Psychosis
Part I and Part II

MHD COURSE
APARNA SHARMA, M.D.

Schizophrenia Lectures - Objectives

Part 1
- Diagnose Schizophrenia and Other Psychotic Disorders
- Review other causes of psychosis

Part 2
- Epidemiology
- Course & prognosis
- Etiology
- Overview: Treatment

Schizophrenia – Disease Burden

- One of the most disabling and economically catastrophic medical disorders, ranked by the World Health Organization as one of the top ten illnesses contributing to the global burden of disease
- Economic cost to society:
  - $30-65 billion/year
- Accounts for 22% of all mental illness costs
- 1/3 of all psychiatric hospital beds occupied by schizophrenic patients

Schizophrenia: A Criteria

- Delusions:
  - Fixed, false belief, present in ~ 80% of patients with schizophrenia
  - Unusual or strange thoughts that are out of touch with reality

- Types:
  - Bizarre
  - Non-Bizarre

- Positive Symptoms:
  - This group of symptoms includes the reality distortion symptoms of hallucinations and delusions, as well as disorganized thoughts and behavior

- Negative Symptoms:
  - While positive symptoms represent an exaggeration of normal processes, negative symptoms are conceptualized as an absence or diminution of normal processes

- Cognitive Symptoms:
  - This group of symptoms affect mental processes that includes the capacity to perceive, think, learn and to study, and the capacity of the brain to analyze information and program adaptive behavior

- Mood & Anxiety Symptoms:
  - This group of symptoms appear to occur at a higher rate than in the general population leading to loss of motivation, demoralization, social isolation and even suicide

**Schizophrenia A Criteria**

**Delusions - Bizarre**

Clearly implausible, not understandable, and do not derive from ordinary life experiences

- Examples –
  - My alien-controlled neighbor is monitoring my outdoor activities
  - My wife is having an affair with Elvis

**Schizophrenia A Criteria**

**Delusions - Non-Bizarre**

Beliefs of something occurring in a person's life which is not true but not out of the realm of possibility

- Examples –
  - My neighbor is watching me when I'm out in the yard
  - My wife is having an affair

**Schizophrenia A Criteria**

**Hallucinations**

- Perception of a sensory process in the absence of an external source
- They can be auditory, visual, somatic, olfactory, or gustatory
- Auditory hallucinations most common form, ~ 40 and 80 % pts
- Frequently are voices; can be sounds such as music, body noises, or machinery
- Auditory hallucinations are often the manifestation of the illness most responsive to antipsychotic medication
Schizophrenia A Criteria

Disorganized Thinking

- Impairs effective communication
- Trouble thinking clearly
- Trouble understanding others
- Tangential thought process
- Looseness of association or Derailment
- Neologisms
- Incoherence or Word salad

Schizophrenia A Criteria

Disorganized Behavior

- Childlike silliness
- Unpredictable agitation
- Problems with goal directed behavior
- Inappropriate sexual behavior
- Shouting, swearing
- Catatonic behavior

Schizophrenia A Criteria

Negative Symptoms

- A core feature of Schizophrenia; they are also referred as Deficit symptoms
- Independent of severity of positive symptoms
- Usually very treatment resistant
- Determine the functional outcome in patients
- Appear to cluster into two components:
  - diminished expression symptom cluster
  - an avolition‐apathy cluster

References:
Andreasen NC, Olsen S. Negative vs positive schizophrenia. Definition and validation. Arch Gen Psychiatry 1982; 39:789.
Negative symptom cluster Negative symptom As manifested by:

**Diminished expression**
- Affective flattening
  - Unchanging facial expression
  - Little spontaneous movement/use of expressive gestures
- Poorest eye contact

**Alogia**
- Apathy
  - Poor grooming and hygiene
- Thought blocking
  - Increased latency of response
- Poverty of speech

**Anhedonia**
- Failure to engage with peers socially
- No interest in stimulating activities
- Little to no intimacy with others

**Anergia**
- Poor eye contact
- Failure to engage with peers socially
- No interest in stimulating activities
- Little to no intimacy with others

**Avolition − apathy**
- Poor grooming and hygiene
- Failure to engage with peers socially
- No interest in stimulating activities
- Little to no intimacy with others

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**Cognitive Impairment in Schizophrenia**

- Cognitive impairment is a core feature of schizophrenia
- Pts exhibit low IQ and below-average cognitive performance years before the emergence of psychosis
- The impairment appears early (prodromal phase), worsens in the active phase, and has a high correlation to functional problems and disability
- Cognitive deficits have been recognized as being fundamentally intertwined with functional outcomes


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**Cognitive Impairment in Schizophrenia - SMART**

**Speed, Memory, Attention, Reasoning, Tact (Social Cognition)**

- **Processing speed**
  - Speed with which an individual is able to perform perceptual or motor tasks. This domain includes verbal fluency.
- **Attention/vigilance**
  - Attention and vigilance influence an individual's ability to complete tasks requiring sustained focus.
- **Working memory**
  - The domain of working memory concerns the individual's ability to temporarily retain information for immediate recall and manipulation.
- **Verbal learning and memory**
  - Tests of verbal learning and memory require encoding and recalling verbal information, such as word lists or short narratives.
- **Visual learning and memory**
  - Tests to assess an individual's immediate or delayed ability to recall visual information, such as faces or scenes, or the ability to reproduce simple images such as line drawings.
- **Reasoning and problem solving**
  - Reasoning and problem solving reflects an individual's ability to complete verbal and nonverbal tasks that require complex planning or decision-making skills.
- **Social cognition**
  - The subtest used in the battery focuses on the emotional management aspect of social cognition and social and emotional perception.
Schizophrenia Spectrum Disorders

**DSM V**

✔ Criteria A. Signs & symptoms
✔ Criteria B. Severity or How bad is it?
✔ Criteria C. Time Duration
✔ Criteria D. Another Diagnostic Explanation?


Schizophrenia A Criteria

✔ A. Signs & symptoms

Positive Symptoms

• 1. Delusions
• 2. Hallucinations
• 3. Disorganized Thinking
• 4. Disorganized Behavior
• 5. Negative Symptoms

Schizophrenia A Criteria

Two (or more) of the following, each present for a significant portion of time during a one-month period (or less if successfully treated). At least one of these must be (1), (2), or (3)

• 1. Delusions
• 2. Hallucinations
• 3. Disorganized Thinking
• 4. Disorganized Behavior
• 5. Negative Symptoms
Schizophrenia B Criteria

Functional Impairment

- How bad is it?
- Personal/Social/Occupational Dysfunction
  - work functioning
  - interpersonal relations
  - self care

- For a significant portion of time since the onset of the illness, level of functioning in one or more major areas (as above), is markedly below the level achieved prior to the onset

Schizophrenia C Criteria

Time-Line / Duration

- Continuous signs of disturbance persist for at least 6 months
- This 6-month period must include at least 1 - month of criteria A symptoms (less if successfully treated)

- Brief Psychotic Disorder
- Schizophreniform Disorder

Another Diagnostic Explanation?

- Another psychotic disorder
- Affective disorder with psychosis
- Psychosis due to a substance
- General medical condition (delirium)
- Developmental disorder
- Personality disorder
Another Psychotic Disorder

Schizoaffective disorder (DSM5)
- Major mood disorder (MDD or Bipolar) and Schizophrenia's A Criterion is met
- MDD/BAD c psychosis vs Schizoaffective disorder
- Psychosis episode, no mood symptoms, x 2wks
- At least once in pt's lifetime
- Bipolar Type: if includes Manic or a Mixed Episode
- Depressive Type: if only includes Major Depressive Episodes
- Not due to substance use or medical illness

Delusional disorder (DSM5)
- Delusions, bizarre or non-bizarre x 1 month
- Criteria A for Schizophrenia not ever met
- Social-occupational function not impaired much
- Mood symptoms - if any very brief vs the delusion
- Not due to substances or medical illness or better explained by another psych disorder

Affective Disorder

Depression
- overlap with negative symptoms
  - Anhedonia
  - Avolition - lack of energy
  - Affective flattening

Mania
- Grandiosity (delusions?)
- Flight of ideas (disorganized speech)
- Decreased need for sleep, increased goal-directed directed activity (disorganized behavior)
Psychosis Due to Substance Use

- Intoxication
  - Alcohol, amphetamines, cannabis, cocaine, hallucinogens (LSD), inhalants, opioids, PCP, sedatives, hypnotics, other unknown substances

- Withdrawal
  - Alcohol, sedatives, hypnotics, anxiolytics

Psychosis Due to Substance

- Medications
  - Anesthetics, anticholinergics, anticonvulsants, anti-histamines, anti-HTN, cardiovascular meds, antimicrobial meds, anti-parkinsonian, chemotherapeutic agents, Gastrointestinal, GI meds, muscle relaxants, NSAIDS, OTC, anti-depressants, disulfiram

Psychosis Due to a General Medical Condition

- Neurological
  - Neoplasms, dementia, CVA's, epilepsy, deafness, Huntington's disease, migraine, CNS infections, auditory nerve injury

- Endocrine
  - Hyper/hypothyroid, hyper/hypo-parathyroid, hypoglycemia

- Metabolic
  - Hypoxia, hypercarbia; hepatic, renal diseases, fluid or electrolyte imbalances; autoimmune disorders
Development Disorders
- Autism, Rett’s, Asperger’s disorder
  - Poor communication skills (disorganized speech?)
  - Poor reciprocal social skills (affect is flat?,anhedonia?)

Personality Disorders
- Paranoid
  - Pattern of distrust and suspiciousness of others (delusion?)
- Schizoid
  - Social detachment and restricted affect (negative symptoms?)
- Schizotypal
  - Odd beliefs & unusual perceptual experience (delusions? hallucinations?)
  - Odd speech (disorganized speech?)
  - Odd, eccentric behavior (disorganized behavior?)

End of Part I
Part 1
- Diagnose Schizophrenia and Other Psychotic Disorders
- Review other causes of psychosis
Schizophrenia - Part II

- Epidemiology
- Onset & Course of illness
- Prognosis
- Etiology
- Overview: Treatment

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Schizophrenia - Epidemiology

- Prevalence of Schizophrenia - 1%
- The incidence ~ 1.5 per 10,000 people
- Prevalence in Males > Female = 1:1.4
- Women tend to be diagnosed later in life than men –
  men ~ 18 to 25 yrs of age
  women ~ 25 to 35 yrs of age
- Severity and Prognosis worse in men than in women

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Onset of Illness

- Acute/abrupt vs Insidious onset
- Majority display gradual development of a prodromal phase signs and symptoms:
  - Loss of interest in school/work
  - Deterioration in hygiene and grooming
  - Social withdrawal
  - Unusual behavior
  - Anger outbursts
- Age of onset have both pathophysiological and prognostic significance
Age of onset has both pathophysiological and prognostic significance!

<table>
<thead>
<tr>
<th>Early age of onset</th>
<th>Late age of Onset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Often Males</td>
<td>Often Females</td>
</tr>
<tr>
<td>Poor premorbid functioning</td>
<td>Better premorbid functioning</td>
</tr>
<tr>
<td>Lower educational achievement</td>
<td>Higher educational achievement</td>
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<tr>
<td>More evidence of structural brain abnormalities</td>
<td>Less evidence of structural brain abnormalities</td>
</tr>
<tr>
<td>More prominent negative signs and symptoms</td>
<td>Less prominent negative signs and symptoms</td>
</tr>
<tr>
<td>More evidence of cognitive impairment</td>
<td>Less evidence of cognitive impairment</td>
</tr>
<tr>
<td>Display poor outcomes</td>
<td>Display better outcomes</td>
</tr>
</tbody>
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Course of Illness

**Prodromal Phase**
- Often diagnosed after a first psychotic break
- ~85% pts with schizophrenia have a prodromal phase
- Duration can last from months to years!

**Active Phase**
- Meets Criteria A
- M – 1 to 2 yrs
- M – 2 to 5 yrs
- Duration depends on treatment response and severity of illness
- The more severe the illness, the longer the active phase

**Residual Phase**
- Remission from psychosis
- Note, the negative symptoms could still be present

Course of Illness

- Highly variable with some pts exhibiting exacerbations and remission and others exhibiting a chronic illness course
- 10-15% single active phase
- 35-30% intermittent active phases
- 50-55% chronic course of illness
- Remission refers to absence of active symptoms, or minimal symptoms that do not interfere with behavior, for a period of at least six months


Course of Illness: Co-morbid Substance Use

- 47% have serious drug and alcohol use disorder compared to only 16% of the general population
  - 60-90% tobacco, 20-80% alcohol and cannabis, 15-50% cocaine

Co-morbid Substance Use associated with:
- Clinical exacerbations
- Treatment non-compliance
- Poor global functioning
- Increased risks of suicide and violence
- Increased rates of relapse and re-hospitalization

Suicide risk

- Rate of suicide much higher than general population
- Approximately 5% of people with schizophrenia commit suicide over their lifetime, ~26% will attempt
- About 30% of all completed suicides are among people with schizophrenia

Risk factors:
- Depressive symptoms, feelings of hopelessness, being unemployed
- Higher risk: period after psychotic episode or hospital discharge
- Especially high for younger males with comorbid substance abuse

Disability in Schizophrenia

- Disability in people with schizophrenia is pervasive, affecting domains in:
  - Social
  - Vocational
  - Residential

- Impairment is evident by reduction in achieving milestones in:
  - Independent living
  - Marriage
  - Employment
Course of Illness: Independent Living

- Only ~33% able to live independently
- 67% needs assistance with living
  - 25% live with family
  - 18% live in group homes and 7.5% in nursing homes
  - 6% live in jails
  - 4.5% are homeless

Treatment Issues

- Medication Non-compliance
  - A systematic review of 39 studies reported a mean rate of medication nonadherence in schizophrenia of 41%.
  - 2 years post-hosp., 50% non-compliant

- Psychosocial treatment needs
  - Handling of $$
  - Food
  - Housing
  - Employment
  - Social Skills training
  - Medical/dental care

Consideration of Social Stigma

- The experience of stigmatizing attitudes towards people with schizophrenia is common
- Concept of “Self-Stigma”
- Self-stigma was a predictor of barrier to care and decreased treatment adherence
- Self-stigma associated with poorer response to vocational rehabilitation
Treatment Issues
Violence Risk in Schizophrenia

- Concerns about Assaultive/Violent Behavior
- Much greater risk for Self-harm
  - Surgeon General 1999 Report—risk to others no different from general population
  - Exception of subset of pts—co-morbid substance use, treatment non-adherence

- Risk of Victimization
  - Pts vulnerable to criminals

- Contribution to Stigma

Overall Outcome

- Life expectancy
  - General population: 78 years
  - Schizophrenia: 48-53 years

- Suicide risk vs. Cardiovascular disease risk
  - Smoking, diabetes, HTN, lipids
  - Difficulty treating for medical illnesses

- Challenge to getting access of care!

Treatment Issues
Quality of Life (QOL)

- 94% unemployed, 55% unmarried, only 33% lived independently
- Psychiatric sxs best independent predictor of subjective and objective QOL
- Subjective QOL – severity of depressive sxs single best predictor
- Objective QOL – severity of negative sxs single best predictor
- Depressive sxs and better cognitive functioning – worse life satisfaction
- Negative sxs limited participation in daily activities and social functioning
### Overall Prognosis

<table>
<thead>
<tr>
<th></th>
<th>Good Prognosis</th>
<th>Poor Prognosis</th>
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<tbody>
<tr>
<td>Age of Onset</td>
<td>Older</td>
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<td>Course of Onset</td>
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<td>Gender</td>
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<td>Substance use</td>
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<td>Present</td>
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<tr>
<td>Family History</td>
<td>Absent</td>
<td>Present</td>
</tr>
<tr>
<td>Initial Treatment</td>
<td>Good</td>
<td>Poor</td>
</tr>
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The single Best Prognostic factor is-

**A good Initial Response to the First Antipsychotic Medication Treatment!!!**

### What causes Schizophrenia?

- Neurochemical theory
- Infection/viral theory
- Nutritional theory
- Endocrine theory
- Genetics theory
Schizophrenia Neurochemical Disorder?

- Dopamine hypothesis
  - Anti-psychotics are dopamine antagonists
  - Other hyper-dopaminergic states cause psychosis

- Glutamate
  - Often paired with GABA
  - PCP blocks glutamate and causes psychosis

Schizophrenia Slow virus cause?

- Winter birth rate of schizophrenia pts
  - Viruses are seasonal, could explain this

- Viruses can be latent for long periods
  - Infected in utero, disease symptoms decades later
  - Idea of interaction of infectious agents (viruses) and genes (susceptible people)

Schizophrenia cause?

- Nutritional theory
- Endocrine theory
- Genetics theory
  - 1:100 if no family history
  - 1:10 if a parent or sibling(s) has it
  - 4:10 if both parents have it
  - 1:2 if your identical twin has it
Schizophrenia: Process of development?

- Genetic predisposition
  - Early environmental insults—prenatal, perinatal
- Environmental exposures
  - Neurodevelopmental abnormalities
  - Substance abuse, psychosocial stressors
  - Late adolescence neuronal pruning mistakes
- Active phase of illness
  - Periods of psychosis
- Neurodegeneration

End Part II

- Epidemiology
- Onset & Course of illness
- Prognosis
- Etiology
- Overview: Treatment