Psychosis 101

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Best Practices in Schizophrenia Treatment (BeST) Center at NEOMED

• The BeST Center’s mission:
  – Promote recovery and improve the lives of as many individuals with schizophrenia as quickly as possible
  – Accelerate the use and dissemination of effective treatments and best practices
  – Build capacity of local systems to deliver state-of-the-art care to people affected by schizophrenia and their families

• The BeST Center offers:
  – Training
  – Consultation
  – Education and outreach activities
  – Services research and evaluation

• The BeST Center was established:
  – Department of Psychiatry, Northeast Ohio Medical University in 2009
  – Supported by Peg’s Foundation and other private foundations and governmental agencies
Reasons for this talk

• Psychosis is often misunderstood
• Psychosis is common
• Recognition and treatment of psychosis is important
What is psychosis?

• A family of medical illnesses that
• Affect neurological functions related to the
• Processes that convert raw sensory data to finished-product perception
What are the inputs to the brain?

• More than 100 billion nerve cells send information from within the body and from the outside world to the brain.

• Raw data from these nerve cells consist only of brief electrical impulses: frequency of on/off states.
What are the outputs from the brain?

- Perception
- Language
- Sense of self
- Recognition of others
- Emotions
- Empathy
- Behavior
- Thought
The brain’s major task is INTEGRATION

- Imponderably large on/off data from every nerve cell within the body
- Integrated seamlessly to
- Construct an internal representation of the inner and outer worlds to
- Promote the survival of the organism

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The integration tasks are demanding and complex

• Energy demands of the brain testify to the complexity of constructing and continually refreshing these virtual realities that we perceive as real
  • The brain accounts for only 3% of the body’s weight
  • Yet the brain burns 20% of the body’s calories

• The more complex the system/task, the greater the opportunities for errors
What is psychosis?

• “osis” - medical term for abnormality without evidence of inflammation
• “psyche” - antiquated term for the **integrated outputs of the brain** (perception, thought, memory, emotion, self-concept, etc)
• Errors in the brain’s integrative functions lead to misperceptions or abnormal perceptions.
• These often take the form of paranoia, illogical ideas, hallucinations, disorganized speech, unusual behavior.
• **Better, more accurate term is Integration Disorder**; this term is used in Japan
• This is neurological disorder (psychiatry is the branch of neurology that focuses on higher-order, integrative brain processes)
Psychosis: more common than most people imagine

• Not surprising considering the extreme complexity of the brain’s integrative functions.


Speaking of psychosis in adolescents...
Data sources

**Annual risk of suicide in adolescents:** 0.2 per 1,000 individuals

**Annual risk of diabetes, any type:** 8 per 1,000 individuals

**Annual risk of teen birth:** 24 per 1,000
Trends in teen pregnancy and childbearing: teen births

**Annual risk of psychosis in adolescence:** 75 per 1,000
Schizophrenia is more common than: lupus, multiple sclerosis, and type 1 diabetes - combined

There are more people with schizophrenia than type 1 diabetes, multiple sclerosis, & lupus combined.

7.2 Schizophrenia¹

1.5 Lupus⁴

1.5 Multiple Sclerosis²

3.4 Type 1 Diabetes³

Sources


4 CDC Lupus Facts https://www.cdc.gov/lupus/facts/detailed.html

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Psychotic disorders are the most common problem that nobody talks about
Without ongoing, science-informed public health information about psychotic disorders, fear and prejudice fills the void

Common misconceptions about schizophrenia:
• It involves splitting of the mind
• It is like multiple personalities
• People with schizophrenia are dangerous
• Medications for schizophrenia are harsh, dangerous
• Hardly anyone recovers from it

Realities about schizophrenia:
• There is no splitting of the mind, nor of the personality
• It’s a neurological condition that affects the processing and integration of nerve cell activity
• Most people with schizophrenia are polite and kind
• The majority of people with schizophrenia can recover with the right kind of treatment
• The right kind of treatment does not involve hard-to-tolerate medications
Psychosis vs Schizophrenia

Psychosis is a symptom
- Arises when one or more factors affect integrative activity of the brain

Psychosis has many possible causes

Schizophrenia encompasses those cases where:
- Psychosis is persistent or recurrent
- Not better explained by other psychiatric or medical conditions
- In other words, schizophrenia is a diagnosis of exclusion
- Within the schizophrenia category are probably multiple diseases
### Some causes of psychosis

<table>
<thead>
<tr>
<th>Cause</th>
<th>Cause</th>
<th>Cause</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addison’s disease</td>
<td>Adrenomyeloneuropathy</td>
<td>Celiac disease</td>
<td>Cerebral cysts and abscesses</td>
</tr>
<tr>
<td>Cerebral malaria</td>
<td>Cerebrovascular lesions</td>
<td>Chromosomal disorders</td>
<td>Cranial trauma</td>
</tr>
<tr>
<td>Cushing’s disease</td>
<td>Encephalitis and its sequelae</td>
<td>Fabry’s disease</td>
<td>Familial basal ganglia calcification</td>
</tr>
<tr>
<td>GM2 gangliosidosis</td>
<td>Hartnup disease</td>
<td>Hashimoto’s encephalopathy</td>
<td>HIV</td>
</tr>
<tr>
<td>Homocystinuria (MTHFR reductase deficiency)</td>
<td>Huntington’s disease</td>
<td>Hydrocephalus</td>
<td>Hyperparathyroidism</td>
</tr>
<tr>
<td>Hyperthyroidism</td>
<td>Hypoparathyroidism</td>
<td>Hypopituitarism</td>
<td>Hypothyroidism</td>
</tr>
<tr>
<td>Kartagener’s syndrome</td>
<td>Klinefelter’s syndrome</td>
<td>Metachromatic leukodystrophy</td>
<td>Narcolepsy</td>
</tr>
<tr>
<td>Neurosyphilis</td>
<td>NMDA receptor antibody encephalitis</td>
<td>Occult hydrocephalus</td>
<td>Oculocutaneous albinism</td>
</tr>
<tr>
<td>Pellagra</td>
<td>Pernicious anemia</td>
<td>Pick’s disease</td>
<td>Porphyrias</td>
</tr>
<tr>
<td>Prenatal static encephalopathy</td>
<td>Rheumatic chorea</td>
<td>Schilder’s cerebral sclerosis</td>
<td>Sheehan’s syndrome</td>
</tr>
<tr>
<td>Subarachnoid hemorrhage</td>
<td>Systemic lupus erythematosus</td>
<td>Tourette syndrome</td>
<td>Toxicity (drugs, medications, heavy metals)</td>
</tr>
<tr>
<td>Tuberous sclerosis</td>
<td>Tumors of the brain</td>
<td>Velocardiofacial syndrome</td>
<td>Vitamin A deficiency</td>
</tr>
<tr>
<td>Vitamin B12 deficiency</td>
<td>Vitamin D deficiency</td>
<td>Wilson’s disease</td>
<td>Zinc deficiency</td>
</tr>
</tbody>
</table>

A complete medical evaluation is necessary to rule out treatable medical illnesses that may cause psychosis.
Medical causes of schizophrenia-like symptoms

6% to 12% of people initially thought to have schizophrenia may actually have an **undetected medical disease** as the cause of their symptoms.


Within schizophrenia are many illnesses

Reminder: Schizophrenia is characterized by persistent or recurring psychosis that can’t be better explained by some other psychiatric diagnosis or medical condition.

Within this category are several illnesses*

- Dopamine psychosis
- Glutamate psychosis
- Inflammatory psychosis
- Other psychoses

*These categories of schizophrenia are not yet recognized by the APA, but are clearly emerging within the medical research community.
Not all schizophrenias are the same

• Every first-line antipsychotic medication is designed to reduce dopamine signals within the brain. They are appropriate for treating people with the ‘dopamine psychosis’ type of schizophrenia.

• These medications don’t work for people with “normal dopamine psychosis.”
  • Dopamine reduction is irrelevant, possibly harmful in normal dopamine psychosis
  • Minimal likelihood of benefit
  • Full risk of side effects/adverse events
Treatment of normal dopamine schizophrenia

• Ordinary antipsychotic medications are ineffective in normal dopamine schizophrenia
• Clozapine is effective in about 60% of patients with normal dopamine schizophrenia
• Clozapine also reduces suicide risk
  • It is the only medication with FDA recognized suicide reduction
Clozapine reduces suicide rates in schizophrenia

- And is the only medication with FDA-approval for suicide reduction

Source: Reid et al., 1998
### Clozapine use in other countries (% of people with schizophrenia prescribed clozapine)

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>35%</td>
</tr>
<tr>
<td>China</td>
<td>30%</td>
</tr>
<tr>
<td>England</td>
<td>23%</td>
</tr>
<tr>
<td>Sweden</td>
<td>22%</td>
</tr>
<tr>
<td>Germany</td>
<td>20%</td>
</tr>
<tr>
<td>India</td>
<td>13%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>4%</td>
</tr>
<tr>
<td>USA</td>
<td>4%</td>
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</tbody>
</table>

Forcing ineffective medications

• The ethics of forced or coerced treatment rests on the assumption that he forced/coerced treatment will bring about the greater good of restored health.

• Yet the science of psychosis is clear that most of the medications that would be forced (i.e., dopamine signal blockers) are ineffective in the subset of individuals with normal dopamine psychoses.

• Combining dopamine signal blocker meds, giving them at higher doses, or giving them in the form of forced long-acting injection does not make them more effective... just more dangerous.
Good-practice in schizophrenia treatment

• Early recognition
• Comprehensive medical, neurological, imaging, and neurological examination to detect the 6% to 12% of cases with underlying medical disease
• Don’t continue ineffective medications
• Don’t change effective medications
• Question original diagnosis when treatment is not working
• Offer clozapine for those cases where two adequately-dosed trials of medication have not worked
With the right treatment, the majority of patients will recover

<table>
<thead>
<tr>
<th>Study</th>
<th>Sample Size</th>
<th>Years Followed</th>
<th>% Recovered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleuler (1974) Switzerland</td>
<td>208</td>
<td>23</td>
<td>53 - 68%</td>
</tr>
<tr>
<td>Hinterhuber (1973) Austria</td>
<td>157</td>
<td>30</td>
<td>75%</td>
</tr>
<tr>
<td>Ciompi &amp; Muller (1976) Switzerland</td>
<td>289</td>
<td>37</td>
<td>53%</td>
</tr>
<tr>
<td>Kreditor (1977) Lithuania</td>
<td>115</td>
<td>20</td>
<td>84%</td>
</tr>
<tr>
<td>Tsuang et al. (1979) Iowa</td>
<td>200</td>
<td>35</td>
<td>46%</td>
</tr>
<tr>
<td>Huber et al. (1979) Germany</td>
<td>502</td>
<td>22</td>
<td>57%</td>
</tr>
<tr>
<td>Marinow (1986) Bulgaria</td>
<td>280</td>
<td>20</td>
<td>75%</td>
</tr>
<tr>
<td>Harding et al. (1987) Vermont</td>
<td>269</td>
<td>32</td>
<td>62 - 68%</td>
</tr>
<tr>
<td>Ogawa et al. (1987) Japan</td>
<td>140</td>
<td>22.5</td>
<td>56%</td>
</tr>
<tr>
<td>Desisto et al. (1995) Maine</td>
<td>269</td>
<td>35</td>
<td>49%</td>
</tr>
</tbody>
</table>

Change the Cycle!

Subpar practice
- outdated
- incomplete
- reactive

Poor outcomes
- poor function
- frequent relapse
- frequent side effects

Reluctance to accept diagnosis
Reluctance to seek help → Patients come in with more severe illness, bigger setbacks

Clinicians not motivated nor equipped to aim for top-level outcomes

Low motivation for government/insurance to adequately fund up-to-date, comprehensive treatment

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"Many would now contend that much of the poor outcome in psychosis is an artifact of
• late detection,
• crude and reactive pharmacotherapy,
• sparse psychosocial care, and
• social neglect"

What could be possible with current knowledge

Like stroke or heart attack, symptoms of psychosis are widely known, accurately recognized

New-onset cases receive accurate diagnosis, personalized treatment

Reduced use of hospitals, involuntary treatments, psychosis-related incarceration

50% to 70% are in recovery or remission within the first 4 months

85% in recovery or remission within the first 12 months

Public recognition of psychosis, schizophrenia as common, treatable conditions from which recovery is the normal outcome
The Promise of Early, Evidence-Based Treatment

40% of early-treated patients are ultimately able to either:

- successfully discontinue medications (20%), or
- be maintained on extremely low doses of medication (20%).


After 6 months in FIRST

99% have access to housing

67% frequently or always get along with family / significant others

92% frequently. Always, or sometimes get along with family / Significant others

After 12 months in FIRST

93% no legal involvement

7% some legal involvement

5% probation <2% incarcerated

Employment

243% increase from baseline

Education

After 6 months in FIRST

33% of first clients are attending: high school, college, or vocational school

17% of first clients are attending college (part / full time)

34% of first clients have high school diploma or GED
A Recovery Story

- August 1999. Begins university
- June 2002. Publishes 2 papers in academic journals
- January 2006. Hears voices, experiences hallucinations
- October, 2006. Jailed
- November, 2006. Jailed
- March, 2007. Hospitalized and treated for schizophrenia
- February, 2008. Recovers
- September, 2009. Returns to university

Bethany Yeiser
www.BethanyYeiser.com
Another Recovery Story

There are many trajectories within the schizophrenias. Some of those trajectories end in law school or professorships.
Summary

- Considering the brain’s tasks, psychosis is an expected event that anyone can experience.
- Schizophrenia is a group of illnesses, characterized by psychosis, that can’t be explained by other medical, neurological, or psychiatric diagnoses.
- Schizophrenias can be caused by: dopamine, glutamate, inflammation, other.
- Almost all antipsychotic medications work for the high-dopamine form of schizophrenia; ineffective for normal-dopamine forms.
- Clozapine is the only FDA-recognized treatment for the other types of schizophrenia.
- With personalized, comprehensive treatment most people with schizophrenia will recover.
- Start the right treatment as soon as possible.
- Don’t continue ineffective treatments - this leads to harm and stigma.