

Transformation of Psychiatry into the Clinical Neuroscience of Mental Disorders: An Update for Advocates and Consumers

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WHAT ARE MENTAL DISORDERS?

- Developmental disorders of the brain beginning early in life
- Complex genetic disorders
- Disorders requiring treatment with both medication and rehabilitative (psycho) therapy - like most illnesses in modern medicine Mental Disorders lead to a shortened life span.
- Suicide is twice as common as homicide in the US.
- Lifespan is shortened due to suicide and heart disease.

WHO ARE THE PEOPLE WHO GET MENTAL DISORDERS?

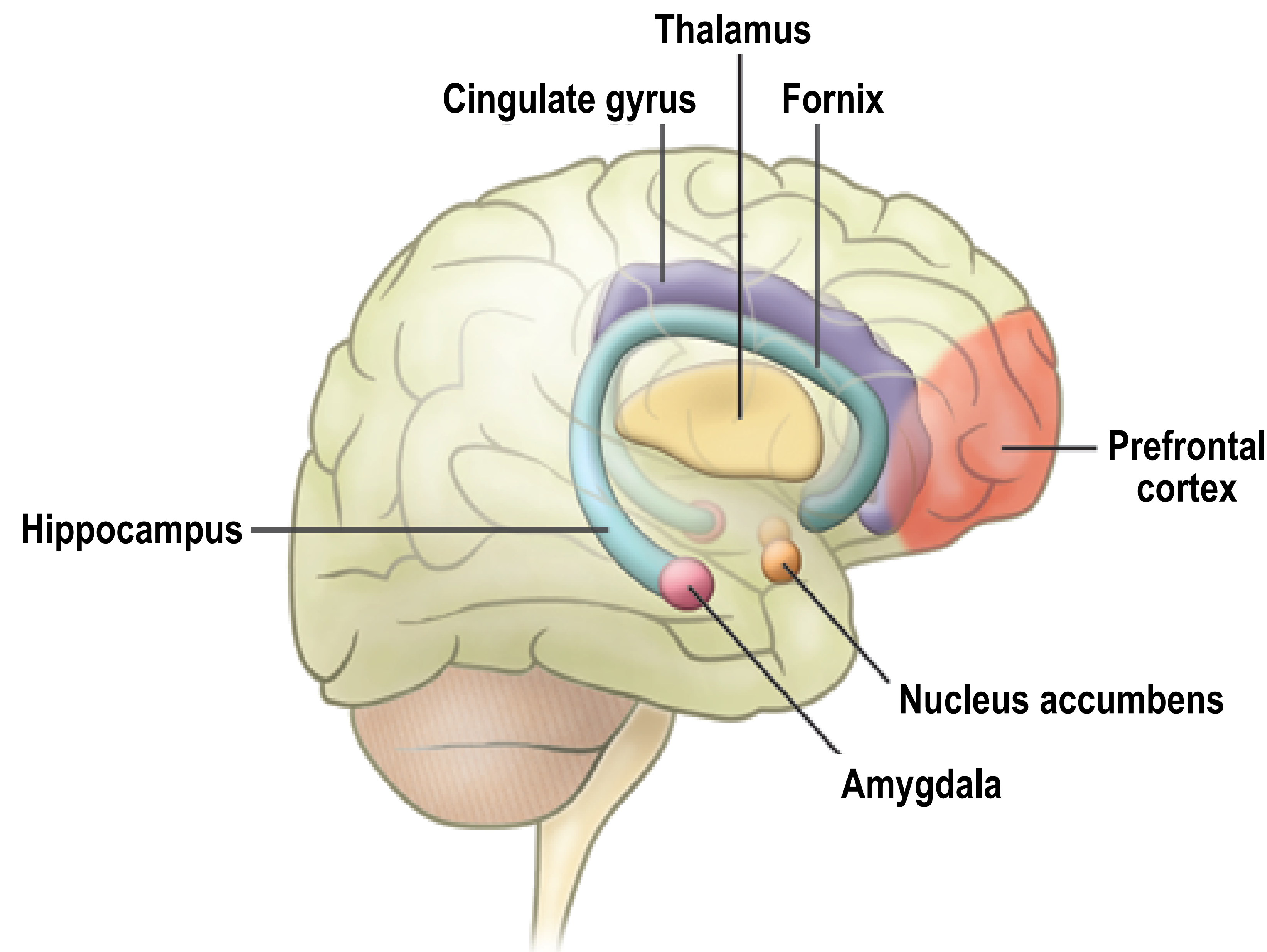
- Mental disorders have become the chronic disorders of young people in the developed world.
- The top 5 causes of medical disability in 15 to 44 year olds are all mental disorders, 1st depression, 2nd alcohol, 3rd drugs, 4th bipolar disorder, and 5th schizophrenia.

WHAT'S NEW IN RESEARCH?

- Mental disorders are brain disorders that cause psychological distress rather than psychological disorders caused by trauma or conflict.
- The tools are now available for a new science of mental disorders, which has forced psychiatry to reformulate the diagnosis, treatment, and training of mental health professionals.
- These new research methods have realigned biological research in psychiatry with neurology and have created a new discipline of the clinical neuroscience of mental disorders.
- Mental disorders do not differ from other serious medical illness in course and treatment.

“PREFRONTAL CORTEX”

AREA OF THE BRAIN THAT REGULATES EMOTION
The Prefrontal Cortex and its connections to the Amygdala are extremely important in emotion regulation, decisions-making, and mental illness.



Areas of the Prefrontal Cortex Important in Emotion Regulation

Orbital frontal cortex
Dorsal medial prefrontal cortex
Dorsal lateral prefrontal cortex
Ventral lateral prefrontal cortex
Anterior cingulate gyrus

{also see: www.case.edu/mdp}

WHEN DOES THE BRAIN CHANGE IN THE MENTALLY ILL?

- The brain begins to change during childhood prior to the development of the symptoms of mental disorders and is the current focus of biological research in psychiatry worldwide.
- The symptoms of mental illness appear late in the course of the disease, much like Alzheimer's disease.

GRAY MATTER CHANGES IN BIPLOAR DISORDER

- No overall change in gray matter, but region specific changes include:
 - Increased ventricular size and decreased frontal cortical volume
 - Decreased size of the anterior cingulate cortex volume
 - Gray matter loss in the left dorsal lateral prefrontal cortex
 - Gray matter loss in the ventral prefrontal cortex and orbital prefrontal cortex
- Decreased levels of N-acetyl-aspartate (NAA) mitochondrial changes suggestive of nerve cell loss in the hippocampus, dorsal lateral prefrontal cortex, orbitofrontal cortex, basal ganglia.

EMOTION REGULATION CHANGES IN BIPOLAR

- Abnormally reduced activity in the left Orbitofrontal Cortex and the Dorsomedial prefrontal cortex during automatic attentional control and automatic emotion regulation paradigms in adult bipolar disorder.
- Structural abnormalities in the dorsal and ventral prefrontal cortices, including left-sided abnormalities in the integrity of white matter tracts in the Orbitofrontal Cortex, in adult bipolar disorder.
- Taken together, these findings point to left-sided abnormalities in prefrontal cortical regions implicated in automatic regulation in adult bipolar disorder.
- Whether or not neural changes cycle with mood state has not been studied.