

Epidemiology of Brain Disorders

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Overview

The Department of Epidemiology of Brain Disorders has two main areas of research. The first focuses on prenatal determinants of schizophrenia and other neurodevelopmental disorders, and involves a series of follow-up studies in “prenatal” cohorts. Previous investigators collected uniquely valuable prenatal data and biological specimens in these cohorts, providing a window on fetal experience. This strategy enables us to elucidate possible fetal origins of disorders including schizophrenia, affective disorders, and autism. Our work on schizophrenia is the most advanced and has produced important findings on prenatal exposures (infection, nutrition, toxins, paternal age) that may play a role in the pathogenesis of schizophrenia. These cohorts are located at various sites in the US and in other countries such as the United Kingdom, Holland, Norway, Israel, and Finland. The second area of research investigates psychosocial treatment for schizophrenia and interventions for homeless mentally ill persons. Among these are the “Critical Time Intervention” (CTI) to reduce homelessness, and “Sex, Games and Videotapes” a 15-session AIDS prevention curriculum. The CTI project has become a model for programs throughout the US and internationally. While these two main areas involve most of the faculty of the department, individual investigators also have other important research foci.

Current Research

Prenatal determinants of schizophrenia and other neurodevelopmental disorders:

A series of findings published in 2005 and 2006 from the Prenatal Determinants of Schizophrenia provide further evidence of prenatal risk factors in the etiology of schizophrenia. For example, prenatal exposure to elevated maternal toxoplasmosis IgG antibody was associated with the risk of schizophrenia in adult offspring (Brown, et al 2005). A large study based on the massive famine precipitated by China’s Great Leap Forward replicated Dr. Susser’s earlier findings on the role of prenatal nutrition in schizophrenia, and Dr. Susser and colleagues are embarked on a new study in China to extend these findings. Drs. Susser (co-PI) and Bresnahan (investigator) continue their work with the ongoing Autism Birth Cohort Study (n= 100,000) underway in Norway. Dr. Susser is senior author of a paper published September 2006 in the Archives of General Psychiatry, which found a strong association between advancing paternal age and risk for autism among members of a large birth cohort in Israel.

Psychosocial treatment for schizophrenia, interventions for homeless mentally ill:

In the newly funded Columbia Center for Homelessness Prevention Studies, Dr. Herman continues his groundbreaking research on effective service delivery models for adults with severe mental illness continues. He is completing a five-year randomized trial of a psychosocial intervention (Critical Time Intervention) designed to prevent homelessness among severely mentally ill men and women following discharge from state hospitals, and is collaborating with

other investigators in the US and Europe in further effectiveness research and dissemination of this model.

Other research:

Dr. Kline has been examining predictors of age at menopause and indicators of ovarian age during the reproductive years. Dr. Kline and her team are examining the relation between skewed X-chromosome inactivation and spontaneous abortions of different types. In particular, they hypothesize the defects in the X-chromosome may be related both to skewed X- inactivation and trisomy. Dr. Richard Neugebauer's research focuses on the investigation of the mental health effects of stressful life events, bereavement and violence. Dr. Pamela was appointed director of the interdepartmental Global Health Track in the Mailman School of Public Health (July, 2005).

Dr. Collins and Dr. Francine Cournois established the PI - Mailman Global Mental Health working group in the Spring of 2006. This group convenes researchers and clinicians from both institutions with an interest in global mental health.

Education and Training

Most of the members of our department are mentors to postdoctoral research fellows and predoctoral students, and several are on the faculty of the Psychiatric Epidemiology Training Program co-directed by Dr. Susser. These fellows and students are actively encouraged to develop their own research projects under the mentorship of senior colleagues.

Highlights

Imprints Center Inaugurated

The Imprints Center for Genetic and Environmental Life Course Studies was inaugurated in 2005. Dr Ezra Susser is director, Drs. Alan Brown and Michaeline Bresnahan are investigators. Imprints brings under a single umbrella the numerous birth cohorts worldwide (n=500,000+) that serve Department investigators in their pursuit of the origins of neurodevelopmental disorders such as autism, ADHD, schizophrenia and bipolar disorder. The Center sponsors an interdisciplinary seminar series that provides opportunities for training and collaboration among postdoctoral students and investigators from NYSPI, CU and internationally.

Dutch Famine Findings Replicated in China; New Study Underway

Dr. Ezra Susser's landmark finding associating prenatal famine with schizophrenia has been replicated on a vast scale. Dr. Susser's research, based on the Dutch 'hunger winter' of 1944-45 when the Nazis blocked food supplies to much of the Netherlands, revealed that individuals who were in utero during the worst of the famine were twice as likely to develop schizophrenia in adulthood. Neuroscientist David St. Clair of the University of Aberdeen examined records from China's Great Leap Forward, which is associated with massive famine in 1959-61, and his findings (JAMA, 2005) were remarkably consistent with those of Dr. Susser: a 2-fold increase in schizophrenia among individuals prenatally exposed to famine. Drs. Susser and St. Clair are collaborating on a new study in China to discover the mechanism linking this fetal experience to the development of schizophrenia decades later.

New Homelessness Center is Funded

Researchers at the New York State Psychiatric Institute, the Department of Psychiatry and the Mailman School of Public Health have been awarded a \$5 million grant from the National

Institute of Mental Health to establish the Columbia Center for Homelessness Prevention Studies. A key objective of the Center is to develop interventions to prevent chronic homelessness among people with severe mental illness. Dr. Carol Caton is director, Dr. Susser is co-director, and Dr. Herman is PI of the research core.

NIMH Grant Awarded to Examine Prenatal Factors in Bipolar Disorder

Dr. Alan Brown is principal investigator of a \$2M NIMH grant focusing on early developmental insult and the risk of adult affective bipolar disorder. His research will utilize the birth cohort of the Child Health and Development Study, a rich source of prospectively gathered data and biological samples, including maternal sera. This cohort has already yielded significant findings associating prenatal experience with risk of schizophrenia in adulthood.

Psychiatric Epidemiology: Searching for the Causes of Mental Disorders

This June, Oxford University Press published "Psychiatric Epidemiology: Searching for the Causes of Mental Disorders," written by Dr. Susser with co-authors Sharon Schwartz, Alfredo Morabia, and Evelyn Bromet. This is the first authored textbook on psychiatric epidemiology in more than 30 years. Starting out by tracing the brief history of psychiatric epidemiology, the book describes the study the causes of mental disorders. Uniting theory and practice in very clear language, it is an invaluable contribution to both epidemiologic and psychiatric research.