

## Testing ensures baby born without Alzheimer's gene

By Rita Rubin, USA TODAY - Wednesday, February 27, 2002

Parents never get a guarantee that they'll be around to care for their children until they reach adulthood.

But, barring a major medical advance, a woman described in Wednesday's *Journal of the American Medical Association* almost certainly won't be able to care for her only child, a daughter born about a year ago, by the time she enters high school. Or even, perhaps, middle school.

The unidentified woman carries a rare genetic mutation that virtually assures she will begin showing signs of Alzheimer's disease before she turns 40. In an editorial accompanying the *JAMA* report, two bioethicists question the wisdom of using reproductive technology to produce a child who may hardly get to know her mother.

The woman saw her father die at age 42. He'd had a history of psychological and memory problems. Her older sister developed symptoms at age 38 and was placed in an assisted-living facility five years later. A brother with the mutation began having mild short-term memory problems at 35.

Despite her genetic destiny, the woman yearned to have a child. Left up to Mother Nature, though, the chances that she would pass on her unfortunate legacy would be 50-50 with each pregnancy.

The 30-year-old woman, a geneticist, refused to take that gamble. To ensure that her yet-to-be-conceived child would escape her fate, she sought help at the Reproductive Genetics Institute in Chicago. There, she underwent two cycles of in vitro fertilization, in which she received fertility drugs to stimulate egg production. Doctors harvested her eggs and tested them for the mutation. Only eggs found not to have it would be fertilized with her husband's sperm.

The institute helped pioneer the use of this preimplantation genetic diagnosis, or PGD. Lead author Yury Verlinsky says his center has performed PGD in nearly 2,000 in vitro fertilization cycles over the past decade. He says PGD has been applied to at least 50 different genetic conditions, including Huntington's disease, another incurable degenerative brain disorder that can affect people in their 30s.

Only two eggs could be tested from the woman's first cycle. Both were found to carry the mutation. In the second attempt, four mutation-free embryos were transferred to the woman's uterus, and one developed into her daughter. Prenatal diagnosis and a blood test after birth confirmed she did not inherit the Alzheimer's mutation.

This is the first known use of PGD for inherited early-onset Alzheimer's that resulted in the birth of a child free of the predisposing mutation, the authors say.

"It's a technological tour de force that's going to have a limited amount of public health value," says William Thies, vice president for medical and scientific affairs at the Chicago-based Alzheimer's Association.

Thies went on to call the use of PGD "a logical extension of genetic testing" for the rare mutations that virtually always cause Alzheimer's.

In their editorial, Dena Towner and Roberta Springer Loewy of the University of California-Davis question whether the mother fully considered the child's welfare.

Verlinsky acknowledges that "everything we're doing can stir up controversy." Still, he adds, "we believe this is a patient decision."