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## Interventions and Management

### 1. BMC Neurol. 2011 Nov 30;11(1):150. [Epub ahead of print]

#### Altered sense of agency in children with spastic cerebral palsy.

Rosenbaum AR, Christensen MS, Kliim-Due M, Petersen LZ, Rasmussen B, Nielsen JB.

Background: Children diagnosed with spastic cerebral palsy (CP) often show perceptual and cognitive problems, which may contribute to their functional deficit. Here we investigated if altered ability to determine whether an observed movement is performed by themselves (sense of agency) contributes to the motor deficit in children with CP. Methods: Three groups; 1) CP children, 2) healthy peers, and 3) healthy adults produced straight drawing movements on a pen-tablet which was not visible for the subjects. The produced movement was presented as a virtual moving object on a computer screen. Subjects had to evaluate after each trial whether the movement of the object on the computer screen was generated by themselves or by a computer program which randomly manipulated the visual feedback by angling the trajectories 0, 5, 10, 15, 20 degrees away from target. Results: Healthy adults executed the movements in 310 seconds, whereas healthy children and especially CP children were significantly slower ( $p < 0.025$ ) (on average 462 seconds and 553 seconds respectively). There was also a statistical difference between the healthy and age matched CP children ( $p < 0.05$ ). When the trajectory of the object generated by the computer corresponded to the subject's own movements all three groups reported that they were responsible for the movement of the object. When the trajectory of the object deviated by more than 10 degrees from target, healthy adults and children more frequently than CP children reported that the computer was responsible for the movement of the object. CP children consequently also attempted to compensate more frequently from the perturbation generated by the computer. Conclusions: We conclude that CP children have a reduced ability to determine whether movement of a virtual moving object is caused by themselves or an external source. We suggest that this may be related to a poor integration of their intention of movement with visual and proprioceptive information about the performed movement and that altered sense of agency may be an important functional problem in children with CP.

[PMID: 22129483](https://pubmed.ncbi.nlm.nih.gov/22129483/) [PubMed - as supplied by publisher]

**2. Res Dev Disabil. 2011 Nov 23;33(2):570-577. [Epub ahead of print]****Validity, responsiveness, minimal detectable change, and minimal clinically important change of the Pediatric Motor Activity Log in children with cerebral palsy.**

Lin KC, Chen HF, Chen CL, Wang TN, Wu CY, Hsieh YW, Wu LL.

School of Occupational Therapy, College of Medicine, National Taiwan University, 17, F4, Xu-Zhou Road, Taipei, Taiwan; Division of Occupational Therapy, Department of Physical Medicine and Rehabilitation, National Taiwan University Hospital, Taipei, Taiwan.

This study examined criterion-related validity and clinimetric properties of the Pediatric Motor Activity Log (PMAL) in children with cerebral palsy. Study participants were 41 children (age range: 28-113 months) and their parents. Criterion-related validity was evaluated by the associations between the PMAL and criterion measures at baseline and posttreatment, including the self-care, mobility, and cognition subscale, the total performance of the Functional Independence Measure in children (WeeFIM), and the grasping and visual-motor integration of the Peabody Developmental Motor Scales. Pearson correlation coefficients were calculated. Responsiveness was examined using the paired t test and the standardized response mean, the minimal detectable change was captured at the 90% confidence level, and the minimal clinically important change was estimated using anchor-based and distribution-based approaches. The PMAL-QOM showed fair concurrent validity at pretreatment and posttreatment and predictive validity, whereas the PMAL-AOU had fair concurrent validity at posttreatment only. The PMAL-AOU and PMAL-QOM were both markedly responsive to change after treatment. Improvement of at least 0.67 points on the PMAL-AOU and 0.66 points on the PMAL-QOM can be considered as a true change, not measurement error. A mean change has to exceed the range of 0.39-0.94 on the PMAL-AOU and the range of 0.38-0.74 on the PMAL-QOM to be regarded as clinically important change.

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**3. Prosthet Orthot Int. 2011 Nov 30. [Epub ahead of print]****The effect of floor reaction ankle foot orthosis on postural control in children with spastic cerebral palsy.**

Bahramizadeh M, Mousavi ME, Rassafiani M, Aminian G, Ebrahimi I, Karimlou M, O'Toole G.

University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

Background: Children with cerebral palsy (CP) often demonstrate postural control difficulties. Orthotic management may assist in improving postural control in these children. Objective: The purpose of this investigation was to examine the influence of floor reaction ankle foot orthosis (FRAFO) on postural flexion called the crouch position in children with CP. Study Design: Quasi-experimental. Methods: Eight children with spastic diplegic CP and eight matched typically developing children participated in this study. Postural control of children with CP was assessed in a static standing position on a force platform with/without a FRAFO. The parameters used were centre of pressure (CoP) measures, calculated from force platform signals including the standard deviation (SD) of excursion; phase plate portrait and SD of velocity in anteroposterior (AP) and mediolateral (ML) directions. Results: The maximum knee extension was statistically significant in children with CP when barefoot compared to wearing braced footwear ( $p < 0.05$ ,  $t = 10.01$ ). AP and ML displacement, AP velocity and AP phase plate portrait of CoP were not statistically significant between children with CP with/without a FRAFO ( $p < 0.05$ ). Conclusion: FRAFO can improve the alignment of the knee, but may not be helpful in improving postural control in children with CP in a short time period.

[PMID: 22130910](#) [PubMed - as supplied by publisher]

**4. Prosthet Orthot Int. 2011 Nov 30. [Epub ahead of print]****Kinematic and electromyographic studies on unaided, unilateral and bilateral crutch walking in adolescents with spastic diplegia.**

Yeung EH, Chow DH, Su IY.

Tuen Mun Hospital, Hong Kong, Hong Kong.

Background: Back pain and ambulation deterioration among ambulatory individuals with cerebral palsy (CP) are common as they grow older and walking aids are often prescribed to improve stability and promote maximal weight-bearing on lower limbs during gait. Objective: To investigate the effects of walking aids on back muscle activity and whole body kinematics among adolescents with spastic diplegia. Study Design: A repeated-measures design was adopted with participants tested under different walking conditions. Methods: Ten participants were recruited and Lofstrand forearm crutches were selected. Both the activity of lumbar erector spinae and the kinematics of head, trunk, pelvis and lower limbs during walking were monitored using telemetric electromyography and motion analysis system respectively. Results: Comparisons between walking unaided and walking with unilateral and bilateral crutch(es) were made. Significant decreases in speed, cadence, erector spinae activity and lower trunk extension were observed during crutch walking together with significantly increased stride time and anterior pelvic tilt. Conclusions: These findings suggested that Lofstrand crutch(es) reduced muscular demands and lumbar lordosis with increased lower back mobility. The results shed light on the prescription of walking aid in the management and prevention of chronic back pain for ambulatory individuals with CP from a life span perspective.

[PMID: 22130909](#) [PubMed - as supplied by publisher]

**5. Arch Phys Med Rehabil. 2011 Dec;92(12):2034-40.****Comparison of 3 different methods to analyze ankle plantarflexor stiffness in children with spastic diplegia cerebral palsy.**

Ross SA, Foreman M, Engsborg JR.

Washington University Human Performance Laboratory, St. Louis, MO; Maryville University Physical Therapy Program, St. Louis, MO.

OBJECTIVE: To compare 3 different methods of measuring plantarflexor stiffness in children with spastic diplegia cerebral palsy (CP) and children without disability. DESIGN: Case-control study. SETTING: Human performance laboratory. PARTICIPANTS: A retrospective analysis was conducted with children with spastic diplegia (n=121; mean age, 8.4y) and children with typical development (TD) (n=48; mean age, 9.7y). INTERVENTIONS: Not applicable. MAIN OUTCOME MEASURES: An isokinetic dynamometer was used to measure ankle plantarflexor stiffness at 10°/s using 3 methods: (1) end-range method, which applied a linear slope to the end of the torque-angle curve; (2) set-range method, which applied a linear slope from 30° to 10° plantarflexion; and (3) a linear method, which applied a slope only to the linear portion of the curve. RESULTS: Two-way analysis of variance revealed significant main effects for group and stiffness method. The end-range method showed no significant difference between groups for plantarflexor stiffness (P=.62), the set-range method showed the CP group with 120% greater stiffness than the TD group (P<.046), and the linear method showed the CP group with 35% greater stiffness than the TD group (P<.001). CONCLUSIONS: The linear method appeared to resolve the issues with the previous methods; applying a linear slope to a nonlinear curve or applying a linear slope to the same range of motion for each child regardless of their range limitations. It is clear that children with CP have limited range of motion; therefore, stiffness occurs earlier in the range than would be expected for a typically developing child. Using the linear method, children with CP were 35% stiffer in the ankle plantarflexors than typically developing peers.

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[PMID: 22133254](#) [PubMed - in process]

**6. Rev Neurol. 2011 Dec 16;53(12):729-34.****Infiltration of the psoas muscles with botulinum toxin guided by computerised axial tomography: a series of cases [Article in Spanish]**

Rodriguez-Pinero Duran M, Martin-Gutierrez R, Martinez-Sahuquillo Amuedo ME, Rodriguez-Burgos MC, Echevarria-Ruiz de Vargas C.

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**AIM.** To evaluate the effectiveness and safety of infiltrating the psoas muscle with botulinum toxin guided by computerised tomography (CT) in order to reduce dynamic contracture in bending the hip. **PATIENTS AND METHODS.** The study involves a series of five children diagnosed with spastic cerebral palsy and bilateral involvement. All the children were able to walk and they presented an attitude on bending the hips and knees consisting in the typical 'crouch gait' together with a dynamic contracture of the hips and knees. They did not present any contraindications for the use of botulinum toxin and their parents gave their consent. Under CT control and anaesthetic sedation, both psoas muscles were infiltrated with a dose of 3 U/kg of body weight; later, both ischiotibial muscles were infiltrated using 3 U/kg doses. The patients were evaluated both prior to and four weeks after infiltration; the muscular range was assessed by means of goniometry, muscular tone was evaluated using the modified Ashworth scale, spasticity was measured using Tardieu's dynamic test and the attitude in bending the hips and knees under a load was assessed by goniometric measurement. Likewise, adverse secondary effects to the puncture or to the use of the toxin were recorded. **RESULTS.** The five patients reported an improvement in both mobility (with a reduction of tone and contracture) and the posture when standing. **CONCLUSIONS.** Infiltration of the psoas muscle guided by CT is an effective, safe technique for reducing spasticity in bending the hip, which, if accompanied by infiltration of the ischiotibial muscles, improves the attitude on bending the hip and knee.

[PMID: 22127659](#) [PubMed - in process]

**7. Child Care Health Dev. 2011 Nov 25. doi: 10.1111/j.1365-2214.2011.01352.x. [Epub ahead of print]****Time use patterns in ambulatory adolescents with cerebral palsy.**

Maher C, Kernot J, Olds T.

Health and Use of Time (HUT) Group, Sansom Institute for Health Research, University of South Australia, and School of Health Sciences, University of South Australia, Adelaide, SA, Australia.

**Background:** No studies to date have examined the daily time spent across a variety of activity types (sleep, screen time, physical activity, domestic and school-related) in children with cerebral palsy (CP). **Aim** To investigate the activity patterns of adolescents with CP and contrast them with those of typically developing (TD) adolescents, using a use-of-time approach. **Methods:** Forty-one Australian adolescents with CP and 82 TD adolescents matched for age, sex, weight status and socio-economic status undertook structured interviews using a validated computerized use of time recall administered over 4 days. Time devoted to sleep, screen time, physical activity, domestic and school-related activity were compared using anova and Mann-Whitney tests. **Results:** Adolescents with CP spent less time in physical activity (91 vs. 147 min/day,  $P=0.0003$ ), and in particular, its sub-components of active transport (28 vs. 52 min/day,  $P=0.0013$ ) and team sports (25 vs. 39 min/day,  $P=0.04$ ). They experienced significantly more quiet time (116 vs. 80 min/day,  $P=0.0025$ ) but spent less time in social interaction (6 vs. 22 min/day,  $P=0.0016$ ). There were no significant differences in sleep, screen time, domestic activities or school-related time. **Conclusions:** By and large, the activity patterns of ambulatory adolescents with CP were similar to their TD peers. Results highlight physical activity in younger adolescents (11-13 years) as an area for targeted interventions.

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**8. Phys Occup Ther Pediatr. 2011 Nov 30. [Epub ahead of print]****Social Participation of Adolescents with Cerebral Palsy: Trade-offs and Choices.**

Stewart DA, Lawless JJ, Shimmell LJ, Palisano RJ, Freeman M, Rosenbaum PL, Russell DJ.

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This article reports on the findings of a qualitative study about the experiences and perceptions of adolescents with cerebral palsy (CP) in relation to social participation. A phenomenological approach was used to interview 10 adolescents with CP, 17 to 20 years of age, selected using purposeful sampling. An iterative process of data collection and analysis resulted in four themes about social participation. The themes of experience, barriers, and supports, and tradeoffs supported the current view of participation as a dynamic interaction between person and environment. The fourth theme of making choices described the unique challenges facing adolescents with CP in terms of deciding what was most important and meaningful to them now and in their future. Health care professionals can support adolescents as they develop the capacity to make their own decisions during the transition to adult living by ensuring that assessments and interventions address social participation.

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**9. Res Dev Disabil. 2011 Nov 24;33(2):341-349. [Epub ahead of print]****The use of night orthoses in cerebral palsy treatment: Sleep disturbance in children and parental burden or not?**

Mol EM, Monbaliu E, Ven M, Vergote M, Prinzie P.

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In this study, we investigated whether (1) children with cerebral palsy (CP) using night orthoses experience more sleep disturbance than those not using night orthoses, (2) parental personality is related to the experienced parental burden of night orthoses, and (3) parental sense of competence in the parenting role mediates the relation between parental personality and parental burden. Eighty-two Flemish children with CP (55 using/27 not using night orthoses) with a mean age of 9 years and 10 months (GMFCS level I-V) participated in this cross-sectional questionnaire study, using the Sleep Disturbance Scale (SDSC), Parenting Stress Index (PSI), Big Five Inventory (BFI) and a newly developed inventory to assess the parental burden of night orthoses. Multivariate analysis of covariance revealed no statistical significant differences in sleep disturbance between children using/not using night orthoses. These findings are positive as the use of night orthoses are presumed to be important in providing adequate postural care in children with CP. Extraverted and emotionally stable parents experienced less parental burden. Mediation analysis revealed that parental sense of competence partially mediated the relation between parental personality and the parental burden. These results suggest that integrating parental sense of competence in treatment programs can improve the understanding of experienced burden. Implications of such integrations for therapy are discussed.

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**10. Res Dev Disabil. 2011 Nov 22;33(2):530-537. [Epub ahead of print]****Arithmetic performance of children with cerebral palsy: The influence of cognitive and motor factors.**

van Rooijen M, Verhoeven L, Smits DW, Ketelaar M, Becher JG, Steenbergen B.

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Children diagnosed with cerebral palsy (CP) often show difficulties in arithmetic compared to their typically

developing peers. The present study explores whether cognitive and motor variables are related to arithmetic performance of a large group of primary school children with CP. More specifically, the relative influence of non-verbal intelligence, working memory, word decoding capacities, gross- and fine motor skills on arithmetic performance is examined using structural equation modeling. One-hundred sixteen primary school children with a formal diagnosis of CP participated (76 males, M=7; 3 years, SD=3 months). In agreement with previous studies our results showed that the cognitive and motor predictors were all positively correlated to each other. Furthermore, in the cognitive model, non-verbal intelligence and word decoding were related to arithmetic in primary school. Our combined model (that included both motor and cognitive variables) showed that word decoding and fine motor skills were the strongest predictors of arithmetic performance. To conclude, this study was the first to show the influence of word decoding and fine motor skills on arithmetic performance of children with CP.

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### 11. Phys Occup Ther Pediatr. 2011 Nov 29. [Epub ahead of print]

#### **Therapeutic Effects of Horseback Riding Therapy on Gross Motor Function in Children with Cerebral Palsy: A Systematic Review.**

Whalen CN, Case-Smith J.

1. Division of Physical Therapy, 2. Division of Occupational Therapy, School of Allied Medical Professions, The Ohio State University, Columbus, Ohio, USA.

**Purpose:** This systematic review examined the efficacy of hippotherapy or therapeutic horseback riding (THR) on motor outcomes in children with cerebral palsy (CP). **Methods:** Databases were searched for clinical trials of hippotherapy or THR for children with CP. **Results:** Nine articles were included in this review. Although the current level of evidence is weak, our synthesis found that children with spastic CP, Gross Motor Function Classification System (GMFCS) levels I-III, aged 4 years and above are likely to have significant improvements on gross motor function as a result of hippotherapy and THR. Evidence indicates that 45-min sessions, once weekly for 8-10 weeks, result in significant effects. **Conclusions:** The current literature on hippotherapy and THR is limited. Large randomized controlled trials using specified protocols are needed to more conclusively determine the effects on children with CP. From the current evidence, it appears that hippotherapy and THR have positive effects on gross motor function in children with CP.

[PMID: 22122355](#) [PubMed - as supplied by publisher]

### 12. Curr Med Res Opin. 2011 Nov 30. [Epub ahead of print]

#### **Long-term outcomes of children and adolescents who had cerebral palsy with secondary osteoporosis.**

Iwasaki T, Nonoda Y, Ishii M.

Kitasato University School of Medicine, Sagamihara, Japan.

**Objective:** To investigate children and adolescents who had cerebral palsy (CP) with secondary osteoporosis and consider the long-term efficacy and index of treatment. **Research design and methods:** Thirty patients with CP and secondary osteoporosis were analyzed for 5 years, and the efficacy of treatment was compared. Treatment methods were divided into 3 groups: patients taking only alfacalcidol (0.03 µg/kg/day), the monotherapy group; those taking alfacalcidol and risedronate (0.05 mg/kg/day), the polytherapy group; and patients who discontinued taking their medications for reasons unrelated to these therapies, the control. We measured bone mineral density (BMD), bone-specific alkaline phosphatase (BAP), and N-telopeptides of type I collagen (NTX)/Cr just before, at discontinuation, 6 months, and 1 and 3 years after treatment. We evaluated the changes in BMD (ΔBMD), BAP (ΔBAP), and NTX/Cr (ΔNTX/Cr) because the normal value of each parameter varies among ages in childhood. **Results:** ΔBMD significantly increased in the polytherapy group ≥1 year (p = 0.006), and the difference of BMD between the polytherapy and the control groups ≥1 year was also significant (p = 0.005). ΔBAP were increased in the monotherapy and polytherapy groups ≥1 year (p = 0.021 and p = 0.033). ΔNTX/Cr decreased in the

polytherapy group  $\geq 1$  year, which compared with the polytherapy group of the period from 1 month to 1 year ( $p = 0.033$ ). Correlation coefficients of  $\Delta\text{BMD}$  and  $\Delta\text{BAP}$ ,  $\Delta\text{BMD}$ , and  $\Delta\text{NTX/Cr}$  were significantly related to the control. Thus,  $\Delta\text{BMD}$  reflected ossification of secondary osteoporosis patients with CP, and  $\Delta\text{BAP}$  and  $\Delta\text{NTX/Cr}$  significantly related to the increase and decrease of  $\Delta\text{BMD}$ . There were no effects of other factors except sexual maturity. Limitations of this study include that each index of examination was the evaluation according to rate of change. Therefore, the results of this study were limited to longitudinal evaluations. Conclusion: Evaluation according to  $\Delta\text{BMD}$  and both methods of monotherapy and polytherapy were useful for CP patient taking AEDs and regardless of sex. Especially, polytherapy for longer than 1 year led to improvement in children who had CP with secondary osteoporosis. BAP and NTX/Cr were useful for the index of progress osteoporosis with or without these therapies.

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### 13. Disabil Rehabil. 2011 Nov 29. [Epub ahead of print]

#### **Interobserver reliability of the Turkish version of the expanded and revised gross motor function classification system.**

El O, Baydar M, Berk H, Peker O, Koşay C, Demiral Y.

Department of Physical Medicine and Rehabilitation, Dokuz Eylül University Faculty of Medicine, İzmir, Turkey.

Purpose: Cerebral palsy (CP) is the most common disability in childhood. The gross motor function classification system (GMFCS) has become an important tool to assess motor function in CP patient. In 2007, the expanded and revised (E&R) version of GMFCS which includes age band for youth 12-18 years of age was developed. The aim of this study was to evaluate reliability of Turkish version of expanded and revised GMCS. Methods: We assessed interobserver reliability between two physical medicine and rehabilitation specialists in 136 children with CP and test-retest reliability within a subgroup of 48 patients. Percent agreement, intraclass correlation coefficient (ICC) and  $\mu$  statistics were used to evaluate reliability. Result: The ICC between two physicians was 0.97 and the total agreement was 89%. This result indicates excellent agreement. The overall weighted  $\mu$  was 0.86. High test-retest reliability was found (ICC: 0.94 95% confidence interval) and the total agreement was 75% for test-retest reliability. Conclusion: The Turkish version of the E&R GMFCS is shown to be reliable and valid for assessment of Turkish CP children.

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### 14. Disabil Rehabil Assist Technol. 2011 Nov 29. [Epub ahead of print]

#### **The Smart Wheelchair: is it an appropriate mobility training tool for children with physical disabilities?**

McGarry S, Moir L, Girdler S.

Department of Occupational Therapy, School of Computing, Health and Science, Edith Cowan University, Perth, Australia.

Purpose: To describe the impact of a mobility training program using the Smart Wheelchair on the driving skills and psychosocial outcomes of children with physical disabilities. Method: A multiple case study design using mixed methods was used. Four children with physical disabilities were recruited through The Centre for Cerebral Palsy in Western Australia. The intervention was a 16 session Smart Wheelchair mobility training program. Data was collected using a quantitative driving skills assessment, field notes and qualitative parent interviews. Results: Three out of four children gained independence in at least three driving skills or more, whilst one child was competent with verbal prompts. Three out of four mothers reported positive changes in their child's confidence, motivation and affect. Conclusions: The Smart Wheelchair has the ability to uncover learning potential and facilitate the recognition of abilities in children previously excluded from access to independent mobility. Given the significant limitation that restrictions in mobility pose to participation for children with physical disabilities, therapists must begin to understand the effectiveness of interventions such as the Smart Wheelchair. The descriptive findings of this study allow for future, more rigorous research, to be conducted on the effectiveness of the Smart Wheelchair as a mobility training tool.

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**15. Hand Clin. 2012 Feb;28(1):53-66.**

**Correction of the claw hand.**

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Intrinsic paralysis can be the manifestation of a variety of pathologic entities (stroke, cerebral palsy, Charcot-Marie-Tooth, muscular dystrophy, leprosy, trauma, cervical disease, and compressive and metabolic neuropathies). Patients present with a spectrum of clinical findings dependent on the cause and severity of the disease. The 3 main problems caused by intrinsic weakness of the fingers are clawing with loss of synchronistic finger flexion, inability to abduct/adduct the digits, and weakness of grip. Clawing is defined as hyperextension of the metacarpophalangeal joints and flexion of the interphalangeal joints. This article describes the clinical evaluation and surgical treatment options for claw hand.

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**16. Pediatr Nurs. 2011 Sep-Oct;37(5):229-35; quiz 236.**

**Oral health care for hospitalized children.**

Blevins JY.

Somerset Community College, Somerset, KY, USA.

Oral health care may be the greatest unmet health need of children in the U.S. Half of the children in the U.S. suffer from tooth decay by 8 years of age. The consequences of poor oral health are many, including mouth pain, inability to chew and eat, abscess and soft tissue infection, diminished self-esteem, and impaired school performance. Numerous medical conditions, such as asthma and diabetes, and developmental disabilities, such as cerebral palsy and autism, have associated oral health implications. Oral health care is often neglected by nondental health providers. Nurses are in a unique position to contribute to the improvement of this national health problem by promoting oral health care among hospitalized children and their families. A hospital program for oral health care is proposed, including assessment of teeth and gingiva, ensuring oral care for all, as well as oral health education as part of patient education.

[PMID: 22132567](#) [PubMed - in process]

## Prevention and Cure

17. **Pediatrics**. 2011 Dec;128(6):e1402-e1410. Epub 2011 Nov 28.

### **Symptomatic Neonatal Arterial Ischemic Stroke: The International Pediatric Stroke Study.**

Kirton A, Armstrong-Wells J, Chang T, Deveber G, Rivkin MJ, Hernandez M, Carpenter J, Yager JY, Lynch JK, Ferriero DM; for the International Pediatric Stroke Study Investigators.

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**BACKGROUND:** Neonatal arterial ischemic stroke (AIS) has emerged as a leading cause of perinatal brain injury, cerebral palsy, and lifelong disability. The pathogenesis is poorly understood, which limits the development of treatment and prevention strategies. Multicenter studies must define epidemiology, risk factors, treatment practices, and outcomes to advance clinical trials and improve the adverse outcomes suffered by most survivors. **METHODS:** The International Pediatric Stroke Study is a global research initiative of 149 coinvestigators (30 centers in 10 countries). Patients with clinical and neuroimaging confirmation of symptomatic neonatal AIS were enrolled (2003-2007). Standardized, Web-based data entry collected clinical presentations, risk factors, investigations, treatments, and early outcomes. We examined predictors of infarct characteristics and discharge outcome by using multivariate logistic regression. **RESULTS:** Two hundred forty-eight neonates were studied (57% male, 10% premature). Most of them presented with seizure (72%) and nonfocal neurologic signs (63%). MRI was completed for 92% of the infants, although <50% had vascular imaging. Infarcts preferentially involved the anterior circulation and left hemisphere and were multifocal in 30%. Maternal health and pregnancies were usually normal. Neonates often required resuscitation (30%) and had systemic illnesses (23%). Cardiac and prothrombotic abnormalities were identified in <20% of the infants. Antithrombotic treatment was uncommon (21%) and varied internationally. Half (49%) of the infants had deficits at discharge, and data on their long-term outcomes are pending. **CONCLUSIONS:** Newborns with AIS are often systemically sick, whereas their mothers are usually healthy. Definitive causes for most neonatal AISs have not been established, and large-scale case-control studies are required to understand pathogenesis if outcomes are to be improved.

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