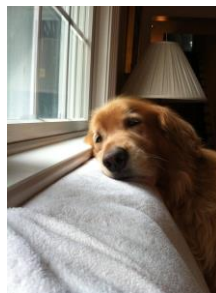


Early detection and intervention of CP: No more waiting

Ginny Paleg, PT, DScPT

Saturday 11-12



Photos from google

1

NO MORE WATCHFUL WAITING!



- We know what's going to happen if we do nothing
- (contracture, hip dislocation, scoliosis, pain...)
- Let's do something



2

September 2017

Early, Accurate Diagnosis and Early Intervention in Cerebral Palsy

Advances in Diagnosis and Treatment

Iona Novak, PhD¹; Cathy Morgan, PhD¹; Lars Adde, PhD²; [et al](#)

» [Author Affiliations](#)

JAMA Pediatr. 2017;171(9):897-907. doi:10.1001/jamapediatrics.2017.1689



3

PRECHTL GENERAL MOVEMENT ASSESSMENT

- Babies with absent fidgety movements at 2-5 months adjusted age are at highest probability to have lifelong sensory and motor impairments



4

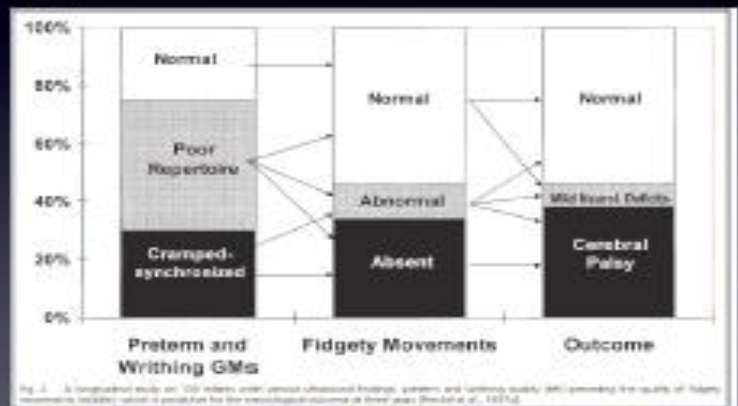
WHAT IF YOU COULD KNOW WHICH CHILD HAD CEREBRAL PALSY IN THE NICU? AT AGE 2-5 MONTHS?



5

Predictor of CP

- Prechtl et al 1997 conducted largest longitudinal study to date of 130 high risk infants
- All children (N=40) who consistently showed cramped-synchronized GMs developed severe spastic cerebral palsy
- Consistent findings: bi weekly preterm, one during term, 2 during post term



6

UPDATED DEFINITION OF CP

- All causes of sensory/motor impairment that are not degenerative including: anatomical, genetic, metabolic, trauma, stroke, bleed, hypoxia (HIE), PVL
- “You have infantile spasms that caused your CP”
- MacLennan, 2019 (Genetic or other causation should not change the clinical diagnosis of CP)
- Rosenbaum, 2017 (What causes CP?)
- Smithers-Sheedy, 2014 (What constitutes CP in the 21st century?)



7

JOIN THE CP FAMILY (CDC)

- Most common motor disability in childhood 1 in 555
- Rates slightly dropping
- Severity decreasing



8

HINE – Hammersmith Infant Neurological Exam

- ❖ Identifies CP at 3 months (finds the babies with mild hemiplegia!)
- ❖ Gives you an idea of the GMFCS Level at 3-24 months adjusted age
- ❖ Identifies Asymmetries




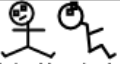
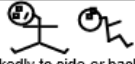



9

HAMMERSMITH INFANT NEUROLOGICAL EXAMINATION (v 07.07.17)

Name	Date of birth
Gestational age	Date of examination
Chronological age / Corrected age	Head circumference

SUMMARY OF EXAMINATION	
Global score (max 78)	
Number of asymmetries	
Behavioural score (not part of the optimality score)	
Cranial nerve function score	<u> </u> (max 15)
Posture score	<u> </u> (max 18)
Movements score	<u> </u> (max 6)
Tone score	<u> </u> (max 24)
Reflexes and reactions score	<u> </u> (max 15)
COMMENTS	

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	score 3	score 2	score 1	score 0	sc	Asymmetry / comments
Head <u>in-sitting</u>	 Straight, in midline		 Slightly to side or backward or forward	 Markedly to side or backward or forward		
Trunk <u>in-sitting</u>	 Straight		 Slightly curved or bent to side	 Very rounded rocketing back bent sideways		
Arms at rest	In a neutral position, central straight or slightly bent		Slight internal rotation or external rotation Intermittent dystonic posture	Marked internal rotation or external rotation or dystonic posture hemiplegic posture		
Hands	Hands open		Intermittent adducted thumb or <u>fisting</u>	Persistent adducted thumb or <u>fisting</u>		

11

ginny@paleg.com

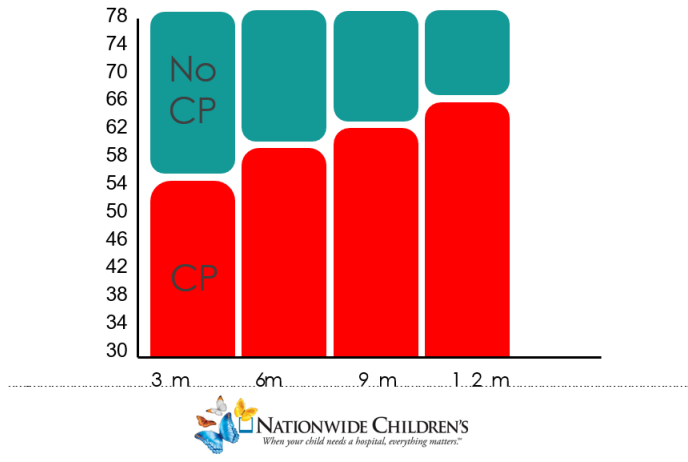
- ❖ Email me for the training video and forms to be used as a screening tool
- ❖ You need to be certified to use this tool effectively especially to diagnose (MDs)

12

HINE

(Hammersmith Infant Neurological Exam)

Predicting CP in infants with brain insults

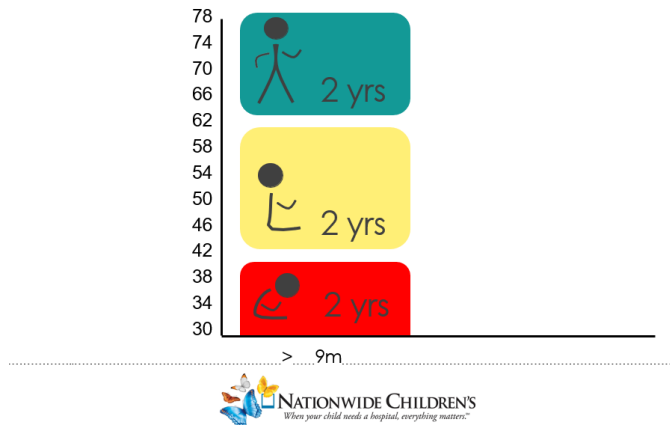


13

HINE

(Hammersmith Infant Neurological Exam)

Predicting motor function at 2 yrs in infants with brain insults



14

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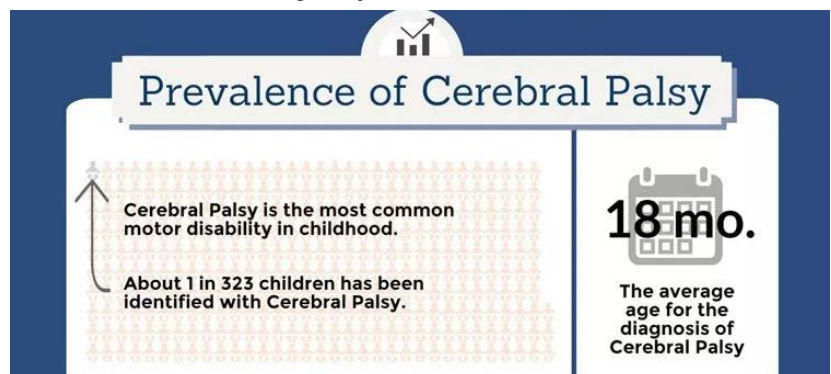
JAMA Pediatr. 2017;171(9):897-907. doi:10.1001/jamapediatrics.2017.1689



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Cerebral Palsy

- ❖ Brain impairment before age 2
- ❖ Lifelong sensory motor impairment
- ❖ Genetic, anatomic, metabolic, injury, stroke, virus, etc.
- ❖ Non-progressive



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WHAT ARE SOME OF THE CP-SPECIFIC INTERVENTIONS?

- ❖ Early sitting, reach and grasp (3-6 months)
- ❖ Early weight bearing (9-12 months)
- ❖ Early mobility and exploration (9-12 months)
- ❖ Postural Management
- ❖ Child-directed Caregiver delivered hand/arm use (CIMT, HABIT)
- ❖ Hanen Language Classes
- ❖ Augmentative Communication
- ❖ Massage (Caregiver Delivered)
- ❖ Vision strategies
- ❖ Sleep hygiene with supportive aligned positioning
- ❖ Hip and spine surveillance (prevent contractures)

17



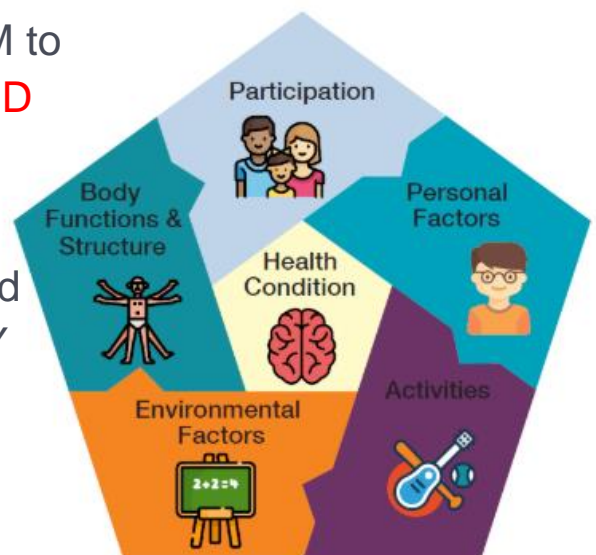
18



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Honest and Comprehensive Assessment

- ❖ Dare to use the HINE and GMFM to accurately assess impairment **AND** function
- ❖ Dare to modify the environment
- ❖ This allows us to offer holistic and supportive care within the ICF-CY
- ❖ Always be hopeful
- ❖ Don't set limits



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What Are we Supposed to Do?

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The Recipe from the Research

- ❖ Active Coaching (not sitting on the couch and chit chatting)
- ❖ Child-directed (follow their lead)
- ❖ Caregiver delivered (your hands-off!)
- ❖ Reaching/Grasping
- ❖ Kicking/Stepping
- ❖ Early Sitting (3-6 months), Standing (9-12 months), Mobility (9-15 months) and Lying (birth)
- ❖ Activity and Participation in Natural Routines



Photos from google

22

The Interventions from the Research

- ❖ Constraint Induced Movement Therapy (Unilateral and Bimanual 60-90 hrs in a “camp” or “intensive model”) Can be applied to infants (BabyCIMT)
- ❖ HABIT-ILE – Hand-arm bimanual intensive therapy including lower extremities
- ❖ COPCA – Coaching in early PT intervention
- ❖ Hanen for language
- ❖ GAME – Goals, Activity Motor Enrichment
- ❖ START-Play – sitting, playing and problem solving
- ❖ DRIVE – Intensive for GMFCS III-IV
- ❖ TMS?
- ❖ Robotics?



Photos from google

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What NOT to Do

- ❖ Passive interventions intended to lead to activity and/or participation (facilitation, handling, hand over hand, hand underhand, reflex integration, cranial sacral)
- ❖ Activities that are not natural routines atypical environments (like a therapy ball), isolated parts of movement, etc.
- ❖ You don't get to be the hero. The success gets to be experienced by the caregiver.
- ❖ Be Bagless – don't use activities or items that the family has no access to
- ❖ IDEA says if it's FAPE, school/EI has to provide



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GMFCS	I	II	III	IV	V
Stander (could be self propelled or power) Usually prone for GMFCS III and IV, Supine for V		Use for contracture management/prevention	Start at 9 months continue as long as there are goals (especially contracture prevention)	Start at 9 months, continue for Lifespan Consider a reasonable amount of abduction 60-90 min/day	
Gait Trainer (one that converts to a walker for GMFCS Levels II and III)	May be used as a play activity at 9 months before onset of indep walking. Be careful not to over support trunk and allow for weight shifting and balance perturbations		Start at 9 months, use as walker when able to walk well in community. Use handsfree model for sports	Start at 9 months, continue for Lifespan	
Transport chair for short trips	As needed to increase participation				
Toileting and bathing support	As needed		Begin as soon as typical baby products stop working		
Adapted Bike	As needed		Begin as soon as peers are using bikes		

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	GMFCS I	GMFCS II	GMFCS III	GMFCS IV	GMFCS V
Postural Management in Lying	As soon as asymmetries are detected		As soon as spasticity or asymmetries begin	Birth to Lifespan	
Seating (activity)	As needed to encourage play, vision and equal hand use		9 months – focus on equal hand and arm use, head control and vision		
Power mobility (toy and/or wheelchair)	Start at 9 months as a play activity. Shift away when walking indep full time in community	Start at 9 months as a play activity. May return to power as adults	Start at 9 months, may shift away from when walking in community full time. Most likely return to power use in high school	Start at 9 months, continue for Lifespan	Start at 9 months, continue as play activity for Lifespan
Manual Mobility (wheelchair)	Usually not used, and if used, child is pushed	Usually not used, and if used, child is pushed	Use for participation in the community, but most likely will be pushed	Used for transport, but child is pushed	

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MY DREAM

- ❖ If I start early, can my kids at Level V Drive? Step? Explore? Keep their hips in the socket? Stay healthy? Live longer? Be happier?



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What's The Point?

1. Find the child who will need power, seating, a stander and/or gait trainer (you can do this by 9-24 months) and start at age typical child does this (9 months)
2. Know what to do - use evidence based practices
3. Stop wasting time and funds doing non-effective things
4. Know how to evaluate New things (level of evidence and quality too!)
5. Do it
6. Measure your outcomes using valid quantitative tools
7. Don't stop!



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NO MORE WATCHFUL WAITING!

We know what's going to happen if we do nothing.
Let's do something.
Let that something be evidence based



29

Neuroplasticity

- ❖ Children not provided the opportunity to experience self-initiated mobility...
- ❖are at a higher risk of cognitive and developmental delay
- ❖ Sensory Motor Peak at 2 years
- ❖ Spinal intra neurons are done by 6-12 months



Photos from google

30

We have no time to loose



- ❖ To optimize motor and cognitive plasticity and prevent secondary complications we need to:
 - ❖ start diagnosis-specific evidence-based interventions early
 - ❖ implement diagnostic tools, outcome measures and interventions based on the best available knowledge
- ❖ We cannot spend time and resources on outdated theories, beliefs and concepts

Rodby-Bousquet DMCN 2018, 60(10): 969-970

Photos from google

31

How do we bridge the gap?



- We have to look at the evidence to see where we can improve
- It's time for ACTION!
- How can you bridge the gap in your practice?



Photos from google

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