Background and aims Children born before 32 weeks of gestational age (GA) have increased risk of neurological, sensory, cognitive and behavioural problems. The latter become evident at school age, but follow-up is rarely continued up to this time. We present preliminary results of ongoing follow-up at school age of the Italian ACTION area-based cohort.

Methods All infants born <32 weeks GA in 2003–2004 in three regions (Lazio, Tuscany and Friuli Venezia-Giulia) and survived to school-age were invited. The Kaufman Assessment Battery second edition (KABC-II) and selected items of NEPSY-II were used to assess cognitive and neuropsychological development. Only results for Lazio and Trieste area in FVG, where follow-up is already completed, are included (n = 390, response rate 58%).

Results Fifty-six percent of children (n = 218) were males; 35% (1379) were ≤ 28 weeks GA. About 8% (n = 30) had cerebral palsy; six children (1.5%) were blind or almost blind, and 12 (3.1%) required hearing aids. Twenty-two percent of children had KABC-II Mental Development Index (MPI) below average (29.9% in children born ≤ 28 weeks gestation, p = 0.008). Lower MPI scores were associated with impaired neuropsychological abilities.

Conclusions While most children have cognitive level within normal range, lower KABC-II and NEPSY-II scores were found particularly in the more preterm group. Sensorimotor abilities were the most frequently compromised neuropsychological functions.

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The PPV of a combined aEEG-score was higher on d1 in the HT group than in the NT group and increased in both groups from d1-d3.

The lack of sleep-wake cycling in children treated with HT significantly correlated with severity of neuroimaging abnormalities (p = 0.05) and pathological outcome (p = 0.03). In contrast, there was no correlation between seizure activity and outcome.

Conclusion Our results reflect published data, underlining the importance of aEEG as early outcome predictor in neonatal HIE.