D Fehlings, A Makino, P. Church, R Banihani, K Thomas, M Luther, S Lam-Damji, B Vollmer, L Haataja,
FM Cowan, DM Romeo, JM George, S Kumar, L Switzer (May 2024)

Name:_____
MRN:_____
Date of Birth:_____

Hammersmith Infant Neurological Examination (HINE): Score Interpretation Aid for Children Receiving Neonatal Follow-Up Care

Clinical history: _____

Brain imaging (if available): _____

Visit	Child's Age (corrected)	Child's Global HINE Score	HINE Asymmetry Score	Corrected Age for GMA (if available)	GMA Category (if available)	Interpretation/Action	Discussed with family
1							☐
2							☐
3							☐
4							☐
5							☐

HINE Scoring Aid Reference Information:
- Interpret HINE scores with clinical reasoning (e.g., term versus preterm, risk factors for CP, health co-morbidities, brain imaging, and General Movements Assessment (GMA)) when comparing to those from typically developing term infants. Follow the trajectory of HINE scores over time.
- The table provides expected global scores (median/ranges) for term[1,2] (column 2) and preterm infants[3,4] of various gestational ages (column 3,4) with typical 2-year development. 10th percentile scores (optimality scores) (equal to or above) which infants are considered to have typical neurological performance[1,4] is provided where available (column 2,4).
- Typically developing preterm infants have median global scores that range from 9 points at 3 months to 3.5 points at 12 months lower than typically developing term-born infants (column 3,4)[3,4]. There is also a wider range of scores around the median in preterms.
- CP cut-off scores (column 5) are global scores below which term and preterm infants with etiologic risk for CP (e.g., preterm, neonatal encephalopathy) have a high probability of developing CP[5]. Refer for early intervention.
- Infants with unilateral CP may not have low global scores but can have ≥4 asymmetries representing significant asymmetric neurologic performance[6]. Refer for early intervention if ≥4 asymmetries are present regardless of infant's age.

Column 1	Column 2 Global scores for typically developing term born infants[1,2]	Column 3 Global scores for low-risk LPT and VPT infants[3]	Column 4 Global scores for low-risk EPT infants[4]	Column 5 Cut-off scores for high probability of CP[5]
Child´s Age (corrected)	37-42 weeks GA Median (range)	mean GA 32 weeks (range 27-36) Median (range)	mean GA 27 weeks (range 23-31) Median (range)	All birth gestational ages but definitive data not available for EPT infants
3 months	**67** (62.5*-69)[2]	**62** (51-69)[3]	**58** (47-69) (10th% 53)[4]	**<56** (sen 96% sp 85%)[5]
6 months	**73** (69*-76.5)[2]	**66** (52-72)[3]	**67** (54-76) (10th% 62)[4]	**<59** (sen 90% sp 89%)[5]
9 months	N/A	**70.5** (57-76)[3]	**71.5** (62-78) (10th% 67)[4]	**<62** (sen 90% sp 91%)[5]
12 months	**76** (63-78) (10th% ≥73)[1]	**72.5** (60-77)[3]	**73.5** (67-78) (10th% 70)[4]	**<65** (sen 91% sp 90%)[5]
18 months	**78** (71-78) (10th% ≥74)[1]	N/A	N/A	N/A
	10th percentile scores (10th%): 90% of infants score at or above this level. * See legend in graph below.	Data for LPT and VPT infants are combined – medians are similar, but the range span is narrower for LPT than VPT	Note median scores are considerably lower for EPT infants than FT, LPT and VPT infants at 3 months.	A global score <40 at any age is highly predictive of CP GMFCS III-V at 2 years of age[7].

N/A not available, Low-risk - no additional CP etiologic risk aside from being preterm[3,4], LPT Late preterm 33-36 weeks gestational age (GA), VPT very preterm 27-32 weeks GA, EPT extremely preterm (23 -31 weeks GA) as defined in this study[4], sen (sensitivity), sp (specificity)
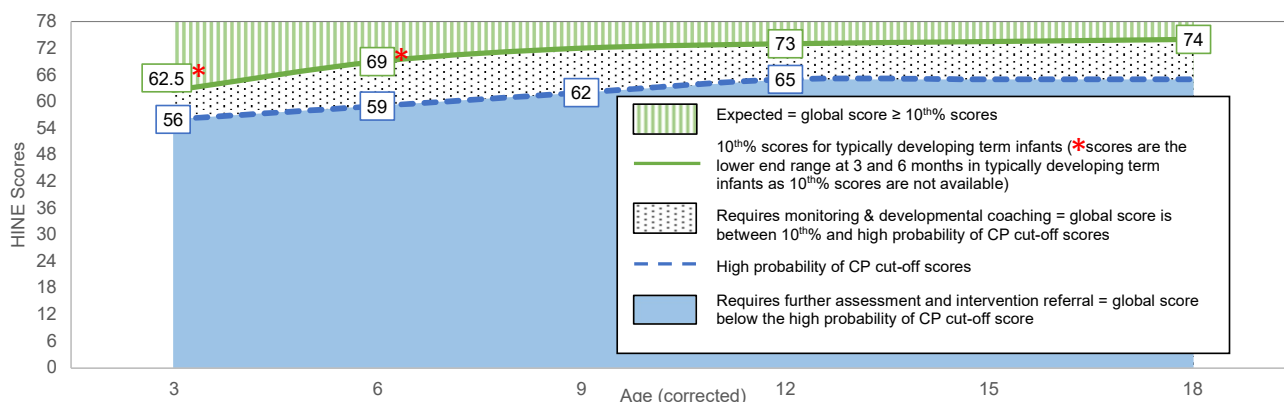
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