



Prevention of Schizophrenia and Severe Mental Illness

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GRAND CHALLENGES FOR SOCIAL WORK INITIATIVE

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Grand Challenge: *Ensure Healthy Development of All Youth*

GRAND CHALLENGES FOR SOCIAL WORK INITIATIVE

The Grand Challenges for Social Work are designed to focus a world of thought and action on the most compelling and critical social issues of our day. Each grand challenge is a broad but discrete concept where social work expertise and leadership can be brought to bear on bold new ideas, scientific exploration and surprising innovations.

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- Close the health gap
- Stop family violence
- Eradicate social isolation
- End homelessness
- Promote smart decarceration
- Reduce extreme economic inequality
- Build financial capability for all
- Harness technology for social good
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Preventing Schizophrenia and Severe Mental Illness

Jordan E. DeVlyder

Schizophrenia is a leading cause of disability and health expenditure worldwide. It is associated with homelessness, substance use, familial and social isolation, unemployment, involvement with the criminal justice system, stigma, discrimination, and excess mortality. Recent efforts have made prevention feasible by intervening with help-seeking youth who show early symptoms of psychosis, identified as being at “clinical high-risk” for schizophrenia and related psychotic disorders. Given the widespread clinical and functional effects of psychotic disorders, preventive mental health can have a profound and measurable positive impact across multiple domains of social work. A social work approach to psychosis prevention would build upon initial evidence that treatments are effective for preventing psychosis among youth at clinical high-risk. Integrating social work expertise in psychosocial interventions, cross-disciplinary coordination of services, stigma alleviation, and mobilization of community and agency resources is fundamental to this approach. Developing a preventive approach to schizophrenia intervention requires substantial innovation relative to the current status quo and greatly expands the role of psychosocial intervention and community agencies. However, recent National Institute of Mental Health funding priorities and state mental health policies have increasingly focused on early intervention for psychosis, making rapid change very possible within the next decade. This substantial potential for change, the massive savings in the quality of lives that would accrue, and the broad impact across social work domains is consistent with the goals of the Grand Challenges Initiative.

Key words: Psychosis, schizophrenia, psychotic disorder, clinical high-risk, prodrome, prevention

THE COMPELLING ISSUE OF SCHIZOPHRENIA AND MENTAL ILLNESS PREVENTION

Individuals with schizophrenia and other psychotic disorders are at the center of a national and global public health crisis. Schizophrenia is a leading cause of disability worldwide (Eaton et al., 2012). It accounts for a sizable portion of global health expenditures, costing the United States alone more than \$60 billion per year in direct costs for hospitalization, treatment, and medications, and indirect costs for lost productivity, excess mortality, family impact, and criminal justice (Knapp, Mangalore, & Simon, 2004; Wu et al., 2005). The estimated 50,000 individuals newly diagnosed with schizophrenia each year in the United States (Tandon, Keshavan, & Nasrallah, 2008) meet a system that provides intermittently effective

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pharmacological treatments with minimal adjunctive psychosocial support. They are subject to elevated risk of homelessness, substance use, medical and psychiatric comorbidities, suicide, stigma, and early mortality. Current treatment approaches center primarily around antipsychotic medications, which are characterized by mixed efficacy (Turner, Knoepfmacher, & Shapley, 2012), substantial side effects (Leucht et al., 2013), low adherence (Gilmer et al., 2004; Lieberman et al., 2005; Valenstein et al., 2006), stigma (Novak & Švab, 2009), and even neurotoxicity (Ho, Andreasen, Ziebell, Pierson, & Magnotta, 2011; Moncrieff & Leo, 2010). Schizophrenia has been long conceptualized as a predominantly biological condition; therefore, environmental factors and gene-environment interactions have only recently come to the forefront in the understanding of schizophrenia etiology. The strong associations between various environmental factors and psychosis prevalence have led to the proposition of an unrecognized psychosis epidemic among high-risk populations (Selten & Cantor-Graae, 2010). The socioenvironmental origins of this epidemic puts numerous systematically disadvantaged, discriminated, and stigmatized groups and individuals at elevated risk and thus places schizophrenia prevention within the appropriate domain of social work (DeVylder, 2012; 2014; Oh, DeVylder, & Chen, 2014).

Schizophrenia treatment has made gains with exciting recent research demonstrating for the first time that psychosocial interventions may effectively improve symptomatic outcomes even in the absence of medications (Morrison et al., 2014). However, this study is an outlier in a field characterized by limited change in both treatment practices and clinical outcomes over the past half century. The incremental and meandering progress being made in schizophrenia treatment should be accompanied by parallel development of preventive approaches, where there is potential for significant and rapid progress. Community-level interventions that target a range of adolescent risk factors (Catalano et al., 2012) have led to gains in the broader field of preventive mental health. However, prevention remains underdeveloped for those at the greatest risk of psychotic disorders (i.e., the most costly and impairing of all mental health conditions). Research with adolescents and young adults at *clinical high-risk* for schizophrenia provides a valuable and promising pathway towards the development of effective preventive approaches (Addington & Heinssen, 2012; Fusar-Poli et al., 2013). Specifically, *clinical high-risk* refers to treatment-seeking adolescents and young adults aged 12–30 years who meet criteria for one of three risk syndromes: (1) the presence of frequent attenuated or subthreshold psychotic symptoms such as hallucinations and delusions; (2) family history of schizophrenia in a first-degree relative combined with recent functional decline; and (3) the occurrence and rapid spontaneous remission of a full psychotic episode that does not meet criteria for psychotic disorder because of duration or severity (Fusar-Poli et al., 2013; Miller et al., 2003). The *clinical high-risk* state referenced in the remainder of the paper refers to individuals who meet psychosis-risk criteria through any of these three syndromes.

Efforts to prevent schizophrenia will result in significant and measureable change across multiple domains of social work, with direct and immediate effects in the domains of health and social connectedness and more distal effects in self-actualization, basic needs, and safety.

Health

Intervening with individuals showing early signs of psychotic disorders may directly lead to the primary prevention of schizophrenia. Given extensive comorbidity (Buckley, Miller, Lehrer, & Castle, 2009), even during this “at-risk” phase (Addington et al., 2011a), effects on mental health will be broad and extend beyond any single diagnosis. Furthermore, schizophrenia is associated with a nearly 20-year reduction in life expectancy (Laursen 2011; Laursen, Munk-Olsen, & Vestergaard, 2012), and even subthreshold psychosis is associated with increased odds for many severe medical conditions (Moreno et al., 2013), which suggests that early intervention would positively affect health as well as mental health.

Social connectedness

Social isolation is a prominent and distressing feature of schizophrenia that begins prior to onset (Addington, Penn, Woods, Addington, & Perkins, 2008; Corcoran et al., 2011; DeVlylder & Gearing, 2013). It has been implicated in the etiology of the disorder, with chronic social defeat as a unifying factor between a multitude of known socioenvironmental risk factors (Selten & Cantor-Graae, 2005; Selten, van der Ven, Rutten, & Cantor-Graae, 2013). Qualitative data show that social connectedness is poor and at times nonexistent among youth at *clinical high-risk* for psychosis (Ben David et al., 2014). Intervention at this stage can alleviate social isolation and in turn prevent the long-term chronic social isolation associated with persistent severe mental illness.

Self-actualization

Individuals at *clinical high-risk* for psychosis constitute a help-seeking population. They seek to prevent the exacerbation of problems that create substantial barriers to their goals. These individuals are at a transition period during which symptoms and functional difficulties may impair their ability to proceed with life as planned. This includes development of relationships and new social connections, completion of education, entry into employment, and maintenance of relationships with family. These disruptions likely explain the elevated rates of homelessness (Folsom & Jeste, 2002; Folsom et al., 2005), unemployment (Perkins & Rinaldi, 2002; Wu et al., 2005), substance use (Fowler, Carr, Carter, & Lewin, 1998), and familial distress (Chen & Lukens, 2011; Lukens, Thorning, & Lohrer, 2004; Martens & Addington, 2001) among individuals with schizophrenia, and may be preventable.

Safety

People with schizophrenia are a highly victimized population (Goodman et al., 2001; Maniglio, 2009) with minimal access to treatment for traumatic experiences (Chessen, Comtois, & Landes, 2011). Although they are at much greater risk of being victims of violent crime than perpetrators (Brekke, Prindle, Bae, & Long, 2001), they are also at elevated risk of perpetrating violence relative to the general population (Stueve & Link, 1997), which potentially affects the safety of others. Most people with psychosis are *not* violent, and risk associated with mental illness is similar to and does not exceed that associated with general age, gender, and educational attainment (Link & Stueve, 1998). Still, preventing the violence that does occur in this context has been at the forefront of public policy efforts given several recent incidents of mass violence committed by people with severe mental illness. Individuals with schizophrenia likewise experience a very high rate of suicide (Palmer, Pankratz, & Bostwick, 2005), a risk that extends to youth at risk for psychosis (DeVylder et al., 2012; Niendam, Berzak, Cannon, & Bearden, 2009) and others experiencing similar symptoms (DeVylder, 2014; DeVylder & Hilimire, in press; Kelleher et al., 2012; 2013).

Basic needs

Psychotic disorders are characterized by long-term unemployment, dependence on services, social isolation, and substance use, which leads to a 20% lifetime prevalence of homelessness among those with schizophrenia (Folsom et al., 2005). Schizophrenia accounts for an estimated 11% of homelessness (Folsom & Jeste, 2002); therefore, prevention of schizophrenia can eliminate a substantial cause of homelessness.

THE FEASIBILITY OF PREVENTING SEVERE MENTAL ILLNESS

The feasibility of preventing schizophrenia and other psychotic disorders has become increasingly realistic since the turn of the century, primarily because of the development of *clinical high-risk* programs. These tend to be small research-oriented programs that serve help-seeking adolescents and young adults who are showing attenuated or subthreshold psychotic symptoms. These symptoms are often accompanied by a recent decline in function, family history of severe mental illness, and the presence of other mental health conditions such as depressive or anxiety disorders (Miller et al., 2003; Yung et al., 2005). The goal is to prevent or intervene early regardless of the age at which psychosis onset occurs. Using these criteria, researchers can identify high-risk group can be identified that goes on to develop schizophrenia at a rate of approximately 30% over two years (Fusar-Poli et al., 2012). Such an incidence rate would far surpass that of the general population and even other high-risk groups, such as offspring of parents with schizophrenia (Parnas et al., 1993).

Current leading theories of schizophrenia etiology propose a prominent role for epigenetic mechanisms (Collip, Myin-Germeys, & van Os, 2008; van Os, Rutten, & Poulton, 2008; van Os, Kenis, & Rutten, 2010). They expand on earlier theories that onset follows exposure to environmental stressors among biologically vulnerable individuals (Corcoran et al., 2003; Walker & Diforio, 1997; Walker, Mittal, & Tessner, 2008). Epigenetic and diathesis-stress models suggest that both biological and socioenvironmental factors are critical to schizophrenia onset, and that both factors provide potential points of preventive intervention.

Initial attempts at schizophrenia prevention were pharmacologically focused. The first such study (McGorry et al., 2002) demonstrated reduced rates of transition to schizophrenia after six months among *clinical high-risk* individuals who were randomized (unblinded) to combined cognitive-behavioral therapy and risperidone treatment compared to case management. These gains were lost after a further six months of follow-up, which the authors attributed to the adverse effects of risperidone and consequent nonadherence (McGorry et al., 2002). A subsequent blinded randomized-controlled trial that compared olanzapine to placebo found similar results, but it had even greater adverse effects of antipsychotic medication (McGlashan et al., 2006). These data, in addition to the concern that overuse of antipsychotics for “psychosis-risk” may be further exacerbated in general clinical practice relative to the research environment (Corcoran, Malaspina, & Hercher, 2005), have led to a reluctance to pursue antipsychotics as a primary preventive treatment for schizophrenia. The general consensus, as the clinical staging model summarizes, is that “the earlier in the course of illness that treatment is offered the safer it should be and the more effective it may be in terms of remission and recovery rates” (McGorry et al., 2009, p.1208). Therefore, the ideal approach is a psychosocial intervention, either alone or in conjunction with low-risk alternative pharmacotherapies like omega-3 fatty acid tablets, which are effective in moderating the onset of schizophrenia in youth at *clinical high-risk* (Amminger & McGorry, 2012; Amminger et al., 2010; 2013), have no known side effects, and can be recommended by nonphysician clinicians as an over-the-counter pharmacotherapy concurrent with psychosocial intervention.

As with pharmacological interventions, randomized-controlled trials have likewise supported the efficacy of psychosocial interventions in psychosis prevention, including cognitive-behavioral therapy as well as general supportive therapy (Addington et al., 2011b; Morrison et al., 2004; 2007). Specifically, Morrison et al. (2004) found that individuals receiving cognitive therapy were less likely to develop schizophrenia or initiate use of antipsychotic medication (treated in the study as an indicator of worsening symptoms), compared to a minimally treated (monitoring) control group. These benefits were partially maintained over a longer follow-up period of three years, at which point cognitive therapy only had an advantage in terms of transition rate when adjusting for baseline cognitive function (Morrison et al., 2007). In a second trial, none of the 27 youth randomized to receive cognitive-behavioral therapy developed schizophrenia during 18

months of follow-up, although this was not statistically different from the transition rate of 12.5% ($n = 3$) in the supportive therapy group (Addington et al., 2011b). Both groups showed symptomatic improvement and exhibited substantially lower transition rates than typically found in *clinical high-risk* cohorts (Fusar-Poli et al., 2012). This supported the authors' conclusion that the lack of a significant difference may reflect the efficacy of both interventions relative to no treatment, which was not tested because of the present lack of a "treatment as usual" for this population.¹ Most recently, family-focused treatment (e.g., psychoeducation, stress management, communication training, problem-solving skills training) was superior to treatment as usual enhanced with brief family psychoeducation in reducing the severity of attenuated psychotic symptoms after six months, with additional improvements in function that varied by age group (Miklowitz et al., 2014). The efficacy of psychosocial interventions is consistent with descriptive cohort studies that show psychosocial factors (e.g., low self-esteem, sensitivity to daily stressors, poor social function) directly relate to the severity of sub-threshold psychotic symptoms (Corcoran et al., 2011; DeVylder et al., 2013; Pruessner, Iyer, Faridi, Joobar, & Malla, 2011). Therefore, it may be possible to delay or prevent schizophrenia onset by addressing these distressing precursor factors rather than attempting to address psychotic symptoms that may or may not progress in severity.

Current evidence supports the notion that primary prevention of schizophrenia is possible by intervening prior to onset with individuals at *clinical high-risk*. Established theories with supporting biological and epidemiological evidence, such as the diathesis-stress model (Corcoran et al., 2003; Walker & Diforio, 1997; Walker, Mittal, & Tessner, 2008), implicate the critical role of psychosocial factors in the onset of schizophrenia, which provides the needed rationale to pursue low-risk psychosocial and social work lead interventions at this stage.

GRAND CHALLENGE GOALS AND MEASURABLE OUTCOMES

Substantial progress toward the primary prevention of psychotic disorders can be made in the following decade by building on the extensive interdisciplinary progress made over the past ten years. Social work can help lead the development of alternatives given the following concerns regarding current approaches: (1) risks associated with treatment; (2) stigma associated with attending dedicated "psychosis-risk" clinics; and (3) the benefits will not be sufficient to justify intervention. This can be achieved in the potential areas of progress outlined below.

¹ For attempts at operationalizing treatment as usual in this population, see Jacobs, Kline, and Schiffman, 2012.

Development and rigorous testing of novel treatment approaches

Research over the next decade should primarily focus on the development of novel psychosocial treatments tailored to the needs of youth at *clinical high-risk* for developing schizophrenia in the near future. These efforts can build off existing success with psychosocial interventions for schizophrenia prevention, particularly cognitive therapy (Addington et al., 2011b; Morrison et al., 2004). However, they may also consist of multimodal approaches that include family support (Miklowitz et al., 2014; O'Brien et al., 2007; 2009), employment and educational support, and substance use treatment, all of which have proven useful in schizophrenia treatment (Dixon et al., 2010). Psychosocial treatment may benefit from integration with low-risk pharmacological or nutritional supports, such as fish oil tablets (Amminger et al., 2010), which nonphysician practitioners may recommend. Demonstrating comparable or superior efficacy of lower-risk interventions should serve to minimize the use of poorly tolerated and potentially harmful antipsychotic medications.

Specific measurable outcomes:

- Reduce transition rate to schizophrenia/psychotic disorder among those enrolled in *clinical high-risk* programs by half from the current estimated transition rates of 29% over two years follow-up and 36% over three years follow-up (Fusar-Poli et al., 2013).
- Develop a treatment manual for a targeted psychosocial intervention for youth at *clinical high-risk* for schizophrenia, and demonstrate its comparability or superiority to antipsychotic medications in preventing schizophrenia among this population through at least one randomized controlled trial.

Development of brief nonstigmatizing screening by existing human service organizations

Clinical high-risk screening should be integrated into existing human service organizations and other social service agencies. Development of even limited community partnerships has been shown to be a highly effective recruitment strategy for leading psychosis-risk research clinics (Domingues, Alderman, & Cadenhead, 2011; Hardy et al., 2011). Current social work roles that may have frequent contact with youth who would meet *clinical high-risk* criteria include education (high school and college), child welfare, mental health, and recreational programs. Screening through existing programs and agencies would potentially remove the stigma that may be associated with making first contact through a dedicated psychosis risk agency or clinic (Anglin, Greenspoon, Lighty, Corcoran, & Yang, 2013; Corrigan, 2004; Yang et al., 2013). Using existing services also improves chances of detection and facilitates accessibility of services. Furthermore, building off of existing social services reduces risk of exacerbating health disparities. It creates special programs that may be accessible to different segments of the population, as social service organizations provide for the underserved. For greater reach,

psychosis-risk scientific work can likewise be integrated into massive programs with existing elements of screening and referral such as *Mental Health First Aid for Youth*, *Military entrance processing exams*, and *Screen, Brief Intervention, Referral to Treatment (SBIRT)*. Integration with existing social service agencies not only facilitates access to care and minimizes stigma, it also places social work in a position of prominence and necessity within this field.

Specific measurable outcomes:

- Pilot a new or existing psychosis-risk screening measure (e.g., Kline et al., 2012a; 2012b; 2014; Liu et al., 2013) in a variety of social work settings that serve adolescents and young adults (e.g., schools, foster care agencies) to determine settings where they yield successful referrals.
- Demonstrate facilitated access to care and reduced feelings of stigma through direct comparison between the proposed social work models and more typical “medical model” type approaches by using qualitative interviews and recently developed stigma measures designed to assess multi-dimensional stigma specifically in this population (L. Yang, personal communication, January 14, 2014).

Testing of the bonus benefits for early intervention

Clinical high-risk status is characterized by widespread clinical need that extends beyond risk for psychotic disorders or schizophrenia. Specifically, youth at risk for schizophrenia also face an elevated suicide risk (DeVylder et al., 2012; Niendam, Berzak, & Cannon, 2009; Palmier-Claus, Taylor, Gooding, Dunn, & Lewis, 2012), significant impairments in social and role function (Addington, Penn, Woods, Addington, & Perkins, 2008; Corcoran et al., 2011; Niendam et al., 2007), and high rates of cooccurring disorders (Addington et al., 2011a; Fusar-Poli, Nelson, Valmaggia, Yung, McGuire, 2014; Salokangas et al., 2012). Existing intervention research has focused only on psychosis onset as the outcome of interest, which neglects possible gains in these peripheral areas of need (McGorry et al., 2009). Person-centered social work approaches are well positioned to address multifaceted issues by focusing on the needs of the client rather than on one specific condition. By addressing broader needs, social workers ensure that clients are not denied services if their difficulties do not evolve specifically into schizophrenia.

Specific measurable outcomes:

- Develop interventions with attention to cooccurring difficulties, not just psychosis. Comorbidity studies and qualitative methods can be used together to identify points of clinical, functional, and subjective need.
- When testing new interventions, include additional outcome measures assessing social and role function, suicidal ideation and attempts, and psychiatric symptoms not defined as psychosis or psychosislike.

Create regional centers of excellence on prevention and early intervention for psychosis

Social work and other allied disciplines could create regional centers of excellence that consult with local mental health services and school districts to help with implementation of efforts to respond to *clinical high-risk* youth. These centers could create and adapt strategies that best fit the local conditions.

Specific measurable outcomes:

- Establish at least two regional centers of excellence over the next decade.
- Demonstrate unique contributions of locally adapted regional centers through qualitative research with clients, families, and practitioners.

Educate social work students with emphasis on early detection and intervention

Information on assessment and screening for psychosis risk may be relevant for anyone working with these adolescent and young adult age groups; therefore, it should be incorporated into the general social work curriculum. Social work students training to enter the mental health field would benefit from more in-depth education on best practices for youth at *clinical high-risk* for psychosis. Macro-level social work students can be educated on the cost effectiveness and long-term benefits of preventive mental health, particular regarding schizophrenia and psychotic disorders.

Specific measurable outcomes:

- Develop and propose curriculum modifications to the Council on Social Work Education that would provide social work students with basic tools needed to intervene with *clinical high-risk* youth.
- Evaluate the knowledge base in the area of schizophrenia prevention, and preventive mental health more broadly, through assessment of social work students at selected schools nationwide.

The past ten years have seen accelerating growth in the area of psychosis prevention and early intervention, with approximately ten times more articles being published on this topic in 2013 versus 2003.² Support for research funding has expanded, with several recent requests for proposals on psychosis risk and related topics from the National Institute of Mental Health. Policy funding support has also increased, with expanding early intervention programs as OnTrackNY and the Maryland Early Intervention Program. In Australia, the award for

² See <http://www.pubmed.gov>.

“Australian of the Year” even went to a psychiatrist for work on psychosis prevention and early intervention.³ Finally, the initial stages of establishing psychiatric legitimacy of the psychosis-risk construct began with its inclusion in the appendix of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders as “attenuated psychosis syndrome” (Tsuang et al., 2013), with significant support for its inclusion as a diagnosis in future editions (Fusar-Poli, Carpenter, Woods, & McGlashan, 2014). Taken together, this notable and growing support from funders, policymakers, and mental health clinicians makes expansion and progress in this area inevitable over the following decade. The critical question in regards to the social work field is whether this growth will proceed with or without our involvement and leadership.

INTERDISCIPLINARY AND CROSS-SECTOR APPROACHES TO PSYCHOSIS RISK

An expansion of focus in schizophrenia treatment from maintenance of chronic symptoms towards primary prevention cannot occur in a single isolated profession and field; there must be interdisciplinary and cross-sector collaboration. Psychosis-risk clinics have accordingly been interdisciplinary, typically housed in psychiatric settings but including collaborations with neuroscientists, psychologists, epidemiologists, and occasionally social workers. Social work involvement has been limited despite the extensive potential outlined above.

Given the profession’s potential as a leader in translational science, the case can be made for greater social work prominence in this interdisciplinary field (Brekke, Ell, & Palinkas, 2007). Social workers have expertise in psychosocial treatment, which will likely emerge in one form as best practices for this population. Social workers also have the greatest access to “at-risk” youth through existing agencies and programs. Given that social work represents the largest mental health profession in the United States, it should have a primary role in any major interdisciplinary shift in mental health treatment priorities and goals.

Social work leadership within interdisciplinary mental health settings is well precedented, particularly in the notable success of the assertive community treatment model for schizophrenia (Dixon, 2000). Under this model, a social worker serves as team leader who coordinates the broad range of clinical services and functional supports necessary for individuals with chronic schizophrenia (Bond, Drake, Mueser, & Latimer, 2001). Later adaptations, such as critical time intervention, further expanded on the ability of social workers to coordinate and integrate a wide variety of services for individuals with mental illness whose needs could not be met through either the medical system or social services alone (Herman, 2013). In devising preventive approaches for psychosis, it will be necessary for social work to recruit support from addiction

³ See <http://www.australianoftheyear.org.au>.

counselors, employment and education specialists, psychologists, and psychiatrists, and combine these various areas of expertise into an implementable model.

Within social work, collaboration would be essential between mental health social workers and those operating within schools, the juvenile justice system, foster care system, and recreational centers. The most notable point of interdisciplinary collaboration is during the screening phase. Given known risk factors for schizophrenia, including separation from parents (Morgan et al., 2007), childhood abuse (Bebbington et al., 2011; Varese et al., 2012), bullying (van Dam et al., 2012), and frequent residential relocation (Paksarian, Eaton, Mortensen, & Pedersen, in press), it is likely that many individuals meeting clinical high-risk criteria have already had some prior contact with social service agencies. Therefore, social work is in a unique position to identify these youth and make appropriate referrals through screening programs, without requiring the youth to take the first step of entering a dedicated mental health program where they may face additional barriers such as inaccessibility of care and public stigma.

BEYOND STATUS QUO: COMMUNITY-BASED PSYCHOSOCIAL APPROACHES TO PSYCHOSIS PREVENTION

The very notion of psychosis prevention challenges the traditional belief many clinicians and researchers hold that schizophrenia is a chronic condition with a declining trajectory and little hope for recovery. Psychosis prevention will require notable innovation in several key areas. The *status quo* is not a reasonable option for schizophrenia interventions; “treatment as usual” is highly problematic for schizophrenia and nonexistent for *clinical high-risk* youth. Innovation is necessary to shift the *aims* from treatment of a chronic illness towards primary prevention, to change the *means* from dependence on antipsychotic medications towards inclusion of psychosocial interventions, and to expand the *settings* to include a broad array of social service agencies.

Innovation 1: Focused primary prevention in mental health

Early intervention for psychosis has been at the forefront of a broader move towards preventive mental health interventions. Prevention of mental health conditions faces a serious challenge in that symptoms that arise early in life, which are highly amenable to intervention, have low diagnostic specificity and predictive value, whereas later symptoms that fit more neatly into diagnostic categories tend to have already established some degree of treatment resistance. This concept is described in the clinical staging model (Fusar-Poli, Yung, McGorry, & van Os, 2014), which provides a useful framework for innovation in mental health treatment. This model essentially suggests that general symptoms and general risk factors that occur early in life should be met with broad interventions, whereas specific diagnoses that develop later should be met with dedicated and targeted pharmacological or psychosocial interventions.

Social work and related fields have made impressive progress in the development of broad preventive approaches for high-risk youth at the earliest stage within this clinical staging construct (Catalano et al., 2012). By addressing broad risk factors at an early age, community-level interventions have managed to influence similarly broad indicators of mental health, such as delinquency and substance use (Hawkins et al., 2012; Hawkins, Oesterle, Brown, Abbott, & Catalano, 2014). However, it remains unclear how community-level early childhood interventions influence risk in later adolescence and early adulthood. Even with widespread implementation, social workers and other mental health clinicians cannot assume that such interventions will be effective for schizophrenia prevention especially with a risk state characterized by notable functional and clinical decline that occurs at a later age than community-level interventions currently address. Psychotic disorders are sufficiently rare but have sufficient long-term costs to justify additional preventive approaches once more diagnostic-specific symptoms begin to develop. Such interventions are more cost-effective than nonspecific interventions for youth at risk for psychosis (Phillips et al., 2009) and are supported by evidence that would be difficult to attain at the community level given the low overall prevalence of psychosis. The paradox of intervening at this later stage is that youth deemed to be at risk for psychotic disorders are likewise still at risk for other severe mental health outcomes. Furthermore, given that psychosis likely forms a continuous dimension of psychiatric symptoms rather than a discrete condition (Linscott & van Os, 2013), the concept of “transition” to psychotic disorder (Yung, Nelson, Thompson, & Wood, 2010) may have limited usefulness (Fusar-Poli, Yung, McGorry, & van Os, 2014). Therefore, a novel and innovative *middle ground* approach should be developed around this *clinical high-risk* state that combines both diagnostic specific (i.e., focused on reducing incidence of psychotic disorders) and nonspecific (i.e., not excluding other distressing clinical and functional features of this at-risk state, which may be equally or more significant). Preventive approaches that take place when clinical need has progressed beyond that met by community-level approaches but not to the point of diagnostic specificity remain largely undeveloped. Successful approaches to psychosis prevention can provide a model for the broader development of a preventive mental health field.

Innovation 2: Psychosocial treatment as a primary intervention for psychotic disorders

The use of antipsychotic medications for schizophrenia and other psychotic disorders has been solidly established as the frontline treatment standard for decades and will continue to be so into the foreseeable future (Buchanan et al., 2010). Despite their notable efficacy in treating established psychotic disorders, and even in preventing psychosis among *clinical high-risk* youth, concerns regarding side effects, adherence, and the overprescription of these medications prior to onset have limited their feasibility as a frontline treatment for the *clinical high-risk* state (Corcoran, Malaspina, & Hercher, 2005; McGorry et al., 2009). Therefore, alternative approaches are necessary. With only one clinical trial demonstrating the efficacy of psychosocial

treatments in the absence of medication for schizophrenia (Morrison et al., 2014), and only two similar studies in *clinical high-risk* youth (Addington et al., 2011b; Morrison et al., 2004; 2007), any progress towards psychosocial intervention without adjunctive antipsychotic pharmacotherapy will require significant and substantial innovation. Although innovative, the development of a novel intervention for the *clinical high-risk* state will be guided by established evidence-based practices for schizophrenia, including family psychoeducation, supported employment, cognitive therapy, and others (Dixon et al., 2010), making it feasible for social workers to develop an effective preventive approach over the next decade.

Innovation 3: Community agencies as points of early detection for severe mental illness

A major innovation required to implement psychosis prevention is the integration of early intervention mental health services with existing social service agencies in the community. Entry into mental health treatment is associated with stigma that negatively affects self-esteem and social opportunities (Corrigan, 2004), two areas in which adolescents or young adults with early psychosis symptoms may be particularly vulnerable. Nonetheless, existing clinics that address the needs of this population are nearly all housed in hospitals or university medical centers. An innovative approach would bridge the gap between services dedicated to at-risk youth with services for youth who have more specific risk syndromes, including psychosis risk. This would facilitate access to care and allow youth to stay involved with service providers that are aware of their history and broader psychosocial needs, at least during the initial screening phase. Implementation will require involvement and interest from such agencies, and convincing evidence that social work interventions can prevent the progression to psychotic disorder for their service recipients.

CONCLUSIONS: THE GRAND CHALLENGE OF SCHIZOPHRENIA PREVENTION

The development and implementation of innovative psychosocial interventions building on cross-sector and interdisciplinary collaborations will contribute significantly to efforts to prevent the onset of schizophrenia. The existing success from initial prevention attempts in the *clinical high-risk* field, in conjunction with the unique expertise of the social work profession, strongly suggest that meaningful and measurable progress can be made within the next decade. Primary prevention of schizophrenia and other psychotic disorders can significantly affect multiple domains of social work, and is squarely within the goals set forth by the Grand Challenges Initiative of the American Academy of Social Work and Social Welfare.

REFERENCES

- Addington, J., Cornblatt, B. A., Cadenhead, K. S., Cannon, T. D., McGlashan, T. H., Perkins, D. O., ... & Heinssen, R. (2011a). At clinical high risk for psychosis: Outcome for nonconverters. *American Journal of Psychiatry*, *168*(8), 800–805. doi: 10.1176/appi.ajp.2011.10081191
- Addington, J., Epstein, I., Liu, L., French, P., Boydell, K. M., & Zipursky, R. B. (2011b). A randomized controlled trial of cognitive behavioral therapy for individuals at clinical high risk of psychosis. *Schizophrenia Research*, *125*(1), 54–61. doi: 10.1016/j.schres.2010.10.015
- Addington, J., & Heinssen, R. (2012). Prediction and prevention of psychosis in youth at clinical high risk. *Annual Review of Clinical Psychology*, *8*, 269–289. doi: 10.1146/annurev-clinpsy-032511-143146
- Addington, J., Penn, D., Woods, S. W., Addington, D., & Perkins, D. O. (2008). Social functioning in individuals at clinical high risk for psychosis. *Schizophrenia Research*, *99*(1), 119–124.
- Amminger, G. P., Chanen, A. M., Ohmann, S., Klier, C. M., Mossaheb, N., Bechdolf, A., ... & Schäfer, M. R. (2013). Omega-3 fatty acid supplementation in adolescents with borderline personality disorder and ultra-high risk criteria for psychosis: a post hoc subgroup analysis of a double-blind, randomized controlled trial. *Canadian Journal of Psychiatry*, *58*(7), 402–408.
- Amminger, G. P., & McGorry, P. D. (2012). Update on omega-3 polyunsaturated fatty acids in early-stage psychotic disorders. *Neuropsychopharmacology*, *37*(1), 309–310. doi: 10.1038/npp.2011.187
- Amminger, G. P., Schäfer, M. R., Papageorgiou, K., Klier, C. M., Cotton, S. M., Harrigan, S. M., ... & Berger, G. E. (2010). Long-chain omega-3 fatty acids for indicated prevention of psychotic disorders: A randomized, placebo-controlled trial. *Archives of General Psychiatry*, *67*(2), 146–154. doi: 10.1001/archgenpsychiatry.2009.192
- Anglin, D. M., Greenspoon, M. I., Lighty, Q., Corcoran, C. M., & Yang, L. H. (2013). Spontaneous labelling and stigma associated with clinical characteristics of peers ‘at-risk’ for psychosis. *Early Intervention in Psychiatry*, *8*(3), 247–252. doi: 10.1111/eip.12047
- Bebbington, P., Jonas, S., Kuipers, E., King, M., Cooper, C., Brugha, T., ... & Jenkins, R. (2011). Childhood sexual abuse and psychosis: data from a cross-sectional national psychiatric

- survey in England. *The British Journal of Psychiatry*, 199(1), 29–37. doi: 10.1192/bjp.bp.110.083642
- Ben-David, S., Birnbaum, M. L., Eilenberg, M. E., DeVlyder, J. E., Gill, K. E., Schienle, J., ... & Corcoran, C. M. (2014). The subjective experience of youths at clinically high risk of psychosis: A qualitative study. *Psychiatric Services*, 65(12), 1499–1501. doi: 10.1176/appi.ps.201300527
- Bond, G. R., Drake, R. E., Mueser, K. T., & Latimer, E. (2001). Assertive community treatment for people with severe mental illness. *Disease Management and Health Outcomes*, 9(3), 141–159.
- Brekke, J. S., Ell, K., & Palinkas, L. A. (2007). Translational science at the National Institute of Mental Health: Can social work take its rightful place? *Research on Social Work Practice*, 17(1), 123–133. doi: 10.1177/1049731506293693
- Brekke, J. S., Prindle, C., Bae, S. W., & Long, J. D. (2001). Risks for individuals with schizophrenia who are living in the community. *Psychiatric Services*, 52(10), 1358–1366.
- Buchanan, R. W., Kreyenbuhl, J., Kelly, D. L., Noel, J. M., Boggs, D. L., Fischer, B. A., ... & Keller, W. (2010). The 2009 schizophrenia PORT psychopharmacological treatment recommendations and summary statements. *Schizophrenia Bulletin*, 36(1), 71–93. doi: 10.1093/schbul/sbp116
- Buckley, P. F., Miller, B. J., Lehrer, D. S., & Castle, D. J. (2009). Psychiatric comorbidities and schizophrenia. *Schizophrenia Bulletin*, 35(2), 383–402. doi: 10.1093/schbul/sbn135
- Catalano, R. F., Fagan, A. A., Gavin, L. E., Greenberg, M. T., Irwin, C. E., Jr., Ross, D. A., & Shek, D. T. (2012). Worldwide application of prevention science in adolescent health. *The Lancet*, 379(9826), 1653–1664. doi:10.1016/S0140-6736(12)60238-4
- Chen, W. Y., & Lukens, E. (2011). Well being, depressive symptoms, and burden among parent and sibling caregivers of persons with severe and persistent mental illness. *Social Work in Mental Health*, 9(6), 397–416. doi:10.1080/15332985.2011.575712
- Chessen, C. E., Comtois, K. A., & Landes, S. J. (2011). Untreated posttraumatic stress among persons with severe mental illness despite marked trauma and symptomatology. *Psychiatric Services*, 62(10), 1201–1206. doi: 10.1176/appi.ps.62.10.1201

- Collip, D., Myin-Germeys, I., & van Os, J. (2008). Does the concept of “sensitization” provide a plausible mechanism for the putative link between the environment and schizophrenia? *Schizophrenia Bulletin*, *34*(2), 220–225. doi: 10.1093/schbul/sbm163
- Corcoran, C. M., Kimhy, D., Parrilla-Escobar, M. A., Cressman, V. L., Stanford, A. D., Thompson, J., ... & Malaspina, D. (2011). The relationship of social function to depressive and negative symptoms in individuals at clinical high risk for psychosis. *Psychological Medicine*, *41*(2), 251–261. doi: 10.1017/S0033291710000802
- Corcoran, C., Malaspina, D., & Hercher, L. (2005). Prodromal interventions for schizophrenia vulnerability: the risks of being “at risk”. *Schizophrenia Research*, *73*(2), 173–184.
- Corcoran, C., Walker, E., Huot, R., Mittal, V., Tessner, K., Kestler, L., & Malaspina, D. (2003). The stress cascade and schizophrenia: Etiology and onset. *Schizophrenia Bulletin*, *29*(4), 671–692.
- Corrigan, P. (2004). How stigma interferes with mental health care. *American Psychologist*, *59*(7), 614–625.
- DeVylder, J. E. (2012). An ecological systems perspective on the clinical high risk state preceding schizophrenia onset. *Social Work in Mental Health*, *10*(6), 478–495. doi: 10.1080/15332985.2012.708018
- DeVylder, J. E. (2014). Maximizing benefits and minimizing risks in the primary prevention of schizophrenia. *Social Work*, *59*(4), 363–365. doi: 10.1093/sw/swu027
- DeVylder, J. E. (2014, January). *The clinical significance of sub-threshold psychosis in the general population: Comorbidity and suicide risk*. Presented at the Society for Social Work and Research 18th Annual Conference: Research for Social Change: Addressing Local and Global Challenges. San Antonio, TX: SSWR.
- DeVylder, J. E., Ben-David, S., Schobel, S. A., Kimhy, D., Malaspina, D., & Corcoran, C. M. (2013). Temporal association of stress sensitivity and symptoms in individuals at clinical high risk for psychosis. *Psychological Medicine*, *43*(2), 259–268. doi: 10.1017/S0033291712001262
- DeVylder, J. E., & Gearing, R. E. (2013). Declining social support in adolescents prior to first episode psychosis: Associations with negative and affective symptoms. *Psychiatry Research*, *210*(1), 50–54. doi: 10.1016/j.psychres.2013.02.004

- DeVylder, J.E., & Hilimire, M.R. (in press). Suicide risk, stress sensitivity, and self-esteem among young adults reporting auditory hallucinations. *Health & Social Work*.
- DeVylder, J. E., Oh, A. J., Ben-David, S., Azimov, N., Harkavy-Friedman, J. M., & Corcoran, C. M. (2012). Obsessive compulsive symptoms in individuals at clinical risk for psychosis: Association with depressive symptoms and suicidal ideation. *Schizophrenia research*, *140*(1), 110–113. doi: 10.1016/j.schres.2012.07.009
- Dixon, L. (2000). Assertive community treatment: Twenty-five years of gold. *Psychiatric Services*, *51*(6), 759–765.
- Dixon, L. B., Dickerson, F., Bellack, A. S., Bennett, M., Dickinson, D., Goldberg, R. W., ... & Kreyenbuhl, J. (2010). The 2009 schizophrenia PORT psychosocial treatment recommendations and summary statements. *Schizophrenia Bulletin*, *36*(1), 48–70. doi: 10.1093/schbul/sbp115
- Domingues, I., Alderman, T., & Cadenhead, K. S. (2011). Strategies for effective recruitment of individuals at risk for developing psychosis. *Early Intervention in Psychiatry*, *5*(3), 233–241. doi: 10.1111/j.1751-7893.2011.00278.x
- Eaton, W.W., Alexandre, P., Bienvenu, O.J., Clarke, D., Martins, S.S., Nestadt, G., Zablotsky, B. (2012). The burden of mental disorders. In W.W. Eaton (Ed.), *Public mental health* (pp. 3–30). New York: Oxford University Press.
- Folsom, D. P., Hawthorne, W., Lindamer, L., Gilmer, T., Bailey, A., Golshan, S., ... & Jeste, D. V. (2005). Prevalence and risk factors for homelessness and utilization of mental health services among 10,340 patients with serious mental illness in a large public mental health system. *American Journal of Psychiatry*, *162*(2), 370–376.
- Folsom, D., & Jeste, D. V. (2002). Schizophrenia in homeless persons: A systematic review of the literature. *Acta Psychiatrica Scandinavica*, *105*(6), 404–413.
- Fowler, I. L., Carr, V. J., Carter, N. T., & Lewin, T. J. (1998). Patterns of current and lifetime substance use in schizophrenia. *Schizophrenia Bulletin*, *24*(3), 443–455.
- Fusar-Poli, P., Bonoldi, I., Yung, A. R., Borgwardt, S., Kempton, M. J., Valmaggia, L., ... & McGuire, P. (2012). Predicting psychosis: Meta-analysis of transition outcomes in individuals at high clinical risk. *Archives of General Psychiatry*, *69*(3), 220–229. doi: 10.1001/archgenpsychiatry.2011.1472

- Fusar-Poli, P., Borgwardt, S., Bechdolf, A., Addington, J., Riecher-Rössler, A., Schultze-Lutter, F., ... & Yung, A. (2013). The psychosis high-risk state: A comprehensive state-of-the-art review. *JAMA Psychiatry*, *70*(1), 107–120. doi: 10.1001/jamapsychiatry.2013.269
- Fusar-Poli, P., Carpenter, W. T., Woods, S. W., & McGlashan, T. H. (2014). Attenuated psychosis syndrome: Ready for DSM-5.1? *Annual Review of Clinical Psychology*, *10*, 155–192. doi: 10.1146/annurev-clinpsy-032813-153645
- Fusar-Poli, P., Nelson, B., Valmaggia, L., Yung, A. R., & McGuire, P. K. (2014). Comorbid depressive and anxiety disorders in 509 individuals with an at-risk mental state: Impact on psychopathology and transition to psychosis. *Schizophrenia Bulletin*, *40*(1), 120–131. doi: 10.1093/schbul/sbs136
- Fusar-Poli, P., Yung, A. R., McGorry, P., & van Os, J. (2014). Lessons learned from the psychosis high-risk state: Towards a general staging model of prodromal intervention. *Psychological Medicine*, *44*(1), 17–24. doi: 10.1017/S0033291713000184
- Gilmer, T. P., Dolder, C. R., Lacro, J. P., Folsom, D. P., Lindamer, L., Garcia, P., & Jeste, D. V. (2004). Adherence to treatment with antipsychotic medication and health care costs among Medicaid beneficiaries with schizophrenia. *American Journal of Psychiatry*, *161*(4), 692–699.
- Goodman, L. A., Salyers, M. P., Mueser, K. T., Rosenberg, S. D., Swartz, M., Essock, S. M., ... & Swanson, J. (2001). Recent victimization in women and men with severe mental illness: prevalence and correlates. *Journal of Traumatic Stress*, *14*(4), 615–632.
- Hardy, K. V., Moore, M., Rose, D., Bennett, R., Jackson-Lane, C., Gause, M., ... & Loewy, R. (2011). Filling the implementation gap: A community–academic partnership approach to early intervention in psychosis. *Early Intervention in Psychiatry*, *5*(4), 366–374. doi: 10.1111/j.1751-7893.2011.00310.x
- Hawkins, J. D., Oesterle, S., Brown, E. C., Abbott, R. D., & Catalano, R. F. (2014). Youth problem behaviors 8 years after implementing the Communities That Care prevention system: A community-randomized trial. *JAMA pediatrics*, *168*(2), 122–129. doi: 10.1001/jamapediatrics.2013.4009
- Hawkins, J. D., Oesterle, S., Brown, E. C., Monahan, K. C., Abbott, R. D., Arthur, M. W., & Catalano, R. F. (2012). Sustained decreases in risk exposure and youth problem behaviors after installation of the Communities That Care prevention system in a randomized trial.

- Archives of Pediatrics & Adolescent Medicine*, 166(2), 141–148. doi: 10.1001/archpediatrics.2011.183
- Herman, D. B. (2013). Transitional support for adults with severe mental illness: Critical time intervention and its roots in assertive community treatment. *Research on Social Work Practice*, 24(5), 556–563. doi: 10.1177/1049731513510976
- Ho, B. C., Andreasen, N. C., Ziebell, S., Pierson, R., & Magnotta, V. (2011). Long-term antipsychotic treatment and brain volumes: A longitudinal study of first-episode schizophrenia. *Archives of General Psychiatry*, 68(2), 128–137. doi: 10.1001/archgenpsychiatry.2010.199
- Jacobs, E., Kline, E., & Schiffman, J. (2012). Defining treatment as usual for attenuated psychosis syndrome: a survey of community practitioners. *Psychiatric Services*, 63(12), 1252–1256. doi: 10.1176/appi.ps.201200045
- Kelleher, I., Corcoran, P., Keeley, H., Wigman, J. T., Devlin, N., Ramsay, H., ... & Cannon, M. (2013). Psychotic symptoms and population risk for suicide attempt: A prospective cohort study. *JAMA Psychiatry*, 70(9), 940–948. doi: 10.1001/jamapsychiatry.2013.140
- Kelleher, I., Lynch, F., Harley, M., Molloy, C., Roddy, S., Fitzpatrick, C., & Cannon, M. (2012). Psychotic symptoms in adolescence index risk for suicidal behavior: Findings from 2 population-based case-control clinical interview studies. *Archives of General Psychiatry*, 69(12), 1277–1283. doi: 10.1001/archgenpsychiatry.2012.164
- Kline, E., Thompson, E., Bussell, K., Pitts, S. C., Reeves, G., & Schiffman, J. (2014). Psychosis-like experiences and distress among adolescents using mental health services. *Schizophrenia Research*, 152(2), 498–502. doi:10.1016/j.schres.2013.12.012
- Kline, E., Wilson, C., Ereshefsky, S., Denenny, D., Thompson, E., Pitts, S. C., ... & Schiffman, J. (2012a). Psychosis risk screening in youth: a validation study of three self-report measures of attenuated psychosis symptoms. *Schizophrenia Research*, 141(1), 72–77. doi: 10.1016/j.schres.2012.07.022
- Kline, E., Wilson, C., Ereshefsky, S., Tsuji, T., Schiffman, J., Pitts, S., & Reeves, G. (2012b). Convergent and discriminant validity of attenuated psychosis screening tools. *Schizophrenia Research*, 134(1), 49–53. doi: 10.1016/j.schres.2011.10.001
- Knapp, M., Mangalore, R., & Simon, J. (2004). The global costs of schizophrenia. *Schizophrenia Bulletin*, 30(2), 279–293.

- Laursen, T. M. (2011). Life expectancy among persons with schizophrenia or bipolar affective disorder. *Schizophrenia Research*, *131*(1), 101–104. doi: 10.1016/j.schres.2011.06.008
- Laursen, T. M., Munk-Olsen, T., & Vestergaard, M. (2012). Life expectancy and cardiovascular mortality in persons with schizophrenia. *Current Opinion in Psychiatry*, *25*(2), 83–88. doi: 10.1097/YCO.0b013e32835035ca
- Leucht, S., Cipriani, A., Spineli, L., Mavridis, D., Örey, D., Richter, F., ... & Davis, J. M. (2013). Comparative efficacy and tolerability of 15 antipsychotic drugs in schizophrenia: A multiple-treatments meta-analysis. *The Lancet*, *382*(9896), 951–962. doi:10.1016/S0140-6736(13)60733-3
- Lieberman, J. A., Stroup, T. S., McEvoy, J. P., Swartz, M. S., Rosenheck, R. A., Perkins, D. O., ... & Hsiao, J. K. (2005). Effectiveness of antipsychotic drugs in patients with chronic schizophrenia. *New England Journal of Medicine*, *353*(12), 1209–1223. doi: 10.1056/NEJMoa051688
- Link, B. G., & Stueve, A. (1998). New evidence on the violence risk posed by people with mental illness: On the importance of specifying the timing and the targets of violence. *Archives of General Psychiatry*, *55*(5), 403–404.
- Linscott, R. J., & van Os, J. (2013). An updated and conservative systematic review and meta-analysis of epidemiological evidence on psychotic experiences in children and adults: On the pathway from proneness to persistence to dimensional expression across mental disorders. *Psychological Medicine*, *43*(6), 1133–1149. doi: 10.1017/S0033291712001626
- Liu, C. C., Tien, Y. J., Chen, C. H., Chiu, Y. N., Chien, Y. L., Hsieh, M. H., ... & Hwu, H. G. (2013). Development of a brief self-report questionnaire for screening putative pre-psychotic states. *Schizophrenia Research*, *143*(1), 32–37. doi: 10.1016/j.schres.2012.10.042
- Lukens, E. P., Thorning, H., & Lohrer, S. (2004). Sibling perspectives on severe mental illness: Reflections on self and family. *American Journal of Orthopsychiatry*, *74*(4), 489–501. doi: 10.1037/0002-9432.74.4.489
- Maniglio, R. (2009). Severe mental illness and criminal victimization: A systematic review. *Acta Psychiatrica Scandinavica*, *119*(3), 180–191. doi: 10.1111/j.1600-0447.2008.01300.x

- Martens, L., & Addington, J. (2001). The psychological well-being of family members of individuals with schizophrenia. *Social Psychiatry and Psychiatric Epidemiology*, *36*(3), 128–133.
- McGlashan, T., Zipursky, R., Perkins, D., Addington, J., Miller, T., Woods, S., ... & Breier, A. (2006). Randomized, double-blind trial of olanzapine versus placebo in patients prodromally symptomatic for psychosis. *American Journal of Psychiatry*, *163*(5), 790–799.
- McGorry, P. D., Nelson, B., Amminger, G. P., Bechdolf, A., Francey, S. M., Berger, G., ... & Yung, A. R. (2009). Intervention in individuals at ultra-high risk for psychosis: A review and future directions. *Journal of Clinical Psychiatry*, *70*(9), 1206–1212. doi: 10.4088/JCP.08r04472
- McGorry, P. D., Yung, A. R., Phillips, L. J., Yuen, H. P., Francey, S., Cosgrave, E. M., ... & Jackson, H. (2002). Randomized controlled trial of interventions designed to reduce the risk of progression to first-episode psychosis in a clinical sample with subthreshold symptoms. *Archives of General Psychiatry*, *59*(10), 921–928.
- Miklowitz, D. J., O'Brien, M. P., Schlosser, D. A., Addington, J., Candan, K. A., Marshall, C., ... & Cannon, T. D. (2014). Family-focused treatment for adolescents and young adults at high risk for psychosis: Results of a randomized trial. *Journal of the American Academy of Child & Adolescent Psychiatry*, *53*(8), 848–858. doi: 10.1016/j.jaac.2014.04.020
- Miller, T. J., McGlashan, T. H., Rosen, J. L., Cadenhead, K., Ventura, J., McFarlane, W., ... & Woods, S. W. (2003). Prodromal assessment with the structured interview for prodromal syndromes and the scale of prodromal symptoms: predictive validity, interrater reliability, and training to reliability. *Schizophrenia Bulletin*, *29*(4), 703–715.
- Moncrieff, J., & Leo, J. (2010). A systematic review of the effects of antipsychotic drugs on brain volume. *Psychological Medicine*, *40*(9), 1409–1422.
- Moreno, C., Nuevo, R., Chatterji, S., Verdes, E., Arango, C., & Ayuso-Mateos, J.L. (2013). Psychotic symptoms are associated with physical health problems independently of a mental disorder diagnosis: results from the WHO World Health Survey. *World Psychiatry*, *12*(3), 251–257. doi: 10.1002/wps.20070
- Morgan, C., Kirkbride, J., Leff, J., Craig, T., Hutchinson, G., McKenzie, K. W. A. M. E., ... & Fearon, P. (2007). Parental separation, loss and psychosis in different ethnic groups: a case-control study. *Psychological Medicine*, *37*(4), 495–50.

- Morrison, A. P., French, P., Parker, S., Roberts, M., Stevens, H., Bentall, R. P., & Lewis, S. W. (2007). Three-year follow-up of a randomized controlled trial of cognitive therapy for the prevention of psychosis in people at ultrahigh risk. *Schizophrenia Bulletin*, *33*(3), 682–687.
- Morrison, A. P., French, P., Walford, L., Lewis, S. W., Kilcommons, A., Green, J., ... & Bentall, R. P. (2004). Cognitive therapy for the prevention of psychosis in people at ultra-high risk: Randomised controlled trial. *The British Journal of Psychiatry*, *185*(4), 291–297.
- Morrison, A. P., Turkington, D., Pyle, M., Spencer, H., Brabban, A., Dunn, G., ... & Hutton, P. (2014). Cognitive therapy for people with schizophrenia spectrum disorders not taking antipsychotic drugs: A single-blind randomised controlled trial. *The Lancet*, *383*(9926), 1395–1403. doi:10.1016/S0140-6736(13)62246-1
- Niendam, T. A., Bearden, C. E., Zinberg, J., Johnson, J. K., O'Brien, M., & Cannon, T. D. (2007). The course of neurocognition and social functioning in individuals at ultra high risk for psychosis. *Schizophrenia Bulletin*, *33*(3), 772–781. doi: 10.1093/schbul/sbm020
- Niendam, T. A., Berzak, J., Cannon, T. D., & Bearden, C. E. (2009). Obsessive compulsive symptoms in the psychosis prodrome: Correlates of clinical and functional outcome. *Schizophrenia Research*, *108*(1), 170–175. doi: 10.1016/j.schres.2008.11.023
- Novak, L., & Švab, V. (2009). Antipsychotics side effects influence on stigma of mental illness: Focus group study results. *Psychiatria Danubina*, *21*(1), 99–102.
- O'Brien, M. P., Zinberg, J. L., Bearden, C. E., Daley, M., Niendam, T. A., Kopelowicz, A., & Cannon, T. D. (2007). Psychoeducational multi-family group treatment with adolescents at high risk for developing psychosis. *Early intervention in psychiatry*, *1*(4), 325–332. doi: 10.1111/j.1751-7893.2007.00046.x
- O'Brien, M. P., Zinberg, J. L., Ho, L., Rudd, A., Kopelowicz, A., Daley, M., ... & Cannon, T. D. (2009). Family problem solving interactions and 6-month symptomatic and functional outcomes in youth at ultra-high risk for psychosis and with recent onset psychotic symptoms: a longitudinal study. *Schizophrenia Research*, *107*(2), 198-205. doi: 10.1016/j.schres.2008.10.008
- Oh, H., DeVlyder, J. E., & Chen, F. P. (2014). To treat or not to treat: Responding to psychotic experiences. *British Journal of Social Work*, 1–17. doi: 10.1093/bjsw/bct199

- Paksarian, D., Eaton, W. W., Mortensen, P. B., & Pedersen, C. B. (in press). Childhood residential mobility, schizophrenia, and bipolar disorder: A population-based study in Denmark. *Schizophrenia Bulletin*.
- Palmer, B. A., Pankratz, V. S., & Bostwick, J. M. (2005). The lifetime risk of suicide in schizophrenia: A reexamination. *Archives of General Psychiatry*, *62*(3), 247–253.
- Palmier-Claus, J. E., Taylor, P. J., Gooding, P., Dunn, G., & Lewis, S. W. (2012). Affective variability predicts suicidal ideation in individuals at ultra-high risk of developing psychosis: An experience sampling study. *British Journal of Clinical Psychology*, *51*(1), 72–83. doi: 10.1111/j.2044-8260.2011.02013.x
- Parnas, J., Cannon, T. D., Jacobsen, B., Schulsinger, H., Schulsinger, F., & Mednick, S. A. (1993). Lifetime DSM-III-R diagnostic outcomes in the offspring of schizophrenic mothers: Results from the Copenhagen High-Risk Study. *Archives of General Psychiatry*, *50*(9), 707–714.
- Perkins, R., & Rinaldi, M. (2002). Unemployment rates among patients with long-term mental health problems: A decade of rising unemployment. *Psychiatric Bulletin*, *26*(8), 295–298. doi: 10.1192/pb.26.8.295
- Phillips, L. J., Cotton, S., Mihalopoulos, C., Shih, S., Yung, A. R., Carter, R., & McGorry, P. D. (2009). Cost implications of specific and non-specific treatment for young persons at ultra high risk of developing a first episode of psychosis. *Early Intervention in Psychiatry*, *3*(1), 28–34. doi: 10.1111/j.1751-7893.2008.00106.x
- Pruessner, M., Iyer, S. N., Faridi, K., Joobar, R., & Malla, A. K. (2011). Stress and protective factors in individuals at ultra-high risk for psychosis, first episode psychosis and healthy controls. *Schizophrenia Research*, *129*(1), 29–35. doi: 10.1016/j.schres.2011.03.022
- Salokangas, R. K., Ruhrmann, S., von Reventlow, H. G., Heinimaa, M., Svirskis, T., From, T., ... & Klosterkötter, J. (2012). Axis I diagnoses and transition to psychosis in clinical high-risk patients EPOS project: Prospective follow-up of 245 clinical high-risk outpatients in four countries. *Schizophrenia Research*, *138*(2), 192–197. doi: 10.1016/j.schres.2012.03.008
- Selten, J. P., & Cantor-Graae, E. (2005). Social defeat: Risk factor for schizophrenia? *The British Journal of Psychiatry*, *187*(2), 101–102. doi: 10.1192/bjp.187.2.101

- Selten, J. P., & Cantor-Graae, E. (2010). The denial of a psychosis epidemic. *Psychological Medicine*, 40(5), 731–733. doi: 10.1017/S0033291709005686
- Selten, J. P., van der Ven, E., Rutten, B. P., & Cantor-Graae, E. (2013). The social defeat hypothesis of schizophrenia: An update. *Schizophrenia Bulletin*, 39(6), 1180–1186. doi: 10.1093/schbul/sbt134
- Stueve, A., & Link, B. G. (1997). Violence and psychiatric disorders: Results from an epidemiological study of young adults in Israel. *Psychiatric Quarterly*, 68(4), 327–342.
- Tandon, R., Keshavan, M. S., & Nasrallah, H. A. (2008). Schizophrenia, “just the facts” what we know in 2008. Part 2: Epidemiology and etiology. *Schizophrenia Research*, 102(1), 1–18. doi: 10.1016/j.schres.2008.01.022
- Tsuang, M. T., van Os, J., Tandon, R., Barch, D. M., Bustillo, J., Gaebel, W., ... & Carpenter, W. (2013). Attenuated psychosis syndrome in DSM-5. *Schizophrenia Research*, 150(1), 31–35. doi: 10.1016/j.schres.2013.05.004
- Turner, E. H., Knoopfmacher, D., & Shapley, L. (2012). Publication bias in antipsychotic trials: An analysis of efficacy comparing the published literature to the US Food and Drug Administration database. *PLoS medicine*, 9(3). doi: 10.1371/journal.pmed.1001189
- Valenstein, M., Ganoczy, D., McCarthy, J. F., Myra, K. H., Lee, T. A., & Blow, F. C. (2006). Antipsychotic adherence over time among patients receiving treatment for schizophrenia: A retrospective review. *The Journal of Clinical Psychiatry*, 67(10), 1542–1550.
- van Dam, D. S., van der Ven, E., Velthorst, E., Selten, J. P., Morgan, C., & de Haan, L. (2012). Childhood bullying and the association with psychosis in non-clinical and clinical samples: A review and meta-analysis. *Psychological Medicine*, 42(12), 2463–2474. doi: 10.1017/S0033291712000360
- van Os, J., Kenis, G., & Rutten, B. P. (2010). The environment and schizophrenia. *Nature*, 468(7321), 203–212. doi:10.1038/nature09563
- van Os, J., Rutten, B. P., & Poulton, R. (2008). Gene-environment interactions in schizophrenia: Review of epidemiological findings and future directions. *Schizophrenia Bulletin*, 34(6), 1066–1082. doi: 10.1093/schbul/sbn117
- Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W., ... & Bentall, R. P. (2012). Childhood adversities increase the risk of psychosis: A meta-analysis of

- patient-control, prospective-and cross-sectional cohort studies. *Schizophrenia Bulletin*, 38(4), 661–671. doi: 10.1093/schbul/sbs050
- Walker, E. F., & Diforio, D. (1997). Schizophrenia: A neural diathesis-stress model. *Psychological Review*, 104(4), 667–685.
- Walker, E., Mittal, V., & Tessner, K. (2008). Stress and the hypothalamic pituitary adrenal axis in the developmental course of schizophrenia. *Annual Review of Clinical Psychology*, 4, 189–216. doi: 10.1146/annurev.clinpsy.4.022007.141248
- Wu, E. Q., Birnbaum, H. G., Shi, L., Ball, D. E., Kessler, R. C., Moulis, M., & Aggarwal, J. (2005). The economic burden of schizophrenia in the United States in 2002. *Journal of Clinical Psychiatry*, 66(9), 1122–1129.
- Yang, L. H., Anglin, D. M., Wonpat-Borja, A. J., Opler, M. G., Greenspoon, M., & Corcoran, C. M. (2013). Public stigma associated with psychosis risk syndrome in a college population: Implications for peer intervention. *Psychiatric Services*, 64(3), 284–288. doi: 10.1176/appi.ps.003782011
- Yung, A. R., Nelson, B., Thompson, A., & Wood, S. J. (2010). The psychosis threshold in ultra high risk (prodromal) research: Is it valid? *Schizophrenia Research*, 120(1), 1–6. doi: 10.1016/j.schres.2010.03.014
- Yung, A. R., Yuen, H. P., McGorry, P. D., Phillips, L. J., Kelly, D., Dell’Olio, M., ... & Buckby, J. (2005). Mapping the onset of psychosis: The Comprehensive Assessment of At-Risk Mental States. *Australian and New Zealand Journal of Psychiatry*, 39(11-12), 964–971.

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