Study shows California's autism increase not due to better counting, diagnosis

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A study by researchers at the UC Davis M.I.N.D. Institute has found that the seven- to eight-fold increase in the number children born in California with autism since 1990 cannot be explained by either changes in how the condition is diagnosed or counted — and the trend shows no sign of abating.

Published in the January 2009 issue of the journal *Epidemiology*, results from the study also suggest that research should shift from genetics to the host of chemicals and infectious microbes in the environment that are likely at the root of changes in the neurodevelopment of California's children.

"It's time to start looking for the environmental culprits responsible for the remarkable increase in the rate of autism in California," said UC Davis M.I.N.D. Institute researcher Irva Hertz-Picciotto, a professor of environmental and occupational health and epidemiology and an internationally respected autism researcher.

Hertz-Picciotto said that many researchers, state officials and advocacy organizations have viewed the rise in autism's incidence in California with skepticism.

The incidence of autism by age six in California has increased from fewer than nine in 10,000 for children born in 1990 to more than 44 in 10,000 for children born in 2000. Some have argued that this change could have been due to migration into California of families with autistic

children, inclusion of children with milder forms of autism in the counting and earlier ages of diagnosis as consequences of improved surveillance or greater awareness.

Hertz-Picciotto and her co-author, Lora Delwiche of the UC Davis Department of Public Health Sciences, initiated the study to address these beliefs, analyzing data collected by the state of California Department of Developmental Services (DDS) from 1990 to 2006, as well as the United States Census Bureau and state of California Department of Public Health Office of Vital Records, which compiles and maintains birth statistics.

Hertz-Picciotto and Delwiche correlated the number of cases of autism reported between 1990 and 2006 with birth records and excluded children not born in California. They used Census Bureau data to calculate the rate of incidence in the population over time and examined the age at diagnosis of all children ages two to 10 years old.

The methodology eliminated migration as a potential cause of the increase in the number of autism cases. It also revealed that no more than 56 percent of the estimated 600-to-700 percent increase, that is, less than one-tenth of the increased number of reported autism cases, could be attributed to the inclusion of milder cases of autism. Only 24 percent of the increase could be attributed to earlier age at diagnosis.

"These are fairly small percentages compared to the size of the increase that we've seen in the state," Hertz-Picciotto said.

Hertz-Picciotto said that the study is a clarion call to researchers and policy makers who have focused attention and money on understanding the genetic components of autism. She said that the rise in cases of autism in California cannot be attributed to the state's increasingly diverse population because the disorder affects ethnic groups at fairly

similar rates.

"Right now, about 10 to 20 times more research dollars are spent on studies of the genetic causes of autism than on environmental ones. We need to even out the funding," Hertz-Picciotto said.

The study results are also a harbinger of things to come for public-health officials, who should prepare to offer services to the increasing number of children diagnosed with autism in the last decade who are now entering their late teen years, Hertz-Picciotto said.

"These children are now moving toward adulthood, and a sizeable percentage of them have not developed the life skills that would allow them to live independently," she said.

The question for the state of California, Hertz-Picciotto said, will become: 'What happens to them when their parents cannot take care of them?'

"These questions are not going to go away and they are only going to loom larger in the future. Until we know the causes and can eliminate them, we as a society need to provide those treatments and interventions that do seem to help these children adapt. We as scientists need to improve available therapies and create new ones," Hertz-Picciotto said.

Hertz-Picciotto and her colleagues at the M.I.N.D Institute are currently conducting two large studies aimed at discovering the causes of autism. Hertz-Picciotto is the principal investigator on the CHARGE (Childhood Autism Risk from Genetics and the Environment) and MARBLES (Markers of Autism Risk in Babies-Learning Early Signs) studies.

CHARGE is the largest epidemiologic study of reliably confirmed cases of autism to date, and the first major investigation of environmental

factors and gene-environment interactions in the disorder. MARBLES is a prospective investigation that follows women who already have had one child with autism, beginning early in or even before a subsequent pregnancy, to search for early markers that predict autism in the younger sibling.

"We're looking at the possible effects of metals, pesticides and infectious agents on neurodevelopment," Hertz-Picciotto said. "If we're going to stop the rise in autism in California, we need to keep these studies going and expand them to the extent possible."

Source: University of California - Davis