

Title: Neurodevelopmental Outcomes for Children Participating in Navajo Birth Cohort Study (NBCS)

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Background: There are many (>500) abandoned mines on Navajo Nation with lots of families living within a short distance (within 10 km) of an abandoned site. Research has indicated higher concentrations of heavy metals among many individuals on Navajo Nation. The Environmental Influences on Child Health Outcomes (ECHO), a seven-year initiative funded by the National Institute of Health (NIH), allowed us to build on the Navajo Birth Cohort Study (NBCS) and continue to follow-up with existing participants. A main aim of NBCS/ECHO has been to examine the effects of environmental exposures such as heavy metals on childhood developmental outcomes. This has been accomplished by tracking the trajectories of childhood neurodevelopmental and physical outcomes. **Methods:** Comprehensive neurodevelopmental assessments were performed for children aged 3-5 (n=138) and 7-8 (n=65). These assessments were conducted in five different locations across Navajo Nation. Children were assessed using parent rating scales, direct assessment, parent interview, and a medical exam. Following the assessment, children were provided with a clinical best estimate diagnosis when applicable. Our results indicate much higher rates of neurodevelopmental disorders in both age groups, with language disorder and speech-sound disorder being the most prevalent diagnoses for each age group. For example, the rate of language disorder diagnoses seen in the 3-5-year old group is 34.1% while in the general population the rate is 3.3%. **Conclusion:** Rates of neurodevelopmental disorders are higher amongst our study population relative to the general population. Further research is needed to understand the contributing factors, including metal exposure, to the onset of these conditions and the developmental trajectories.

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