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Testimony before the
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United States Senate

Assessing the State of America's Mental Health System

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Mr. Chairman and Members of the Committee:

I am Thomas R. Insel, M.D., Director of the National Institute of Mental Health (NIMH) at the National Institutes of Health, an agency in the Department of Health and Human Services. Thank you for this opportunity to present an overview of the current state of mental health research at NIMH, with a particular focus on our efforts to address serious mental illness, and our efforts to discover, develop, and pursue new treatments for these brain disorders. In my statement, I will review the scope of mental disorders in the United States and their impact on public health, and I will outline examples of NIMH's research efforts designed to address this challenge.

PUBLIC HEALTH BURDEN OF MENTAL ILLNESS

The National Institute of Mental Health is the lead Federal agency for research on mental disorders, with a mission to transform the understanding and treatment of mental illnesses through basic and clinical research. The burden of mental illness is enormous. In the United States, an estimated 11.4 million American adults (approximately 4.4 percent of all adults) suffer from a serious mental illness (SMI) each year, including conditions such as schizophrenia, bipolar disorder, and major depression.[1] According to a 2004 World Health Organization report, neuropsychiatric disorders are the leading cause of disability in the United States and Canada, accounting for 28 percent of all years of life lost to disability and premature mortality (Disability Adjusted Life Years or DALYs).[2] The personal, social and economic costs associated with these disorders are tremendous. Suicide is the 10th leading cause of death in the United States, accounting for the loss of more than 38,000 American lives each year, more than double the

[1] Substance Abuse and Mental Health Services Administration. *Results from the 2009 National Survey on Drug Use and Health: Mental Health Findings* (Office of Applied Studies, NSDUH Series H-39, HHS Publication No. SMA 10-4609). Rockville, MD: Substance Abuse and Mental Health Services Administration, 2010.

[2] The World Health Organization. *The global burden of disease: 2004 update*, Table A2: Burden of disease in DALYs by cause, sex and income group in WHO regions, estimates for 2004. Geneva, Switzerland: WHO, 2008.

number of lives lost to homicide.[3] A cautious estimate places the direct and indirect financial costs associated with mental illness in the United States at well over $300 billion annually, and it ranks as the third most costly medical condition in terms of overall health care expenditure, behind only heart conditions and traumatic injury.[4,5] Even more concerning, the burden of illness for mental disorders is projected to sharply increase, not decrease, over the next 20 years.[6]

NIMH-supported research has found that Americans with SMI die eight years earlier than the general population.[7] People with SMI experience chronic medical conditions and the risk factors that contribute to them more frequently and at earlier ages. There are low rates of prevention, detection, and intervention for chronic medical conditions and their risk factors among people with SMI, and this contributes to significant illness and earlier death. Two-thirds or more of adults with SMI smoke[8]; over 40 percent are obese (60 percent for women)[9,10]; and metabolic syndrome is highly prevalent, especially in women.[11] Approximately five percent of individuals with schizophrenia will die by suicide during their lifetime, a rate 50-fold greater than the general population.[12]

DELAYS IN RECEIVING TREATMENT—AND THE CONSEQUENCES

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[3] Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS): www.cdc.gov/ncipc/wisqars accessed November 2011.
[4] Insel TR. Assessing the economic cost of serious mental illness. *Am J Psychiatry*. 2008 Jun;165(6):663-5.
[5] Soni A. *The Five Most Costly Conditions, 1996 and 2006: Estimates for the U.S. Civilian Noninstitutionalized Population*. Statistical Brief #248. July 2009. Agency for Healthcare Research and Quality, Rockville, MD.
[6] Bloom DE, Cafiero ET, Jané-Llopis E, Abrahams-Gessel S, Bloom LR, Fathima S, Feigl AB, Gaziano T, Mowafi M, Pandya A, Prettner K, Rosenberg L, Seligman B, Stein A, Weinstein C. *The Global Economic Burden of Non-communicable Diseases*. Geneva, Switzerland: World Economic Forum, 2011.
[7] Druss BG, Zhao L, Von Esenwein S, Morrato EH, Marcus SC. Understanding excess mortality in persons with mental illness: 17-year follow up of a nationally representative US survey. *Med Care*. 2011 Jun;49(6):599-604.
[8] Goff DC, Sullivan LM, McEvoy JP, et al. A comparison of ten-year cardiac risk estimates in schizophrenia patients from the CATIE study and matched controls. *Schizophrenia Res*. 2005;80(1):45-53.
[9] Allison DB, Fontaine KR, Heo M, et al. The distribution of body mass index among individuals with and without schizophrenia. *J Clin Psych*. 1999;60(4):215-220.
[10] McElroy SL. Correlates of overweight and obesity in 644 patients with bipolar disorder. *J Clin Psych*. 2002;63:207-213.
[11] McEvoy JP, Meyer JM, Goff DC, et al. Prevalence of the metabolic syndrome in patients with schizophrenia: Baseline results from the (CATIE) schizophrenia trial and comparison with national estimates from NHANES III. *Schizophrenia Res*. 2005;80(1):19-32.
[12] Hor K. & Taylor M. Suicide and schizophrenia: a systematic review of rates and risk factors. J Psychopharmacol. 2010;24(4S): 81-90.

According to a study published in 2004, the vast majority (80.1 percent) of people having any mental disorder eventually make contact with a health care professional to receive treatment, although delays to seeking care average more than a decade.[13] Although instances of SMI are associated with shorter delays, the average delay was nevertheless approximately five years—that is five years of increased risk for using potentially life-threatening, self-administered treatments, such as legal or illicit substances, or even death. During an episode of psychosis, people can lose touch with reality and experience hallucinations and delusions. Research has suggested that persons with schizophrenia whose psychotic symptoms are controlled are no more violent than those without SMI.[14] Nonetheless, when untreated psychosis is also accompanied by symptoms of paranoia and when it is associated with substance abuse, the risk of violence is increased. Importantly, the risk of violence is reduced with appropriate treatment. Moreover, people with SMI are 11 times more likely than the general population to be victims themselves of violence.[15]

HOW NIMH IS ADDRESSING THIS PUBLIC HEALTH CHALLENGE

In the past, we viewed mental disorders as chronic conditions defined by their apparent symptoms, even though behavioral manifestations of illness are in fact the last indications—following a cascade of subtle brain changes—that something is wrong. We understand now that mental disorders are brain disorders, with specific symptoms rooted in abnormal patterns of brain activity. Moving forward, NIMH aims to support research on earlier diagnosis and quicker delivery of appropriate treatment, be it behavioral or pharmacological. NIMH has a three-

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[13] Wang PS, Berglund PA, Olfson M, Kessler RC. Delays in initial treatment contact after first onset of a mental disorder. *Health Serv Res.* 2004 Apr;39(2):393-415.

[14] Steadman HJ, Mulvey EP, Monahan J, Robbins PC, Appelbaum PS, Grisso T, Roth LH, Silver E. Violence by people discharged from acute psychiatric inpatient facilities and by others in the same neighborhoods. *Arch Gen Psychiatry.* 1998 May;55(5):393-401.

[15] Teplin, LA, McClelland, GM, Abram, KM & Weiner, DA. Crime victimization in adults with severe mental illness: comparison with the National Crime Victimization Survey. *Arch Gen Psychiatry*, 2005, 62(8), 911-921.

pronged research approach to achieve this aim: (1) optimize early treatment to improve the trajectory of illness in people who are already experiencing the symptoms of SMI; (2) understand and prevent the transition from the pre-symptomatic (prodrome) phase to actual illness; and (3) investigate the genetic and biological mechanisms underlying SMI in order to understand how, in the future, we can preempt illness from ever occurring. Here are examples of NIMH efforts on these three fronts:

(1) In the United States, the delay between a first episode of psychosis and onset of treatment ranges from 61 to 166 weeks, with an average of 110 weeks.[16] NIMH seeks to reduce that delay as much as possible, through continued support of the Recovery After an Initial Schizophrenia Episode (RAISE) project; a large-scale research project to explore whether using early and aggressive treatment will reduce the symptoms and prevent the gradual deterioration of functioning that is characteristic of chronic schizophrenia. The project is currently focused on maintaining the quality of the treatment over time, and retaining individuals in treatment. Results from initial analyses suggest that a RAISE-type intervention would not only produce superior clinical outcomes, but will reduce re-hospitalization during the first year.

(2) NIMH is continuing to fund research directed at the prodromal phase of schizophrenia, the stage just prior to full psychosis. A consortium of eight clinical research centers (North American Prodrome Longitudinal Study or NAPLS) are using biological assessments, including neuroimaging, electrophysiology, neurocognitive testing, hormonal assays, and genomics, to improve our ability to predict who will convert to psychosis, and to develop new approaches to pre-emptive intervention.

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[16] Marshall M, Lewis S, Lockwood A, Drake R, Jones P, Croudace T. Association between duration of untreated psychosis and outcome in cohorts of first-episode patients. *Arch Gen Psychiatry.* 2005 Sep 62:975-983.

(3) For decades, we have known that schizophrenia has a genetic component, but different methods for studying genetic changes have led to uncertainty about which genes are involved and how they contribute to illness. Using a new method to integrate information about illness-related genes from different types of studies, NIMH-supported researchers have identified a network of genes that affect the development, structure, and function of brain cells. The researchers detected important variations in how these gene-related brain changes affected risk for schizophrenia versus other disorders.[17]

PREEMPTION: THE FUTURE OF MENTAL HEALTH RESEARCH

Research has taught us to detect diseases early and intervene quickly to preempt later stages of illness. This year we will avert 1.1 million deaths from heart disease because we have not waited for a heart attack to diagnose and treat coronary artery disease.[18] The 100,000 young Americans who will have a first episode of psychosis this year will join over two million with schizophrenia. Our best hope of reducing mortality from this, other SMI, and other brain disorders will come from realizing that just like other medical disorders, we need to diagnose and intervene before the symptoms become manifest. The health of the country cannot wait.

[17] Gilman SR, Chang J, Xu B, Bawa TS, Gogos JA, Karayiorgou M, Vitkup D. Diverse types of genetic variation converge on functional gene networks involved in schizophrenia. *Nat Neurosci*. 2012 Nov;15(12):1723-8.
[18] Vital Statistics of the United States, CDC/National Center for Health Statistics. (2011, August). Age-adjusted Death Rates for Coronary Heart Disease (CHD). National Heart Lung and Blood Institute. Retrieved January 23, 20130, from http://www.nhlbi.nih.gov/news/spotlight/success/conquering-cardiovascular-disease.html