Supplemental Online Content

Morgan C, Fetters L, Adde L, et al. Early intervention for children aged 0 to 2 years with or at high risk of cerebral palsy: international clinical practice guideline based on systematic reviews. *JAMA Pediatr*. Published online May 17, 2021. doi:10.1001/jamapediatrics.2021.0878

This supplemental material has been provided by the authors to give readers additional information about their work.

eTable 1. Literature Search Strategy by Topic

Search Dates

January 1980 – March 2016 (unless specified otherwise)

Databases

American Speech-Language-Hearing Association- ASHA
CINAHL
Cochrane
EBSCO
EMBASE
Google Scholar
ISI Web of Knowledge
MEDLINE
PEDro
PsycINFO
PubMED
SCOPUS
speechBITE
The Communication Trust What Works
Web of Science

Search Terms

These were the population terms unless otherwise specified in the topic sub-headings below

P:

CP OR or HIE OR Hypoxic isch$emic encephalopathy OR Neonatal encephalopathy OR Neonatal stroke OR IVH OR Intraventricular h$emorrhage OR Periventricular leu$omalacia OR PVL OR Hydrocephal$ OR Arterial isch$emic stroke OR Middle cerebral artery infarct

OR

P: ((Cerebral Palsy/) OR (Cerebral Pals$.mp) OR (Hemiplegia/) OR (Hemiplegi$.mp) OR (Quadriplegia/) OR (Quadriplegi$.mp) OR (Monoplegi$.mp) OR (Triplegi$.mp) OR ((Neonatal adj stroke).mp) OR ((Intraventricular adj h$emorrhage).mp) OR ((Brain adj injury).mp) OR ((Hypoxic adj ischemic adj encephalopathy).mp) OR ((Periventricular adj leukomalacia).mp) OR (Exp Infant, Low Birth Weight/) OR (Exp Infant, Premature/))

I:

MOTOR

MOTOR PubMed

"Cerebral Palsy"[Mesh] (explode) OR cerebral palsies OR cerebral palsy OR little disease OR little's disease OR spastic diplegia OR "Hypoxia-Ischemia, Brain"[Mesh] (explode) OR HIE OR hypoxic-ischemic encephalopathy OR ischemic hypoxic encephalopathy OR neonatal encephalopathy OR neonatal stroke OR intraventricular hemorrhage OR intraventricular haemorrhage OR IVH OR periventricular leucomalacia OR periventricular leukomalacia OR PVL arterial ischemic stroke OR arterial ischaemic stroke OR middle cerebral artery embolus OR "Infarction, Middle Cerebral Artery"[Mesh] (explode) OR mca infarction OR middle cerebral artery infarct OR middle cerebral artery infarction OR middle cerebral artery thrombosis OR Hydrocephal* OR "Hemiplegia"[Mesh] (explode) OR hemiplegia OR (spastic OR hypotonic OR atonic OR dyskinetic OR athetoid OR monoplegia OR congenital OR rolandic OR quadriplegic infantile OR mixed OR dystonic-rigid) OR ("Cerebral Palsy"[Mesh] (explode) OR cerebral palsy OR cerebral palsies) OR ("Pediatrics"[Mesh] (explode) OR "Infant"[Mesh] (explode) OR "Infant, Newborn"[Mesh] (explode) OR "Intensive Care Units, Pediatric"[Mesh] (explode) OR Neonat* OR newborn OR infant* OR baby OR babies OR toddler OR premat* OR pediatric* OR PICU OR "young children")

AND

I: (“Occupational Therapy”[Mesh] (explode) OR (“Physical Therapy Specialty”[Mesh] (explode) OR “Physical Therapists”[Mesh] (explode) OR “Physical Therapy Modalities”[Mesh] (explode) OR “Restraint, Physical”[Mesh] (explode) OR “Exercise Therapy”[Mesh] (explode) OR “Early Intervention (Education)”[Mesh] (explode) OR motor training OR NDT OR neurodevelopmental therapy OR bobath OR physiotherapy OR physical therapy OR occupational therapy OR Exercise* OR early intervention OR constraint-induced movement therapy OR constraint-induced therapy
AND
O: (“Treatment Outcome”[Mesh] (explode) OR “Upper Extremity”[Mesh] (explode) OR “lower extremity”[Mesh] (explode) OR “Motor Skills”[Mesh] (explode) OR “Motor Skills Disorders”[Mesh] (explode) OR “gait”[Mesh] (explode) OR “gait disorders, neurologic”[Mesh] (explode) OR motor outcome* OR motor function OR motor skill* OR motor development OR gross motor OR fine motor OR upper limb function OR lower limb function OR hand function OR foot function OR movement OR gait)
LIMIT 1980-Current

MOTOR Web of Science

P: "cerebral palsies" OR cerebral palsy OR "little disease" OR "little's disease" OR spastic diplegia OR HIE OR "hypoxic-ischemic encephalopathy" OR ischemic hypoxic encephalopathy OR neonatal encephalopathy OR neonatal stroke OR intraventricular hemorrhage OR intraventricular haemorrhage OR IVH OR periventricular leucomalacia
periventricular leukomalacia OR PVL OR arterial ischemic stroke OR arterial ischaemic stroke OR middle cerebral artery embolus OR mca infarction OR middle cerebral artery infarct OR middle cerebral artery infarction OR middle cerebral artery thrombosis OR Hydrocephal* OR hemiplegia OR spastic OR hypotonic OR atonic OR dyskinetic OR athetoid OR monoplegia OR congenital OR Rolandic OR quadriplegic infantile OR mixed OR dystonic-rigid OR (cerebral palsy OR cerebral palsies) OR (Neonat* OR newborn OR infant* OR baby OR babies OR toddler OR premat* OR pediatric* OR PICU OR “young children”)
AND
I: (motor training OR NDT OR neurodevelopmental therapy OR Bobath OR physiotherapy OR physical therapy OR occupational therapy OR Exercise* OR early intervention OR constraint-induced movement therapy OR constraint-induced therapy)
AND
O: (motor outcome* OR motor function OR motor skill* OR motor development OR gross motor OR fine motor OR upper limb function OR lower limb function OR hand function OR foot function OR movement OR gait)
LIMIT 1980-2014

MOTOR CINAHL

P: (MH "Cerebral Palsy") OR cerebral palsies OR cerebral palsy OR little disease OR spastic diplegia OR (MH "Hypoxia-Ischemia, Brain+") OR HIE OR hypoxic-ischemic encephalopathy OR ischemic hypoxic encephalopathy OR neonatal encephalopathy OR neonatal stroke OR intraventricular hemorrhage OR intraventricular haemorrhage OR IVH OR periventricular leucomalacia OR periventricular leukomalacia OR PVL OR arterial ischemic stroke OR arterial ischaemic stroke OR middle cerebral artery embolus OR mca infarction OR middle cerebral artery infarct OR middle cerebral artery infarction OR middle cerebral artery thrombosis OR Hydrocephal* OR (MH "Hemiplegia") OR hemiplegia OR (spastic OR hypotonic OR atonic OR dyskinetic OR athetoid OR monoplegia OR congenital OR rolandic OR quadriplegic infantile OR mixed) OR (MH "Cerebral Palsy") OR cerebral palsy OR cerebral palsies AND ((MH "Pediatrics+") OR (MH "Pediatric Units+") OR (MH "Infant+") OR (MH "Infant,

Newborn+") OR (MH "Intensive Care Units, Pediatric+") OR Neonat* OR newborn OR infant* OR baby OR babies OR toddler OR premat* OR pediatric* OR PICU OR “young children”)
AND
I: (MH "Occupational Therapy+") OR (MH "Physical Therapy+") OR (MH "Physical Therapy Practice, Research-Based") OR (MH "Physical Therapists") OR (MH "Restraint, Physical") OR (MH "Therapeutic Exercise+") OR (MH "Early Childhood Intervention") OR motor training OR NDT OR neurodevelopmental therapy OR Bobath OR physiotherapy OR physical therapy OR occupational therapy OR Exercise* OR early intervention OR constraint-induced movement therapy OR constraint-induced therapy)
OR
O: (MH "Treatment Outcomes+") OR (MH "Upper Extremity+") OR (MH "Lower Extremity+") OR (MH "Motor Skills+") OR (MH "Motor Skills Disorders") OR (MH "Gait+") OR (MH "Gait Disorders, Neurologic+") OR motor outcome* OR motor function OR motor skill* OR motor development OR gross motor OR fine motor OR upper limb function OR lower limb function OR hand function OR foot function OR movement OR gait
LIMIT 1980-Current

MOTOR Cochrane

P: Cerebral Palsy[Mesh] OR cerebral palsies: ti,ab,kw (Word variations have been searched) OR cerebral palsy OR little disease OR little's disease OR spastic diplegia
Hypoxia-Ischemia, Brain[Mesh] OR "HIE" OR hypoxic-ischemic encephalopathy OR ischemic hypoxic encephalopathy OR neonatal encephalopathy OR neonatal stroke OR intraventricular hemorrhage OR intraventricular haemorrhage OR IVH OR periventricular leukomalacia OR periventricular leukomalacia OR PVL OR arterial ischemic stroke OR arterial ischaemic stroke OR middle cerebral artery embolus OR Infarction, Middle Cerebral Artery[Mesh] OR mca infarction OR middle cerebral artery infarct OR middle cerebral artery infarction OR middle cerebral artery thrombosis OR Hydrocephal* OR Hemiplegia[Mesh] OR hemiplegia OR (spastic OR hypotonic OR atonic OR dyskinetic OR athetoid OR monoplegia OR congenital OR Rolandic OR quadriplegic infantile OR mixed OR dystonic-rigid) OR (Cerebral Palsy[Mesh] OR cerebral palsy OR cerebral palsies) AND (Pediatrics[Mesh] OR Infant[Mesh] OR Infant, Newborn[Mesh] OR Intensive Care Units, Pediatric[Mesh] OR Neonat* OR newborn OR infant* OR baby OR babies OR toddler OR premat* OR pediatric* OR PICU OR “young children”
AND
I: Occupational Therapy[Mesh] OR Physical Therapy Specialty[Mesh] OR Physical Therapists[Mesh] OR Physical Therapy Modalities[Mesh] OR Restraint, Physical[Mesh] OR Exercise Therapy[Mesh] OR Early Intervention (Education)[Mesh] OR motor training OR NDT OR neurodevelopmental therapy OR Bobath OR physiotherapy OR physical therapy OR occupational therapy OR Exercise* OR early intervention OR constraint-induced movement therapy OR constraint-induced therapy
OR
O: Treatment Outcome[Mesh] OR Upper Extremity[Mesh] OR lower extremity[Mesh] OR Motor Skills[Mesh] OR Motor Skills Disorders[Mesh] OR gait[Mesh] OR gait disorders, neurologic[Mesh] OR motor outcome* OR motor function OR motor skill* OR motor development OR gross motor OR fine motor OR upper limb function OR lower OR limb function OR hand function OR foot function OR movement OR gait
LIMIT 1980-Current

MOTOR PEDro
Cerebral Palsy child OR CP child OR Cerebral Palsy infant OR CP infant

COGNITION
[Intelligen$ OR Intellectual disability OR Intellectual impairment OR Cognitive impairment OR Mental retardation] AND [assessment measures OR tests OR screening]

COMMUNICATION

(“Cerebral palsy” [MeSH] OR “cerebral palsy” OR “Stroke” [MeSH] OR stroke OR “Encephalopathy” [MeSH] OR encephalopathy OR Prematurity) AND (“Speech Disorders” [MeSH] OR “speech disorders” OR “Speech Therapy” [MeSH] OR “speech therapy” OR “Language Development” [MeSH] OR “Language Therapy” [MeSH] OR “language therapy” OR “Communication Disorders” [MeSH] or “communication disorders”) AND (Intervention* OR therapy OR rehabilitation) AND (infant OR “infant, newborn” OR “infant, premature” OR toddler
EATING AND DRINKING feeding behaviours OR sucking behaviours OR swallowing behaviours OR deglutition disorders OR dysphagia OR feeding and eating disorders AND [instruments OR measures OR assessments OR assessment tools OR assessment instruments]
VISION ((("cerebral palsy"[MeSH Terms] OR ("cerebral"[All Fields] AND "palsy"[All Fields]) OR "cerebral palsy"[All Fields]) AND ("vision, ocular"[MeSH Terms] OR ("vision"[All Fields] AND "ocular"[All Fields]) OR "ocular vision"[All Fields] OR "vision"[All Fields])) AND English[Language]) AND ("infant"[MeSH Terms] OR "infant"[All Fields]) = 186 (((infarct)AND infant) AND vision) AND english[language] = 18 ((((neonatal encephalopathy) AND vision AND English[language] AND (treatment or intervention) = 49 (((Stroke)AND infant AND vision = 29 For additional recommendations on cortical visual impairment in infants ((((blindness[MeSH Major Topic]) AND infant[MeSH Terms]))) AND rehabilitation = 91
SLEEP sleep disorder OR sleep problem OR sleep disturbance OR nocturnal wakenings AND [measures OR questionnaires]
TONE Pharmacological pain measurement OR pain perception OR neonatal pain assessment OR pain assessment tools OR pain assessment instruments OR *TONE OTHER* ((exp Physical therapy modalities/) OR ((Physical adj therap$).mp) OR (Physiotherap$.mp) OR (Occupational therapy/) OR ((Occupational adj therap$).mp) OR ((Functional adj electrical adj stimulation).mp) OR ((Electrical adj stimulation).mp) OR ((Neuromuscular adj electrical adj stimulation).mp) OR (Cast$.mp) OR (Exp Orthotic devices/) OR (Orthot$.mp) OR (Orthos$.mp) OR (Brace$.mp) OR ((Sensory adj integration).mp) OR (NDT.mp) OR ((Neurodevelopmental adj treatment).mp) OR ((Neuro-developmental adj treatment).mp) OR (Bobath.mp) OR ((Early adj intervention).mp) OR ((Goal adj directed adj training).mp) OR (Hippotherap$.mp) OR (Hydrotherap$.mp) OR ((Home adj program).mp) OR ((Constraint adj induced adj therapy).mp) OR ((Constraint adj induced adj movement adj therapy).mp) OR ((Bimanual adj therapy).mp) OR ((Conductive adj education).mp) OR (Positioning.mp) OR ((Treadmill adj training).mp) OR (Vojta.mp) OR ((Robotic adj gait adj training).mp) OR (Exp Botulinum toxins/) OR (Botulin$.mp) OR (Botox.mp) OR (Bont-a.mp) OR (Baclofen.mp) OR (Rhizotomy/) OR ((Selective adj dorsal adj rhizotomy).mp) OR (Exp Orthopedic procedures/) OR ((Orthop$edic adj surg$).mp) OR (Tizanidine.mp) OR (Phenol.mp) OR (Dantrolene.mp)) AND O: ((Muscle tonus/) OR ((Muscle adj ton$).mp) OR (Muscle hypertonia/) OR (Hyperton$.mp) OR (Muscle spasticity/) OR (Spastic$.mp) OR ((Ashworth adj Scale).mp) OR ((Modified adj Ashworth adj Scale).mp)

OR ((Tardieu adj Scale).mp) OR ((Modified adj Tardieu adj Scale).mp) OR ((Australian adj Spasticity adj Assessment adj Scale).mp) OR (Dystonia/) OR (Dystoni$.mp) OR ((Barry-Albright adj Dystonia adj Scale).mp) OR ((Spasm adj Scale).mp) OR (Muscle rigidity/) OR (Rigidity.mp) OR (Exp Muscle strength) OR (exp Movement/) OR (Motor skills/) OR (Motor activity/) OR ((Motor adj development).mp) OR ((motor adj learning).mp) OR ((motor adj outcome).mp) OR (Exp Pain/) OR (Pain.mp) OR (Activity.mp) OR (Function.mp) OR (Participat$.mp) OR ((Quality adj of adj li$).mp) OR ((Activities adj of adj Daily adj Living).mp) OR (environment$.mp) OR ((personal adj factor$).mp) OR ((Family adj function).mp) OR ((Attachment adj disorder).mp) OR ((Maternal adj mental adj health).mp) OR ((Enriched adj environment).mp))

MUSCULOSKELETAL

Contracture[Mesh] OR Postural Balance[Mesh] OR Range of Motion, Articular[Mesh] OR Muscle Strength[Mesh] OR Muscles[Mesh] OR Bone Density[Mesh] OR Fractures, Bones[Mesh] OR Joint Dislocations[Mesh] OR Body Weights and Measures[Mesh] OR contracture OR contractures OR balance OR equilibrium OR “range of motion” OR “joint flexibility” OR muscle OR muscles OR “bone density” OR “bone densities” OR “bone mineral density” OR “bone mineral densities” OR fracture OR fractures OR microfracture OR microfractures OR micro fracture OR micro fractures OR dislocation OR dislocations OR subluxation OR subluxations OR obesity OR obese OR overweight OR body mass index OR BMI OR overweight

PARENT MENTAL HEALTH

Parent* wellbeing OR parent* depress* OR parent* anxi* OR parent* psychological OR parent* mental health OR parent* stress OR maternal wellbeing OR maternal depress* OR maternal anxi* OR maternal psychological OR maternal mental health OR maternal stress

OR

PARENT MENTAL HEALTH OTHER POPULATIONS

Due to the absence of systematic literature reviews and the paucity of available randomised controlled trials meeting inclusion criteria a secondary search was conducted to identify systematic literature reviews focussing on the broader population of infants born preterm or low birth weight. The following search terms were used for the secondary search:

(prematurity OR preterm OR low birth weight)

AND

(Parent* wellbeing OR parent* depress* OR parent* anxi* OR parent* psychological OR parent* mental health OR parent* stress OR maternal wellbeing OR maternal depress* OR maternal anxi* OR maternal psychological OR maternal mental health OR maternal stress)

AND

(review OR meta analysis)

This secondary search yielded a total of 1008 articles. Of these, four were identified as meeting inclusion criteria.

C:

All comparisons included

O:

All outcomes included (unless specified above under the sub-headings)

LIMITS

All Infant: 0-23 months

Preschool: 2-5 years

Human

English

eTable 2. AMSTAR Ratings

	AMSTAR Ratings Items										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
INTERVENTIONS TO PROMOTE MOVEMENT											
Morgan 2016	Y	Y	Y	Y	N	Y	Y	Y	N/A	N	N
Hadders-Algra, 2017	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N
INTERVENTIONS TO PROMOTE COMMUNICATION											
Chorna 2016	Y	Y	Y	Y	N	Y	Y	Y	Y	N	?
Pennington 2018	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	?
INTERVENTIONS TO PROMOTE EATING AND DRINKING											
Ferluga 2013	Y	N	Y	Y	Y	Y	Y	Y	Y	N/A	N
Ferluga 2014	Y	Y	Y	Y	N	Y	N	N/A	Y	N/A	N
Gantasala 2013[a]	Y	Y	Y	Y	N	N/A	N/A	N/A	N/A	N/A	Y
Khamis 2019*	N	?	Y	Y	Y	Y	Y	Y	N/A	Y	Y
Morgan 2012	Y	N	Y	Y	Y	Y	Y	Y	Y	N/A	N
Samson-Fang 2003	N	?	Y	N	N	Y	Y	Y	N/A	N/A	N
Sleigh 2004a	N	N	Y	Y	Y	Y	N	N/A	Y	N/A	N
Snider 2011	N	?	Y	N	Y	Y	N	N/A	N/A	N/A	N
Wilcox 2009	N	N	Y	N	N	N	N	N/A	N/A	N/A	N
INTERVENTIONS TO PROMOTE VISION											
Chorna 2017	Y	Y	Y	Y	N	Y	Y	Y	N/A	N	N
INTERVENTIONS TO PROMOTE SLEEP											
Galland 2012	Y	Y	Y	Y	Y	Y	Y	Y	N/A	N	N
Angriman 2014	N	N	N	N	N	Y	N	Y	N/A	N	N
Simard-Tremblay 2011	N	N	N	N	N	Y	N	Y	N/A	N	N
Blackmer 2016	N	N	N	N	N	Y	N	Y	N/A	N	N
INTERVENTIONS TO PROMOTE REDUCTION IN MUSCLE TONE											
Ward 2016	Y	Y	Y	Y	N	Y	Y	Y	N/A	N	N/A
Bourseul 2018	Y	N	Y	Y	N	Y	Y	Y	Y	N	Y
INTERVENTIONS TO PROMOTE PARENT WELL-BEING											
Athanasopoulou 2014	Y	N	Y	N	N	Y	Y	Y	N	N	N
Benzies 2013	Y	N	Y	N	N	Y	Y	Y	Y	N	Y
Bielenink 2016	Y	Y	Y	N	N	Y	N	N	Y	N	Y
Brecht 2012	Y	N	Y	N	N	Y	N	N	Y	N	N
Kraljevic 2013	Y	Y	Y	N	N	Y	Y	Y	Y	N	Y

Y=yes; N=no; ?=unclear/can't answer; N/A=not applicable

[a] Sleigh 2004b was also retrieved during the database searches but was excluded from the review since it was a previous version of Gantasala 2013.

eTable 3. COCHRANE RISK OF BIAS FOR RANDOMIZED CONTROLLED TRIALS

Reference	Random sequence generation	Allocation concealment	Blinding of participants & personnel	Blinding of outcome assessments	Incomplete outcome data addressed	Free of selective reporting	Free of other bias
INTERVENTIONS TO PROMOTE MOVEMENT							
Campbell 2015	L	L	H	L	L	U	H
Morgan 2016	L	L	H	L	L	L	L
Chamudot 2018	L	L	H	L	L	L	U
Eliasson 2018	L	L	H	L	L	L	H
Harbourne 2019	L	L	H	L	L	L	H
Hielkema 2019	L	U	H	L	L	L	U
Van Balen 2019	L	U	H	L	L	L	H
Kolobe 2019	L	U	U	L	L	L	H
Holmstrom 2019	L	L	H	L	L	L	U
INTERVENTIONS TO PROMOTE COGNITION							
Badr 2006	L	H	H	L	H	H	H
Blauw-Hospers 2011	H	H	H	L	H	H	U
Harbourne 2019	L	L	H	L	L	L	H
Hielkema 2019	L	U	H	L	L	L	U
Mayo 1991	L	U	U	L	U	H	H
Morgan 2016	L	L	U	L	L	L	L
Nelson 2000	H	U	U	L	U	H	H
Ohgi 2004	U	L	H	L	L	L	L
Palmer 1988, 1990	H	H	H	L	L	L	L
Reddihough 1998	U	H	H	H	H	H	H

Weindling 1996	L	L	L	L	H	U	U
INTERVENTIONS TO PREVENT MUSCULOSKELTAL IMPAIRMENTS							
Law 2011	L	L	H	L	L	L	U
Zhao 2013	L	L	H	L	L	L	L
INTERVENTIONS TO PROMOTE PARENT MENTAL HEALTH							
Badr 2006	U	U	H	L	U	L	L
Morgan 2016	L	L	H	L	L	L	L
Ohgi 2004	L	U	H	L	U	L	L

Legend: L=low; U=unclear; H=high

Note: No Risk of Bias Scoring required for

INTERVENTIONS TO PROMOTE COMMUNICATION; INTERVENTIONS TO PROMOTE EATING AND DRINKING; INTERVENTIONS TO PROMOTE VISION; INTERVENTIONS TO PROMOTE SLEEP; INTERVENTIONS TO PROMOTE REDUCTION IN MUSCLE TONE

All data reported in systematic review format, no additional Randomized Controlled Trials (RCTs) to appraise.

eTable 4. GRADE RECOMMENDATIONS EVIDENCE TO DECISION PANEL JUDGMENTS

RECOMMENDATION 1.0: Strong (For) Early Intervention It is best practice to begin intervention at the time of diagnosis of cerebral palsy or "high risk" for cerebral palsy		
FACTOR	**DECISION**	**EXPLANATION**
Quality of the evidence	☑ High ☑ Moderate ☐ Low ☐ Very low	
Values and preferences	☑ No significant variability ☐ Significant variability	A precise diagnosis is not necessary as it is sufficient to begin intervention when motor delay or motor system dysfunction is observed. Both clinical and parental concern are sufficient reasons to begin intervention when infants have a "high risk" diagnosis.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	Parents want to know as soon as possible if their infant has developmental problems so that treatment and support can be implemented as soon as possible.
Resource use	☐ Less resource intensive ☑ More resource intensive	Starting early intervention when motor dysfunction is first identified is likely to require more intensive resources during the first few months of life. It is not yet clear if the benefits of starting intervention earlier leads to less resource use in later years.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	It is not good practice to "wait and see" observation when there are clear clinical symptoms of motor delay or dysfunction. Waiting for motor delay or atypical movement to emerge misses critical developmental time for plasticity of developing neuromuscular systems.
Overall strength of the recommendation	☑ Strong recommendation ☐ Conditional recommendation	Although current RCT evidence is of moderate quality, it is strongly recommended intervention, begin at diagnosis of cerebral palsy or high risk. Recommendation is upgraded to strong based on qualitative parent evidence and benefit to harm ratio.
RECOMMENDATION 2.0: Strong (For) Task-Specific Motor Training It is best practice for intervention to include self-discovery of the environment and solutions to overcome movement challenges. Evidence supports the designing of motor tasks that challenge the infant but are achievable, typically including trials with failures but with persistence lead finally to success. The creation of enriched environments can trigger a variety of movement and intense enjoyable practice. Enrichment is supported in both the animal and human literature, indicating small positive effects from moderate to high quality human evidence		
Quality of the evidence	☐ High ☑ Moderate ☐ Low ☐ Very low	The evidence including 2 systematic review and 9 RCTs is of moderate to high quality but limited in number of subjects included in the studies with infants with CP or high risk of CP as defined in this guide. The recommendation receives support from the rehabilitation literature of older children with CP, adults post stroke, and animals with brain lesions who received enriched environments.
Values and preferences	☑ No significant variability	Families are likely to want to engage in setting goals, implementing intervention in which their

	☐ Significant variability	infant is an active participant and working with their infants to achieve specific goals.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	The benefits of early intervention have moderate support from the infant literature. Parents identify that they want to be active in assisting the motor development of their infants as soon as possible. Families with infants identified as high risk for CP can be told that their child may eventually develop typically and not develop CP, but that the benefits from beginning early outweigh waiting for movement delays or atypical movement to develop.
Resource use	☐ Less resource intensive ☑ More resource intensive	Early motor intervention with the identified characteristics requires monitoring, regular communication with families and the skills necessary to educate families about their children's development and how to provide "just right challenges". Since most of the intervention is supported at home, early and comprehensive family education is necessary.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	Based on limited but moderate and high-quality evidence.
Overall strength of the recommendation	☑ Strong recommendation ☐ Conditional recommendation	Based on limited but moderate and high-quality evidence, qualitative data and risk benefit ratio.
RECOMMENDATION 3.0: Strong (Against) Passive Movement It is not best practice to promote intervention in which there is passive therapist-controlled handling techniques for part or most of the movement activation or activities		

RECOMMENDATION 2.0: Strong (For) Task-Specific Motor Training It is best practice for intervention to include self-discovery of the environment and solutions to overcome movement challenges. Evidence supports the designing of motor tasks that challenge the infant but are achievable, typically including trials with failures but with persistence lead finally to success. The creation of enriched environments can trigger a variety of movement and intense enjoyable practice. Enrichment is supported in both the animal and human literature, indicating small positive effects from moderate to high quality human evidence		
FACTOR	**DECISION**	**EXPLANATION**
Quality of the evidence	☐ High ☑ Moderate ☑ Low ☐ Very low	Neurodevelopmental Therapy (NDT) is the most studied intervention for infants under 2 years of age although the evidence quality is moderate to low. The intervention (in the original format) evidence does not support this recommendation for the less than 2-year-old age group.
Values and preferences	☐ No significant variability ☑ Significant variability	NDT is a heterogenous intervention that is widely used around the world. Both clinicians and families have variability in their opinions and experience of NDT.
Balance of benefits	☐ Benefits outweigh disadvantages	The benefits of not using NDT (original format) outweigh the benefits of using it. There are alternative

	☐ Benefits and disadvantages are balanced ☑ Disadvantages outweigh benefits	interventions with better quality evidence and that align with current neuroscience.
Resource use	☐ Less resource intensive ☑ More resource intensive	NDT is more resource intensive as it depends on trained clinicians using specialized techniques.
Recommendation direction	☐ In favour of the intervention ☑ Against the intervention	Interventions that are based on a neuromaturational model and in which the infant is a more passive participant e.g., NDT should not be used**.**
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	Further research on more current forms of NDT might change the recommendation.
RECOMMENDATION 4.0: Strong Recommendation (For) Constraint-Induced Movement Therapy (CIMT) or Bimanual It is best practice to begin CIMT and/or bimanual training as soon as a diagnosis of unilateral CP is made or "high risk" of unilateral CP is determined		
Quality of the evidence	☐ High ☐ Moderate ☑ Low ☐ Very low	Although the evidence is insufficient at this time, it is not good practice to simply "wait and see" when there are clear clinical symptoms of asymmetrical motor function.
Values and preferences	☑ No significant variability ☐ Significant variability	In the case of "high risk" of cerebral palsy, parents can be counselled that intervention may reduce or stop if it becomes clear that motor progress is sufficient to rule out cerebral palsy or the infant is moving typically.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	The potential benefit in terms of early and frequent use of the more involved side of the body outweighs the small risk of harm from incorrect diagnosis.
Resource use	☐ Less resource intensive ☑ More resource intensive	Successful intervention programs to date include parent delivered intervention, conducted daily for 30-60 mins, depending on the age of the infant.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	The first 2 years are a critical time for neuroplasticity. Both CIMT and bimanual are recommended to be used. Clinical reasoning and parent preferences help determine which of the interventions should be applied.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	Since there are only 2 RCTs in this age group, only conditional recommendation can be made. However, evidence in older children with hemiplegia and basic science support this intervention.
RECOMMENDATION 5.0: Strong (For) Cognitive Interventions It is best practice for infants to receive targeted cognitive interventions since motor impairment can hamper social interactions and exploration of the environment and toys, restricting discovery-based learning		
Quality of the evidence	☐ High ☑ Moderate ☐ Low ☐ Very low	Evidence from 7 small studies supports the delivery of interventions with a collaboration between parents and therapists. Active engagement of the infant and parent through environmental enrichment and parent

		provided opportunities was demonstrated to provide higher cognitive outcomes.
Values and preferences	☑ No significant variability ☐ Significant variability	Families are likely to want to participate in daily interaction with their infants. As such the families are receptive to activities which may enhance cognitive outcomes and can be incorporated into their daily routine.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	There were no significant disadvantages to engaging parents in active self-generated movements. Parents did not report any difficulties completing the interventions or environmental modifications which became part of their daily routine.
Resource use	☑ Less resource intensive ☐ More resource intensive	Interventions which engage parents to incorporate infant specific developmental activities and enrich their environment require limited resources. The majority of the enrichment can be accomplished with items in the home. Parents can be trained to provide these intervention approaches, which limited the visits to address the need to update the activities. This may require more frequent visits or more resources early in the intervention process, but is likely to result in lower service utilization over time.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	The results of this intervention are in support of the use of parent enrichment with therapist guidance on ways to provide active infant engagement with specific consequences.
Overall strength of the recommendation	☑ Strong recommendation ☐ Conditional recommendation	While the evidence is all positive for these interventions to advance cognitive outcomes, the studies are of small size and often do not specifically focus on cognitive outcomes or interventions. Additional evidence is needed. However, given the importance of cognition for independence in adults, and the known benefits of cognitive interventions in typically developing children based on high quality evidence, this recommendation was upgraded to strong (for).
RECOMMENDATION 6.0: Conditional (Against) Generic Developmental Education Alone &/or a Sole Focus on Movement using Passive Motor Interventions It is not best practice for intervention to be generic developmental education alone and/or a sole focus on motor development using passive motor interventions to improve cognition		
Quality of the evidence	☐ High ☐ Moderate ☑ Low ☐ Very low	Three small studies in which therapists and caregivers predominantly focus on assisting the child appear to have a negative effect on cognitive development scores, at least in the short term. In addition, generic recommendations on development appear to have no benefit to cognitive development.
Values and preferences	☐ No significant variability ☑ Significant variability	There is significant variability in this evidence on the intervention strategies used and little information is provided on the parents value or preferences.
Balance of benefits	☐ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☑ Disadvantages outweigh benefits	Interventions that focus on postural control or general developmental education require families and therapists to dedicate time that could be used for more effective intervention approaches. Thus, using these interventions, while not directly harmful, may result in a lost opportunity cost.

Resource use	☐ Less resource intensive ☑ More resource intensive	Therapy sessions in the papers reviewed were not very frequent, but required the parents to work with the infant often. While this may not be difficult parent time is a resource that must be considered.
Recommendation direction	☐ In favour of the intervention ☑ Against the intervention	With more harm than good likely from these interventions, we recommend not using them.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	While the few studies available in this area do not support the use of NDT / postural focused interventions or generic caregiver advice, the studies are small, interventions poorly defined. Thus the recommendation against is conditional pending more evidence on efficacy in larger samples with well-defined protocols.
RECOMMENDATION 7.0: Conditional (For) Face-to-Face Nurturing with Vocalizations, Joint Attention and Reciprocal Interaction Interventions It is best practice for parents to engage their infant face-to-face to talk, sing, show emotion and communicate		
Quality of the evidence	☐ High ☐ Moderate ☐ Low ☑ Very low	There was no cerebral palsy specific evidence, and recommendations had to be inferred from good practice in typically developing infants.
Values and preferences	☑ No significant variability ☐ Significant variability	Very little has been researched or written about promoting the communication abilities of infants with cerebral palsy under 2 years of age, however, general principles for promoting communication in typically developing children are considered good practice.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	The benefits from beginning communication intervention early outweigh waiting for communication delays to develop.
Resource use	☐ Less resource intensive ☑ More resource intensive	Parent time is a resource that must be considered. However, the benefits of parents promoting good communication behaviour are likely to be widespread beyond the domain of communication alone, including socialization, parental enjoyment of interactions and bonding.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	The first 2 years are a critical time for language exposure, socialization and bonding.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	Since there are no cerebral palsy specific studies in this age group, only conditional recommendation can be made.
RECOMMENDATION 8.0: Conditional (For) Transactional speech-language and communication interventions It is likely to be best practice to teach parents and caregivers to build relational connections and reciprocal communication exchanges		
Quality of the evidence	☐ High ☑ Moderate ☑ Low ☐ Very low	HANEN and variations of parent–infant transactional programs had an overall level of evidence of low to moderate for the review population. We found 17 studies of speech or language in infants up to 24 months with or at high risk for CP. Of these studies,

		none represented high level of evidence, 9 were of moderate level, 6 were low level, and 2 were very low level.
Values and preferences	☑ No significant variability ☐ Significant variability	Interventions may be provided by licensed therapists/professionals or caregivers/parents trained by therapists/professionals. Parent-directed or clinician-based interventions were equally effective for improving phonological/speech skills and expressive vocabulary. Clinician provided Interventions vary among parent, child, or dyad as the primary recipient. Individual and group interventions may be provided in and out of the home environment. In a recent survey of parent preferences for early interventions for other CP-associated morbidities, parents ranked parent-administered interventions as their highest preference, above therapist-administered, pharmaceutically-aided or surgical interventions. Transactional speech interventions therefore fit values and preferences of parents for these other comorbidities.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	HANEN and variations of Parent-Infant Transaction programs' benefits outweigh the risks. Effects include improvements in communication skills, and expressive language acquisition. Majority of people would implement it with children at high-risk for CP under 2, and a minority would not. Overall, the intervention does more good than harm. Family perceived benefits also are consistent with published data on family-centered and focused on structured participation in a population that included parents of infants under two with CP.
Resource use	☐ Less resource intensive ☑ More resource intensive	Most training programs last 8-12 weeks and parents continue using acquired skills in daily life indefinitely. The amount of parent–child interaction, responsiveness to child communication, amount and quality of linguistic input, and the use of language learning support strategies are all aspects of parent-infant interactions that may have a positive effect on language and communication development. Therefore, teaching the primary caregivers about appropriate interaction and developmental milestones, along with specific intervention techniques, directs caregivers to create an effective environment for infant speech and language development. Availability of trained therapists and training programs may be a limitation. Parent-training is accomplished through group models.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	The guideline recommendation is *do it* to *probably do it*, or a majority of clinicians would implement it with children at high-risk for CP under 2, but a minority would not.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	Based on the quality of the evidence, while several interventions were identified as potentially beneficial for infants at high risk for CP, none were specifically targeted to infants at high risk or with a diagnosis of CP, therefore, the recommendations are conditional.
RECOMMENDATION 9.0: Conditional (For) softer food consistencies It is best practice to soften food consistencies to enhance feeding safety and efficiency		

Quality of the evidence	☐ High ☐ Moderate ☑ Low ☐ Very low	Overall, the quality of the evidence was rated low.
Values and preferences	☐ No significant variability ☑ Significant variability	Access to culturally appropriate foods may be restricted by this recommendation, and this should be a factor in clinical decision making.
Balance of benefits	☐ Benefits outweigh disadvantages ☑ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	Disadvantages include the resource use outlined below, however the balance of benefits and disadvantages will vary depending on the individual client and their family.
Resource use	☐ Less resource intensive ☑ More resource intensive	Increased food preparation time required for softer food consistencies may be prohibitive for some clients.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	The recommendation was in favour of soft food consistencies. This was informed by its potential to enhance feeding safety and efficacy.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	Considering the quality of the evidence, the recommendation was rated conditional.
RECOMMENDATION 10.0: Conditional (For) slightly reclined or upright positioning It is best practice to modify position (a slightly reclined or upright position) to enhance feeding safety and efficiency by decreasing the risk of aspiration and reducing the time spent on eating		
Quality of the evidence	☐ High ☐ Moderate ☑ Low ☐ Very low	Overall, the quality of the evidence was rated low.
Values and preferences	☐ No significant variability ☑ Significant variability	Will vary depending on individual client and the specific level of feeding deficits, e.g. reclined position for oral phase impairments and upright for pharyngeal.
Balance of benefits	☐ Benefits outweigh disadvantages ☑ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	Disadvantages include the resource use outlined below, and difficulty with eating outside the home; however, the balance of benefits and disadvantages vary depending on the individual client and family.
Resource use	☐ Less resource intensive ☑ More resource intensive	Cost of specialized seating may be prohibitive for some clients.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	The recommendation was in favor of modifications to positioning. This was informed by its potential to enhance feeding safety and efficacy.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	Considering the quality of the evidence, the recommendation was rated conditional.
RECOMMENDATION 11.0: Conditional (For) Surgical Correction of Strabismus It is best practice to complete surgery to correct binocular alignment and fusion in children with CP on a similar schedule reported for normally developing children		

Quality of the evidence	☐ High ☑ Moderate ☐ Low ☐ Very low	Evidence was moderate level from 1 observational study.
Values and preferences	☑ No significant variability ☐ Significant variability	Similar outcomes reported to correct esotropia and exotropia in children with CP; improvement inversely affected by CP severity.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	Surgical correction of esotropia and exotropia in children with CP completed by 2 years of age benefits outweigh the risks. Effects include good surgical alignment, but sensorial binocular fusion is dependent on CP severity.
Resource use	☐ Less resource intensive ☑ More resource intensive	Optimal binocular alignment in children with CP requires an average of 2 surgeries.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	The guideline recommendation for corrective surgery for binocular alignment and fusion is *do it* to *probably do it*, or a majority of people would implement it with children under 2 with CP or at high-risk for CP, but a minority would not.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	Based on the quality of evidence, surgical correction for visual alignment and fusion early and for less severe CP have some benefit.
RECOMMENDATION 12.0: Conditional (For) Visual Training It is best practice to commence visual training programs early to improve attention to visual stimuli and encourage the use of available visual functions.		
Quality of the evidence	☐ High ☐ Moderate ☑ Low ☐ Very low	Rehabilitation program for visually impaired children evidence low level from 1 observational study with low level evidence.
Values and preferences	☑ No significant variability ☐ Significant variability	Four-week visual rehabilitation course with high contrast stimuli improved visual function in the majority of children, including those with CP.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	Therapist-administered visual rehabilitation programs in children with visual impairment. Effects include improved attention to visual stimuli with no adverse events.
Resource use	☐ Less resource intensive ☑ More resource intensive	Greater than one 4-week visual rehabilitation program was shown benefit to visual function.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	The guideline recommendation for enrolment in a visual rehabilitation program is *do it* to *probably do it*, or a majority of people would implement it with children under 2 with CP or at high-risk for CP, but a minority would not.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	Based on the quality of evidence, rehabilitative visual stimulation may improve attention to visual stimuli in children with CVI, including those with CP.
RECOMMENDATION 13.0: Conditional (For) Color Contrast Cues		

It is best practice to commence early developmental programs engaging parents to provide high contrast/color visual stimulation in an interactive and contingent manner is recommended to improve visual orientation and mobility		
Quality of the evidence	☐ High ☐ Moderate ☑ Low ☐ Very low	Developmental programs to improve visual orientation and mobility had low level evidence based on 3 observational studies in infants and children with CVI and brain damage.
Values and preferences	☑ No significant variability ☐ Significant variability	Programs engaging parents to deliver high contrast stimuli and adapted lighting may confer some benefit for some types of CVI.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	Developmental programs to provide high contrast/color visual stimulation may improve orientation and mobility in infants with specific types of cerebral visual impairment, with CP or at high risk for CP.
Resource use	☐ Less resource intensive ☑ More resource intensive	High contrast/color visual stimulation administered by primary caregivers on a regular basis can utilize various readily available resources.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	The guideline recommendation for parent-directed stimulation with high contrast stimuli is *probably do it*, or a majority of people would implement it with children under 2 with CP or at high-risk for CP, but a minority would not.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	Based on the quality of evidence, developmental programs engaging parents to provide interactive high contrast/color visual stimulation may confer some advantage to infants with cerebral visual impairment with CP or at high risk for CP.
RECOMMENDATION 14.0: Conditional (For) Sleep Hygiene It is best practice for Sleep Hygiene to be implemented at home, including structuring a bedtime routine in a dark and quiet environment		
Quality of the evidence	☐ High ☑ Moderate ☐ Low ☐ Very low	Based on limited but moderate quality evidence on neurodevelopmental disorders and on clinical experience.
Values and preferences	☐ No significant variability ☑ Significant variability	Most of the published research on intervention was related to different neurodevelopmental disorders.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	No real disadvantages were reported in relation to most of the intervention proposed to promote sleep.
Resource use	☐ Less resource intensive ☑ More resource intensive	Teaching the primary caregivers about appropriate parent-based education and behavioral interventions, along with specific medical intervention, directs caregivers to promote rapid sleep onset near the desired bedtime might be more time intensive, but ultimately may save time in the bedtime routine.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	As the presence of sleep disorders influence the quality of life of all the family, an effective treatment has the potential to improve not only the well-being of the child but the well-being of a whole family.

Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	No specific studies on sleep intervention for children with CP. Most of the published research on intervention was related to other neurodevelopmental disorders with only few including CP participants.
RECOMMENDATION 15.0: Strong (Against) Stimulating Activities Before Bedtime It is best practice to avoid potentially stimulating activities such as watching television or other screens and vigorous play during the lead-in to bedtime		
Quality of the evidence	☑ High ☐ Moderate ☐ Low ☐ Very low	Based on evidence on neurodevelopmental disorders and on clinical experience.
Values and preferences	☐ No significant variability ☑ Significant variability	Most of the published research on intervention was related to different neurodevelopmental disorders.
Balance of benefits	☐ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☑ Disadvantages outweigh benefits	A high-quality systematic review indicated that Potentially stimulating activities such as watching television and vigorous play leads to inadequate and poor sleep, plus excessive daytime sleepiness.
Resource use	☐ Less resource intensive ☑ More resource intensive	Educating parents about potentially stimulating activities such as watching television or other screens and vigorous play leads to inadequate and poor sleep, plus excessive daytime sleepiness.
Recommendation direction	☐ In favour of the intervention ☑ Against the intervention	Stimulating activities before bedtime are to be strongly avoided.
Overall strength of the recommendation	☑ Strong recommendation ☐ Conditional recommendation	Although no specific studies on stimulating activities for children with CP are reported, there is no reason to believe that these recommendations are not applicable for infants with CP.
RECOMMENDATION 16.0: Conditional (For) Melatonin For infants with poor sleep onset, especially with a co-occurring cortical visual impairment, melatonin might be considered after discussing risks and benefits and if parents with to try it		
Quality of the evidence	☐ High ☑ Moderate ☐ Low ☐ Very low	Based on limited but moderate quality evidence on neurodevelopmental disorders including CP.
Values and preferences	☐ No significant variability ☑ Significant variability	Little published research on intervention and low number of children with CP.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	No real disadvantages were reported in relation to most of the intervention proposed to promote sleep.
Resource use	☐ Less resource intensive ☑ More resource intensive	Melatonin is considered a safe treatment with poor adverse side effects reported; it could therefore be considered the first line of pharmacological treatment of sleep disorders in children with neurodevelopmental disorders.
Recommendation direction	☑ In favour of the intervention	As the presence of sleep disorders influence the quality of life of all the family, an effective treatment

	☐ Against the intervention	has the potential to improve not only the well-being of the child but the well-being of a whole family.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	No specific studies on sleep intervention for children with CP. Most of the published research on intervention was related to other neurodevelopmental disorders with only few including CP participants.
RECOMMENDATION 17.0: Conditional (For) Apnea Management It is best practice to use conventional staged apnea management approaches (e.g. CPAP, steroids and surgical management) as the risks of harm from untreated apnea are serious		
Quality of the evidence	☐ High ☑ Moderate ☐ Low ☐ Very low	Based on limited but moderate quality evidence on neurodevelopmental disorders and on clinical experience**.**
Values and preferences	☐ No significant variability ☑ Significant variability	Most of the published research on intervention was related to different neurodevelopmental disorders.
Balance of benefits	☐ Benefits outweigh disadvantages ☑ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	Conventional staged apnea management approaches are recommended although infants and toddlers often have poor tolerance to these treatments.
Resource use	☐ Less resource intensive ☑ More resource intensive	Referral to a sleep specialist is recommended.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	The risks of harm from untreated apnea are serious.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	There is very little research evidence about how to effectively treat apnea in infants with/at high risk of cerebral palsy, nor is there good consensus from systematic reviews on how to manage apnea in children developing typically.
RECOMMENDATION 18.0: Conditional (For) Spasticity Management to Improve Sleep It is best practice to trial Baclofen and/or botulinum toxin to reduce spasms and pain in an effort to improve sleep behavior		
Quality of the evidence	☐ High ☑ Moderate ☑ Low ☐ Very low	Based on limited and low-moderate quality evidence in neurodevelopmental disorders.
Values and preferences	☐ No significant variability ☑ Significant variability	Few published research on intervention in very low number of children with no definite conclusions.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	No real disadvantages were reported in relation to most of the intervention proposed to promote sleep.
Resource use	☐ Less resource intensive ☑ More resource intensive	Few studies on treatment of spasticity in improving sleep secondarily to the reduced spasm and improvement of pain and mobility.

Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	As the presence of sleep disorders influence the quality of life of all the family, an effective treatment has the potential to improve not only the well-being of the child but the well-being of a whole family.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	No specific studies on sleep intervention for children with CP.
RECOMMENDATION 19.0: Conditional (Against) Sleep Positioning Systems It is best practice to not use sleep positioning systems as they can elevate the risk for gastroesophageal reflux, breathing difficulties and death		
Quality of the evidence	☐ High ☐ Moderate ☑ Low ☐ Very low	Based on very limited and low quality evidence on neurodevelopmental disorders and on clinical experience.
Values and preferences	☐ No significant variability ☑ Significant variability	Most of the published research on intervention was related to different neurodevelopmental disorders with few cerebral palsy only studies.
Balance of benefits	☐ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☑ Disadvantages outweigh benefits	Sleep positioning systems may correct an infant's postural asymmetry during sleep; however, the risks outweigh the benefits.
Resource use	☐ Less resource intensive ☑ More resource intensive	Sleep positioning systems are specialist equipment that is expensive.
Recommendation direction	☐ In favour of the intervention ☑ Against the intervention	Sleep positioning systems are not recommended as they can elevate the risk for gastroesophageal reflux, breathing difficulties and death from accidental asphyxiation.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	There is very little research evidence on sleep positioning system in children with CP.
RECOMMENDATION 20.0: Conditional (For) Complementary and Alternative Medicine Osteopathy combined with acupuncture could be considered by parents for improving sleep		
Quality of the evidence	☐ High ☑ Moderate ☑ Low ☐ Very low	Based on limited and low-moderate quality evidence on neurodevelopmental disorders.
Values and preferences	☐ No significant variability ☑ Significant variability	Few published research studies on intervention, in a very low number of children, with no definite conclusions reached.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	No real disadvantages were reported in relation to most of the intervention proposed to promote sleep.
Resource use	☐ Less resource intensive ☑ More resource intensive	Sparse and controversial studies on osteopathy and massage in improving sleep secondarily to muscles relax and to decreasing child's pain.

Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	As the presence of sleep disorders influence the quality of life of all the family, an effective treatment has the potential to improve not only the well-being of the child but the well-being of a whole family.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	No specific studies on sleep intervention for children with CP. Most of the published research on intervention was related to other neurodevelopmental disorders with only a few including CP participants.
RECOMMENDATION 21.0: Conditional (For) comprehensive hypertonia management It is best practice to commence a comprehensive goal directed hypertonia management for hypertonia causing pain or interfering with motor development		
Quality of the evidence	☐ High ☐ Moderate ☑ Low ☐ Very low	We found 5 studies that addressed the management of hypertonia in infants ≤ 2 years, with or at risk of cerebral palsy. Overall, the quality of the level of evidence was rated low.
Values and preferences	☑ No significant variability ☐ Significant variability	Standardized measures to quantify hypertonia, and systematic application of sensitive outcome measures of motor function are recommended to determine the impact of treatment on tone.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	Hypertonicity is a major contributor to secondary impairments that may develop progressively and lead to activity limitations and participation restriction. Secondary impairments include the development of contractures and deformities, muscle stiffness, pain and abnormal motor control.
Resource use	☐ Less resource intensive ☑ More resource intensive	Hypertonia should not be managed in isolation. Management requires a multidisciplinary using a goal based decision making model based on the ICF-CY (International Classification of Function – Child Youth).
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	The guideline recommendation is do it to probably do it, or a majority of people would implement it with children at high-risk for CP ≤ 2 years.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	Based on the quality of the evidence, the recommendations are conditional.
RECOMMENDATION 22.0: Conditional (For) Regular Use of Standing Equipment for Positioning It is best practice to regularly use standing equipment for positioning as part of an active intervention program, to potentially decrease hip migration percentage and maintain hip abduction range of motion		
Quality of the evidence	☐ High ☑ Moderate ☐ Low ☐ Very low	Evidence is mostly from children >2 or >5 with CP.
Values and preferences	☐ No significant variability ☑ Significant variability	Equipment used and intervention dose varied, and no one type of equipment was recommended.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	Benefits of weightbearing have been demonstrated to increase bone density in older children with CP and other neurological conditions; standing equipment should be used in conjunction with an intervention program that promotes activity.
Resource use	☐ Less resource intensive	The child needs to be placed into equipment; it may be costly and requires room in the home.

	☑ More resource intensive	
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	
RECOMMENDATION 23.0: Conditional (For) Use of Ankle-Foot Orthosis (AFOs) It is best practice for AFOs to be worn to improve or maintain dorsiflexion range of motion		
Quality of the evidence	☐ High ☐ Moderate ☑ Low ☐ Very low	Evidence is mostly from children >2 with CP.
Values and preferences	☐ No significant variability ☑ Significant variability	Less is understood about the benefits and indications for AFO's in infants without spasticity or contracture. For children who are learning to walk, that need to pull to stand often as a consequence of falls, it is known that whilst AFO's can assist with balance whilst in standing, AFO's can also impede independent movement in pulling to stand plus impede sensory feedback of foot contact with the floor.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	Benefits probably outweigh the disadvantages for those with emergent risk of contracture.
Resource use	☐ Less resource intensive ☑ More resource intensive	AFO's are specialist customised equipment items that are costly. Since children grow rapidly, AFO's require regular replacement.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	
RECOMMENDATION 24.0: Conditional (For) evidence based mental health therapies for parents It is best practice for parents/carers with changes in their mental health or wellbeing, to be provided with specifically targeted interventions for parents		
Quality of the evidence	☐ High ☑ Moderate ☐ Low ☐ Very low	The usual care mental health care evidence base in adults can be applied to parents of infants with CP. The infant CP intervention evidence is based on two RCTs. One RCT was of the intervention GAME (Goals- Activity- Motor Enrichment), an intervention grounded in motor learning and environmental enrichment, and the other was of a cognitive and sensorimotor stimulation program using the Curriculum Monitoring System (CAMS). Both found no effect on parental adjustment by intervening with the child alone without directly intervening with the parent.

Values and preferences	☐ No significant variability ☑ Significant variability	Individual family needs regarding mental health and wellbeing support are likely to vary.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	Intervening early to support parental mental health and wellbeing is likely to have far-reaching consequences.
Resource use	☐ Less resource intensive ☑ More resource intensive	This is likely to require additional intervention in many clinical service contexts.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	In favour of targeted mental health interventions for parents. NOTE: Interventions focused on child cognitive or motor abilities should not be considered sufficient to target parental mental health or wellbeing.
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	
RECOMMENDATION 25.0: Conditional (For) Cognitive Behavioral Therapy It is best practice that psychological interventions grounded in Cognitive Behavioral Therapy approaches, be available to parents		
Quality of the evidence	☐ High ☑ Moderate ☐ Low ☐ Very low	Evidence limited to parents of infants born preterm and/or low birth weight. Recommendations based on two systematic literature reviews.
Values and preferences	☐ No significant variability ☑ Significant variability	Evidence limited to parents of infants born preterm.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	No disadvantages.
Resource use	☐ Less resource intensive ☑ More resource intensive	Requires specialist intervention.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	
RECOMMENDATION 26.0: Conditional (For) Support Parents to Carryout Kangaroo Care It is best practice to support parents to provide Kangaroo care as it benefits maternal psychological adjustment		
Quality of the evidence	☐ High ☐ Moderate ☑ Low	Evidence is limited to infants born preterm or low birth weight. Recommendations based on a systematic literature review of Kangaroo Mother Care for infants

	☐ Very low	born preterm or low birth weight. Findings are inconclusive, however, some evidence supported effects of Kangaroo Mother Care on maternal psychological adjustment. Available evidence is limited to maternal outcomes.
Values and preferences	☐ No significant variability ☑ Significant variability	Evidence limited to infants born preterm.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	No disadvantages.
Resource use	☑ Less resource intensive ☐ More resource intensive	Parents share in the care of their infants whilst hospitalized.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	
RECOMMENDATION 27.0: Conditional (For) Music Therapy Including Musical Interactions It is best practice that clinicians support and encourage music therapy including musical interactions between parents and their infants to promote infant well- being and reduce maternal anxiety		
Quality of the evidence	☐ High ☑ Moderate ☐ Low ☐ Very low	Evidence limited to infants born preterm. Recommendations based on a systematic literature review of music therapy for preterm infants and their parents found significant large effects for maternal anxiety. Available evidence is focused on maternal outcomes and short-term effects only.
Values and preferences	☐ No significant variability ☑ Significant variability	Evidence limited to infants born preterm.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	No disadvantages.
Resource use	☐ Less resource intensive ☑ More resource intensive	Use of music therapy is likely to require additional resources in many clinical contexts.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	

RECOMMENDATION 28.0: Conditional (For) Attachment Support and Coaching It is best practice that support and coach parental sensitivity and mutually enjoyable parent-infant interactions to be offered from birth and beyond to foster good parental mental health and wellbeing		
Quality of the evidence	☐ High ☑ Moderate ☐ Low ☐ Very low	Recommendation based on an RCT of an early intervention program with 23 high-risk low birthweight infants with cerebral injuries, as well as a systematic literature review of therapeutic and behavioral interventions for parents of low birth weight infants.
Values and preferences	☐ No significant variability ☑ Significant variability	Individual family intervention needs to enhance parental sensitivity are likely to vary.
Balance of benefits	☑ Benefits outweigh disadvantages ☐ Benefits and disadvantages are balanced ☐ Disadvantages outweigh benefits	Intervening early to support parental sensitivity is likely to have far-reaching consequences.
Resource use	☐ Less resource intensive ☑ More resource intensive	This may require additional intervention in many clinical service contexts.
Recommendation direction	☑ In favour of the intervention ☐ Against the intervention	
Overall strength of the recommendation	☐ Strong recommendation ☑ Conditional recommendation	