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## Interventions and Management

**1. J Hand Surg Am. 2015 Feb 24. pii: S0363-5023(14)01699-2. doi: 10.1016/j.jhsa.2014.11.025. [Epub ahead of print]**

### **Management of the Spastic Wrist and Hand in Cerebral Palsy.**

Leafblad ND1, Van Heest AE2.

Research from the last 5 years on the pathophysiology and treatment of upper extremity sequelae of cerebral palsy (CP) is presented. The development of new treatments of CP-affected limbs, utilizing the brain's inherent neuroplasticity, remains an area of promising and active research. Functional magnetic resonance imaging scans have evaluated the role of neuroplasticity in adapting to the initial central nervous system insult. Children with CP appear to have greater recruitment of the ipsilateral brain for motor and sensory functions of the affected upper limb. Studies have also shown that constraint-induced movement therapy results in localized increase in gray matter volume of the sensorimotor cortex contralateral to the affected arm targeted during rehabilitation. Recent therapy interventions have emphasized the role of home therapy programs, the transient effects of splinting, and the promise of constraint-induced movement therapy and bimanual hand training. The use of motion laboratory analysis to characterize the movement pattern disturbances in children with CP continues to expand. Classification systems for CP upper limb continue to expand and improve their reliability, including use of the House Classification, the Manual Ability Classification System, and the Shriner's Hospital Upper Extremity Evaluation. Surgical outcomes have greater patients' satisfaction when they address functional limitations, also in addition to aesthetics, which may improve patients' self-esteem. Surgical techniques for elbow, wrist, fingers, and thumb continue to be refined. Research into each of these areas continues to expand our understanding of the nervous system insults that cause CP, how they may be modified, and how hand surgeons can continue to serve patients by improving their upper limb function and aesthetics.

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**2. Dev Med Child Neurol. 2015 Apr 9. doi: 10.1111/dmcn.12762. [Epub ahead of print]**

### **Adaptive seating systems in children with severe cerebral palsy across International Classification of Functioning, Disability and Health for Children and Youth version domains: a systematic review.**

Angsupaisal M1, Maathuis CG, Hadders-Algra M.

AIM: The aim of this study was to systematically review the effect of adaptive seating systems (AdSSs) in young people less than 19 years of age with severe cerebral palsy (CP), with particular focus on child-related outcomes

across all components of the functioning and disability domains of the International Classification of Functioning, Disability, and Health for Children and Youth version (ICF-CY). **METHOD:** Literature searches of studies published from 1975 to October 2014 were performed. Methodological quality and the risk of bias were analysed using Sackett's level of evidence, the American Academy for Cerebral Palsy and Developmental Medicine guidelines, and Mallen criteria for observational studies. **RESULTS:** Nine studies fulfilled the selection criteria. All studies had level IV evidence and were of moderate methodological quality. The results focused on the effects of AdSSs on postural control and on upper extremity function and on additional child-related outcomes. The results suggested that AdSSs that include trunk and hip support devices may improve postural control outcomes, and that special-purpose AdSSs may improve self-care and play behaviour at home. **INTERPRETATION:** Because of a low level of evidence and the moderate methodological quality of the studies available, no robust conclusions can be drawn. Nevertheless, the data suggest that AdSSs may be able to improve activity and participation at home among children with severe CP. More studies of high methodological quality addressing the effect of AdSSs on activity and participation are urgently needed. Suggestions for future research are provided.

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### 3. J Pediatr Orthop. 2015 Mar 3. [Epub ahead of print]

#### **Risk Factors of Refracture and Morbidity During Removal of Titanium Pediatric Proximal Femoral Locking Plates in Children With Cerebral Palsy.**

Inan M1, Sarikaya IA, Seker A, Guven MF.

**BACKGROUND:** Pediatric proximal femoral locking plates (PFLPs) are widely used when performing proximal femoral osteotomy in children with cerebral palsy (CP). The purpose of this study is to report the difficulties and risk factors of titanium PFLPs removal in CP. **METHODS:** PFLP removal was performed in 58 hips of 33 patients (17 males, 16 females). The mean age at the time of surgery (plate removal) was 10.9 (range, 5.7 to 19.2) years. The patients were divided into 2 groups as group 1 and 2, if any difficulty was observed during surgery or not. **RESULTS:** Difficulty was not detected in 42 (72.4%) hips (group 1). Difficulties were encountered in 16 (27.6%) hips (group 2). A total of 364 screws were used (259 in group 1, 105 in group 2). The mean plate screw density ratios were 0.88 in group 1 and 0.94 in group 2. The difference between group 1 and 2 was statistically significant. The mean duration between the insertion and removal of the PFLP was 14.9 months (11.9 mo in group 1, 22.7 mo in group 2). The difference between group 1 and 2 was statistically significant. The screw heads were cut and the shafts were left in the bone in 4 hips (4 screws); 3 of these 4 screws were calcar screws. Therefore, calcar screw application can be accepted as a handicap for screw removal. **CONCLUSIONS:** As a conclusion, this study suggested that difficulty in titanium PFLP removal in CP is common and PFLP removal is not a harmless procedure. A longer time from internal fixation to removal, increased plate screw density ratio, and calcar screw application are risk factors for difficulties in titanium PFLP removal in CP.

LEVEL OF EVIDENCE: Level III.

[PMID: 25851677](#) [PubMed - as supplied by publisher]

### 4. J Pediatr Orthop. 2015 Apr 1. [Epub ahead of print]

#### **Outcomes of Orthopaedic Surgery With and Without an External Femoral Derotational Osteotomy in Children With Cerebral Palsy.**

McMulkin ML1, Gordon AB, Caskey PM, Tompkins BJ, Baird GO.

**BACKGROUND:** Ambulatory children with cerebral palsy (CP) often present with multiple deviations in all planes including increased internal hip rotation during gait. Excessive femoral anteversion is a common cause of deviation managed surgically with an external femoral derotational osteotomy (FDO). The purpose of this study was to evaluate the gait and functional outcomes of a group of subjects with CP who underwent surgical intervention that included an FDO compared with a match group with indications of internal hip rotation that did not receive an FDO. **METHODS:** For this retrospective study, subjects were identified from the Motion Analysis Laboratory database that

had orthopaedic surgery including an FDO (FDO group). A control group was established from a chart review identifying subjects that had indications for an FDO, but did not have this surgery (No-FDO group). All subjects had preoperative and postoperative gait studies. Subjects categorized as Gross Motor Function Classification System (GMFCS) levels I and II in both FDO and No-FDO groups were combined for analysis. Subjects rated as GMFCS level III were analyzed separately. Preoperative to postoperative kinematic and kinetic variables, Gait Deviation Index, net oxygen cost, and PODCI scores were analyzed with paired t tests. RESULTS: Typical sagittal plane kinematic variables improved significantly by equivalent magnitudes for both FDO and No-FDO groups (GMFCS I/II and III). Transverse plane improvements were only seen for the FDO group (GMFCS I/II and III). The Gait Deviation Index, an overall index of kinematics, improved by a significantly greater amount for the FDO group across GMFCS levels I/II and III. Net oxygen cost improved for both FDO and No-FDO for GMFCS I/II. PODCI scores improved for FDO and No-FDO in GMFCS I/II, but only the FDO group for GMFCS III. CONCLUSIONS: For children with CP, inclusion of an FDO in the surgical intervention, when indicated, resulted in improved outcomes. Overall gait kinematic improvements were significantly greater when an FDO was included in the surgical management.

LEVEL OF EVIDENCE: Level III-retrospective comparative study.

[PMID: 25851681](#) [PubMed - as supplied by publisher]

##### **5. J Pediatr Orthop B. 2015 Apr 8. [Epub ahead of print]**

#### **Does the GMFCS level influence the improvement in knee range of motion after rectus femoris transfer in cerebral palsy?**

Blumetti FC1, Morais Filho MC, Kawamura CM, Cardoso MO, Neves DL, Fujino MH, Lopes JA.

The aim of this study was to evaluate the influence of the Gross Motor Function Classification System (GMFCS) on the outcomes of rectus femoris transfer (RFT) for patients with cerebral palsy and stiff knee gait. We performed a retrospective review of patients seen at our gait laboratory from 1996 to 2013. Inclusion criteria were (i) spastic diplegic cerebral palsy, (ii) GMFCS levels I-III, (iii) reduced peak knee flexion in swing (PKFSw<55°), and (iv) patients who underwent orthopedic surgery with preoperative and postoperative gait analysis. Patients were divided into two groups according to whether they received a concurrent RFT or not at the time of surgery: non-RFT group (185 knees) and RFT group (123 knees). The primary outcome was the overall knee range of motion (KROM) derived from gait kinematics. The secondary outcomes were the PKFSw and the time of peak knee flexion in swing (tPKFSw). We observed a statistically significant improvement in KROM only for patients in the RFT group (P<0.001). However, PKFSw and tPKFSw improved in both groups after surgery (P<0.001 for all analyses). In the RFT group, the improvement in KROM was observed only for patients classified as GMFCS levels I and II. In the non-RFT group, no improvement in KROM was observed in any GMFCS level. In this study, patients at GMFCS levels I and II were more likely to benefit from the RFT procedure.

[PMID: 25856277](#) [PubMed - as supplied by publisher]

##### **6. Clin Biomech (Bristol, Avon). 2015 Mar 28. pii: S0268-0033(15)00099-6. doi: 10.1016/j.clinbiomech.2015.03.023. [Epub ahead of print]**

#### **Acclimatization of the gait pattern to wearing an ankle-foot orthosis in children with spastic cerebral palsy.**

Kerkum YL1, Brehm MA2, van Hutten K3, van den Noort JC3, Harlaar J3, Becher JG3, Buizer AI3.

BACKGROUND: Ankle-foot orthoses can be prescribed to improve gait in children with cerebral palsy. Before evaluating the effects of ankle-foot orthoses on gait, a period to adapt or acclimatize is usually applied. It is however unknown whether an acclimatization period is actually needed to reliably evaluate the effect of a new orthosis on gait. This study aimed to investigate whether specific gait parameters in children with cerebral palsy would change within an acclimatization period after being provided with new ankle-foot orthoses. METHODS: Ten children with cerebral palsy, walking with excessive knee flexion in midstance (8 boys; mean (SD) 10.2 (1.9) years; Gross Motor Function Classification System levels I-II) were provided with ventral shell ankle-foot orthoses. The orthoses were worn in combination with the child's own shoes and tuned, based on ground reaction force alignment with respect to the lower limb joints. Directly after tuning (T0) and four weeks later (T1), 3D-gait analysis was performed using an optoelectronic motion capture system and a force plate. From this assessment, ten spatiotemporal, kinematic and

kinetic gait parameters were derived for the most affected leg. Differences in parameters between T0 and T1 were analyzed using paired t-tests or Wilcoxon signed rank tests ( $P < 0.05$ ). FINDINGS: Over the course of four weeks, no significant differences ( $P \geq 0.080$ ) were observed for any investigated parameter. INTERPRETATION: These results imply that the biomechanical effect of ventral shell ankle-foot orthoses on gait in independent walking children with cerebral palsy is immediately apparent, i.e., there is no further change after acclimatization.

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## 7. Disabil Rehabil. 2015 Apr 9:1-10. [Epub ahead of print]

### What is it like to walk with the help of a robot? Children's perspectives on robotic gait training technology.

Phelan SK1, Gibson BE, Wright FV.

**PURPOSE:** Robotic gait training is an emerging intervention that holds great therapeutic promise in the rehabilitation of children with neuromotor disorders such as cerebral palsy (CP). Little is known about children and parents' views on this new technology. The purpose of this qualitative study was to investigate the expectations and experiences of children with CP in relation to robotic gait training using the Lokomat®Pro. **METHOD:** An interpretivist qualitative design was employed in which perspectives of children and parents were elicited through separate semi-structured interviews to examine expectations of and experiences with the Lokomat. **RESULTS:** Four themes related to children's expectations and experiences using the Lokomat were identified: (1) Not sure what to expect, but okay, I will do it; (2) It's more than just the Lokomat, it's the people that make the difference; (3) Having mixed impressions about the Lokomat; and (4) It's probably helping me, but I don't really know. **CONCLUSIONS:** Rehabilitation professionals, researchers and parents are encouraged to reflect on why and how one might engage children in gait-related rehabilitation in ways that appeal to children's desires and expectations. This may shape how interventions are presented to children and how goals and outcomes are framed. Implications for Rehabilitation Children in this study did not consistently feel excited about, have a wish to use, or have a sustained interest in the use of a robotic technology, and at times experienced some anxiety in relation to their participation in the intervention. Contrary to assumptions that disabled children value walking "normally", children in this study did not express a desire to walk in typical (non-disabled) gait patterns, and equated so-called "normal" walking with their usual walking styles. Thus, we encourage clinicians, researchers and parents to reflect on why, when and how best to engage children in gait-related rehabilitation in ways that appeal to and align with children's desires and expectations.

[PMID: 25856202](#) [PubMed - as supplied by publisher]

## 8. Dev Med Child Neurol. 2015 Apr 6. doi: 10.1111/dmcn.12761. [Epub ahead of print]

### Reliability and validity of the Duncan-Ely test for assessing rectus femoris spasticity in patients with cerebral palsy.

Lee SY1, Sung KH, Chung CY, Lee KM, Kwon SS, Kim TG, Lee SH, Lee IH, Park MS.

**AIM:** The aim of this study was to clarify the method of the Duncan-Ely test and to estimate its interobserver reliability and validity by comparing it with three-dimensional gait analysis (3DGA). **METHOD:** This study included 36 consecutive ambulatory patients with cerebral palsy (CP) who underwent preoperative 3DGA. The Duncan-Ely test was performed during three different velocities (slow, gravity, and fast). The interobserver reliability was assessed by three examiners. The results of the test were compared with kinematic variables derived from the gait analysis to assess the sensitivity and specificity of the test. The cut-off value was determined at the point of trade-off between the highest sensitivity and specificity. **RESULTS:** The intraclass correlation coefficient measuring interobserver reliability of the Duncan-Ely test was greatest during fast velocity (0.819). The sensitivity and specificity of the test during gravity velocity for knee range of motion total were 63.0% and 100% respectively, with a cut-off value of 78.3°. The sensitivity and specificity of the test during fast velocity for knee range of motion total were 66.7% and 100% respectively, with a cut-off value of 65°. **INTERPRETATION:** The Duncan-Ely test shows excellent reliability in fast knee-flexion velocity, and good sensitivity and specificity compared with 3DGA during physical examination as a preoperative assessment of rectus

femoris spasticity in patients with CP.

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**9. Dev Med Child Neurol. 2015 Apr 3. doi: 10.1111/dmcn.12754. [Epub ahead of print]**

**Australian hip surveillance guidelines for children with cerebral palsy: 5-year review.**

Wynter M1, Gibson N, Willoughby KL, Love S, Kentish M, Thomason P, Graham HK; National Hip Surveillance Working Group.

AIM: To ensure hip surveillance guidelines reflect current evidence of factors influencing hip displacement in children with cerebral palsy (CP). METHOD: A three-step review process was undertaken: (1) systematic literature review, (2) analysis of hip surveillance databases, and (3) national survey of orthopaedic surgeons managing hip displacement in children with CP. RESULTS: Fifteen articles were included in the systematic review. Quantitative analysis was not possible. Qualitative review indicated hip surveillance programmes have decreased the incidence of hip dislocation in populations with CP. The Gross Motor Function Classification System was confirmed as the best indicator of risk for displacement, and evidence was found of hip displacement occurring at younger ages and in young adulthood. Femoral geometry, pelvic obliquity, and scoliosis were linked to progression of hip displacement. A combined data pool of 3366 children from Australian hip surveillance databases supported the effectiveness of the 2008 Consensus Statement to identify hip displacement early. The survey of orthopaedic surgeons supported findings of the systematic review and database analyses. INTERPRETATION: This review rationalized changes to the revised and renamed Australian Hip Surveillance Guidelines for Children with Cerebral Palsy 2014, informing frequency of radiographic examination in lower risk groups and continuation of surveillance into adulthood for adolescents with identified risk factors.

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**10. J Pediatr Orthop. 2015 Mar 3. [Epub ahead of print]**

**A Preliminary Study to Assess Whether Spinal Fusion for Scoliosis Improves Carer-assessed Quality of Life for Children With GMFCS Level IV or V Cerebral Palsy.**

Sewell MD1, Malagelada F, Wallace C, Gibson A, Noordeen H, Tucker S, Molloy S, Lehovsky J.

BACKGROUND: Scoliosis affects 50% of children with Gross Motor Function Classification System (GMFCS) level IV or V cerebral palsy (CP). In children with complex neurodisability following intervention, the WHO considers quality of life (QoL) should be assessed to aid decision-making and assess the effects. This study assesses whether scoliosis surgery improves carer-assessed QoL for children with severe CP. METHODS: Retrospective review of 33 children (16 male:17 female) with GMFCS level IV/V CP and significant scoliosis. Fifteen underwent observational treatment during childhood, and 18 underwent surgery. Questionnaire and radiographic data were recorded over a 2-year period. The carer-completed Caregiver Priorities and Child Health Index of Life with Disabilities (CPCHILD) questionnaire was used to assess QoL. RESULTS: In the observational group, Cobb angle and pelvic obliquity increased from 46 (40 to 60) and 8 degrees (0 to 28) to 62 (42 to 94) and 12 degrees (1 to 35). Mean CCHILD score decreased from 50 (30 to 69) to 48 (27 to 69) ( $P<0.05$ ). In the operative group, Cobb angle and pelvic obliquity decreased from 78 (52 to 125) and 14 degrees (1 to 35) to 44 (16 to 76) and 9 degrees (1 to 24). Mean CCHILD score increased from 45 (20 to 60) to 58 (37 to 76) ( $P<0.05$ ). Change in pain, and not presence of associated impairments, was the most significant factor affecting QoL changes for children in both groups. There was no difference in mobility, GMFCS level, feeding, or communication in either group before and after treatment. CONCLUSIONS: Nonoperative treatment for children with GMFCS level IV/V CP and a significant scoliosis was associated with a small decrease in carer-assessed QoL over 2 years. Spinal fusion was associated with an increase in QoL. Change in pain was the most significant factor affecting QoL changes, and is therefore an important factor to consider when deciding upon surgery.

LEVEL OF EVIDENCE: Level III-therapeutic retrospective study.

[PMID: 25851675](#) [PubMed - as supplied by publisher]

#### **11. Braz Oral Res. 2015;29(1):1-5. Epub 2014 Dec 2.**

##### **Factors associated with bruxism in children with developmental disabilities.**

Souza VA1, Abreu MH2, Resende VL1, Castilho LS1.

The aim of the present study was to investigate factors associated with bruxism in children aged from 1 to 13 years with developmental disabilities. A total of 389 dental records were examined. The bruxism analyzed was determined based on parental reports. The following variables were also analyzed: gender, age, International Code of Diseases (ICD), mouth breathing, history of gastroesophageal reflux, use of psychotropic drugs, gingival status, reports of xerostomia, hyperkinesis, pacifier use, thumb sucking and involuntary movements. For the purposes of analysis, the individuals were categorized as being with and without bruxism. Variables with a p-value < 0.25 in the bivariate analysis were incorporated into the logistic regression models. Females had a 0.44-fold (95%CI: 0.25 to 0.78) greater chance of exhibiting bruxism than males. Individuals with gastroesophageal reflux had a 2.28-fold (95%CI: 1.03 to 5.02) greater chance of exhibiting bruxism. Individuals with reported involuntary movements had a 2.24-fold (95%CI: 1.19 to 4.24) greater chance of exhibiting bruxism than those without such movements. Exhibiting involuntary movements, the male gender and gastroesophageal reflux are factors associated with bruxism in children with developmental disabilities.

[PMID: 25466325](#) [PubMed - indexed for MEDLINE] Free full text

#### **12. J Int Oral Health. 2015 Feb;7(2):37-41.**

##### **Oral manifestation in mentally challenged children.**

Rahul VK1, Mathew C2, Jose S3, Thomas G4, Noushad MC5, Feroz TP6.

**BACKGROUND:** In general, mentally challenged children have higher rates poor oral hygiene, gingivitis and periodontitis than the general population. An investigation was undertaken to assess the oral manifestations of mentally challenged children in Chennai, India. **MATERIALS AND METHODS:** The study group consisted of 150 children (70 Down syndrome patients and 80 cerebral palsy patients). Of which, 93 patients were males and 57 were females. **RESULTS:** Speech difficulty hindered the communication between the patient and the dentist. Mastication and swallowing difficulties were also present in few children. Profuse salivation was a cause for drooling of saliva down the cheeks, which was a constant finding in cerebral palsy children. The oral hygiene statuses of the patient were significantly poor. The prevalence of periodontitis was 35.7% in Down syndrome and 55.0% in cerebral palsy patients. Whereas, the prevalence of gingivitis was found to be 92.9% and 61.3% respectively. The prevalence of fractured maxillary anterior teeth was found to be more evident in cerebral palsy patients (62.9%) when compared to Down syndrome patients (0.0%). An increase in age shows an increase in the decayed-missing-filled teeth which is statistically significant. **CONCLUSION:** The prominent findings like flat nasal bridge (94.3%), hypertelorism (92.9%), high arched palate (78.6%) and fissured tongue (78.6%) in our study, suggest that they could be used as a reliable clinical markers to diagnose Down syndrome condition.

[PMID: 25859105](#) [PubMed]

#### **13. Fiziol Cheloveka. 2015 Jan-Feb;41(1):49-56.**

##### **The distinctive features of EMG-activity in early age children with movement disorders [Article in Russian]**

[No authors listed]

The purpose of this work was the study of neuromuscular characteristics of healthy infants and infants with movement disorders by method of surface electromyography. 76 children at the age from 6 months till 3 years participated in the investigation: 61 with movement disorders (13--with ataxic form of cerebral palsy (CP), 48--with

spastic form of CP) and 15 without movement disorders. Passive flexing and extending of knee and hip joints was conducted to the child in a recumbent position, EMG activity of the basic muscles groups of a hip and a shin was recorded. Characteristic properties of electromyographic activity were assessed with wavelet transform and subsequent analysis of obtained time dependencies. As a result of work the parameters connected with diagnosis of infants with movement disorders were revealed.

[PMID: 25857177](#) [PubMed - in process]

#### **14. Intellect Dev Disabil. 2015 Apr;53(2):114-9. doi: 10.1352/1934-9556-53.2.114.**

##### **Factors related to complications among adult patients with intellectual disabilities hospitalized at an academic medical center.**

Ailey SH, Johnson TJ, Fogg L, Friese TR.

People with intellectual disabilities (ID) represent a small but important group of hospitalized patients who have higher rates of complications than do patients without ID hospitalized for the same reasons. Complications are potentially avoidable conditions, such as healthcare-acquired infections, healthcare-acquired skin breakdown, falls, and medication errors and reactions. Addressing factors related to complications can focus efforts to improve hospital care. The purpose of this exploratory study was to analyze data from reviews of academic medical center charts (N = 70) about complications and to examine patient and hospitalization characteristics in relation to complications among adult patients (age  $\geq 18$  years) with ID hospitalized for nonpsychiatric reasons. Adults with ID tended to be twice as likely to have complications ( $\chi^2 = 2.893$ ,  $df = 1$ ,  $p = .09$ ) if they had a surgical procedure and were nearly four times as likely to have complications ( $\chi^2 = 6.836$ ,  $df = 1$ ,  $p = .009$ ) if they had multiple chronic health conditions (three of the following: history of cerebral palsy, autism spectrum symptoms, aggressive behavior, respiratory disorder, and admission through the emergency department). Findings suggest preliminary criteria for assessing risk for complications among hospitalized people with ID and the need for attention to their specific needs when hospitalized.

[PMID: 25860449](#) [PubMed - in process]

#### **15. J Child Neurol. 2015 Apr 8. pii: 0883073815576792. [Epub ahead of print]**

##### **Assessment of Abilities and Comorbidities in Children With Cerebral Palsy.**

Gabis LV1, Tsubary NM2, Leon O2, Ashkenasi A2, Shefer S2.

This study examines major comorbidities in children with severe cerebral palsy and the feasibility of psychological tests for measuring abilities in a more impaired population. Eighty psychological evaluations of children with cerebral palsy aged 1.8 to 15.4 years (mean = 5.6) were analyzed. Major comorbid disorders were correlated with severity of motor disability. More than half of the cohort were diagnosed with severe cerebral palsy according to the Gross Motor Function Classification System. Multiple subtests were combined in order to assess the intellectual level. Normal intelligence was found in 22.5%, and 41.3% had moderate or severe intellectual impairment. Epilepsy occurred in 32.5% and attention-deficit hyperactivity disorder (ADHD) in 22.5%. Intellectual disability correlated with motor ability and with epilepsy. In a logistic regression model, epilepsy and motor ability score predicted 29.9% of IQ score variance. Intellectual impairment and epilepsy are common comorbidities. Subtests from different scales should be applied and interpreted with caution.

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## Prevention and Cure

**16. Dev Med Child Neurol. 2015 Apr 9. doi: 10.1111/dmcn.12760. [Epub ahead of print]**

### **Predictors for early diagnosis of cerebral palsy from national registry data.**

Granild-Jensen JB1, Rackauskaite G, Flachs EM, Uldall P.

**AIM:** As early intervention is important in cerebral palsy (CP), an early diagnosis is desirable. The aim of this study was to establish the median diagnostic age of CP and to identify predictors of an early diagnosis in a population-based cohort. **METHOD:** Using the Danish National Cerebral Palsy Registry (NCPR), we identified 1291 children with CP (764 males, 527 females) born between 1995 and 2003. The date of diagnosis was defined as the day the parents were told that their child was spastic or had CP. We calculated the age of diagnosis and analysed the following predictors: type of CP, degree of motor disability, cerebral ultrasonography results, epilepsy, gestational age, and degree of cognitive impairment. **RESULTS:** We found the overall median corrected diagnostic age of CP to be 11 months. Early diagnosis was associated with the type of CP, presence of epilepsy, a high degree of motor disability, and abnormalities in the cerebral ultrasonography. The gestational age was not associated with the diagnostic age. **INTERPRETATION:** The median diagnostic age implies that half of the Danish children with CP will be able to enter an early intervention program before 1 year of age. A late diagnosis was associated with less severe symptoms, and gestational age did not influence the diagnostic age.

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**17. Diagn Interv Radiol. 2015 Apr 6. doi: 10.5152/dir.2014.14329. [Epub ahead of print]**

### **The prevalence of pineal cyst in patients with cerebral palsy.**

Özmen E1, Derinkuyu B, Samancı C, Ünlü HA, Demirkan TH, Haşiloğlu ZI, Kuruoğlu S, Adaletli İ.

**PURPOSE:** Pineal cysts are common incidental findings during magnetic resonance imaging (MRI) examinations. The etiology of pineal cyst development is still unclear. We aimed to determine whether there is an association between periventricular leukomalacia and pineal cyst prevalence. **METHODS:** Clinical and MRI data of 201 patients with periventricular leukomalacia (110 female, 91 male; mean age, 6 years; range, 2-18 years) and 687 control patients (355 female, 332 male; mean age, 6 years, range, 2-18 years) who did not have any evidence of periventricular leukomalacia were independently evaluated by two radiologists for presence or absence of pineal cyst. **RESULTS:** Pineal cysts were detected in 32.3% of the study group (65/201) and 8.4% of the control group (58/687) ( $P < 0.001$ ). Patients with periventricular leukomalacia were more likely to have a pineal cyst. In terms of pineal cyst detection on MRI, interobserver reliability was high between the two radiologists. **CONCLUSION:** The prevalence of pineal cysts is higher in patients with periventricular leukomalacia. We suggest that an ischemic process may have a role in the etiopathogenesis of pineal cyst development.

[PMID: 25858521](#) [PubMed - as supplied by publisher]

**18. J Obstet Gynaecol Res. 2015 Apr 6. doi: 10.1111/jog.12703. [Epub ahead of print]**

### **Significance of chorionicity on long-term outcome of low birthweight infants of <1500g in twin pregnancies.**

Kawamura H1, Ishii K, Yonetani N, Mabuchi A, Hayashi S, Mitsuda N.

**AIM:** The aim of this study was to evaluate the long-term outcomes of very low birthweight twins by chorionicity and to identify the perinatal predictors for outcomes in the era of laser surgery for twin-twin transfusion syndrome. **MATERIAL AND METHODS:** This was a retrospective single-center cohort study of twin pregnancy infants <1500 g from 2003 through 2010. During the study period, laser surgery was performed on cases of twin-twin transfusion

syndrome. The composite of adverse outcomes at 3 years of age was defined, including death, cerebral palsy, and developmental delay. The association between perinatal factors and adverse outcomes was evaluated by multiple logistic regression analysis. RESULTS: A total of 162 infants (79 dichorionic diamniotic twins [DCDA] and 83 monochorionic diamniotic twins [MCDA]) were included in this study. Laser surgery was performed on 11 cases. The rate of adverse outcomes was 13.9% for DCDA and 26.5% for MCDA. The incidence of each outcome for DCDA and MCDA was: cerebral palsy, 1.3% and 4.8%; developmental delay, 8.9% and 9.6%; and death, 3.8% and 14.5%. Gestational age at birth (adjusted odds ratio: 0.69; 95% confidence interval, 0.57-0.84); and anemia at birth (adjusted odds ratio, 10.64; 95% confidence interval, 1.69-66.9) were independent risk factors, whereas chorionicity did not have significance for outcomes. CONCLUSION: The long-term outcome of very low birthweight MCDA was almost identical to that of DCDA. Gestational age and anemia at birth were independent risk factors for adverse outcomes.

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**19. J Pediatr. 2015 Apr 1. pii: S0022-3476(15)00155-9. doi: 10.1016/j.jpeds.2015.02.035. [Epub ahead of print]**

### **Cerebral Palsy after Neonatal Encephalopathy: How Much Is Preventable?**

Garfinkle J1, Wintermark P2, Shevell MI3, Platt RW4, Oskoui M5; Canadian Cerebral Palsy Registry.

OBJECTIVES: To determine the expected proportion of term cerebral palsy (CP) after neonatal encephalopathy (NE) that could theoretically be prevented by hypothermia and elucidate the perinatal factors associated with CP after NE in those who do not meet currently used clinical criteria required to qualify for hypothermia ("cooling criteria"). STUDY DESIGN: Using the Canadian CP Registry, we categorized children born at  $\geq 36$  weeks with birth weight  $\geq 1800$  g with CP after moderate or severe NE according to the presence or absence of cooling criteria. Maternal, perinatal, postnatal, and placental factors were compared between the 2 groups. A number needed to treat of 8 (95% CI 6-17) to prevent one case of CP was used for calculations. RESULTS: Among the 543 term-born children with CP, 155 (29%) had moderate or severe NE. Sixty-four of 155 (41%) met cooling criteria and 91 of 155 (59%) did not. Shoulder dystocia was more common in those who did not meet cooling criteria (OR 8.8; 95% CI 1.1-71.4). Low birth weights (20% of all singletons), small placentas (42%), and chorioamnionitis (13%) were common in both groups. CONCLUSIONS: The majority of children with CP after NE did not meet cooling criteria. An estimated 5.1% (95% CI 2.4%-6.9%) of term CP after NE may be theoretically prevented with hypothermia. Considering shoulder dystocia as an additional criterion may help recognize more neonates who could potentially benefit from cooling. In all cases, a better understanding of the antenatal processes underlying NE is essential in reducing the burden of CP.

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