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Interventions and Management

1. Child Care Health Dev. 2011 Oct 31. doi: 10.1111/j.1365-2214.2011.01331.x. [Epub ahead of print]

Profiles of family needs of children and youth with cerebral palsy.

Almasri N, Palisano RJ, Dunst C, Chiarello LA, O'Neil ME, Polansky M.

Physical Therapy Department, Rehabilitation Sciences Faculty, University of Jordan, Amman, Jordan Physical Therapy and Rehabilitation Sciences, Drexel University School of Public Health, Drexel University, Philadelphia, PA, and Orelena Hawks Puckett Institute, Asheville, NC, USA.

Background: To identify profiles of family needs of families of children and youth with cerebral palsy (CP), and determine whether profile membership is related to child, family and service characteristics. **Methods:** Participants were mostly mothers (80%) of 579 children and youth with CP. A family member completed modified version of the Family Needs Survey and questionnaires about their child, family and services. Research assistants determined the Gross Motor Function Classification System levels. K-means cluster analysis identified profiles of needs. Cluster membership was analysed to examine differences in clusters based on selected characteristics. **Results:** Four profiles of needs were identified: Low needs, Needs related to community and financial resources, Needs related to child health condition and High needs. Profile membership was differentiated based on child/youth gross motor function, adaptive behaviour, family relationships, family income, access and effort to co-ordinate services. **Conclusion:** Despite heterogeneity among individuals with CP and their families, four profiles of family needs were identified. In total, 51% of families had low needs suggesting that they are effectively managing their children's health conditions while 11% of families had high needs that may require high levels of services and supports. Service providers are encouraged to partner with families, provide anticipatory guidance and co-ordinate services.

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2. Eur J Paediatr Neurol. 2011 Oct 27. [Epub ahead of print]

Behavioural problems in school age children with cerebral palsy.

Brossard-Racine M, Hall N, Majnemer A, Shevell MI, Law M, Poulin C, Rosenbaum P.

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BACKGROUND: Although behavioural problems are frequent in children with Cerebral Palsy (CP), the exact nature of these difficulties and their relationship with intrinsic or extrinsic factors are just beginning to be explored. **AIM:** To describe and characterize behavioural problems in children with CP and to determine the nature of any relationships with child and family characteristics. **METHODS:** In this cross-sectional study, children with CP between 6 and 12 years of age were recruited. Children were assessed using the Leiter Intelligence Test, the Gross Motor Function Measure, the Strengths and Difficulties Questionnaire (SDQ), the Vineland Adaptive Behavior Scales and questionnaires on demographic factors. Parents' level of stress was measured with the Parenting Stress Index. **RESULTS:** Seventy-six parents completed the SDQ. Using the Total Difficulties Scores, 39.4% of the sample scored in the borderline to clinically abnormal range. Peer problems were the most common (55.3%). High parental stress was consistently associated with behavioural difficulties across all domains of the SDQ. Not surprisingly, better socialization skills and a lower parental stress were correlated with more positive behaviours. **CONCLUSION:** Behavioural difficulties are common in children with CP and appear not to be associated with socio-demographic variables and physical and cognitive characteristics. These difficulties are an important correlate of parental distress. This study emphasizes the need to recognize and address behavioural difficulties that may arise so as to optimize the health and well-being of children with CP and their families.

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3. Br J Nutr. 2011 Nov 4:1-6. [Epub ahead of print]

Protein levels in enteral feeds: do these meet requirements in children with severe cerebral palsy?

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Children with cerebral palsy (CP) have been documented to have feeding difficulties, which increase in line with condition severity and result in lowered growth potential. Much nutrition literature surrounds energy intake and expenditure in these children, with less information available on other parameters such as protein and micronutrients, which are also important for growth and development. We examined differences in protein intake and a variety of protein metabolism indices in children with CP compared with controls. A total of twenty-four children aged 4-12 years with marked CP fed orally (O, n 15) or enterally (E, n 9) were recruited, including age-matched typically developing children (C, n 24). Fasting blood samples were analysed for levels of albumin, creatinine, urea and urate. Parents collected an exact food replica for three consecutive days of their child's actual intake, which were directly analysed for protein content. Significant differences were found in protein intakes between the groups (mean percentage minimum requirements: E = 178 (sd 47); O = 208 (sd 95); C = 311 (sd 119), P = 0.005). Despite all children consuming over recommended levels, children with CP had significantly reduced levels of the protein metabolic indices compared with controls. These include as z-scores: albumin mean C = 0.71 (sd 1.04) and CP = - 0.17 (sd 1.60), P = 0.03; creatinine C = - 2.06 (sd 0.46) and CP = - 3.11 (sd 0.98), P < 0.001; urate C = 0.18 (sd 0.62) and CP = - 0.58 (sd 0.93), P = 0.002. Post hoc analysis, the present data show potentially greater protein metabolism issues in enterally fed children, compared with the other groups. This may also support recent literature that suggests shortfalls in current recommendations.

[PMID: 22050917](#) [PubMed - as supplied by publisher]

4. Perit Dial Int. 2011 Nov 1. [Epub ahead of print]

Chronic Peritoneal Dialysis in Children with Special Needs or Social Disadvantage or Both: contraindications are not always contraindications.

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OBJECTIVE: Our aim in the present study was to identify outcomes in children with special needs or social

disadvantage, or both, receiving chronic peritoneal dialysis (CPD) treatment in a pediatric dialysis unit. **METHODS:** Among 110 children started on CPD in our unit during the period between November 1995 and November 2008, we identified 13 patients (8 girls, 5 boys) with major physical, mental, or psychosocial problems. Age at CPD initiation in the group with disability ranged from 4.0 years to 16.5 years (median: 7.5 years). Underlying diseases were vesicoureteral reflux (4 patients), neuropathic bladder and vesicoureteral reflux (3 patients), chronic pyelonephritis (3 patients), amyloidosis (2 patients), and Alport syndrome (1 patient). Challenges encountered were adverse family or social circumstances (4 patients), cerebral palsy (3 patients), Down syndrome (1 patient), rectovesical fistula in conjunction with ectopic anus and previous multiple abdominal surgery (1 patient), blindness and deafness (1 patient), ventriculoperitoneal shunt (1 patient), colostomy and malnutrition (1 patient), and mental retardation and blindness (1 patient). All catheters were implanted percutaneously. **RESULTS:** Median duration of dialysis was 18 months (range: 6 - 124 months). The frequency of peritonitis was not different between children with and without disability ($p > 0.05$). In children with disability compared with children without disability, the frequencies of catheter-related infections (1 episode/79.3 patient-months vs 1 episode/32.4 patient-months) and of catheter-related noninfectious complications (1 episode/238 patient-months vs 1 episode/115.7 patient-months) were lower ($p < 0.05$). Chronic peritoneal dialysis was terminated in 5 children (for renal transplantation in 3, switch to hemodialysis in 1, death in 1). **CONCLUSIONS:** Our results suggest that, with appropriate family support and an experienced multidisciplinary team, CPD can be effectively performed in children with special needs or social disadvantage, or both.

[PMID: 22045099](#) [PubMed - as supplied by publisher]

5. Pediatrics. 2011 Nov;128(5):e1321-e1329. Epub 2011 Oct 31.

Providing a Primary Care Medical Home for Children and Youth With Cerebral Palsy.

Liptak GS, Murphy NA; the Council on Children With Disabilities.

All primary care providers will care for children with cerebral palsy in their practice. In addition to well-child and acute illness care, the role of the medical home in the management of these children includes diagnosis, planning for interventions, authorizing treatments, and follow-up. Optimizing health and well-being for children with cerebral palsy and their families entails family-centered care provided in the medical home; comanagement is the most common model. This report reviews the aspects of care specific to cerebral palsy that a medical home should provide beyond the routine health care needed by all children.

[PMID: 22042817](#) [PubMed - as supplied by publisher]

6. Semin Pediatr Neurol. 2011 Jun;18(2):72-3.

Pediatric patients with cerebral palsy or other developmental disabilities.

Tilton A, Delgado MR.

Louisiana State University Health Sciences Center, New Orleans, Louisiana.

[PMID: 22036482](#) [PubMed - in process]

7. Clin Ter. 2011 Sep;162(5):e125-8.

Preliminary evidence of Focal Muscle Vibration Effects on Spasticity due to Cerebral Palsy in a small sample of Italian children.

Celletti C, Camerota F.

Orthopaedic Department, Physical Medicine and Rehabilitation Division, "Sapienza" University of Rome, Rome, Italy.

Aims. Effects of muscle mechanical vibration on movement disorders still need accumulation of a pertinent body of

evidence. The aim of this study was to explore the effects of repeated muscle vibration stimulation (rMV) using a protocol, previously demonstrated able to induce plastic reorganization of the primary motor cortex in an experimental model. **Patients and Methods.** The study was carried out in a cohort of 8 pediatric patients (6-15 years) with lower limb spasticity due to cerebral palsy. rMV was applied for 3 consecutive days, 30 min/day, with fixed frequency (100 Hz) and low amplitude (<0.5 mm peak-to-peak), on the triceps surae. Outcome was measured using the modified Ashworth scale (MAS) and ankle range of movement (ROM) and spasticity was evaluated at T0, T1 (24 hours afterwards), T2 (30 days afterwards) and T3 (12 weeks afterwards). **Results.** Spasticity ameliorated with a 40% reduction of the MAS value and a 7.7% improvement of the ankle ROM at T1. Similar results were observed in T2 and T3, thus suggesting long-lasting effects of the treatment. **Conclusions.** This study remarks the possible role of rMV in a mini-invasive and cost-effective setting of treatment for spasticity due to cerebral palsy. Further studies are needed in order to confirm this preliminary results. *Clin Ter* 2011; 162(5):e125-128.

[PMID: 22041808](#) [PubMed - in process]

8. *Arq Neuropsiquiatr.* 2011 Oct;69(5):799-804.

Therapeutic effects of a horse riding simulator in children with cerebral palsy.

Borges MB, Werneck MJ, Silva Mde L, Gandolfi L, Pratesi R.

Department of Physical Therapy, Catholic University of Brasília, Brasília, DF, Brazil.

OBJECTIVE: To evaluate the efficacy of horse riding simulator on the sitting postural control of children with spastic diplegia. **METHOD:** Forty children were randomly divided in a group using the simulator (RS) and a group performing conventional physical therapy (CT). FScan/Fmat equipment was used to register maximal displacement in antero-posterior (AP) and medio-lateral (ML) directions with children in sitting position. At the pre and post intervention stage both groups were classified according to the Gross Motor Function Classification System (GMFCS) and, after intervention, by the AUQEI questionnaire (Autoquestionnaire Qualité de vie Enfant Image). **RESULTS:** Comparison between groups disclosed statistically significant pos-intervention improvement both in the AP ($p<0.0001$) as in the ML ($p<0.0069$) direction in the RS group. **CONCLUSION:** The horse riding simulator produced significant improvement in the postural control of children in sitting position, additionally showing a higher motor functionality and a better acceptance of the therapeutic intervention.

[PMID: 22042184](#) [PubMed - in process]

9. *Spine (Phila Pa 1976).* 2011 Oct 27. [Epub ahead of print]

Are Antifibrinolytics Helpful in Decreasing Blood Loss and Transfusions During Spinal Fusion Surgery in Children with Cerebral Palsy Scoliosis?

Dhawale AA, Shah SA, Sponseller PD, Bastrom T, Neiss G, Yorgova P, Newton PO, Yaszay B, Abel MF, Shufflebarger H, Gabos PG, Dabney KW, Miller F.

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Study Design. Therapeutic comparative study **Objective.** To evaluate the safety and efficacy of antifibrinolytic agents in reducing blood loss and transfusions during posterior spinal fusion (PSF) in children with cerebral palsy (CP) scoliosis. **Summary of Background Data.** Scoliosis surgery in children with CP is associated with substantial blood loss. Few reports on the role of antifibrinolytics exist. **Methods.** A multi-center, retrospective review of a prospectively collected database of 84 consecutively enrolled CP patients (age < 18 yrs) with spinal deformity who underwent PSF and instrumentation. The use of antifibrinolytics, tranexamic acid (TXA), epsilon-aminocaproic acid (EACA), or none was based on surgeon preference. Estimated blood loss (EBL), transfusion requirements, and length of stay were recorded. Analysis was performed with the independent samples t test and one way ANOVA with post hoc Bonferroni analysis. **Results.** The average age at surgery was 14.4 ± 2.6 years. The groups were well matched in preoperative major deformity, age, levels fused, and operating time. Forty-four patients received

antifibrinolytics (30 TXA and 14 EACA), and 40 received no antifibrinolytics (NAF). The EBL averaged 1684 ml for the antifibrinolytics group and 2685 ml for the NAF group, $P = 0.002$. There was more cell salvage transfusion in the NAF group. No significant differences were found in total transfusion requirements. There was a trend for decreased hospital stay in the antifibrinolytics group. No adverse effects were seen. On comparison of the 3 groups (NAF, TXA, and EACA), a significant difference was observed between the TXA and the other groups with respect to EBL and cell salvage transfusion. Conclusion. Antifibrinolytics significantly reduced intra-operative EBL associated with PSF, with no adverse effects; however, we could not demonstrate significant differences in total transfusion, except in cell salvage. Tranexamic acid was more effective than EACA in decreasing the EBL and cell salvage transfusion.

[PMID: 22037532](#) [PubMed - as supplied by publisher]

10. Gait Posture. 2011 Oct 31. [Epub ahead of print]

Predictors of pelvic retraction in children with cerebral palsy derived from gait parameters and clinical testing.

Böhm H, Stief F, Dussa CU, Döderlein L.

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Excessive pelvic rotation in the transverse plane is common in patients with cerebral palsy. Knowing the underlying reasons is important for clinical decision making, since changes in pelvic retraction might have an effect on internally rotated gait. We hypothesized that the contralateral leg contributes considerably to pelvic rotation on the retracted side. Therefore the aim of this study is to calculate predictors for pelvic retraction using both, parameters from the retracted and from the contralateral protracted side. Thirty-two children with diplegia and 18 children with hemiplegia were examined by three-dimensional gait analysis followed by a clinical examination protocol. Stepwise multilinear regression of the response value mean pelvic retraction during stance phase was performed on 10 potential predictors of dynamic gait data and 10 corresponding predictors of clinical data of the retracted and the contralateral protracted side. Gait analysis revealed ankle push-off energy on the protracted side as the best predictors in hemiplegic patients explaining 59% of the variance in pelvic retraction. In diplegic patients external hip rotation of the protracted side was most accurate in predicting pelvic retraction (27%). Best clinical predictors for hemiplegic patients were ankle dorsiflexion on the retracted side (46%) and for diplegic patients it was the knee extension strength on the protracted side together with hip rotation on the retracted side (36%). In hemiplegic patients ankle push-off energy of the contralateral side is a significant compensation mechanism that might cause increased pelvic retraction to compensate for the weakness of the involved side. In diplegic patients prediction of pelvic retraction was only moderate and requires further investigation.

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11. Chir Narzadow Ruchu Ortop Pol. 2011 May-Jun;76(3):125-8.

Surgical treatment of the spastic hip luxation at patients with severe form of CP [Article in Polish]

Piasek R, Snela S.

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BACKGROUND: The aim of our study was the assessment the final results of the operative treatment of the luxated neurogenic hips at patients with severe form of CP. **MATERIALS AND METHODS:** Analysis was performed on 13 CP patients with hemiplegia bilateralis treated in our department because of the neurogenic hip dislocation. At 5 patients (7 hips) was performed resection of femoral head according to Castle. At 9 patients (13 hips) the femoral osteotomy according to Schanz were done. The follow up ranged from 1 to 3 years. The early and late complications such as pain before and after surgery and nursing possibilities were analysed. The 4 questions

concerned on the status before and after surgery. They assessed the pain, possibilities of crotch nursing and rehabilitation as well as total opinion about the final result of surgery. RESULTS: At the group of patients after the resection of the femoral head two of them had no pain, one patients complained on the decreasing pain, and two hadn't any changes. Only three parents assessed the surgery as satisfactory. At the group after osteotomy according to Schanz six patients observed no pain, two complained on the decreasing pain and one didn't observe any changes. The possibilities of nursing improved at all patients in this group. Eight parents were satisfied and one dissatisfied after surgery. As late complications we have classified the following: ossification around the hip joint in one case and destabilization of the plate in one another. CONCLUSIONS: The Schanz osteotomy permitted us to achieve the improvement in abduction of the hips at majority of the patients, the reduction of the pain and improvement in rehabilitation's possibilities. In our experience this method was more effective in the treatment of the luxated hips at patients with severe form of CP.

[PMID: 21961263](#) [PubMed - indexed for MEDLINE]

12. J Appl Biomech. 2011 Aug;27(3):266-71.

Commercial video frame rates can produce reliable results for both normal and CP spastic gait's spatiotemporal, angular, and linear displacement variables.

Nikodelis T, Moscha D, Metaxiotis D, Kollias I.

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To investigate what sampling frequency is adequate for gait, the correlation of spatiotemporal parameters and the kinematic differences, between normal and CP spastic gait, for three sampling frequencies (100 Hz, 50 Hz, 25 Hz) were assessed. Spatiotemporal, angular, and linear displacement variables in the sagittal plane along with their 1st and 2nd derivatives were analyzed. Spatiotemporal stride parameters were highly correlated among the three sampling frequencies. The statistical model (2×3 ANOVA) gave no interactions between the factors group and frequency, indicating that group differences were invariant of sampling frequency. Lower frequencies led to smoother curves for all the variables, with a loss of information though, especially for the 2nd derivatives, having a homologous effect as the one of oversmoothing. It is proposed that in the circumstance that only spatiotemporal stride parameters, as well as angular and linear displacements are to be used, in gait reports, then commercial video camera speeds (25/30 Hz, 50/60 Hz when deinterlaced) can be considered as a low-cost solution to produce acceptable results.

[PMID: 21844616](#) [PubMed - indexed for MEDLINE]

13. J Med Assoc Thai. 2011 Aug;94 Suppl 3:S183-8.

Improvement of ambulatory function with multilevel soft tissue surgery in children with spastic diplegic cerebral palsy.

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Single Event Multilevel soft tissue surgery in spastic diplegic children also was effective for improving ambulatory function obviously as multilevel bone and soft tissue surgery. Just muscle and tendon surgery seem to be enough for better lever arm dysfunction of the lower extremity. It has safe, simple and rapid recovery. OBJECTIVE: Gross Motor Functional Classification System (GMFCS) improvement after single event multilevel soft tissue surgery had been observed in these study groups of patients. MATERIAL AND METHOD: Retrospective review in 93 spastic diplegic children who were more than 3 years old, had ability to understand communication, at least leaned sitting and one-hand gross function ability had been operated on by single event multilevel soft tissue surgery. GMFCS was assessed at the time of pre-operation and 6-12 months after operation. Analyzing GMFCS change was performed by statistics. RESULTS: Average 7 site surgery per one patient, 84% GMFCS level improvement and 16% GMFCS level non-improvement were reported. Nine cases (9.7%) were improved 2 level of GMFCS and 74% improved 1 level. GMFCS level compared between pre- and post surgery had changed by the significant statistic (p

< 0.001). The average GMFCS level improvement for all groups was 0.93 level. The average age in the improved group (75 months old) was less than the non-improved group (92 month old), was a trend difference in statistic ($p = 0.032$). **CONCLUSION:** Single Event Multilevel Soft tissue surgery was effective in improving the GMFCS level average 1 level. It changed ambulatory function of spastic diplegic CP children obviously, immediately and safely. Younger age might get more benefit than older children.

[PMID: 22043774](#) [PubMed - in process]

14. Hip Int. 2011 Oct 28;0. doi: 10.5301/HIP.2011.8758. [Epub ahead of print]

The effects of femoral derotation osteotomy in cerebral palsy: a kinematic and kinetic study.

Cimolin V, Piccinini L, Portinaro N, Turconi AC, Albonico S, Crivellini M, Galli M.

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We attempted to quantify the effects of isolated femoral derotation osteotomies using clinical evaluation and gait analysis (kinematics and kinetics) in patients with cerebral palsy (CP). Twelve children with CP were evaluated before and 10 months after isolated femoral derotation osteotomy, and 15 healthy children were evaluated as controls. There were significant improvements on clinical examination. A better position of the hip and ankle in the transverse plane was evident and significant changes occurred in terms of hip and ankle kinetics after surgery. Improvements in kinematics and hip and ankle power are very important biomechanically. The correction of lever arm dysfunction and more physiological hip and ankle power generation result in an improvement in terms of energy consumption, leading to a more functional and economic gait pattern.

[PMID: 22038310](#) [PubMed - as supplied by publisher]

15. J Clin Med Res. 2011 Feb 12;3(1):8-16.

Research on the performance of the spastic calf muscle of young adults with cerebral palsy.

Lampe R, Mitternacht J.

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BACKGROUND: The aim of this study was to find an objective graduation of pes equinus in infantile cerebral palsy, especially with regard to functional aspects, to allow a differentiated choice of the therapeutic options. Very often raises the question of whether a surgical lengthening of the Achilles tendon may let expect a functional improvement. **METHODS:** For this documentation 17 patients with pes equinus and a diagnosis of spastic cerebral palsy, primarily of the lower limbs, and hemiplegia were examined first clinically and then by a procedure for calculating the functional kinetic parameters from an in-shoe plantar pressure distribution measurement (novel pedar-X system), which is used in many orthopedic practices and clinics as a standard measuring device. Using additional video motion analysis, the flexion in the ankle joint and the ankle joint torque were determined. From this the physical performance of the spastically shortened calf muscle was calculated. The course of the curves of torque and joint performance allows a functional classification of the pes equinus. **RESULTS:** Approximately three quarters of all pes equinus demonstrated functional activity of the most part of the normal push-off propulsion power. Even the rigid pes equinus was capable of performing push-off propulsion work, provided it converted energy that was absorbed during the heel-strike phase and released it again during the push-off phase. This suggests that the function of paretic ankle joint is better than its kinematics of motion. **CONCLUSIONS:** A heel strike with a pes equinus triggers via stretching stimuli in the muscle-ligament structure reflex motor functions, thereby causing the typical spastic gait pattern. This remarkable gait pattern is often evaluated as dysfunctional and as absolutely requiring correction. However, an aspect possibly neglected in this instance is the fact that this gait pattern may be efficient for the patient and may in fact be a suitable means allowing for economic locomotion despite the cerebral control deficits. **KEYWORDS:** Pes equinus; Cerebral palsy; Pedography; Ankle joint performance.

[PMID: 22043266](#) [PubMed - in process] [PMCID: PMC3194020](#)

Prevention and Cure

16. Ann Med. 2011 Oct 31. [Epub ahead of print]

Perinatal immunoproteins predict the risk of cerebral palsy in preterm children.

Kaukola T, Kallankari H, Tuimala J, Olsén P, Tammela O, Kingsmore SF, Hallman M.

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Objective. To investigate whether blood cytokines during the perinatal period predict the risk of cerebral palsy (CP) in preterm infants. **Methods.** This prospective cohort study comprised 169 children born before 32 weeks of gestation. Cord blood was drawn at birth, and 109 cytokines were analyzed using microarrays. Eleven cytokines were further measured from both cord and peripheral blood on days 1 and 7. Cerebral palsy was confirmed at 5 years of age. **Results.** Cerebral palsy was diagnosed in 19 children. Five clusters of cord blood cytokines were scored using factor analysis. According to logistic regression analysis, the scores of factors 1 and 2 independently predicted the risk of CP. These cytokines included several growth factors and chemokines, and they all tended to be higher in children with CP than in children without CP. Inflammatory cytokine levels were associated with CP risk on days 1 and 7 after birth. **Conclusion.** The high blood concentrations of various cytokines during the perinatal period may relate to CP, and these cytokines may influence the pathways leading to early insult in the central nervous system. The risk profile of inflammatory cytokines is different at birth than during the first week after birth.

[PMID: 22040034](#) [PubMed - as supplied by publisher]

17. Early Hum Dev. 2011 Oct 31. [Epub ahead of print]

Poor repertoire General Movements predict some aspects of development outcome at 2 years in very preterm infants.

Beccaria E, Martino M, Briatore E, Podestà B, Pomero G, Micciolo R, Espa G, Calzolari S.

Child Neuropsychiatry Unit, S. Croce and Carle Hospital, Cuneo, Italy.

BACKGROUND: Observation of the quality of endogenously generated "General Movements" has been proved to be a reliable and sensitive tool in the assessment of fragile neonates. The absence of fidgety movements at 2-4 months post-term is highly predictive of Cerebral Palsy. On the contrary, the presence of a poor repertoire pattern during the writhing period is not reliable in predicting motor or neurobehavioral disorders at any stage of development. **AIM:** To examine if the presence of a PR pattern at 1 month post-term was associated with lower neurodevelopmental quotients at 2 years. **STUDY DESIGN:** General Movements evaluation at 1 and 3 months and the Griffiths Scales of Mental Development at 2 years were administered to a sample of very preterm infants. Infants were divided into two groups: poor repertoire pattern group and normal pattern group. Student's t Test and Chi squared test and ANOVA were used to compare neonatal variables and results between the two groups. **SUBJECTS:** 79 very preterm infants (birthweight=1500g or gestational age = 32 weeks), born January 2003 to December 2006 who had a follow-up at 2 years. **OUTCOME MEASURE:** Griffiths developmental quotient at 2 years. **RESULTS:** The Poor Repertoire group had lower Gestational Age, lower Birth Weight, lower Apgar scores at birth and lower Developmental Quotient at 2 years. Eye and Hand Coordination (subscale D) was the domain mostly responsible for such a difference. Quality of fidgety movements (normal or abnormal fidgety) at 3 months did not show any correlation with outcome measures at 2 years. **CONCLUSION:** The presence of a PR pattern at 1 month post-term seems to predict lower neurodevelopmental scores at 2 years especially in the domain of eye and hand coordination. Longer follow-up is necessary in order to ascertain if such difference will continue to persist at older ages. Copyright © 2011 Elsevier Ltd. All rights reserved.

[PMID: 22044887](#) [PubMed - as supplied by publisher]

18. J Med Assoc Thai. 2011 Aug;94 Suppl 3:S101-6.**Growth and development of very low birth weight infants aged 18-24 months at Queen Sirikit National Institute of Child Health.**

Sangtawesin V, Singarj Y, Kanjanapattanakul W.

Neonatal Unit, Department of Pediatrics, Queen Sirikit National Institute of Child Health, College of Medicine, Rangsit University, Bangkok, Thailand. vsaengtawesin@hotmail.com

BACKGROUND: The number of very low birth weight (VLBW) births is increasing worldwide. Despite better care in recent years, they have a high incidence of delayed growth and development. There are no previous studies regarding the growth and development of these infants at Queen Sirikit National Institute of Child Health (QSNICH). **OBJECTIVE:** To study growth and developmental outcome of VLBW infants, aged 18-24 months who were discharged from QSNICH. **MATERIAL AND METHOD:** VLBW infants who were discharged from QSNICH during the year 2007 were recruited in the study. Patients with chromosomal abnormalities, major congenital anomalies, definite congenital infections and positive maternal anti-HIV tests were excluded. At the corrected age of 18-24 months, the parents were called upon to bring their infants for complete physical examination and developmental evaluation on 2 occasions, two months apart. **RESULTS:** There were 111 cases of VLBW infants who were discharged from QSNICH during the year 2007. Fifty-four patients were eligible for the present study. Thirty cases (55.56%) were contacted for the first examination. During this examination, there were 3 cases (10%) with low head circumference, 1 case (3.33%) with poor weight gain, 5 cases (16.67%) with visual defect, 1 case (3.33%) with moderately severe hearing loss, 1 case (3.33%) with cerebral palsy and 7 cases (23.33%) with delayed development. Twenty-one cases could be recalled for a second evaluation. Two of the 5 cases had delayed language development. There were no cases with hydrocephalous, blindness or profound hearing loss. **CONCLUSION:** VLBW infants at QSNICH had much better survival during recent years. Most of these survivors had normal growth and development. Those with delayed growth and development need aggressive intervention and long-term follow-up for enhancement of quality of their lives.

[PMID: 22043761](#) [PubMed - in process]

19. J Pediatr. 2011 Oct 31. [Epub ahead of print]**Proton Magnetic Resonance Spectroscopic Images in Preterm Infants with Bilirubin Encephalopathy.**

Kamei A, Sasaki M, Akasaka M, Soga N, Kudo K, Chida S.

Department of Pediatrics, School of Medicine, Iwate Medical University, Morioka, Japan.

Two preterm infants with athetoid cerebral palsy due to bilirubin encephalopathy were examined by magnetic resonance spectroscopic imaging at age 3 years. An increased glutamate/glutamine complex/creatine ratio was found in the basal ganglia. Chemical metabolic abnormalities of the basal ganglia were clearly demonstrated by color-coded metabolite images.

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