were selected and followed up. Results showed that the mean DUP was higher for a group which showed clinical recovery on Clinical Global Impression Scale [14.0 months (SD=8.0) in recovered and 10.8 months (SD=5.7) in non-recovered group ( $P=0.091$ )]. DUP was not found to be significantly associated with any of the end point parameters of good clinical or social outcome. Thus, this study found that DUP alone does not determine outcome status confirming the role of psychopathological heterogeneity.

**Key words:** Duration of untreated psychosis, first-episode schizophrenia, long-term outcome

### INTRODUCTION

Outcome of schizophrenia has been repeatedly demonstrated to be 'good' and 'favorable,' which generally implies that most of the patients treated adequately are able to maintain a reasonable quality of life, remain free from distressing symptoms, can function at a moderate level and live a life outside psychiatric institutions in the community.<sup>[1-5]</sup>

**Address for correspondence:** Dr. Amresh Shrivastava, Regional Mental Health Care, 467 Sunset Drive, St. Thomas, Ontario, Canada N5H 3V9  
E-mail: dr.amresh@gmail.com

DOI: 10.4103/0019-5545.64583

How to cite this article: Shrivastava A, Shah N, Johnston M, Stitt L, Thakar M, Chinnasamy G. Effects of duration of untreated psychosis on long-term outcome of people hospitalized with first episode schizophrenia. Indian J Psychiatry 2010;52:164-7.

A number of reasons have been cited for this premise, which of course has currently come under some scrutiny.<sup>[6-7]</sup> There has been intense interest in duration of untreated psychosis (DUP) because of the proposal that psychosis is somehow neurologically toxic.<sup>[8]</sup> If this is true that delay in treating people with psychosis could impair prognosis, while reducing delay could improve it.<sup>[9]</sup> However, despite the blossoming of early intervention services, there is continuing disagreement over whether there is a real association between DUP and outcome. Several conflicting evidence have been reported.<sup>[10-12]</sup>

Although DUP has been reported as an independent marker of outcome, measurement errors and variability in DUP in terms of heterogeneity have also been reported and caution advised.<sup>[13,14]</sup> The strength of association between DUP and outcome has been found to be only 'moderately strong' based upon the available data, accounting for approximately 13% of variance or one-third to one-fourth of those who did not achieve remission.<sup>[15]</sup> Until now, very few long-term studies have examined this association. Long-

term outcome of schizophrenia is multifactorial in nature; it not clearly known if a short DUP is a strong determinant of long-term outcome.<sup>[16]</sup> The present study examines the effects of DUP on clinical and social outcome in a 10-year, long-term follow-up in a cohort of first episode psychosis.

## MATERIALS AND METHODS

### Design

This study is a naturalistic, prospective, longitudinal follow-up study conducted at Mumbai, India. Assessments were conducted at the baseline and at the end of 10 years, follow-up, by trained and experienced clinical research staff. Inter-rater reliability was established for quantification of outcome.

### Sample and settings

Two hundred patients admitted with first episode psychosis were recruited as per inclusion criteria, and 101 were available at the end point. Wherever necessary patients were traced, contacted and assessed. The study was carried out in a non-governmental, psychiatric hospital certified as a psychiatric facility by the State Government as per Indian Mental Health Act 1983 from a period of 1993 to 2007. The Independent Ethics Commission of Mumbai approved the study.

All patients and their relatives were explained the nature and purpose of study and an informed consent was obtained at the beginning of the study as well as at the end of the follow up for repeat assessment.

### Inclusion and exclusion criteria

Baseline inclusion criteria included: hospitalization, availability of key relatives, confirmed diagnosis of psychotic disorder- non-affective as per Diagnostic and Statistical Manual (DSM-III-R) criteria; between the ages of 18-45 years, informed consent for participation in the study. Inclusion criteria at the end point of the study included: reconfirmed diagnosis of schizophrenia as per DSM IV -TR<sup>[17]</sup> at the follow-up of 10 tears; informed consent, and available objective data from key relatives.

We excluded cases of primary organic psychotic disorder intellectual disability, drug and substance induced psychosis, any change in diagnosis from baseline to endpoint, epilepsy, co morbid alcoholism and substance abuse.

### Assessment of DUP

The assessment of duration of untreated psychosis was done clinically by a detailed interview with the patient and the key relatives. We carefully assessed known prodromal signs and tried to elicit the time of first-distressing symptoms either positive or negative symptom to decide the onset of illness. The assessment of DUP included positive symptoms

(hallucinations, delusions, and odd beliefs thought disorder), negative symptoms (depression, dysphoria, apathy, anergia, apathy, and amotivation), and social decline (withdrawn behavior, poor interpersonal relationship, social avoidance, and lack of interest in education or work).

### Assessment tools

We used clinical and social outcome criteria based upon Meltzer's<sup>[18]</sup> criteria recommendations. We operationalized the definition on a scale of 1-to-5 where one represented poorest and 5 the best outcome for some of the parameters. This scale was developed for the local conditions and used in other studies.<sup>[19]</sup> Clinical outcome was measured by 1) Clinical Global Impression Scale (CGIS),<sup>[20,21]</sup> 2) Psychopathology (positive symptoms, negative symptoms and disorganization) using Positive and Negative Syndrome Scale [PANSS),<sup>[22,23]</sup> 3) Depressive symptoms using Hamilton Depression Rating Scale (HDRS)<sup>[24]</sup> 4) Factors of Compliance, 5) Extrapyramidal symptoms (EPS), using Abnormal Involuntary Movement Scale (AIMS)<sup>[25]</sup> 6) Aggression, 7) Hospitalization, and 8] Suicidality. Social outcome was measured using 1)Quality of life (QOL),<sup>[26]</sup> 2) Global Functioning (GAF),<sup>[27,28]</sup> 3)Independent living, 4) Family burden, and 5) Social burden by measured operationalized criteria. Raters in this study were not blinded.

### Outcome criteria

We used GCIS for measuring severity as well as improvement by CGIS-S and CGIS-I respectively. Primary criteria – a score of 2 or less i.e. scoring 'improved and much improved' rating were considered 'good outcome' on CGIS. Secondary outcome criteria included clinical improvement as defined by: 1) no hospitalization for minimum 2 preceding years, 2) GAF score less than 80, 3) QOL score greater than 80, 4) a score greater than 3 on scales of social functioning, independent living, education, and social burden.

## RESULTS

The statistical analysis was performed using SAS, version 9.1. Probability values less than 0.05 were considered to be statistically significant. Mean duration of untreated psychosis was observed as 12.7 months (SD =7.3). The majority of patients (73%) had duration of untreated psychosis ranging between six months to 24 months [Table 1]. There were no differences between short and long DUP in terms of age at intake and gender (Table 2,  $P=0.148$  and  $P=0.799$ , respectively). No statistically significant differences were observed between the two groups on parameters of clinical and social recovery [Table 3].

## DISCUSSION

There is a well-established association between DUP, critical period and early intervention. This association is

**Table 1: Duration of untreated psychoses on differential time line**

Parameter	Value (SD)
Mean (SD)	12.7 (7.3)
Median (Minimum, Maximum)	11.0 (3, 35)
≤6 months	20 (19.8%)
6-11 months	34 (33.7%)
12-24 months	40 (39.6%)
>24 months	7 (6.9%)

**Table 2: Differences in gender and age at intake between subjects with short and long dup (<12 months vs ≥ 12 months)**

Outcome	<12 months DUP (n=54)	≥12 months DUP (n=47)	Test statistic	P value
Age at intake	27.7 (7.4)	30.1 (9.0)	$t_{98}=1.46$	0.148
Male gender	39 (72.2%)	35 (74.5%)	$X_1^2=0.06$	0.799

**Table 3: Difference in effect of duration of untreated psychoses on follow-up outcomes on multiple clinical and social parameters using 12 months cut-off for short and long DUP**

Outcome	<12 months DUP (n=54)	≥12 months DUP (n=47)	Test statistic	P value
PANNS	52.4 (9.4)	50.6 (8.3)	$t_{99}=0.99$	0.326
Positive symptoms	9.1 (4.1)	8.2 (3.7)	$t_{99}=1.17$	0.244
Negative symptoms	12.8 (8.0)	11.5 (6.7)	$t_{99}=0.91$	0.363
General				
Psychopathology	27.9 (11.5)	30.6 (12.2)	$t_{99}=1.11$	0.270
HDRS	13.1 (5.2)	13.2 (5.3)	$t_{95}=0.18$	0.861
GAF	77.6 (13.1)	80.5 (9.6)	$t^{94}=1.22$	0.226
QOL	65.9 (14.1)	69.3 (15.2)	$t_{98}=1.16$	0.248
Disorganization abnormal (>3)	25 (46.3%)	19 (40.4%)	$X_{12}=0.35$	0.553
>1 Hospitalization in past 10 years	34 (64.2%)	27 (58.7%)	$X_{12}=0.31$	0.578
IP Social abnormal (≤3)	37 (68.5%)	36 (76.6%)	$X_{12}=0.82$	0.366
Work abnormal (≤3)	44 (81.5%)	31 (67.4%)	$X_{12}=2.63$	0.105
EPS abnormal (>2)	18 (34.6%)	17 (36.2%)	$X_{12}=0.03$	0.872
Independent living abnormal (≤3)	26 (49.1%)	25 (54.4%)	$X_{12}=0.28$	0.599
Aggression abnormal (>2)	20 (37.0%)	19 (41.3%)	$X_{12}=0.19$	0.663
Family burden abnormal (>3)	33 (63.5%)	21 (47.7%)	$X_{12}=2.40$	0.122
Suicidality abnormal (2-5)	28 (53.9%)	23 (52.3%)	$X_{12}=0.02$	0.878
Recovered (CGI -I <3)	29 (53.7%)	32 (68.1%)	$X_{12}=2.17$	0.141

independent of confounding factors, including premorbid functioning, gender, diagnosis and age of onset of symptoms variance in functional recovery has been reported.<sup>[29]</sup>

The finding of 48 weeks DUP in the present study is not surprising from a developing country where stigma is rampant, awareness is poor, accessibility of care is limited

and resources for mental health are less than sufficient. A DUP as much as 796 weeks has been reported from India which is primarily because of lack of availability and accessibility of mental health services rather than the psychosis remaining 'unidentified'.<sup>[30, 31]</sup> Mental illness remains untreated despite recognition. There are several cultural, social, religious, economic and personal factors which determine approach to mental healthcare, which obviously leads to longer DUP.<sup>[32]</sup> Long DUP has also been reported in western literature e.g. a Canadian study observed duration of untreated psychosis as 84 weeks.<sup>[33]</sup>

In the present study, in a multivariate analysis, results did not show any statistically significant correlation between various categories of duration of untreated psychosis and outcome parameters. The significant findings were the lack of correlation with symptom remission and level of social functions measured by several psychosocial parameters. We compared patients with less than 12 months of DUP and more than 12 months of DUP and found that no clinical or social parameters at ten years outcome correlated DUP below 12 months or more than 12 months. This lack of association may arise from the complexity inherent to the assessment of DUP or the fact that treatment may be inadequate due to limited resources. Additionally, the long-term outcome in schizophrenia is not influenced by DUP because most of neuronal changes take place early in the course or even preceding the onset and therefore an intervention as late as 12 months does not contribute to long term outcome.<sup>[34]</sup> DUP remains relevant only for short period of follow-up and once the psychosis has persisted long enough, enough toxic damage has been caused to change anything in the outcome.

The findings also indicate that longer the DUP worse the outcome but a shorter DUP does not necessarily mean a good outcome. Further, in our study out of 13 outcome parameters of clinical and social relevance none of the parameter showed any correlation. All the parameters most importantly, social function, global function, quality of life and independent living show no correlation. It is likely that DUP correlates with outcome measures in conjunction with several other factors. It further suggests that the benefit of early intervention in long term is gradually lost, no matter when the intervention is done due to several factors such as, poor treatment, lack of follow-up, inconsistencies in management, poor adherence, poor psychosocial intervention and frequent relapses. The assumption that delay in treating people with psychosis could impair psychosis while reducing delay would improve it, is not as straight forward as often stated.<sup>[35]</sup> There has been continuing disagreement over whether there is a real association between DUP and outcome.<sup>[12, 36]</sup> We need more studies comparing ultra short DUP, short DUP and long DUP to understand more clearly about its association with outcome. Further studies also need to examine

how powerful DUP is as a predictor.<sup>[37]</sup> Success of this concept depends upon public campaign and resources for treatments. Research of DUP has given a new responsibility for community awareness programs for early identification, which remains a daunting, task everywhere.<sup>[38,39]</sup>

## CONCLUSIONS

Our study finds that DUP alone does not determine long term outcome status in first episode schizophrenia. Long DUP leads to poor outcome and the short DUP does not necessarily lead to good outcome due to psychopathological heterogeneity in early phase.<sup>[30, 31]</sup> There is a missing link in association of DUP and outcome.

## ACKNOWLEDGMENTS

The authors thank the clinical and research staff, particularly Sangeeta Rao, Gopa Sakel and Sunita Iyer of the Psychiatric Research Center at Silver Mind Hospital, Mumbai, for their valuable help in conducting this project. This research was in-part financially supported by the PRERANA Charitable Trust, Mumbai, India and also partly by Ashoka Innovators for Public, Arlington, USA. Both these funding bodies had no role in the study design; collection, analysis and interpretation of data; writing of the report; or the decision to submit the paper for publication.

## REFERENCES

- Vergheze A, Dube KC, John J, Menon DK, Menon MS, Rajkumar S, *et al.* Factors associated with the course and outcome of schizophrenia. *Indian J Psychiatry* 1985;27:201-6.
- Vergheze A, Dube KG, John JK, Kumar N, Nandi DN, Parhee R, *et al.* Factors associated with the course and outcome of schizophrenia a multicentred follow-up study: Result of five year follow-up. *Psychiatr Q* 1996;67:195-207.
- Vergheze A, Dube KG, John JK, Kumar N, Nandi DN, Parhee R, *et al.* Factors associated with the course and outcome of schizophrenia a multicentred follow-up study. *Indian J Psychiatry* 1990;32:211-6.
- Varma VK, Malhotra S, Yoo ES, Jiloha RC, Finnerty MT, Susser E. Course and outcome of acute non-organic psychotic states in India. *Eur Arch Psychiatry Clin Neurosci* 1994;244:227-35.
- Kulhara P, Shah R, Grover S. Is the course and outcome of schizophrenia better in the 'developing' world? *Asian Journal of Psychiatry* 2009;2:54-63.
- Gangadhar BN, Thirthalli J. Differential outcome of schizophrenia: Does cultural explanation suffice? *Asian Journal of Psychiatry* 2009;2:53-4.
- Cohen A, Patel V, Thara R, Gureje O. Questioning an axiom: Better prognosis for schizophrenia in the developing world? *Schizophr Bull* 2008;34:229-44.
- Philip M, Gangadhar BN, Jagadisha, Velayudhan L, Subbakrishna DK. Influence of duration of untreated psychosis on the short-term outcome of drug-free schizophrenia. *Indian J Psychiatry* 2003;45:158-60.
- Sheitman BB, Lieberman JA. The natural history and pathophysiology of treatment resistant schizophrenia. *J Psychiatr Res* 1998;32:143-50.
- Norman RM, Malla AK. Duration of untreated psychosis: A critical examination of the concept and its importance. *Psychol Med* 2001;31:381-400.
- Lincoln CV, McGorry P. Who cares? Pathways to psychiatric care for young people experiencing a first episode of psychosis. *Psychiatr Serv* 1995;46:1166-71.
- Ho BC, Andreasen NC. Long delays in seeking treatment for schizophrenia. *Lancet* 2001;357:898-900.
- Wyatt RJ, Henter I. Rationale for the study of early intervention. *Schizophr Res* 2001;51:69-76.
- Keshavan MS, Schooler NR. First-episode studies in schizophrenia: Criteria and characterization. *Schizophr Bull* 1992;18:491-513.
- Marshall M, Hariigan S, Lewis S. Duration of untreated psychosis: Definition, measurement and association with outcome. In: McGorry PD, Jackson HJ, editors. *The recognition and management of early psychosis: A preventive approach*. Cambridge University Press; 2009. p. 125-45.
- Brill N, Levine SZ, Reichenberg A, Lubin G, Weiser M, Rabinowitz J. Pathways to functional outcomes in schizophrenia: The role of premorbid functioning, negative symptoms and intelligence. *Schizophr Res* 2009;110:40-6.
- American Psychiatric Association. *Diagnostic and statistical manual of mental Disorders, 4 ed., Text revision*. Washington DC: American Psychiatric Association; 2000.
- Meltzer HY. Outcome in schizophrenia: Beyond symptom reduction. *J Clin Psychiatry* 1999;60:3-7.
- Guy W. Patient assessment in clinical trials. *Prog Neuropsychopharmacol Biol Psychiatry* 1982;6:601-6.
- Kay SR, Opler LA. The positive-negative dimension in schizophrenia: Its validity and significance. *Psychiatr Dev* 1987;5:79-103.
- Hamilton MA. Rating scale for depression. *J Neurol Neurosurg Psychiatry* 1960;23:56-62.
- National Institute of Mental Health. *Abnormal involuntary movement scale (AIMS)*. Early Clin Drug Eval Unit Intercom 1975;4:3-6.
- World Health Organization. *WHO QoL Study Protocol*. Geneva, Switzerland: World Health Organization; 1993.
- American Psychiatric Association, 1994. *Diagnostic and statistical manual of mental disorders, Global assessment of functioning*. Washington DC: American Psychiatric Association; 1994.
- Hall RC. Global assessment of functioning: A modified scale. *Psychosomatics* 1995;36:267-75.
- Menezes NM, Malla AM, Norman RM, Archie S, Roy P, Zipursky RB. A multi-site Canadian perspective: Examining the functional outcome from first-episode psychosis. *Acta Psychiatr Scand* 2009;120:138-46.
- Tirupati SN, Padmavati R, Thara R, McCreadie RG. Psychopathology in never-treated schizophrenia. *Compr Psychiatry* 2006;47:1-6.
- Tirupati NS, Rangaswamy T, Raman P. Duration of untreated psychosis and treatment outcome in schizophrenia patients untreated for many years. *Aust NZ J Psychiatry* 2004;38:339-43.
- Saravanan B, Jacob KS, Johnson S, Prince M, Bhugra D, David AS. Belief models in first episode schizophrenia in South India. *Soc Psychiatry Psychiatr Epidemiol* 2007;42:446-51.
- Addington J, Van Mastrigt S, Addington D. Duration of untreated psychosis: Impact on 2-year outcome. *Psychol Med* 2004;34:277-84.
- Drake RJ, Haley CJ, Akhtar S, Lewis SW. Causes and consequences of duration of untreated psychosis in schizophrenia. *Br J Psychiatry* 2000;177:511-5.
- Wyatt RJ, Henter I. Rationale for the study of early intervention. *Schizophr Res* 2001;51:69-76.
- Ho BC, Andreasen NC. Long delays in seeking treatment for schizophrenia. *Lancet* 2001;357:898-900.
- Wiersma D, Nienhuis FJ, Slooff CJ, Giel R. Natural course of schizophrenic disorders: A 15-year follow-up of a Dutch incidence cohort. *Schizophr Bull* 1998;24:75-85.
- Larsen TK, McGlashan TH, Johannessen JO, Friis S, Guldborg C, Haahr U, *et al.* Shortened duration of untreated first episode of psychosis: Changes in patient characteristics at treatment. *Am J Psychiatry* 2001;158:1917-9.
- Cassidy CM, Norman R, Manchanda R, Schmitz N, Malla A. Testing definitions of symptom remission in first-episode psychosis for prediction of functional outcome at 2 years. *Schizophr Bull* 2009 in press.
- Joa I, Johannessen JO, Auestad B, Friis S, McGlashan T, Melle I, *et al.* The key to reducing duration of untreated first psychosis: information campaigns. *Schizophr Bull* 2008;34:466-72.
- Buckley PF. Factors that influence treatment success in schizophrenia. *J Clin Psychiatry* 2008;69:4-10.
- Correll CU, Smith CW, Auther AM, McLaughlin D, Shah M, Foley C, *et al.* Predictors of remission, schizophrenia, and bipolar disorder in adolescents with brief psychotic disorder or psychotic disorder not otherwise specified considered at very high risk for schizophrenia. *J Child Adolesc Psychopharmacol* 2008;18:475-90.

**Source of Support: Nil, Conflict of Interest: None declared**