Early life influences risk for psychiatric disorders

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For more than a century, clinical investigators have focused on early life as a source of adult psychopathology. Although the hypothesized mechanisms have evolved, a central notion remains: early life is a period of unique sensitivity during which experience confers enduring effects.

Neurodevelopmental disorders, which include mood disorders, schizophrenia, autism and eating disorders, have been associated with fetal antecedents such as maternal stress or infection and malnutrition. Sex is another factor that influences the risk for psychiatric disorders through poorly understood mechanisms.

We know little as to how the maternal environment alters offspring programming. Epigenetics, an area of research that is studying how environmental factors produce lasting changes in gene expression without altering DNA sequence, may provide new insights into this question.

A new review, published in Biological Psychiatry, has "incorporated the latest insight gained from clinical and epidemiological studies with potential epigenetic mechanisms from basic research," explained first author Dr. Tracy Bale. These key findings are from a conference on Early Life Programming and Neurodevelopmental Disorders held at the University of Pennsylvania.

For example, the authors discuss findings where maternal stress has been associated with an increased risk of schizophrenia in male offspring and

may alter fetal brain growth. Data also indicate that maternal stress, infection, and/or exposure to famine contribute to an elevated risk for depression in offspring. Of critical importance, the brain continues to develop into adolescence, and so later influences, such as exposure to child abuse and/or neglect, must also be taken into account. Studies have consistently shown that adults who experience maltreatment as children are at a much greater risk of developing mood disorders.

Clearly, multiple factors are at play that influence an individual's disease risk. By applying the principals of personalized medication, one can view this science as "personalized prevention," as it aims to apply these principals earlier in the pathological process. Understanding and defining these disease mechanisms at the very earliest points in life could help identify novel targets in therapy and prevention.

More information: The article is "Early Life Programming and Neurodevelopmental Disorders" by Tracy L. Bale et al. The article appears in *Biological Psychiatry,* Volume 68, Issue 4 (August 15, 2010), published by Elsevier.

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