Understanding Mental Illness & Its Treatment

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Overview

- Mental illness: a brain disease
- Defining mental illness: diseases and classification
- Pharmacological treatment of mental illness
- Dangerousness: when the law and illness collide
Mental Illness

A Brain Disease
A disease of the brain

Diseases of the brain are similar to other medical illnesses where an important body organ system is not working properly or at full capacity
- Congestive heart failure
- Liver failure
- Kidney failure
Mental Illness

- The human brain is the most complex organ on the planet (universe)
- Understanding the biology of an organ helps us appreciate how diseases arise from its dysfunction
- The study of brain biology is known as neurobiology or neuroscience
Mental Illness

Imagine everything a brain does, and then imagine what might happen if even a tiny thing went wrong

- Senses
- Memory
- Social cognition/judgment
- Emotion
- Planning/organization
- Reality testing/logic
The Mind And The Brain Are One
In The Same

- 1848: Phineas Gage had an iron rod blasted through his head.
- Gage’s personality dramatically altered.
- Before: well-balanced, honest, reliable, efficient, capable.
- After: childish, capricious, inconsiderate, profane, poor judgment.
- Described as “No longer Gage.”
The Function of the Brain

- To acquire external information and convert it to an internal representation (transducer)
  - To receive environmental stimuli and interpret that stimuli and ultimately ascribe meaning to the interpretation
  - For example, different wavelengths of light become color and visual images, which may convey meaning to the observer
In addition to information processing, the brain is a communication device
- Large-scale communication (between organisms)
- Macro-communication
  - Between brain regions (e.g., cortical-subcortical)
  - Within neuroanatomical networks (e.g., hippocampal subregions)
- Micro-communication (between cells or neurons)
The Brain

- A transducer and communication device
  - Exterior $\rightarrow$ interior
  - Interior $\rightarrow$ interior
  - Interior $\rightarrow$ exterior

- From **Big** to **small** (and back again)
The vast majority of psychiatric symptoms arise from:

- Misinterpretation of environmental stimuli
  - Misinterpretation of sensory information
  - Misinterpretation of cognitive or social cues
  - Delusions, ideas of reference
- Internal representation in the absence of environmental stimuli
  - Hallucinations
  - Affective symptoms
Psychiatric Symptoms

- Faulty transducer/transmitter
- Such symptoms result from abnormal or atypical brain activity
  - Impaired micro-communication
  - Impaired macro-communication
  - Impaired large-scale communication
  - Combinations of all of the above
Mental Illness

- Mental illness results from brain disease
- Typically, there is a problem with communication/transduction at some level in the brain
- Depending on just where things are going, any number of symptoms can arise
Figure 2. MRI Coronal Views from Two Sets of Monozygotic Twins Discordant for Schizophrenia Showing Subtle Enlargement of the Lateral Ventricles in the Affected Twins (Panels B and D) as Compared with the Unaffected Twins (Panels A and C), Even When the Affected Twin Had Small Ventricles.
Defining Mental Illness

Diseases and Classification
Emil Kraepelin (1855-1926)

- The towering figure in psychiatry (not Freud).
- Great systematizer and diagnostic “lumper.”
- Unified nosology among the psychoses, placing under the rubric dementia praecox.
Emil Kraepelin (1855-1926)

- Assigned Alois Alzheimer the task of finding neuropathology of dementia praecox; instead, discovered lesions of senile dementia.
- Kraepelin also described subtle or borderline forms of major psychosis.
- Manic-depression divided into types [manic, hypomanic, depressive, irritable, & cyclothymic].
- Emphasis on precision and objective diagnostic criteria.
From the Tradition of Kraepelin

- DSM
  - Diagnostic and Statistical Manual of Mental Disorders
  - Now in its 4th Edition (with recent text revision)
  - Developed from clinical research and field validation
  - To improve communication and understanding
Several Broad Categories

- Affective disorders
- Anxiety disorders
- Psychotic disorders
- Personality disorders
- Dementias
- Substance use disorders
Affective Disorders

- Depression: sad mood, hopelessness, anhedonia, guilt, crying spells, sleep & appetite changes, and suicidal ideation
- Mania: distractibility, irritability, grandiosity, flight of ideas, decreased sleep, impulsivity, poor judgment
- Each of these may or may not have psychotic features
Anxiety Disorders

- Include: specific phobia, social phobia, posttraumatic stress disorder, panic disorder, and generalized anxiety disorder

- Characterized by persistent anxiety plus several other features depending upon diagnosis

- Anxiety: imagine fear response (physical and psychological) but no external threat
Psychosis

- A symptom, not a disease
- Can be associated with many disorders, both psychiatric and medical
- Gross impairment in reality testing
- Decreased ability to evaluate the accuracy of perceptions and thoughts; make incorrect inferences about external reality (even in the face of contrary evidence)
Psychosis: Positive Symptoms

- Hallucinations: false perceptions in the absence of real sensory stimuli
- Illusions: misperceptions of real external stimuli
- Delusion: a fixed false belief that the believer maintains even in the face of considerable evidence or likelihood to the contrary
- Ideas of Reference: the patient believes that events that are of no obvious reference to him refer personally to him
Psychosis: Thought Disorder

- Loose associations: thought production in which there is no recognizable relationship between ideas.
- Thoughts appear unconnected, or, at best, obliquely related to one another.
- Also: tangentiality, circumstantiality, clang associations, echolalia, perseveration.
Negative Symptoms: Andreasen’s A’s

- **Affective flattening** - unchanging facial expression; ↓ expressive gestures, poor eye contact, affective nonresponsivity, inappropriate affect, lack of vocal inflections

- **Alogia** - poverty of speech/content of speech

- **Avolition-apathy** - ↓ grooming/hygiene, impersistence at work/school, anergia

- **Anhedonia-asociality** - ↓ interests/activities, ↓ interest in sex/intimacy/closeness, few friends

- **Attention deficits** - social/testing inattentiveness
Psychotic Disorders

- Schizophrenia: combinations of the psychotic symptoms discussed above
- Schizophreniform disorder
- Schizoaffective disorder: an illness like schizophrenia occurring with an illness like depression or bipolar disorder
- Delusional disorder: fixed false belief, non-bizarre, without other psychotic symptoms
- Substance-induced psychosis
- Psychotic Disorder NOS
Personality Disorders: Borderline

- Borderline personality disorder: impulsivity, affective instability, “black and white thinking,” splitting, fear of abandonment, unstable relationships, chronic suicidal ideation, poor self-identity, self-injurious behavior (cutting), chronic suicidal ideation

- Often, clinically exhausting
Personality Disorders: Antisocial

- Antisocial personality disorder: disregard for the rights of others, lack of empathy, disregard for rules and regulations, impulsivity, difficulty learning from experience, substance abuse, frequent exposure to the criminal justice system, problem with violence and aggression.
Dementia

- Significant memory impairment
  - Short-term earlier than long-term

- Other cognitive impairments
  - Word-finding difficulties
  - Peseveration
  - Constructional difficulties
  - Procedural difficulties

- Alzheimer’s, vascular, Pick’s
Substance Use Disorders

- Substance dependence
  - Increased tolerance
  - Physiological withdrawal
  - Significant impairment in social function
  - Concomitant problems with impulsivity, aggression, illegal activities, mood and psychotic problems

- Alcohol, cocaine, benzodiazepines, amphetamine, cannabis, etc.
Mental Illness

- There are several mental illnesses, which are defined by specific symptom clusters as delineated by DSM-IV-TR
- Diagnoses aid in communication, assessing prognosis, determining duration of illness, and counseling regarding genetic transmission
- Symptoms help guide pharmacological treatment
Pharmacological Treatment of Mental Illness
In general, psychiatric drugs work directly at altering micro-communication.

However, over time, such alterations in micro-communication affect macro-communication (neuronal networks).

Finally, it is hoped that these latter changes will alter large-scale, or interpersonal, communication, as well as enhancing accurate interpretation of environmental stimuli.
Pharmacological Treatment

- Usually symptom driven\(\rightarrow\) what symptoms is the patient experiencing and how can we help them?
- A single drug can target more than one symptom
Antidepressants

- Are used to treat symptoms of depression and anxiety
- Sometimes used to treat symptoms of impulsivity (SSRI → selective serotonin reuptake inhibitors)
- Sometimes used to treat attention deficit hyperactivity disorder (ADHD; bupropion or Wellbutrin®)
Antidepressants

- SSRI s:
  - Fluoxetine = Prozac®
  - Paroxetine = Paxil®
  - Sertraline = Zoloft®
  - Citalopram = Celexa®
  - Escitalopram = Lexapro®
  - Fluvoxamine = Luvox®

- Others: buproprion (Wellbutrin®), venlafaxine (Effexor®), mirtazapine (Remeron®), duloxetine (Cymbalta®), nefazodone (Serzone®)
Anxiolytics

- Used to treat anxiety symptoms (most often antidepressants are used)

- Benzodiazepines
  - Acutely treat anxiety
  - Diazepam (Valium\textsuperscript{®}), lorazepam (Ativan\textsuperscript{®}), alprazolam (Xanax\textsuperscript{®})
  - Problems with abuse, dependence, and withdrawal
Mood Stabilizers

- Help treat aspects of bipolar disorder (mania and depression)
- Sometimes used for impulsivity and aggression
- Sometimes used in refractory schizophrenia
Mood Stabilizers

- Lithium, divalproex sodium (Depakote®), carbamazepine (Tegretol®), lamotrigine (Lamictal®), topiramate (Topamax®)
- Also all atypical antipsychotics (for treatment of acute mania)
Antipsychotics

- Used to treat various symptoms of psychosis
- Most effective for positive symptoms
- Newer drugs are probably more effective than older drugs for negative and cognitive symptoms
- Sometimes used to treat aggression and impulsivity; used to augment antidepressants
Antipsychotics

- Older drugs: haloperidol (Haldol®), chlorpromazine (Thorazine®)
- Newer drugs: clozapine (Clozaril®), risperidone (Risperdal®), olanzapine (Zyprexa®), quetiapine (Seroquel®), ziprasidone (Geodon®), aripiprazole (Abilify®)
Long-lasting agents

- Intramuscular injections with sustained release of medication
- Haloperidol decanoate, fluphenazine decanoate (Prolixin®)
- Newer drugs are attempting to create similar formulations
  - Risperdal Consta®
Treatment of Mental Illness

- Virtually all diseases are chronic and require long-term treatment.
- Cessation of medication often results in recurrence of illness.
- Even patients complying with treatment can have recurrence of illness.
- Lack of insight is often part of illness, particularly with schizophrenia.
Treatment of Mental Illness

- For the majority of patients, treatment results in significant symptom relief.
- Treatment of mental illness has similar success rate to treatment of medical illness.
- A variety of modalities are employed in addition to medications, though medications are crucial.
Dangerousness
When the Law and Illness Collide
Symptoms + Behavior = Acute Treatment

Symptoms

• Command hallucinations
• Acting on delusions, paranoia
• Disorganization of thought and behavior

Behavior

Dangerous to Others

• Command hallucinations
• Acting on delusions, paranoia
• Disorganization of thought and behavior

Dangerous to Self

• Poor self care (hygiene, nutrition)
• Unable or unmotivated to follow treatment
• Medication noncompliance

Acute Treatment
Dangerousness

- Direct: suicide / homicide / aggression
- Indirect: poor self care (sleep, eating, hygiene) and failure to care for medical illnesses
- Indirect: cognitive (lack of organizational skills, unable to perform activities of daily living)

All the above result from the signs and symptoms of mental illness
Mental illnesses are common brain diseases. Diagnosis is based on clusters of presenting symptoms. Treatment is targeted toward relieving symptoms. Persistent symptoms can lead to dangerousness, necessitating hospitalization.
Freud's First Slip
Common (and Uncommon) Abbreviations

- AEB = as evidenced by
- APD = antisocial personality disorder
- BPAD = bipolar affective disorder
- BPD = borderline personality disorder
- CFS = contracts for safety
- CPS = chronic paranoid schizophrenia
Common (and Uncommon) Abbreviations

- ED = emergency department
- GAD = generalized anxiety disorder
- HI = homicidal ideation
- MDD = major depressive disorder
- MI = mental illness
Common (and Uncommon) Abbreviations

- MR/DD = mental retardation / developmental disability
- NOS = not otherwise specified
- OCD = obsessive-compulsive disorder
- OD = overdose
- OSH = outside hospital
- prn = “as needed”
- PTA = prior to admission
Common (and Uncommon) Abbreviations

- PTSD = posttraumatic stress disorder
- SI = suicidal ideation
- SIB = self-injurious behavior
- SPMI = severely persistently mentally ill