

# Hammersmith Infant Neurological Examination (HINE)

The Hammersmith Infant Neurological Examination (HINE) is recommended in the *International Clinical Practice Early Diagnosis of Cerebral Palsy Guidelines*, particularly in situations where the most predictive tools (General Movements and MRI) are not able to be used.

The HINE can assist in the early detection, diagnosis and prognosis of infants at risk of developing cerebral palsy. It can be used on infants aged between 2–24 months of age.

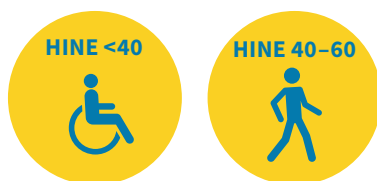
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EXAM



## What is the HINE?

The HINE is a simple, scoreable, standardised clinical neurological examination for infants between 2 and 24 months of age. Specific cut-off scores for predicting cerebral palsy both in pre-term and full-term infants have been published.

- The HINE has good sensitivity and high predictive value for risk of cerebral palsy in high risk populations under 5 months.
- A HINE score < 57 at 3 months 96% predictive of cerebral palsy (sensitivity 96%; specificity 87%).<sup>1</sup>
- Over 5 months age corrected for prematurity it has 90% predictive accuracy for detecting the risk of cerebral palsy.<sup>2,3</sup>
- It provides objective information about likely motor severity and distribution of cerebral palsy.<sup>1</sup> Scores below 40 predict non-ambulant cerebral palsy.
- It provides information on other aspects of neurological function other than motor.
- It has good inter-observer reliability for all levels of clinical experience.<sup>3,5,6</sup>



## Performing and scoring the HINE

There are three parts to the HINE: a neurological examination (which is scored), developmental milestones and behaviour (which are not scored).

The scoreable neurological examination is comprised of 26 items divided into 5 domains, assessing cranial nerve function, posture, quality and quantity of movements, muscle tone, and reflexes and reactions.

Each item is scored individually (0, 1, 2 or 3). The maximum score for any one item is a score of 3 and the minimum is a score of 0.

A subscore can be given for each section and the overall global score can be calculated by summing up all 26 items (range: 0–78), with higher scores indicating better neurological performance.

The maximum global score is 78.

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2. Pizzardi A, Romeo DM, Cioni M, Romeo MG, Guzzetta A. Infant neurological examination from 3 to 12 months: predictive value of the single items. *Neuropediatrics* 2008; 39: 344-6.
3. Romeo DM, Ricci D, Brogna C, Mecuri E. Use of the Hammersmith Infant Neurological Examination in infants with cerebral palsy: a critical review of the literature. *Dev Med Child Neurol* 2015. doi:10.1111/dmcn.12876.
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6. N.L. Maitre, O. Chorna, D.M. Romeo, A. Guzzetta. Implementation of the Hammersmith Infant Neurological Examination in a high-risk infant follow-up program. *Pediatr Neurol* 2016; 65: 31-38.