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**Purpose:** To characterize the cognitive, adaptive, and emotional/behavioral functioning of children with urea cycle disorders (UCDs; aged 5 months to 16 years; mean age 7.2 years) using direct testing and parent questionnaires in 92 children with UCDs (33 neonatal onset [NO]; 59 late onset [LO]).

### Key takeaways:

- Among all patients with UCDs, 35% had learning disabilities and 43% were diagnosed with mental retardation/developmental disability.
- In children under 3 years old (n=24), there were significant differences in Bayley-III<sup>a</sup> composite scores, but no apparent differences in ABAS-II<sup>b</sup> scores between patients with and without a history of hyperammonemic crisis; there were no significant differences in either measure between the NO and LO patient groups.
- In children aged 3 to 16 years (n=68), there were no significant differences in IQ<sup>c</sup> or ABAS-II scores between patients with and without a history of hyperammonemic crisis; patients with NO had significantly lower scores on both IQ and ABAS-II.
- Among children aged 3 to 16 years, in the NO group (n=16), 50% were in the range of intellectual disability (ID), with 31% severely impaired, while in the LO group (n=52), 25% were in the range of ID, with 4% showing moderate to severe disabilities.
- The percentage of patients showing ID varied by UCD subtype: in patients with argininosuccinate lyase (AL) deficiency, 40% had mild ID and none had severe ID; in patients with argininosuccinate synthetase (AS) deficiency, 50% had ID, including 33% with moderate to severe ID; in patients with ornithine transcarbamylase (OTC) deficiency, 20% had ID, including 6% with severe ID.
- The UCD group as a whole showed difficulty in several key areas including social difficulties, attention problems, and several metacognitive skills (initiation, planning/organization, working memory, and self-monitoring); there were no significant differences between NO and LO patients in the emotional/behavioral and everyday executive skills domains.
- Children with UCDs present with a wide range of cognitive outcomes and even children with LO and presumably less severe disease show evidence of neurocognitive and behavioral difficulties, especially aspects of executive functioning.

<sup>a</sup>Bayley Scales of Infant Development-Third Edition; a test of intellectual/developmental skills used for ages 5 to 35 months.

<sup>b</sup>Adaptive Behavior Assessment System-Second Edition, used for all ages.

<sup>c</sup>IQ was measured by the Wechsler Preschool and Primary Scale of Intelligence (WPPSI-III), for ages 3 to 5 years, and the Wechsler Abbreviated Scales of Intelligence (WASI), for ages 6 to 16 years.