NIMH Mission

To transform the understanding and treatment of mental illnesses through basic and clinical research, paving the way for prevention, recovery, and cure.

www.nimh.nih.gov

Research = Hope
About the NIMH

- The National Institute of Mental Health (NIMH) is the lead federal agency for research on mental illnesses.

- NIMH supports more than 3,000 research grants and contracts at universities and other institutions across the country and overseas.

- NIMH intramural research programs support approximately 600 scientists working on the NIH campuses.
Cumulative U.S. DALYs for the Leading Disease/Disorder Categories by Age (2015)

Data Courtesy of IHME
Agenda

• NIMH Strategic Research Priorities

• Neurodevelopmental Perspective

• Early Identification and Intervention Across the Lifespan

• Challenges and Opportunities
Objective 1: Define the mechanisms of complex behaviors

Objective 2: Chart mental illness trajectories to determine when, where, and how to intervene

Objective 3: Strive for prevention and cures

Objective 4: Strengthen the public health impact of NIMH-supported research
NIMH Strategic Plan for Research

Disease Origins → Pre-Symptom → Prodrome → Disease → Recovery

Priorities

I. Identify Risk – Enhance Prediction

II. Identify biomarkers

III. Chart illness across development

IV. Develop personalized interventions

Development: Maturation/Sensitive Periods
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(Neuro)developmental Perspective

Early & Differential Onset

Roots in Neurodevelopment

Early insult alters trajectories

Early interventions improve outcomes
Psychiatric Disorders Onset During Childhood and Adolescence

- Autism
- ADHD
- Anxiety disorder
- Mood disorders
- Schizophrenia
- Substance Abuse
- Any Disorder

Age of Diagnosis (years)
Neurodevelopmental Roots and Risk

Early Trajectories Predict ASD

Children’s Early Visual Behavior Predicts Autism

Constantino, *Nature*, 2017
Early Interventions May Improve Outcomes

Dawson, et al., Pediatrics, 2010
Autism Spectrum Disorder (ASD) Services Research Across the Lifespan (ServASD)

• ASD Screening, Evaluation and Engagement in Treatment and Services in the First Two Years of Life

• Pilot Studies on Services for Transition-Age Youth

• Pilot Studies on Services for Adults with ASD
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Suicide Screening and Intervention

Universal Screening Plus Intervention Reduces Number of Suicide Attempts

Miller…ED-SAFE Investigators, JAMA Psychiatry, 2017
ServASD: Developmental Milestones

**Age 15-17**
- Increased independence
  - Social relationships
  - Work habits & problem-solving
  - Future planning

**Early 20s**
- Beginning work life
  - Health & stress management
  - Adult relationships
  - Independent living

**Mid-20s-30s**
- Established friends & community
  - Continued & new health management
  - Long-term planning

http://www.cdc.gov/ncbddd/childdevelopment/positiveparenting/adolescence2.html
http://hubpages.com/health/Adult-Developmental-Stages-Adults-in-Their-20s
Structural Brain Abnormalities in Youth With Psychosis Spectrum Symptoms

Data from the Philadelphia Neurodevelopmental Cohort

Satterthwaite, et al., JAMA Psychiatry, 2016
Participants with shorter duration of untreated psychosis had greater improvement in quality of life and psychopathology over 2 years.

Kane, et al., Am. J. Psychiatry, 2016
Current Initiative:

Initiation of a Mental Health Family Navigator Model to Promote Early Access, Engagement and Coordination of Needed Mental Health Services for Children and Adolescents

(PAR-18-428 & PAR-18-429)

These announcements encourage research to develop and test the effectiveness and implementation of family navigator models to:

- Promote early access, engagement and coordination of treatment and services
- Specially address children and adolescents experiencing early symptoms of mental health problems
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• Opportunities in the Era of Big Data
Challenge: Non-linear, Non-uniform Changes Across the Lifespan

- Development is a non-linear, non-uniform, process
- Aging is a non-linear, non-uniform, process
- Environment changes, and it matters

Human Connectome Project (HCP)

- Map the neural pathways that underlie human brain function
- Deciphering the brain’s complex wiring system
  - Mapping the connectomes in over 1,000 healthy adults
  - Optimizing MRI technology for imaging brain structure
Lifespan Connectome

• Baby Connectome:
  ■ Ages 0-5 years; 500 participants; cross-sectional and longitudinal

• Development Connectome:
  ■ Ages 5-21 years; 1350 participants; cross-sectional and longitudinal

• Young Adult Connectome (initial HCP)
  ■ Ages 22-35; 1200 participants, twin pairs, siblings

• Aging Connectome:
  ■ Ages 36 – 100; 1200 participants
Big Data Approaches

Adolescent Brain Cognitive Development (ABCD) Study

- Longitudinal study of ~10,000 children from ages 9-10 through early adulthood

All of Us Research Program

- Over 1 million participants; now Beta testing
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