



Autism research: 4 things we learned in 2014

By

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Only a short time ago, autism was one of our great medical mysteries. Today, it's one of the better-funded disease research areas— with great benefit: Autism's causes and treatments are more understood than ever before.

We know that a complex mixture of genetic and environmental factors causes autism spectrum disorder (ASD). But this year, researchers learned more about the entire spectrum of disorders, from the time those people affected are in the womb through their adulthood.

Environmental factors

Two studies this year confirmed that environmental factors play a part in the development of ASD. The first was conducted by University of Chicago Medical Center researchers, who analyzed 100 million medical records. They compared rates of autism and intellectual disability with genital malformations in newborn males, since malformations are an indicator of exposure to toxins in the womb.

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The UCMC researchers found that for every 1 percent increase in malformations, there was a 283 percent increase in autism prevalence. There was also a 94 percent increase in intellectual disability.

The more recent study, conducted through the University of Wisconsin-Milwaukee and published this October, compared autism rates to air pollutant measures in California and North Carolina for over 150,000 children. Those two states were chosen for their similar climates but opposite seasonal levels of air pollution. The study showed that autism births were highest in summer in North Carolina, and it was highest in the fall and winter in California— when air pollution is highest in each region.

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Risk factors among family members

Along with environmental factors like air pollution, researchers are learning that the fetal environment can be a significant determinant in assessing autism risk. It's been known for some time that mothers who supplement their diets with iron and folic acid during pregnancy have a lower risk of having autistic offspring.

Researchers added even more to pregnant women's arsenal this year. Scientists at York University discovered that abnormal levels of a specific molecule in a pregnant mother's brain can change the baby's brain development. The molecule, called PGE2, can make certain autism-associated genes more prevalent and may increase autism risk.

Many autism-associated genes, or those that increase risk of ASD, have already been found. This year, researchers at the University of Washington found the first autism-specific gene, meaning that the gene definitely causes autism in those who have it. This gene could be tested for at the same time as other genetic tests for autism, researchers say, which may increase the accuracy of these tests.

Researchers from King's College in London studied how autism runs in families. Their work, published in May, showed that siblings of an autistic child are 10 times as likely to develop the disorder. It also showed that half-siblings had three times the risk, and cousins of autistic children had twice the risk of developing autism than a child with no relation.

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Improving early detection

The Autism Genome Project, funded by leading advocacy organization Autism Speaks, turned out an impressive discovery this year. The project showed that a specific type of genetic testing, called copy number variant, or CNV testing, is effective at predicting autism. Early detection and early treatment is key to a higher quality of life for many autistic children, so this discovery could benefit generations to come.

Scientists also found other methods for early detection involving behavioral symptoms. One study showed that babies younger than 1 year old who smile less, especially when making eye contact during play, may have an elevated risk of developing autism. Another study found that 6-month-olds who look away, rather than at, someone who is speaking, are also at higher risk of developing ASD.

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New ways to treat autism

Researchers at Florida State University showed that intensive intervention by parents was superior to that of clinicians for improving autism symptoms in toddlers. The study, published Nov. 4, establishes an entirely new treatment model for parents with autistic children.

For adults with autism, the outlook is often poorer than for children and newly diagnosed babies. But a new study by researchers at Vanderbilt University offers promise. The research looked at 153 autistic adults, and showed that those with more independence at work had measurable improvements in symptoms and better quality of life.

Not all diseases, especially brain disorders show such promise at every stage—from early detection to adult life. Autism has long vexed researchers, and continues to heavily impact American families, but there is hope on the horizon for all affected.

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