

Neuropsychological Assessment of Psychotic Symptoms in Children, Adolescents, and Young Adults

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Presented at the Pacific Northwest Neuropsychological Society, 09/10/18



Reason for Referral

Clinical Vignette

- ▶ Charity is a 20 year-old Caucasian who attends art school. While visiting family over summer break, her aunt, a therapist, noticed significant changes in Charity compared to previous summers. Charity seemed confused, disorganized, and afraid. She had trouble answering questions about basic topics. She gave vague answers and her thoughts tended to trail off. She became quickly agitated when asked a question, asking her aunt to “slow down” and “speak one at a time.”
- ▶ Charity’s hygiene was poor and she dressed inappropriately for the weather, often wearing 4 or 5 layers. She carried several plastic bags with her at all times full of odd objects, like a jigsaw puzzle and a flashlight. She often paused in the middle of a conversation to write notes on scraps of paper. Sometimes she asked if she could show her writing to her aunt.

Note: In the original talk, I discussed my personal connection with schizophrenia in a relative. For privacy reasons, those slides have been replaced with a de-identified clinical vignette for online distribution.

Clinical Vignette

- ▶ On the pieces of paper, Charity wrote that others were always laughing at her, and could read her thoughts. On one note, she wondered if when she looked at someone's legs, they thought she was a "racist" or a "pedophile" because of the way she looked at them. In another, she wrote that dead people might be listening to her. She wrote she felt like she was receiving messages in the songs she listened to and the videos she watched.
- ▶ Her aunt contacted her parents, who confided that Charity was failing school and spending most of her time alone in her apartment smoking marijuana. They told her Charity complained of anxiety, difficulty concentrating, and "weird visions." They had suggested she go see a psychiatrist, who had put her on a low dose of antidepressant medication (citalopram). However, they didn't think it was working. Her aunt suggested an evaluation to help with differential diagnosis.

Clinical Vignette

Samples of Charity's notes:

- ▶ "When are you gonna take control. Feed your soul. Feel like the he's nowhere. I can't go unless I go home Austin Austin coworking break down the door. I am staying up late getting up late. Worrying worrying worrying I'm stress. 3-9-6 hours whatever and expect it's too long for me. I'm just not. You have to set yourself free go outside lucky it's only 2 doughnuts."
- ▶ "I can't bear it all anymore. Maybe I am exhausted. Who can make me listen in to god, a church or a kick in the face. Something like that. I am disappearing, only 2 live bullshit audience TV is a bunch of helpful chat shows. Answer it shows. I can't express what I want in case they are gonna be surprised how am I to like I am damn meant to insult emotions. I was saying jokes - sorry I don't want to offend you. Impractical jokers."
- ▶ "I struggle to join groups. Unrest in groups."

Why You Should Be Interested

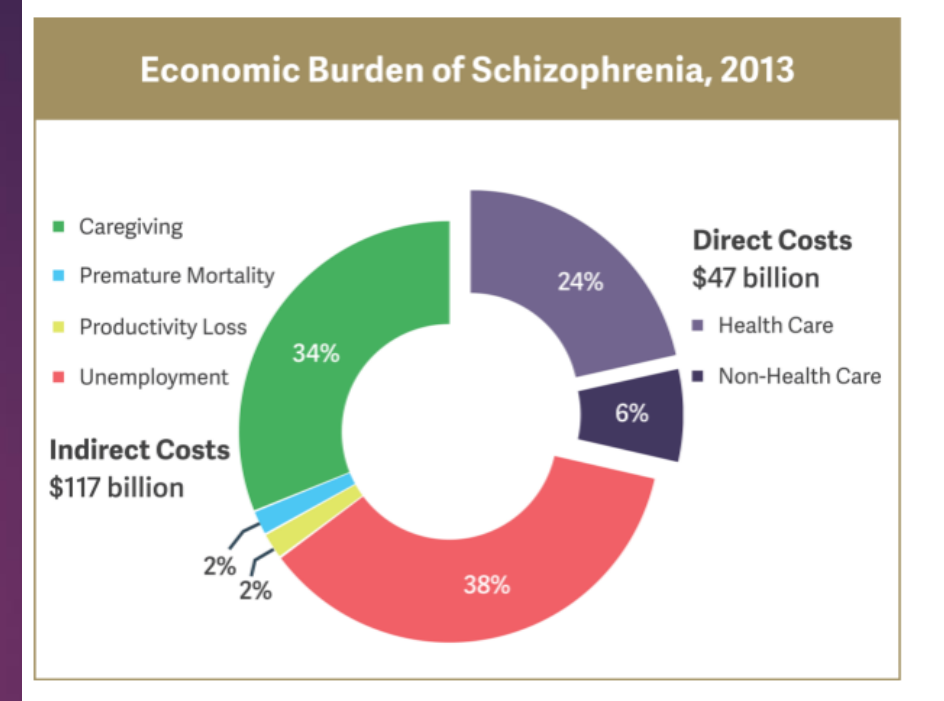
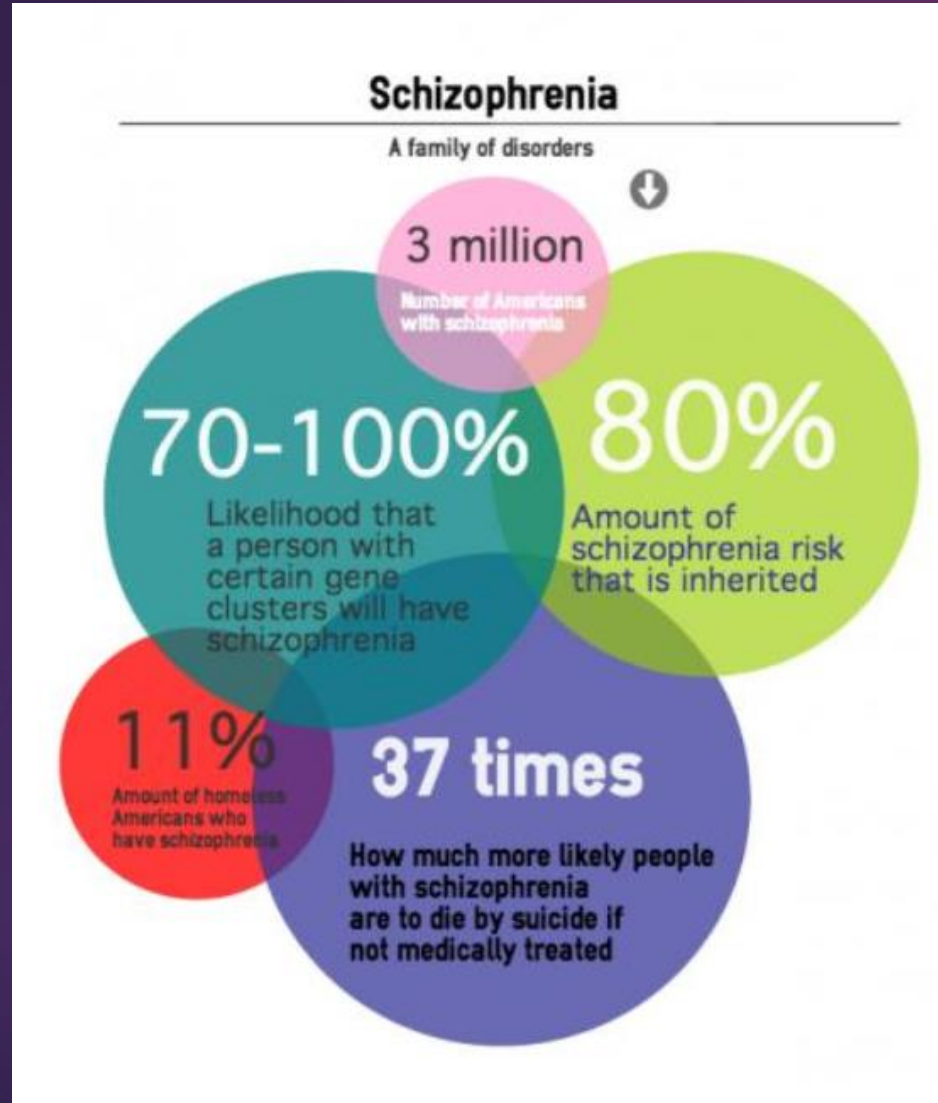


Approximately 100,000 adolescents & young adults in the US experience First Episode Psychosis each year (McGrath, Saha, Chant, et al., 2008)

Washington State had 18,695 individuals diagnosed with psychosis disorders during the fiscal year of 2013

Lifetime Prevalence of Disorders with Psychotic Symptoms is 3% - approaches adult prevalence in adolescent

Schizophrenia carries a standard mortality ratio of 2.6, usually from suicide or cardiovascular risk



J Clin Psychiatry. 2016 Jun;77(6):764-71. doi: 10.4088/JCP.15m10278.
 The Economic Burden of Schizophrenia in the United States in 2013.
 Cloutier M¹, Aigbogun MS^{2,3}, Guerin A¹, Nitulescu R¹, Ramanakumar AV¹, Kamat SA³, DeLucia M³, Duffy R³, Legacy SN³, Henderson C³, Francois C⁴, Wu E⁵.

Table 1
Familial risks in schizophrenia

General Population Prevalence (12 mo)	1% (1 in 100)
Lifetime Development Risk (%)	0.7 (0.3-2)
Family History First-degree Relative (%)	9-18
Family History Second-degree Relative (%)	3-6
Family History Third-degree Relative (%)	2-3
Nontwin Sibling Risk (%)	8 (9-18)
Twin Risk: Monozygotic (%)	47-48 (41-65)
Twin Risk: Dizygotic (%)	12 (0-28)
Child with 1 Parent with Schizophrenia (%)	12-14 (2-35)
Child of 2 Parents with Schizophrenia (%)	40-46 (40-60)

TABLE I. Symptoms of schizophrenia

Positive psychotic symptoms	Positive disorganization symptoms	Negative symptoms
<ul style="list-style-type: none">• Hallucinations• Delusions	<ul style="list-style-type: none">• Disorganized speech, thought, language• Thought disorder characterization: thought blocking, loosening of associations, tangentiality• Disorganized behavior	<ul style="list-style-type: none">• Alogia (poverty of speech)• Flat affect• Poor attention• Avolition (loss of motivation)• Anhedonia (lack of pleasure)• Loss of social interest• Attentional deficits

[Abimbola Farinde, PhD, PharmD](#), March 03, 2017, [CLINICAL FEATURE](#): Schizophrenia: a clinical overview

Overview of Symptoms of Schizophrenia

DSM 5 criteria:

Two or more of the following for at least a one-month (or longer) period of time, and at least one of them must be 1, 2, or 3:

- Delusions
- Hallucinations
- Disorganized speech
- Grossly disorganized or catatonic behavior
- Negative symptoms

Course of Psychotic Disorders

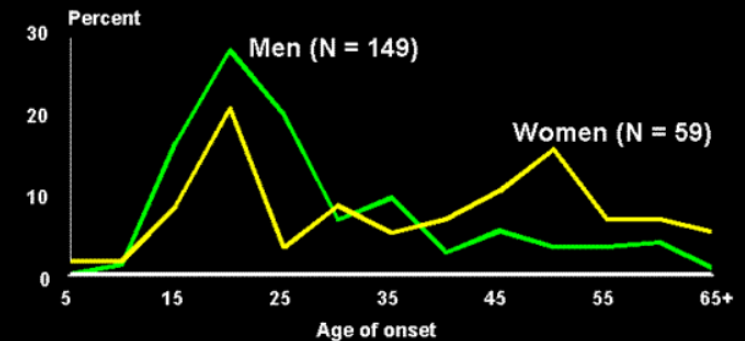
Definitions

- ▶ Early-Onset Schizophrenia: Occurring before age 18
 - ▶ Mean age of onset: 14.5 years
 - ▶ Mean age of diagnosis: 15.6 years
 - ▶ Similar severity adult onset
 - ▶ Typically a longer Duration of Untreated Psychosis (average of 17 months, up to 5 years not uncommon)
- ▶ Childhood Onset Schizophrenia: Occurring before age 13
 - ▶ Rare: Less than 1: 10,000
 - ▶ Associated with worse outcomes
 - ▶ Highly comorbid with ASD (up to 50%)

Bimodal peak of onset

- Ages 15 – 24
- Women high incidence between ages 55 and 64

Age of Onset of Schizophrenia by Gender (Age > 45)

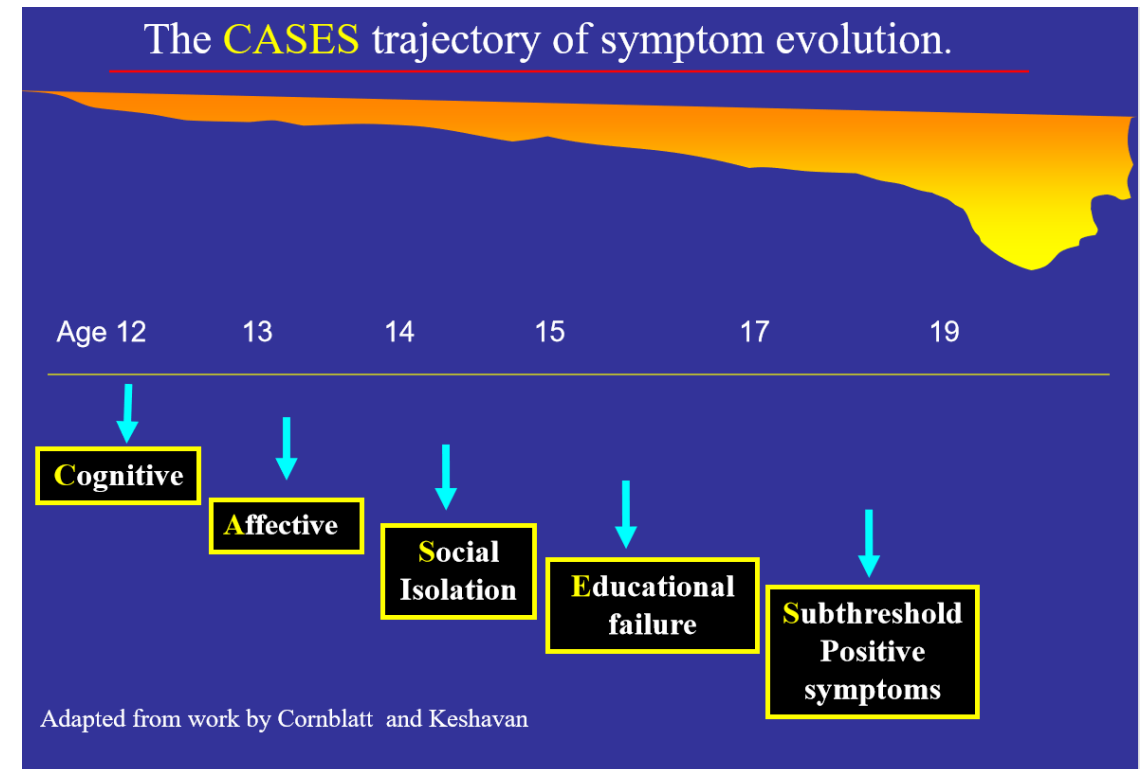


Kolmogorov-Smirnov pvalue < .0001

(Lindamer et al., Psychopharm. Bull., 1997)

Prodrome: Typical Course

- ▶ Prodrome defined differently in different studies
- ▶ Period of non-psychotic symptoms, or mild/subthreshold positive symptoms, and/or primarily negative symptoms, that includes emotional disturbance and decrease in functioning
- ▶ Typically recognized retrospectively





Summary and Impressions

Suggestions for Providing Feedback

Reference:

Adapted from the Center for Early Detection, Assessment, and Response to Risk (CEDAR) Clinic, Boston, MA.

<http://www.cedarclinic.org/>



Specific Topics to Cover in Feedback

Reference:

Adapted from Jon Stone's ideas on providing Feedback to patients with functional neurological disorders, e.g. Functional Neurological Disorders: The Neurological Assessment as Treatment (2015)

Explain	Explain what they do have
Educate	Explain what they do not have
Fears	Listen for and address fears
Normalize	Emphasize psychotic symptoms are common and treatable
Hope	Emphasize potential for recovery
Plan	Direct to resources and educational materials. Emphasize that there are specific things the individual and family can to help.



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CONFIDENTIAL NEUROPSYCHOLOGICAL EVALUATION

Name: Charity (Not Her Real Name) Smith

Date of Birth: XX/XX/1998 (20 years old)

You participated in a neuropsychological evaluation today XX/XX/2018. You had these questions:

- Do I have brain damage? Do I have a learning disability?
- Do I have depression? Why can't I get anything done?
- Why am I having so much trouble thinking?

We did two kinds of testing:

- **Cognitive testing** to find out how your brain works
- **Psychological testing**, to find out what's going on with your thoughts and emotions

Cognitive test results:

- You are just as intelligent as most people. You have a strong vocabulary and good problem-solving skills. Your current difficulties are not due to a cognitive problem like low IQ or a learning disability. Your difficulties are also not due to brain damage.
- You are having trouble thinking as clearly as you used to. You get overwhelmed. You can get confused. You wrote, "I find it hard to access deeper thoughts, memories, and details. The important things. I tend to glaze over or can't remember." That is a good way to describe it. These problems thinking clearly are caused by your psychological illness.

Psychological test results:

- You feel anxious, depressed, and stressed almost all the time. Your test results show you have these symptoms of anxiety and depression:
 - **Emotional symptoms:** Worrying, feelings of guilt, feeling self-conscious, feeling lonely, low self-esteem, suicidal thoughts
 - **Cognitive symptoms:** Ruminating, obsessions, over-analyzing, trouble paying attention, feeling like your thoughts are going too fast or feeling slowed down
 - **Physical symptoms:** Problems sleeping, appetite problems, tension, IBS, constipation
 - **Behavioral symptoms:** Compulsions, bingeing, "freezing", getting angry with others, doing things to help you feel 'numb' or to self-medicate, avoiding things you want or need to do
- You wondered if you have psychotic symptoms. Your test results show these psychotic symptoms:
 - **Paranoia:** Feeling like others are out to get you, like thinking that hearing the word 'she' or hearing someone laugh must be about you.
 - **Delusions:** Misinterpreting situations in ways you can tell don't totally make sense, like thinking people are communicating with you through songs, or thinking dead people can hear you.
 - **Hallucinations:** Seeing or hearing things that are not there (or you're not sure they're there), like seeing faces in everyday things, seeing people in the corner of your vision, and hearing voices or sounds that aren't there.

Sample Feedback Summary: Charity

- ▶ Explain
- ▶ Educate
- ▶ Fears
- ▶ Normalize
- ▶ Hope
- ▶ Plan

- **Confusion:** Feeling like you're not sure about things. Feeling one way and a different way the next. Or thinking two contradictory things at the same time. Having trouble telling what's real and what's not real.
- **Disorganization:** Feeling like you can't get through your usual day because you can't stay organized or on task. Behaving in ways that seem unusual for you. Having trouble getting through your usual routine. Having trouble staying on track when you're talking or thinking.

Impact:

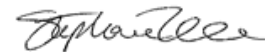
- You said your symptoms feel "crippling" right now. These symptoms are also preventing you from reaching your goals. Your illness is **severe**. You need treatment that addresses your symptoms.

Diagnosis:

- When people have a lot of psychotic symptoms that make it so they cannot function as well as they should be able to, we call that **schizophrenia**.
- About 1-3% of people in the world have schizophrenia or a related disorder. Schizophrenia is a biological illness that affects thinking and feeling. It usually emerges when people are in their late teens or early 20s. Schizophrenia is a **treatable illness**.
- Schizophrenia often comes with high levels of **anxiety and depression**.

Treatment Recommendations:

1. Share the results of this evaluation with your treatment providers and family members who care for you. They can contact me with questions if you say it is okay.
2. Talk to your psychiatrist about medication. Medications for schizophrenia are called 'antipsychotic medications' because they target the psychotic symptoms people with schizophrenia have. Many people with schizophrenia also take medications for their emotional symptoms.
3. Keep yourself physically healthy. You are seeing a lot of people to help you maintain your health, which is great. Talk to these people about your illness and ask them to continue helping you stay physically healthy. Get as regular of sleep as you can. Eat healthy, nourishing food, but don't go overboard – you can't 'cure' schizophrenia with the right food.
4. Try not to self-medicate with other drugs or excessive alcohol. These substances are likely to make your symptoms worse over time.
5. Continue going to therapy to learn more about your illness and how to cope with it.
6. Develop a crisis plan with your therapist and psychiatrist. This is a plan you have in place for if you feel suicidal, **really scared**, or unable to get anything done during the day. Make sure you, your treatment team, and at least 2 other people know your crisis plan.
7. Make sure school, work, and socializing support you, instead of overwhelming you. Don't take on too much right now and take a break if you need to. Treat yourself like you would if you had a physical illness like cancer. Remember that your illness is not your fault or something that you caused. Keep taking advantage of the supports available to you through school, like your mentor and study skills specialist, so that school feels supportive and manageable.
8. Remember that you have a lot of strengths to draw on while you recover. You are smart, savvy, creative, funny, artistic, and wise. These strengths will help you get through the difficult times.



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Recommendations

Benefits of Early Intervention

- ▶ Reduced Disruptions in School
- ▶ Retention of Social Skills
- ▶ Better Social Support
- ▶ Reduced Need for Hospitalization
- ▶ More Rapid Recovery
- ▶ Better Long-term Outcomes
- ▶ Reduced Family Distress
- ▶ Better Engagement in Treatment
- ▶ Lower Risk of Relapse



Medication Options

- Antipsychotic medications are not recommended in the prodromal phase
- Antipsychotic medications recommended at the first sign of clear psychosis
- Should be started at a low dose and titrated accordingly
- Side effects include metabolic changes, sedation, extrapyramidal symptoms, and dyskinesias
- Children may gain weight even on meds that are considered “weight neutral
- Medication noncompliance is very high
 - Up to 50% during first year
 - Up to 75% during second year

Table 6
List of antipsychotic medications available in the United States and pediatric approval

First-generation Approved (#12)	Second-generation Approved (#11)
Chlorpromazine (IM), >1 y ^a	Asenapine, >10 y ^a
Droperidol (IM), >2 y ^a	Clozapine
Fluphenazine (IM, LAI)	lloperidone
Haloperidol (IM, LAI), >3 y ^a	Lurasidone
Loxapine, >12 y ^a	Olanzapine (ODT, IM, LAI), >13 y ^a
Molindone, >12 y ^a	Paliperidone (LAI), >12 y ^a
Perphenazine, >12 y ^a	Quetiapine (oral extended release), >10 y ^a
Pimozide, >2 y ^a	Risperidone (ODT, LAI), >10 y ^a
Prochlorperazine ^a	Ziprasidone (IM)
Thiothixene, >12 y ^a	Third generation
Thioridazine, >2 y ^a	Aripiprazole (oral, ODT, IM, LAI), >13 y ^a
Trifluoperazine, >6 y ^a	Brexpiprazole
Combination	Cariprazine
Perphenazine + amitriptyline	Olanzapine + fluoxetine

Abbreviations: IM, intramuscular; LAI, long-acting injectable; ODT, oral dissolvable tablets.
^a Approved for use in the pediatric age group.
 Adapted from Agency for Healthcare Research and Quality. First and second generation antipsychotics in children and young adults – comparative effectiveness review update. 2015.

Chan, V (2017). Schizophrenia and Psychosis. *Child and Adolescent Psychiatric Clinics*, Volume 26 (2), 341 – 366.

Practice Parameters for Treatment



AACAP Practice Parameter for the Assessment and Treatment of Children and Adolescents With Schizophrenia

Recommendation 1. Psychiatric assessments for children and adolescents should include screening questions for psychosis.

Recommendation 2. The diagnosis of schizophrenia in children and adolescents should follow *DSM-5* criteria, using the same criteria as for adults.

Recommendation 3. Youth with suspected schizophrenia should be carefully evaluated for other pertinent clinical conditions and/or associated problems, including suicidality, comorbid disorders, substance abuse, developmental disabilities, psychosocial stressors, and medical problems.

Recommendation 4. Antipsychotic medication is a primary treatment for schizophrenia spectrum disorders in children and adolescents.

Recommendation 5. Ongoing medication therapy should be provided to most youth with schizophrenia to improve functioning and prevent relapse.

Recommendation 6. Some youth with schizophrenia spectrum disorders may benefit from adjunctive medication treatments to address side effects of the antipsychotic agent or to alleviate associated symptomatology (e.g., agitation, mood instability, depression, explosive outbursts).

Recommendation 7. A trial of clozapine should be considered for youth with treatment resistant schizophrenia spectrum disorders.

Recommendation 8. Baseline and follow-up monitoring of symptoms, side effects, and laboratory tests should be performed as indicated.

Recommendation 9. Psychotherapeutic interventions should be provided in combination with medication therapies.

Recommendation 10. Electroconvulsive therapy may be used with severely impaired adolescents if meds are not helpful or cannot be tolerated.

Practice Parameter for the Assessment and Treatment of Children and Adolescents With Schizophrenia
McClellan, Jon et al. (2013) Journal of the American Academy of Child & Adolescent Psychiatry, Volume 52 , Issue 9 , 976 - 990

Non-Medication Treatment Options



- ▶ Individuals with psychotic disorders typically have high levels of sedentary behavior
- ▶ 90 minutes of moderate-to-vigorous weekly physical activity can reduce risk of cardiovascular disease, premature death, psychiatric symptoms, neurocognition, and comorbidities.
- ▶ Those with higher levels of physical activity had faster motor reaction times and processing speed and better attention than patients with more sedentary behavior.
- ▶ Supplementation with Omega 3 fatty acids
- ▶ Relationship with cannabis is complicated
 - ▶ Pooled analysis showed greatest risk of psychosis in people who used cannabis most frequently
 - ▶ Individuals with psychotic disorders who use cannabis show greater brain volume reduction at 5 years

Non-Medication Treatment Options

- Supplementation with Omega 3 fatty acids
- Relationship with cannabis is complicated
 - Pooled analysis showed greatest risk of psychosis in people who used cannabis most frequently
 - Individuals with psychotic disorders who use cannabis show greater brain volume reduction at 5 years
- Nicotine and caffeine can interact with medication
- CBT
- Family Interventions
 - Reviews suggest 6 to 9 months needed to sustain significant improvements



Treatment: Based on Stage

White Paper on Integration of Early Psychosis services into systems of care framework

Written by partners from Oregon Health Sciences University, Northeast Ohio Medical University, Columbia University and Stanford Psychiatry

Stage	Definition	Role within SOC	Potential interventions
0	Genetic risk without symptoms.	Medical monitoring and self-referral by families with genetic high risk.	Brief education about preventive strategies and early signs. Brief cognitive skills training.
1a	Mild or nonspecific symptoms, mild functional change or decline.	Mental health literacy and screening. Services can be provided by any trained mental health practitioner.	Formal mental health literacy/eHealth. Problem solving and support. Family psychoeducation. Substance misuse reduction. Exercise.
1b	Clinical High Risk (CHR): Moderate but subthreshold mood/positive/negative symptoms with moderate neurocognitive changes and functional decline.	Specialized assessment and treatment for psychosis CHR by early psychosis team or trained specialized practitioners.	Formal CBT/case management. Family psychoeducation. Substance abuse reduction. <i>Atypical antipsychotics only used under limited circumstances.</i> Antidepressants, mood stabilizers as indicated. Supported employment and education based on functional level/need.
2	First episode of full-threshold disorder with moderate to severe symptoms, neurocognitive deficits, and functional decline.	Referral to early psychosis team for intensive specialized services.	Formal CBT/case management. Family psychoeducation. Substance misuse reduction. Atypical antipsychotics. Antidepressants or mood stabilizers. Supported employment and education. Peer support.

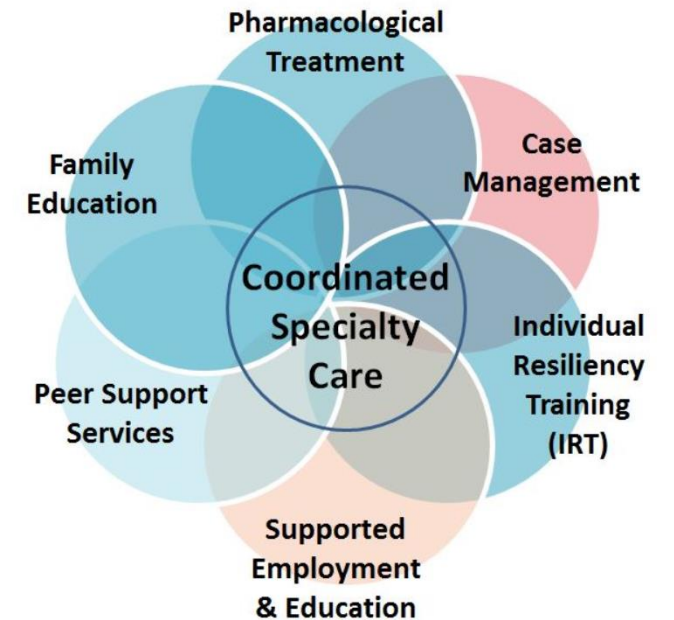
Table 1: Stages of Early Psychosis Intervention Within an SOC Framework (adapted from McGorry et al., 2007)

Treatment:

NAVIGATE Model

<https://navigateconsultants.org/how-it-works/>

- Module 1. Orientation
- Module 2. Assessment / Initial Goal Setting
- Module 3. Education About Psychosis
- Module 4. Relapse Prevention Planning
- Module 5. Processing the Psychotic Episode
- Module 6. Developing Resiliency – Standard Sessions
- Module 7. Building a Bridge to Your Goals
- Module 8. Dealing with Negative Feelings
- Module 9. Coping with Symptoms
- Module 10. Substance Use
- Module 11. Having Fun and Developing Good Relationships
 - Sub-Module – Having Fun
 - Sub-Module – Connecting with People
 - Sub-Module – Improving Relationships
- Module 12. Making Choices about Smoking
- Module 13. Nutrition and Exercise
- Module 14. Developing Resiliency – Individualized Sessions



Follow Up

Course of Schizophrenia: Critical Period and Following Decade

- ▶ 5 year period following illness
 - ▶ 75% have 8 or more weeks of remission or recovery
 - ▶ About 30% only have one episode of psychosis
 - ▶ About 60-70% experience relapse
- ▶ Next 10 years after critical period:
 - ▶ Symptoms tend to plateau
 - ▶ Does not usually become progressively deteriorating

Box 1

Favorable prognostic indicators of schizophrenia

- Shorter DUP (with antipsychotic medication)
- Fewer negative symptoms
- Predominantly only delusions and hallucinations as positive symptoms
- Higher baseline premorbid functioning (eg, social function, intelligence quotient)
- Onset associated with acute precipitating stressor
- No co-occurring psychiatric disorders (including substance use disorders)
- Absent family history of schizophrenia
- Present family history of mood disorder
- Living in a nonurban area; in a developing country

From Lehman AF, Lieberman JA, Dixon LB, et al. Practice guideline for treatment of patients with schizophrenia, second edition. *Am J Psychiatry* 2004;161(Suppl 2):1-56; with permission.

Schizophrenia and Psychosis (2017). Chan, V. Child and Adolescent Psychiatric Clinics, Volume 26 (2), 341 – 366.

Poor Prognostic Factors

Poor premorbid history

Insidious onset

No precipitating stress

Psychosis as most prominent symptom

Negative symptoms

Early Onset

Unremitting Course

Family Member with Schizophrenia

Risk Factors

Box 3

Six factors in the psychosis risk calculator model

- Baseline age
- Unusual thought content and suspiciousness
- Family history of a psychiatric disorder
- Verbal learning (on Hopkins Verbal Learning Test)
- Processing speed performance (on Brief Assessment of Cognition in Schizophrenia Symbol Coding Test)
- Decline in social functioning

Data from Carrion RE, Cornblatt BA, Burton CZ, et al. Personalized prediction of psychosis: external validation of the NAPLS-2 psychosis risk calculator with the EDIPPP project. Am J Psychiatry 2016;173(10):989–6.



Behavior Observations

Attenuated Psychosis Symptoms

Algon, Yi, Calkins, Kohler & Borgmann-Winter (2012)



Positive Symptoms:

- Unusual thought content
- Suspicious or persecutory ideas
- Grandiose ideas
- Perceptual abnormalities
- Disorganized communication



Negative Symptoms:

- Social anhedonia
- Avolition
- Reduced expression of emotions
- Reduced experience of emotions
- Lack of ideational richness



Disorganization Symptoms:

- Odd behavior or appearance
- Bizarre thinking
- Trouble with focus and attention
- Poor personal hygiene



General symptoms:

- Poor occupational functioning
- Impaired tolerance to stress

Negative Symptoms: CAMPS Model

Communication

- ▶ May be limited in quantity and/or quality of information provided
- ▶ Alogia can include:
 - ▶ Poverty of speech
 - ▶ Few words or limited elaboration; long latency before replying; thought blocking
 - ▶ Poverty of content of speech
 - ▶ Vague, overly generalized, and disconnected

Affect/Emotional Expressiveness

- ▶ Anhedonia
- ▶ Apathy
- ▶ Blunted affect, monotone, blunted levels of nonverbal communication
- ▶ Blunted levels of spontaneous movement during social interactions
- ▶ Poor rapport
- ▶ May not be able to describe emotions
- ▶ May have trouble demonstrating common emotions if requested

Negative Symptoms: CAMPS Model

Motivation/Drive

- Avolition - lack of drive or goal-directed behavior
- Amotivation
- Reduced initiation
- Limited interest in participating in self-care or activities (may do only grudgingly)
- Reduced sexual interest

Psychomotor

- Psychomotor slowing, limited movement overall or movements that seem to require more effort than normal
- Gazing blankly in no particular direction.
- Mumbling
- Markedly reduced stamina/energy.

Social

- Reduced interest in social activities and relationships
- Limited attention to social input, possibly to the extent of nonresponsiveness
- Limited response to environmental stimuli.
- Socially "disconnected" or odd

Negative Symptoms

- ▶ Represent losses of previous levels of functioning
- ▶ Often precede positive symptoms in emerging thought disorders by an average of 5 years
- ▶ Often more debilitating overall
 - ▶ Correlate more strongly with almost all negative outcomes except hospital re-admissions, which are more associated with positive symptoms
- ▶ Are more deteriorative
- ▶ Are more treatment refractory
- ▶ Improvement in negative symptoms often result in major contributions to overall functioning and quality of life of individuals with active or emerging thought disorders

Interview

Assessing Attenuated Symptoms: YALE Prime Screening Test



Yale University PRIME Screening Test
1. I think that I have felt that there are odd or unusual things going on that I can't explain.
2. I think that I might be able to predict the future.
3. I may have felt that there could possibly be something interrupting or controlling my thoughts, feelings, or actions.
4. I have had the experience of doing something differently because of my superstitions.
5. I think that I may get confused at times whether something I experience or perceive may be real or may be just part of my imagination or dreams.
6. I have thought that it might be possible that other people can read my mind, or that I can read other's minds.
7. I wonder if people may be planning to hurt me or even may be about to hurt me.
8. I believe that I have special natural or supernatural gifts beyond my talents and natural strengths.
9. I think I might feel like my mind is "playing tricks" on me.
10. I have had the experience of hearing faint or clear sounds of people or a person mumbling or talking when there is no one near me.
11. I think that I may hear my own thoughts being said out loud.
12. I have been concerned that I might be "going crazy".

The prodromal questionnaire (PQ): Preliminary validation of a self-report screening measure for prodromal and psychotic syndromes
Loewy, Rachel L. et al., Schizophrenia [Research](#), Volume 79 , Issue 1 , 117 - 125

- Positive result on the PRIME Screen is defined as one or more scores of "6" (definitely agree) or three or more scores of "5" (somewhat agree).
- People who have a positive screen should consider going for a diagnostic evaluation if they are concerned or distressed.

Prodromal Questionnaire

The 16-item Version of the Prodromal Questionnaire (PQ-16)

		If TRUE: how much distress did you experience?			
		None	Mild	Moderate	Severe
1.	I feel uninterested in the things I used to enjoy.	<input type="checkbox"/> True <input type="checkbox"/> False	<input type="checkbox"/> 0 <input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2.	I often seem to live through events exactly as they happened before (déjà vu).	<input type="checkbox"/> True <input type="checkbox"/> False	<input type="checkbox"/> 0 <input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3.	I sometimes smell or taste things that other people can't smell or taste.	<input type="checkbox"/> True <input type="checkbox"/> False	<input type="checkbox"/> 0 <input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4.	I often hear unusual sounds like banging, clicking, hissing, clapping or ringing in my ears.	<input type="checkbox"/> True <input type="checkbox"/> False	<input type="checkbox"/> 0 <input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5.	I have been confused at times whether something I experienced was real or imaginary.	<input type="checkbox"/> True <input type="checkbox"/> False	<input type="checkbox"/> 0 <input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
6.	When I look at a person, or look at myself in a mirror, I have seen the face change right before my eyes.	<input type="checkbox"/> True <input type="checkbox"/> False	<input type="checkbox"/> 0 <input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7.	I get extremely anxious when meeting people for the first time.	<input type="checkbox"/> True <input type="checkbox"/> False	<input type="checkbox"/> 0 <input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8.	I have seen things that other people apparently can't see.	<input type="checkbox"/> True <input type="checkbox"/> False	<input type="checkbox"/> 0 <input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

► Ising, H. K., Veling, W., Loewy, R. L., Rietveld, M. W., Rietdijk, J., Dragt, S., ... van der Gaag, M. (2012). The Validity of the 16-Item Version of the Prodromal Questionnaire (PQ-16) to Screen for Ultra High Risk of Developing Psychosis in the General Help-Seeking Population. *Schizophrenia Bulletin*, 38(6), 1288–1296

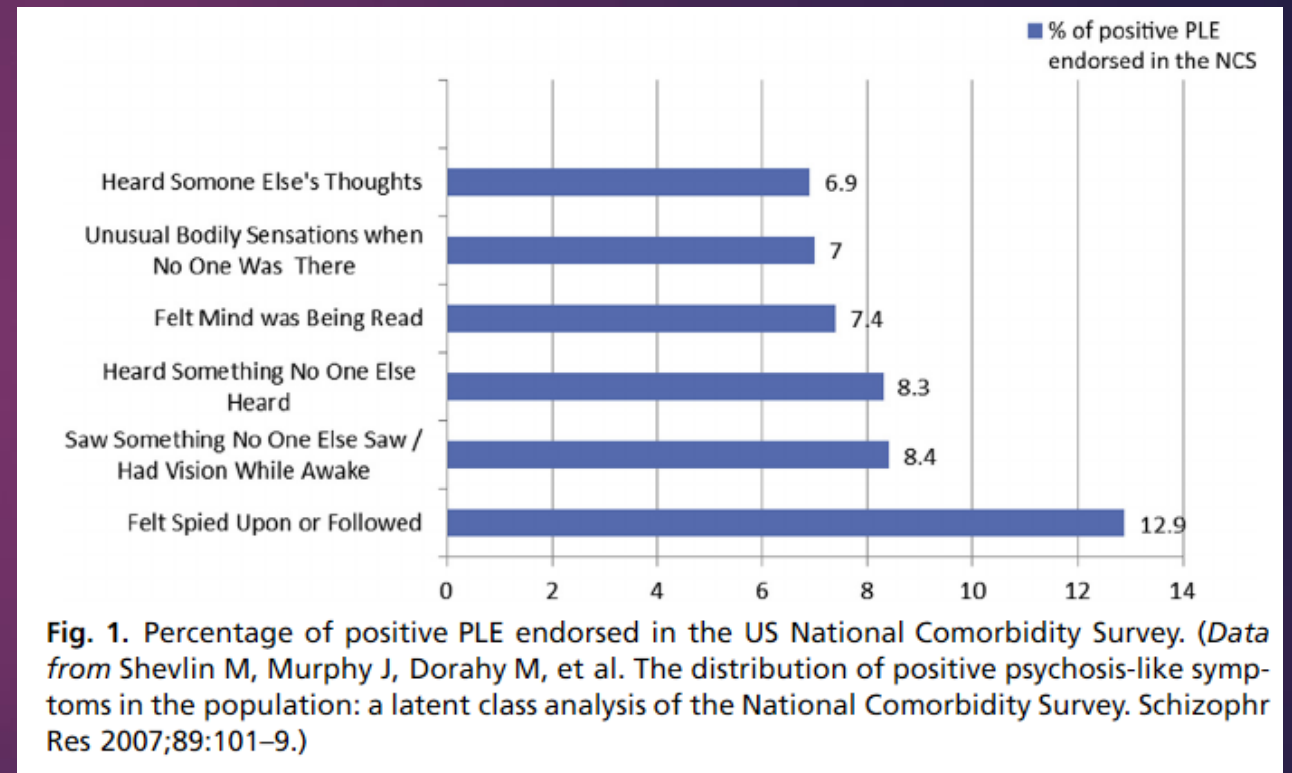
Prodromal Questionnaire

► 6 or more positively answered items produced correct classification of psychosis risk/clinical psychosis in 44% of cases, distinguishing at-risk/positive diagnosis from no diagnosis with high sensitivity (87%) and specificity (87%)

9. My thoughts are sometimes so strong that I can almost hear them.	<input type="checkbox"/> True	<input type="checkbox"/> False	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. I sometimes see special meanings in advertisements, shop windows, or in the way things are arranged around me.	<input type="checkbox"/> True	<input type="checkbox"/> False	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Sometimes I have felt that I'm not in control of my own ideas or thoughts.	<input type="checkbox"/> True	<input type="checkbox"/> False	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
12. Sometimes I feel suddenly distracted by distant sounds that I am not normally aware of.	<input type="checkbox"/> True	<input type="checkbox"/> False	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
13. I have heard things other people can't hear like voices of people whispering or talking.	<input type="checkbox"/> True	<input type="checkbox"/> False	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
14. I often feel that others have it in for me.	<input type="checkbox"/> True	<input type="checkbox"/> False	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. I have had the sense that some person or force is around me, even though I could not see anyone.	<input type="checkbox"/> True	<input type="checkbox"/> False	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. I feel that parts of my body have changed in some way, or that parts of my body are working differently than before.	<input type="checkbox"/> True	<input type="checkbox"/> False	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

How Common Are Psychotic-Like Experiences (PLEs) in the General Population?

- Depends on how you ask. Prevalence rates vary from 0.6% to 84%
- Most studies:
 - 6-8% in children
 - Only 15% bothered by them
 - Up to 28% in adults
 - Only 2% have psychosis diagnosis
- Four primary categories:
 - Bizarre experiences, perceptual abnormalities, persecutory ideas, magical thinking



When to Be Concerned About Auditory Hallucinations

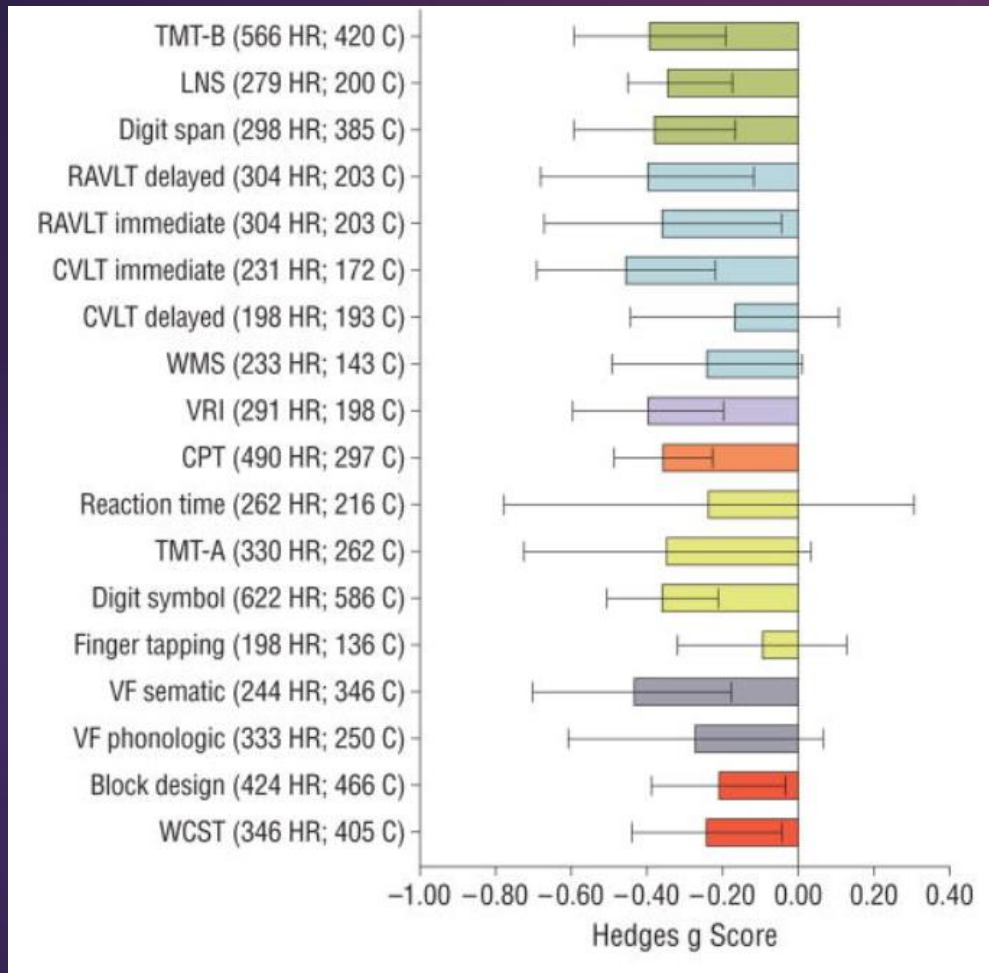
- ▶ Complex
- ▶ Multiple voices
- ▶ Specific, commanding content
- ▶ Frequent
- ▶ Distressing content
- ▶ Cause impairment in functioning
- ▶ Lack of control over the voices
- ▶ Clear external attribution





Test Results: Neurocognitive

Neuropsychological Assessment



- Specific deficits in executive functions:
 - Cognitive flexibility/set shifting
 - Working memory
 - Planning
 - Processing speed,
 - Cognitive impulsivity (e.g., intrusions on memory tests; inhibitory error)
- Impairments in language, memory, and sensorimotor functioning
- Generally depressed cognitive functioning
- May do better on tests with immediate feedback (

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.

Neuropsychological Assessment:

Measurement and Treatment Research to Improve Cognition in Schizophrenia Consensus Battery

Measured Domain	MCCB Component Tests
Processing speed	Trail Making Test Part A Brief Assessment of Cognition in Schizophrenia Symbol Coding Test Category Fluency Test, animal naming
Verbal learning	Hopkins Verbal Learning Test
Working memory	Wechsler Memory Scale Spatial Span University of Maryland Letter Number span
Reasoning and problem solving	Neuropsychological Assessment Battery: Mazes
Visual learning	Brief Visuospatial Memory Test: Revised
Social cognition	Mayer-Salovey Caruso Emotional Intelligence Test Managing Emotions Branch
Attention/vigilance	Continuous Performance Test: Identical Pairs

Abbreviation: MCCB, MATRICES Consensus Cognitive Battery.

Data from McCleery A, Ventura J, Kern RS, et al. Cognitive functioning in first-episode schizophrenia: MATRICES Cognitive Consensus Battery (MCCB) profile of impairment. *Schizophr Res* 2014;157:33–9.



Test Results: Psychological

Positive & Negative Syndrome Scale

- ▶ Clinician-rated positive, negative, and general symptoms of thought disorders

- ▶ **Reference:**

The positive and negative syndrome scale (PANSS) for schizophrenia (1987). Kay SR, Fiszbein A & Opler LA. *Schizophr Bull.* 1987;13(2):261-76.

PANSS RATING FORM

		<u>absent</u>	<u>minimal</u>	<u>mild</u>	<u>moderate</u>	<u>moderate severe</u>	<u>severe</u>	<u>extreme</u>
P1	Delusions	1	2	3	4	5	6	7
P2	Conceptual disorganisation	1	2	3	4	5	6	7
P3	Hallucinatory behaviour	1	2	3	4	5	6	7
P4	Excitement	1	2	3	4	5	6	7
P5	Grandiosity	1	2	3	4	5	6	7
P6	Suspiciousness/persecution	1	2	3	4	5	6	7
P7	Hostility	1	2	3	4	5	6	7

G1	Somatic concern
G2	Anxiety
G3	Guilt feelings
G4	Tension
G5	Mannerisms & posturing
G6	Depression
G7	Motor retardation
G8	Uncooperativeness
G9	Unusual thought content
G10	Disorientation
G11	Poor attention
G12	Lack of judgement & insight
G13	Disturbance of volition
G14	Poor impulse control
G15	Preoccupation
G16	Active social avoidance

N1	Blunted affect
N2	Emotional withdrawal
N3	Poor rapport
N4	Passive/apathetic social withdrawal
N5	Difficulty in abstract thinking
N6	Lack of spontaneity & flow of conversation
N7	Stereotyped thinking

▶ Sample PANNS Items

P1. DELUSIONS - Beliefs which are unfounded, unrealistic and idiosyncratic.

Basis for rating - Thought content expressed in the interview and its influence on social relations and behaviour.

- 1 **Absent** - Definition does not apply
- 2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
- 3 **Mild** - Presence of one or two delusions which are vague, uncrystallised and not tenaciously held. Delusions do not interfere with thinking, social relations or behaviour.
- 4 **Moderate** - Presence of either a kaleidoscopic array of poorly formed, unstable delusions or a few well-formed delusions that occasionally interfere with thinking, social relations or behaviour.
- 5 **Moderate Severe** - Presence of numerous well-formed delusions that are tenaciously held and occasionally interfere with thinking, social relations and behaviour.
- 6 **Severe** - Presence of a stable set of delusions which are crystallised, possibly systematised, tenaciously held and clearly interfere with thinking, social relations and behaviour.
- 7 **Extreme** - Presence of a stable set of delusions which are either highly systematised or very numerous, and which dominate major facets of the patient's life. This frequently results in inappropriate and irresponsible action, which may even jeopardise the safety of the patient or others.

P2. CONCEPTUAL DISORGANISATION - Disorganised process of thinking characterised by disruption of goal-directed sequencing, e.g. circumstantiality, loose associations, tangentiality, gross illogicality or thought block.

Basis for rating - Cognitive-verbal processes observed during the course of interview.

- 1 **Absent** - Definition does not apply
- 2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
- 3 **Mild** - Thinking is circumstantial, tangential or paralogical. There is some difficulty in directing thoughts towards a goal, and some loosening of associations may be evidenced under pressure.
- 4 **Moderate** - Able to focus thoughts when communications are brief and structured, but becomes loose or irrelevant when dealing with more complex communications or when under minimal pressure.
- 5 **Moderate Severe** - Generally has difficulty in organising thoughts, as evidenced by frequent irrelevancies, disconnectedness or loosening of associations even when not under pressure.
- 6 **Severe** - Thinking is seriously derailed and internally inconsistent, resulting in gross irrelevancies and disruption of thought processes, which occur almost constantly.
- 7 **Extreme** - Thoughts are disrupted to the point where the patient is incoherent. There is marked loosening of associations, which result in total failure of communication, e.g. "word salad" or mutism.

Differential Diagnosis



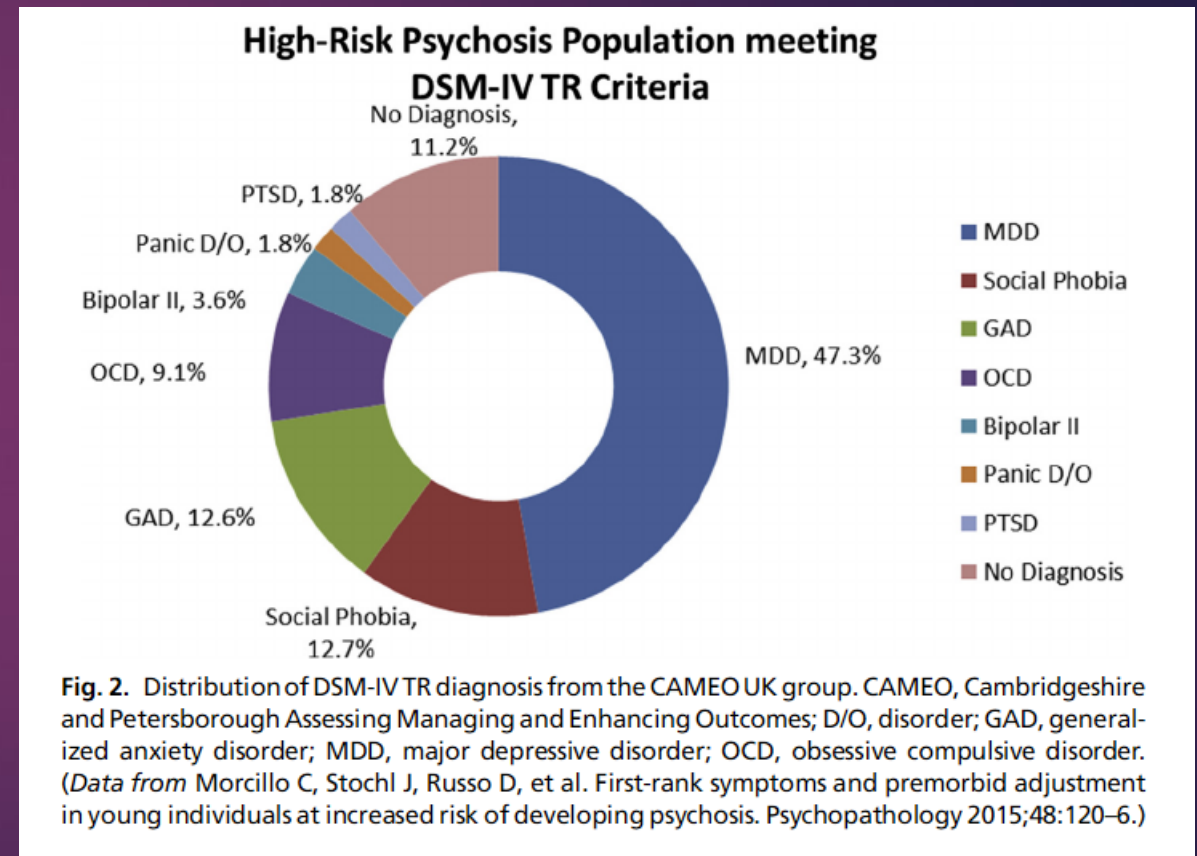
Audience Question:

What Disorders Should Be
Considered for Differential
Diagnosis?



Ultra High Risk Patients Who Do Not Develop Psychosis

- About 30% of ultra-high risk patients convert to psychosis within 2 years
- The 70% of ultra-high risk patients who do not convert are functionally impaired compared to controls
- More than 70% of the nonconverters had at least 1 DSM diagnosis



Differential Diagnosis

▶ OCD

- ▶ Approximately 1/3 (10-60%) of individuals with psychosis experienced obsessions and compulsions during prodrome
- ▶ In psychosis, content of obsessions and compulsions tends to be atypical

▶ PTSD

- ▶ A dose of 3 childhood traumas can predict hallucinations
- ▶ More likely to experience transient symptoms with traumatic content

▶ ASD

- ▶ Shared: Individuals with either condition may show odd thinking, rigid behaviors, impaired social skills, poor theory of mind, difficulty reporting on own experiences, difficulty understanding others' intentions
- ▶ Individuals with psychotic disorders tend to experience more paranoia, more inappropriate affect, more delusions, and tell odder stories than individuals with ASD
- ▶ Individuals with psychosis often have neurological "soft signs"
- ▶ Developmental history essential

Differential Diagnosis

▶ ADHD

- ▶ Impairments in concentration are extremely common in schizophrenia
- ▶ Individuals with psychosis more likely to be distracted by internal symptoms
- ▶ Treatment with stimulants may be helpful for negative features, but effects wane over time
- ▶ Treatment with modafinil may be useful for negative symptoms according to preliminary research

▶ Affect Disorders with Psychotic Features

- ▶ Shared genetic risk between bipolar disorder and schizophrenia
 - ▶ Depression and anxiety extremely common (up to 60%) in individuals with schizophrenia
 - ▶ Schizoaffective disorder has limited stability or predictive validity as a diagnosis
 - ▶ Individuals with mania more likely to present with more grandiose delusions and fewer paranoid delusions
- ▶ Distinguishing between primary and secondary features of affective disorders is recommended if possible

Medical Causes

About 3% of episodes of psychosis have a medical cause

- ▶ Organic causes are more likely with visual, olfactory, or gustatory hallucinations
- ▶ Most likely medical causes for an acute psychotic state:
 - ▶ Febrile, drug/toxicity-induced, neoplastic, or encephalitic
- ▶ Most likely causes for episodic or fluctuating PLEs:
 - ▶ Epilepsy, migraine, or sleep disorders
- ▶ Routine, but not indiscriminate, medical work recommended for all FEP
 - ▶ Half of all patients with new-onset psychosis have EEG abnormalities of unclear significance
 - ▶ Incidental and non-clinically meaningful MRI findings in about 20% of population
- ▶ More extensive medical work up suggested in cases of atypical presentation or when refractory to standard treatment

Potential Medical Causes

Neurologic disorders <ul style="list-style-type: none">• Epilepsy• Head trauma• Hydrocephalus• Brain neoplasms• Arteriovenous malformations• Hamartoma (eg, as in tuberous sclerosis)	Autoimmune diseases <ul style="list-style-type: none">• Systemic lupus erythematosus• Poststreptococcal acute disseminated encephalomyelitis• Mixed collagen vascular diseases• Paraneoplastic syndromes (eg, NMDA receptor encephalitis)• Multiple sclerosis in childhood	Infections <ul style="list-style-type: none">• Brain abscesses and cysts• Central nervous system–invasive parasitic infection• HIV/AIDS• Syphilis• Neuroborreliosis (lyme disease)• Viral encephalitis
Neuropsychiatric disorders^a <ul style="list-style-type: none">• Friedreich’s ataxia• Huntington’s disease• Tuberous sclerosis• Wilson’s disease	Chromosomal disorders and congenital disorders^a <ul style="list-style-type: none">• Velocardiofacial syndrome (22q11.2 deletion syndrome)• Turner syndrome (XO)• Fragile X syndrome	Medications <ul style="list-style-type: none">• Stimulants (including modafinil)• Antidepressants: selective serotonin reuptake inhibitors, bupropion• Hypnotics: barbiturates, benzodiazepines• Opiates• Guanfacine• Herbal therapies (eg, St. John’s wort, ginseng, ma-huang)
Nutritional anomalies <ul style="list-style-type: none">• Magnesium deficiency• Vitamin A, vitamin D, or vitamin B12 deficiency	Drugs of abuse <ul style="list-style-type: none">• Amphetamines• Hallucinogens (eg, cannabis, PCP, MDMA, ketamine)• Inhalant abuse• Opiates	Metabolic diseases^a
	Endocrinopathies + electrolyte anomalies <ul style="list-style-type: none">• Hyper- and hypoparathyroidism• Hyper- and hypothyroidism• Hypocalcemia/hypoglycemia• Hypomagnesemia/hypophosphatemia	Neurologic disorders <ul style="list-style-type: none">• Epilepsy• Head trauma• Hydrocephalus• Brain neoplasms• Arteriovenous malformations• Hamartoma (eg, as in tuberous sclerosis)

Algon, S., Yi, J., Calkins, M. E., Kohler, C., & Borgmann-Winter, K. E. (2012). Evaluation and Treatment of Children and Adolescents with Psychotic Symptoms. *Current Psychiatry Reports*, 14(2), 101–110. <http://doi.org/10.1007/s11920-012-0258-y>

Neuroimaging

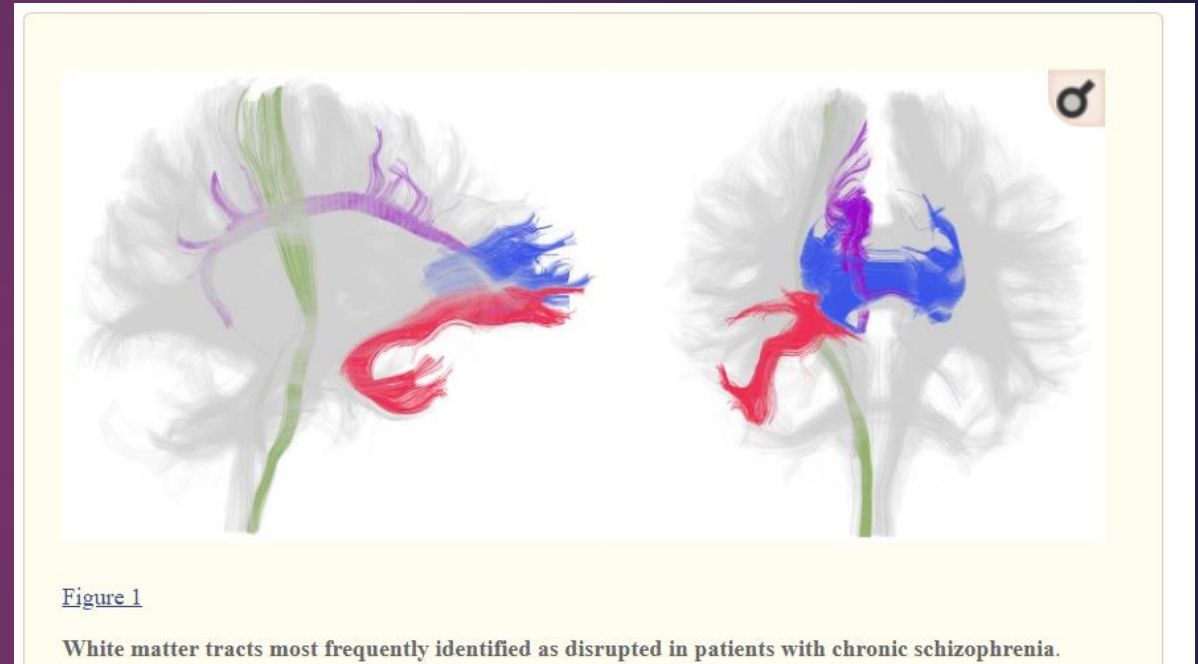
Brief Overview of Neuroimaging

Structural studies point to:

- Cortical thinning
- Prefrontal gray matter loss
- Increased lateral ventricles
- Smaller amygdala
- Smaller hippocampus

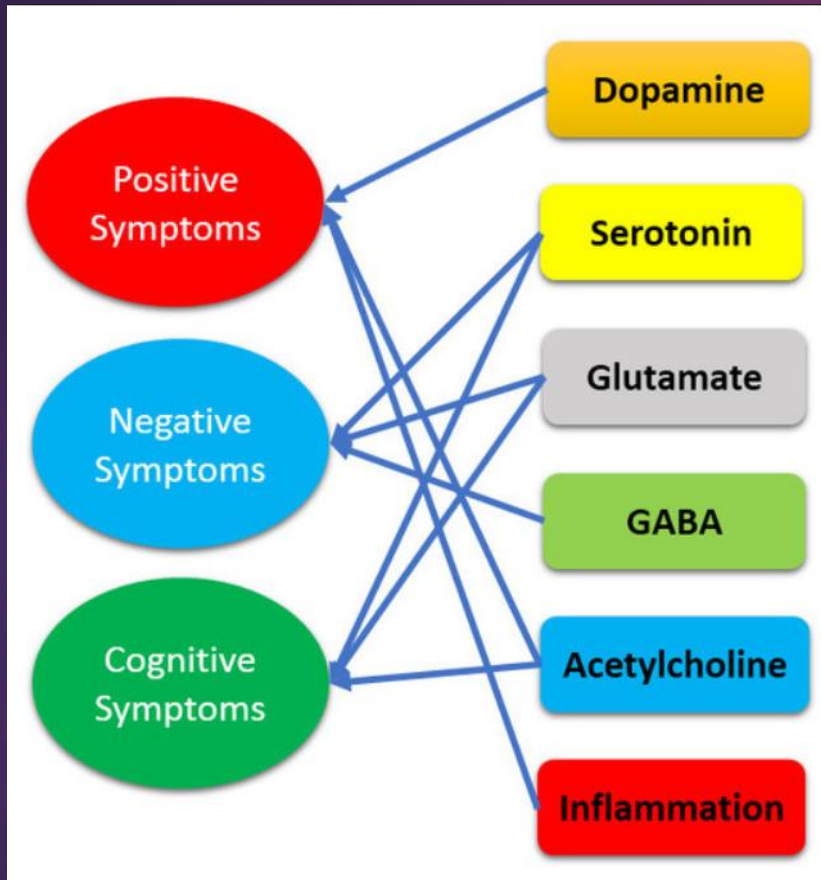
Functional studies point to:

- Decreased fractional anisotropy within prefrontal and temporal lobes
- Abnormalities within the fiber bundles connecting these regions, particularly the uncinate fasciculus, cingulum bundle, corpus callosum, internal capsule



Wheeler, A. L., & Voineskos, A. N. (2014). A review of structural neuroimaging in schizophrenia: from connectivity to connectomics. *Frontiers in Human Neuroscience*, 8, 653. <http://doi.org/10.3389/fnhum.2014.00653>

Brief Overview of Neurotransmitter Studies



- Disrupted neurotransmission and cognitive functions are key components in the pathophysiology of schizophrenia
- However, no single neurotransmitter is clearly responsible for the onset or progression of schizophrenia
- Individuals with schizophrenia have fewer D1 receptors in the prefrontal cortex
- Disturbances in glutamate, serotonin, and GABA have also been implicated

Resources

BC Early Psychosis Intervention Program

Dealing with Psychosis Toolkit (DWP)

There are many ways to use this toolkit. You can start in any section and work through the toolkit in any order. Some of the topics may be more useful to you than others. Pick and choose what parts you want to work on. There are many activities in this toolkit. Some of the activities are challenging. Give yourself time and be patient. Learning new skills takes time.



[Download](#)

Download Single Sections of the Toolkit

[Download](#)

About this Toolkit and Monitoring your Progress

Information on how to use the toolkit and monitor your progress.

[Download](#)

What is Psychosis?

Learn about the symptoms of psychosis and the six different factors that may contribute to the onset of psychosis.

[Download](#)

What Can You Do About Psychosis?

This section focuses on the importance of learning new skills, finding good support and taking effective medication. There are some worksheets here you can use to better understand the medication you are prescribed.

[Download](#)

Taking Care of Your Health

Information on sleep, exercise and other factors that contribute to a healthy lifestyle.

[Download](#)

Managing Stress

Learn techniques to help you deal with and manage your stress.

<https://www.earlypsychosis.ca/pages/resources/downloads>

Washington State Department of Social and Health Services

- ▶ <https://www.dshs.wa.gov/bha/division-behavioral-health-and-recovery/first-episode-psychosis-project>

First Episode Psychosis Project

Facts

- Anyone can develop psychosis.
- Psychosis is common and treatable and affects 3 in 100 people.
- It usually occurs for the first time between the ages of 15 and 30.
- It is equally as prevalent in both males and females.

What is psychosis, and what do I need to know about it?

Psychosis is a condition which affects the brain's ability to process information. It keeps our brain from working well and can:

- Alter perceptions and make things that are not real seem real.
- Make our thoughts jumbled and speech disorganized and illogical.
- Change or exaggerate our feelings and emotions towards ourselves, others, or the outside world.
- Trigger feelings of dread, panic, fear and anxiety as our thoughts and perspectives of reality change.

Washington State Early Psychosis Initiative

Psychosis can be treated.

Learning all you can about psychosis types, causes, early intervention and treatments will help determine what works for you.

Visit www.warecoveryhelpline.org if you think a problem might exist and to find out how to get help for yourself or others.

Washington
Recovery Help Line

24-Hour Help for Substance Abuse, Problem Gambling & Mental Health

1.866.789.1511

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Get help early.

Learn more at www.dshs.wa.gov/GetHelpEarly

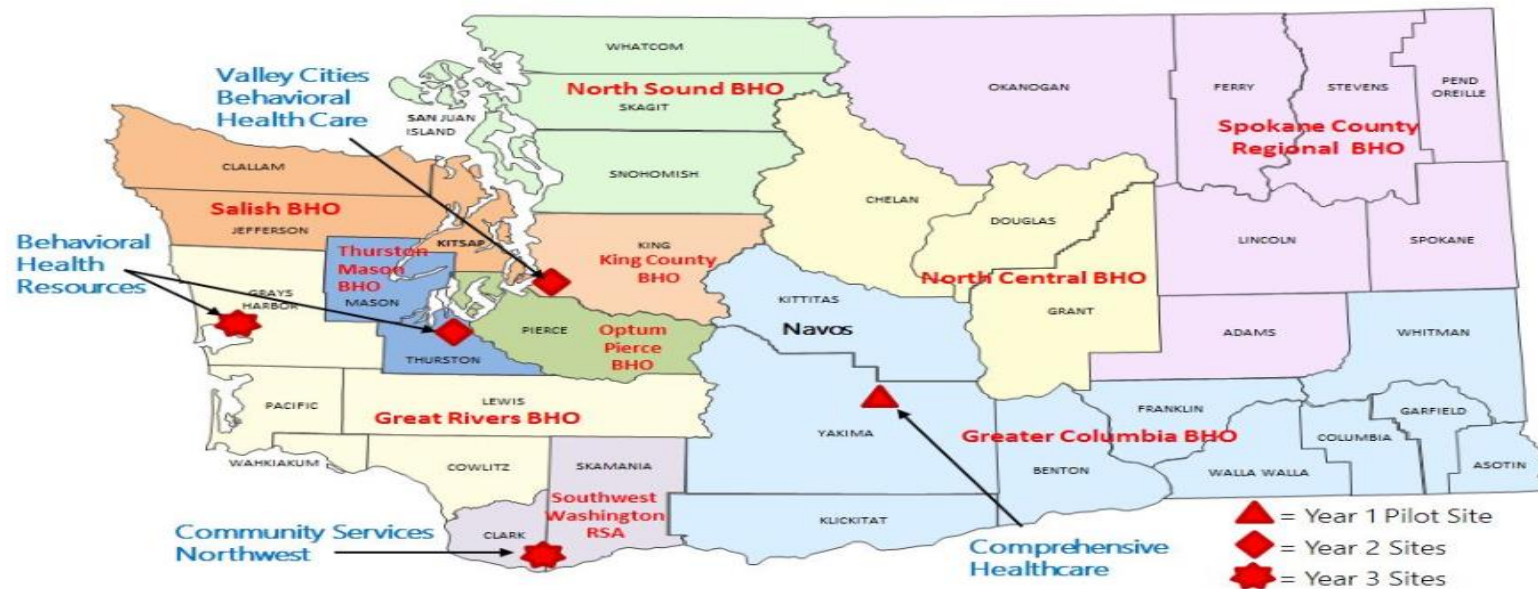


The information provided in this fact sheet was extracted from the booklet *Recognizing and Helping Young People at Risk for Psychosis*, developed by the Portland Identification and Early Referral (PIER) program and utilized in conjunction with the EDIPPP initiative.

Resources: New Journeys

Map of Current Sites

NEW JOURNEYS NETWORK WASHINGTON STATE



Results of Pilot Program:

Leickly, E., McDonell, M., Monroe-DeVita, M., Peterson, R., Oluwoye, O., Hughes, M., ... Blair, T. (2017). M131. Washington State New Journeys Program for Young Adults Experiencing First Episode Psychosis: Pilot Results. *Schizophrenia Bulletin*, 43(Suppl 1), S258.

New Journeys Comprehensive Healthcare

Contact: Victor Larios, Program Director

Email: victor.larios@comphc.org | Phone Number: 509-575-4084

BHO: Greater Columbia | Location: Yakima, WA

Website: <http://www.comphc.org/yakima-valley-mental-health-first-episode-psychosis.php>

Additional link: <https://www.valleycities.org/new-journeys/>