

Monday 27 September 2010

This free weekly bulletin lists the latest research on cerebral palsy (CP), as indexed in the NCBI, PubMed (Medline) and Entrez (GenBank) databases. These articles were identified by a search using the key term "cerebral palsy".

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Interventions

1. *J Pediatr Orthop*. 2010 Oct-Nov;30(7):732-8.

Effect of High-frequency, Low-magnitude Vibration on Bone and Muscle in Children With Cerebral Palsy.

Wren TA, Lee DC, Hara R, Rethlefsen SA, Kay RM, Dorey FJ, Gilsanz V.

*Childrens Orthopaedic Center, Childrens Hospital, Los Angeles Departments of †Radiology ‡Pediatrics, CHLA §Department of Orthopaedics ¶Radiology Keck School of Medicine, University of Southern California ¶¶Department of Biomedical Engineering, Viterbi School of Engineering, USC.

BACKGROUND: Children with cerebral palsy (CP) have decreased strength, low bone mass, and an increased propensity to fracture. High-frequency, low-magnitude vibration might provide a noninvasive, nonpharmacologic, home-based treatment for these musculoskeletal deficits. The purpose of this study was to examine the effects of this intervention on bone and muscle in children with CP. **METHODS:** Thirty-one children with CP ages 6 to 12 years (mean 9.4, SD 1.4) stood on a vibrating platform (30Hz, 0.3 g peak acceleration) at home for 10 min/d for 6 months and on the floor without the platform for another 6 months. The order of vibration and standing was randomized, and outcomes were measured at 0, 6, and 12 months. The outcome measures included computed tomography measurements of vertebral cancellous bone density (CBD) and cross-sectional area, CBD of the proximal tibia, geometric properties of the tibial diaphysis, and dynamometer measurements of plantarflexor strength. They were assessed using mixed model linear regression and Pearson correlation.

RESULTS: The main difference between vibration and standing was that there was a greater increase in the cortical bone properties (cortical bone area and moments of inertia) during the vibration period (all P's=0.03). There was no difference in cancellous bone or muscle between vibration and standing (all P's>0.10) and no correlation between compliance and outcome (all r's<0.27; all P's>0.15). The results did not depend on the order of treatment (P>0.43) and were similar for children in gross motor function classification system (GMFCS) 1 to 2 and GMFCS 3 to 4. **CONCLUSIONS:** The primary benefit of the vibration intervention in children with CP was to the cortical bone in the appendicular skeleton. Increased cortical bone area and the structural (strength) properties could translate into a decreased risk of long bone fractures in some patients. More research is needed to corroborate these findings, to elucidate the mechanisms of the intervention, and to determine the most effective age and duration of the treatment.

LEVEL OF EVIDENCE: Level II, prospective randomized cross-over study.

PMID: 20864862 [PubMed - in process]

2. J Pediatr Orthop. 2010 Oct-Nov;30(7):726-31.

The Pediatric LCP Hip Plate for Fixation of Proximal Femoral Osteotomy in Cerebral Palsy and Severe Osteoporosis.

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BACKGROUND: Hip dislocation or subluxation together with poor nutrition, reduced weight bearing, and osteoporosis is a frequent condition in severe cerebral palsy (CP). Severe osteoporosis may cause difficulties in fixing a proximal femoral osteotomy with a conventional blade plate. The Pediatric locking compression plate (LCP) Hip Plate system offers better grip and more stable fixation. **METHODS:** Fifty-three proximal femoral osteotomies, alone or as part of a more complex surgical intervention, were performed in 28 patients (17 boys and 11 girls, age at surgery average 10.4 y, 3 to 19 y). All children suffered from CP (24 quadriplegics, 2 diplegics, and 2 hemiplegics) with Gross Motor Function Classification System levels: 3x III, 3x IV, and 22x V. This cohort was compared with a historical (conventional AO blade plate) group (38 patients with 53 operative interventions, 24 girls and 14 boys, age at surgery average 9.8 y, 3 to 18.5 y, Gross Motor Function Classification System levels: 4x III, 5x IV, and 29x V; 34 quadriplegics, 3 diplegics, and 1 hemiplegic). **RESULTS:** The operative interventions of both cohorts that are performed are comparable considering the average amount of varisation and derotation. Operations with the conventional AO blade plate were 17.2 minutes shorter on average and the blood loss was 45.6 mL less on average. Radiologically, 19.6% of the patients had signs of complete consolidation with the LCP Hip Plate 6 weeks after surgery (vs. 91.1% of the patients of the historical cohort, $P < 0.001$) but all osteotomies in both groups were completely consolidated by 12 weeks. In the LCP cohort in 3 patients (10.7%) full weight bearing was allowed immediately after the operation. **CONCLUSIONS:** Both implants, the Pediatric LCP Hip Plate and the conventional AO blade plate, produce similar results regarding fixation and correction of the neck-shaft angle. The consolidation rate 6 weeks postoperatively using the LCP plate is lower than with the conventional blade plate, whereas equivalent healing at 3 months was found. Hence, LCP plate removal is recommended not earlier than 6 months after surgery despite good callus formation on x-ray.

LEVEL OF EVIDENCE: Level III.

PMID: 20864861 [PubMed - in process]

3. J Pediatr Orthop. 2010 Oct-Nov;30(7):720-5.

Clinical relevance of valgus deformity of proximal femur in cerebral palsy.

Lee KM, Kang JY, Chung CY, Kwon DG, Lee SH, Choi IH, Cho TJ, Yoo WJ, Park MS.

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BACKGROUND: Proximal femoral deformity related to physis has not been studied in patients with cerebral palsy (CP). This study was performed to investigate the clinical relevance of neck shaft angle (NSA), head shaft angle (HSA), and proximal femoral epiphyseal shape in patients with CP, which represent the deformities of metaphysis, physis, and epiphysis, respectively. **METHODS:** Three hundred eighty-four patients with CP (mean age 9.1 y, 249 males and 135 females) were included. Extent of involvement and functional states [Gross Motor Function Classification System (GMFCS) level] were obtained. Radiographic measurements including NSA, HSA, and qualitative shape of the proximal femoral epiphysis were evaluated and analyzed according to extent of involvement and GMFCS level. Reliability and correlation with each measurement were assessed. Multiple regression test was performed to examine the significant contributing factors to migration percentage (MP) that represents hip instability. **RESULTS:** NSA showed excellent interobserver reliability with intraclass correlation coefficients of 0.976. Correlation with the MP was higher in the NSA ($r=0.419$, $P < 0.001$) than in the HSA ($r=0.256$, $P < 0.001$). NSA, HSA, and MP tended to increase with increasing GMFCS level, and proportion of valgus deformed proximal femoral epiphysis also increased with increasing GMFCS level, which means valgus deformity and unstable hips in the less favorable functional states. Multiple regression analysis revealed NSA, GMFCS level, and shape of the proximal femoral epiphysis to be significant factors affecting MP. **CONCLUSIONS:** NSA appeared to be more clinically relevant than

HSA in evaluating proximal femoral deformity in patients with CP. Shape of proximal femoral epiphysis is believed to have clinical implications in terms of hip instability.

LEVEL OF EVIDENCE: Diagnostic level II.

PMID: 20864860 [PubMed - in process]

4. J Pediatr Orthop. 2010 Oct-Nov;30(7):690-4.

Guided growth of the proximal femur: a pilot study in the lamb model.

McCarthy JJ, Noonan KJ, Nemke B, Markel M.

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BACKGROUND: The concept of guided growth has been used for decades in the lower extremities of children, but has not been applied to correct varus or valgus deformity in the hip, such as those that occur in children with cerebral palsy or developmental dysplasia of the hip. The purpose of this study is to determine whether guided growth techniques are effective at altering the morphology of the proximal femur in a lamb model. **METHODS:** Ten, 2-month-old mixed-breed male lambs underwent hemiepiphyseal drilling and screw placement. Drilling occurred eccentrically (inferiorly) in an attempt to close only a portion of the growth plate. In 5 lambs, a sham surgery was performed in which the screw did not cross the proximal femoral physis. Growth was compared between groups and with the opposite hip in which no procedure was performed in both groups. Standardized radiographs were obtained preoperatively and monthly. A 3-dimensional computed tomography scan and standard histology were obtained postnecropsy. Version and neck shaft angle (NSA) was determined and recorded at the time of the index procedure with the aid of fluoroscopy. Radiographs were assessed by measurement of the NSA and the articular trochanteric distance (ATD). Results were compared by using the t test: paired 2 sample for means.

RESULTS: The NSA and ATD were compared preoperatively and at a mean of 3.3 months after surgery. They were no significant differences preoperatively between the screw or sham group. Postoperatively, the NSA was 132 versus 143 ($P=0.006$) and the ATD -0.6 mm versus 10 mm ($P=0.033$) for the screw and sham hips, respectively. The sham group showed no statistical differences between the operative and nonoperative sides postoperatively, although the ATD trended toward a larger number on the "sham" side, possibly because of a growth stimulation effect. **CONCLUSIONS:** Screw hemiepiphysiodesis seems to alter the growth of the proximal femur in the lamb model. **SIGNIFICANCE:** Further studies are ongoing and with more research this technique could be used to correct or prevent proximal femoral deformity in the growing child.

LEVEL OF EVIDENCE: Level II.

PMID: 20864854 [PubMed - in process]

5. Pediatrics. 2010 Sep 20. [Epub ahead of print]

Increasing Prevalence of Medically Complex Children in US Hospitals.

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Department of Pediatrics, College of Medicine, University of Arkansas for Medical Sciences and Arkansas Children's Hospital, Little Rock, Arkansas.

Objective: In this study we used national data to determine changes in the prevalence of hospital admissions for medically complex children over a 15-year period. **Patients and Methods:** Data from the Nationwide Inpatient Sample, a component of the Healthcare Cost and Utilization Project, was analyzed in 3-year increments from 1991 to 2005 to determine national trends in rates of hospitalization of children aged 8 days to 4 years with chronic conditions. Discharge diagnoses from the Nationwide Inpatient Sample were grouped into 9 categories of complex chronic conditions (CCCs). Hospitalization rates for each of the 9 CCC categories were studied both individually and in combination. Trends of children hospitalized with 2 specific disorders, cerebral palsy (CP) and bronchopulmonary dysplasia, with additional diagnoses in more than 1 CCC category were also examined. **Results:** Hospitali-

zation rates of children with diagnoses in more than 1 CCC category increased from 83.7 per 100 000 (1991-1993) to 166 per 100 000 (2003-2005) ($P[r] < .001$). The hospitalization rate of children with CP plus more than 1 CCC diagnosis increased from 7.1 to 10.4 per 100 000 ($P = .002$), whereas the hospitalization rates of children with bronchopulmonary dysplasia plus more than 1 CCC diagnosis increased from 9.8 to 23.9 per 100 000 ($P < .001$). Conclusions: Consistent increases in hospitalization rates were noted among children with diagnoses in multiple CCC categories, whereas hospitalization rates of children with CP alone have remained stable. The relative medical complexity of hospitalized pediatric patients has increased over the past 15 years.

PMID: 20855383 [PubMed - as supplied by publisher]

6. Neuropsychol Rehabil. 2010 Sep 18:1-16. [Epub ahead of print]

Validating the Cerebral Palsy Quality of Life for Children (CP QOL-Child) questionnaire for use in Chinese populations.

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The purpose of this study was to examine the psychometric properties of the Chinese version of Cerebral Palsy Quality of Life for Children (CP QOL-Child) questionnaire. We performed forward (into Chinese) and backward translation of the CP QOL-Child for: (1) the primary caregiver form (for parents of children with CP aged 4-12 years); and (2) the child self-report form (for children with cerebral palsy aged 9-12 years). Psychometric properties assessed included test-retest reliability, internal consistency, item discrimination, construct validity, and concordance between the forms of questionnaire. The Chinese CP QOL-Child was completed by 145 caregivers and 44 children. Excellent test-retest reliability and internal consistency were obtained. Item discrimination analysis revealed a majority of the items have moderate to good discriminating power. Confirmatory factor analysis demonstrated distinguishable domain structure as on the original English version. Significant associations were found between lower QOL and more severe motor disability. Consistent with the English version, the highest correlation between the primary caregiver and child forms on QOL was in the domain of functioning. Results of this study indicate that the Chinese CP QOL-Child appears to be valid for use in Mandarin-Chinese speaking children with cerebral palsy.

PMID: 20859827 [PubMed - as supplied by publisher]

7. Curr Opin Neurol. 2010 Sep 16. [Epub ahead of print]

What's new in new technologies for upper extremity rehabilitation?

Brochard S, Robertson J, Médée B, Rémy-Néris O.

A CHU Brest, Service de Médecine Physique et de Réadaptation, France bInserm, UMR_S 650, IFR 148, France cUniversité Européenne de Bretagne, Brest, France dService de Médecine Physique et Réadaptation, Hôpital Poincaré, 104 bvd Poincaré, Garches, France eLaboratoire de Neurophysique et Physiologie (UMR CNRS 8119), Université Paris Descartes, Faculté de Médecine, Paris, France.

PURPOSE OF REVIEW: The field of new technologies for upper-limb rehabilitation is exploding. The review presents new trends and studies of effectiveness from recent literature regarding robots, virtual reality and telerehabilitation for neurorehabilitation of the upper limb. **RECENT FINDINGS:** There appears to be a greater focus on technological developments than on clinical trials or studies to evaluate the mechanisms behind the effectiveness of these systems. Developments are most abundant in the field of robotics. However, the first well designed and powered randomized-controlled trial on robot rehabilitation has appeared, confirming that the effectiveness of robot therapy lies in the number of repetitions provided. There is a move towards studies in populations other than stroke, particularly cerebral palsy with a few studies on multiple sclerosis and traumatic brain injury. There is also an increasing trend for the use of robotic devices as evaluation tools. **SUMMARY:** Despite the fact that new technologies are based on knowledge from motor control and learning literature and that they provide an exciting potential for varied rehabilitation, recent evidence suggests that the only contribution to clinical practice currently is the provision of intensive, repetitive movements.

PMID: 20852420 [PubMed - as supplied by publisher]

8. Ther Clin Risk Manag. 2010 Sep 7;6:413-8.

Growth hormone deficiency and cerebral palsy.

Devesa J, Casteleiro N, Rodicio C, López N, Reimunde P.

Department of Physiology, School of Medicine of Santiago de Compostela, Spain;

Cerebral palsy (CP) is a catastrophic acquired disease, occurring during development of the fetal or infant brain. It mainly affects the motor control centres of the developing brain, but can also affect cognitive functions, and is usually accompanied by a cohort of symptoms including lack of communication, epilepsy, and alterations in behavior. Most children with cerebral palsy exhibit a short stature, progressively declining from birth to puberty. We tested here whether this lack of normal growth might be due to an impaired or deficient growth hormone (GH) secretion. Our study sample comprised 46 CP children, of which 28 were male and 18 were female, aged between 3 and 11 years. Data obtained show that 70% of these children lack normal GH secretion. We conclude that GH replacement therapy should be implemented early for CP children, not only to allow them to achieve a normal height, but also because of the known neurotrophic effects of the hormone, perhaps allowing for the correction of some of the common disabilities experienced by CP children.

PMID: 20856687 [PubMed - in process]PMCID: PMC2940749Free PMC Article

9. Arch Otolaryngol Head Neck Surg. 2010 Sep;136(9):873-7.

Efficacy and duration of botulinum toxin treatment for drooling in 131 children.

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OBJECTIVE: To address the efficacy of botulinum toxin and the duration of its effect when used on a large scale for the treatment of drooling in children with neurological disorders. **DESIGN:** Prospective cohort study. **SETTING:** Academic multidisciplinary drooling clinic. **PATIENTS:** A total of 131 children diagnosed as having cerebral palsy or another nonprogressive neurological disorder and who also have moderate to severe drooling. **INTERVENTION:** Injection of botulinum toxin to the submandibular glands. **MAIN OUTCOME MEASURES:** Direct observational drooling quotient (DQ) (0-100) and caretaker visual analog scale (VAS) scores (0-100). **RESULTS:** A clinically notable response was found in 46.6% of children, reflected in a significant mean reduction in DQ from a baseline of 29 to 15 after 2 months and 19 after 8 months ($P < .001$). The mean VAS score decreased from 80 at baseline to 53 after 2 months and increased to 66 after 8 months ($P < .001$). Kaplan-Meier analysis showed that patients who initially responded to treatment experienced relapse after a median of 22 weeks (interquartile range, 20-33 weeks). **CONCLUSIONS:** Our study provides further support for botulinum toxin's efficacy for treatment of drooling in approximately half of patients for a median of 22 weeks. Further optimization of patient selection should be an area of attention in future studies.

PMID: 20855679 [PubMed - in process]

10. Aust Occup Ther J. 2010 Aug 1;57(4):239-45.**Randomised controlled trial comparing two school furniture configurations in the printing performance of young children with cerebral palsy.**

Ryan SE, Rigby PJ, Campbell KA.

Bloorview Research Institute, Bloorview Kids Rehab and Department of Occupational Science and Occupational Therapy, University of Toronto.

Aim: This randomised controlled trial compared the same-session effects of two different school furniture configurations on printing legibility. **Methods:** A total of 30 school-age children with ambulatory cerebral palsy participated in this study. Each child provided one near-point printing sample of up to 34 letters while positioned on Mandal-type specialty school furniture and on standard school furniture. An assessor who was unaware of the intervention assignment scored printing errors. **Results:** No significant difference in legibility score mean values between the interventions was detected and the effect size was small. **Conclusions:** Compared with standard school furniture, the use of specialty school furniture did not lead to immediate gains in printing legibility and other printing performance areas for children with cerebral palsy. Further study of the influence of functional abilities, other contextual factors and the longer-term use of school furniture on handwriting performance is recommended.

PMID: 20854598 [PubMed - in process]

11. Neuropediatrics. 2010 Jun;41(3):121-6. Epub 2010 Sep 21.**Quality of Life in Parents of Children with Cerebral Palsy: Is it Influenced by the Child's Behaviour?**

Romeo DM, Cioni M, Distefano A, Battaglia LR, Costanzo L, Ricci D, De Sanctis R, Romeo MG, Mazzone D, Mercuri E.

Division of Child Neurology and Psychiatry, Department of Paediatrics, University of Catania, Catania, Italy.

The aims of the present study were: to examine the quality of life (QOL) of parents of children with cerebral palsy (CP) and to establish the possible effect of behaviour problems on their QOL. One-hundred children with CP, aged between 4 and 10 years, and both their parents were included in the study. Both parents completed the WHOQOL-BREF, to assess their QOL. A sample of 60 parents of healthy children was used as control group. The primary caregiver also completed the CHILD BEHAVIOUR CHECKLIST (CBCL). Parents of children with CP showed lower scores on physical and psychological domains than the control group on QOL. In the psychological domain the mothers of children with hemiplegia had the lowest scores. The mothers reported lower scores than the fathers for the physical domain in the group of children with diplegia and quadriplegia and for the psychological domain in the group of children with hemiplegia. Children with hemiplegia showed externalizing scores at CBCL higher than the other groups, that could explain the poorer QOL scores of their mothers. In conclusions our results provide useful information on the QOL in families with different forms of CP, useful in planning interventions for the family of children with CP.

PMID: 20859830 [PubMed - in process]

12. Pediatr Neurosurg. 2010;46(1):62-5. Epub 2010 Jun 1.**Malfunction of SynchroMed II baclofen pump delivers a near-lethal baclofen overdose.**

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INTRODUCTION: Intrathecal baclofen therapy using implantable pumps is an established treatment for spasticity. The pumps occasionally experience serious malfunction. **CASE REPORT:** A 12-year-old girl suffering from spastic diplegia was implanted with a Medtronic SynchroMed II pump (Medtronic Inc., Minneapolis, Minn., USA). During a

refill at 3 months 19 ml of baclofen were still in the pump. It was assumed that there was a lumbar catheter obstruction and a revision was performed. At 11 months she was receiving 180 microg/day. When she presented for refill, there were again 19 ml of baclofen in the reservoir. The pump was refilled, stopped and restarted at a lower dose. Ten minutes after restart the patient was complaining that she could not move her legs. Within the next 50 min she lapsed into coma, from a presumed baclofen overdose. She was intubated and ventilated. The reservoir was emptied of baclofen and the pump stopped. Seventeen hours after the baclofen overdose, the patient woke up gradually with no new neurological deficits. The pump was removed a week later. Medtronic laboratories examined the pump and reported no technical fault. **DISCUSSION:** The implanted Medtronic SynchroMed II pump suffered an unusual malfunction. It is postulated that the pump had suffered a motor stall, and when it was restarted, it gave an unusually high, potentially lethal, dose to the patient. **CONCLUSION:** Physicians who implant pumps for intrathecal baclofen administration need to be aware that these devices may suffer unheralded catastrophic failure that can lead to potentially lethal overdose administration.

PMID: 20516743 [PubMed - indexed for MEDLINE]

13. Aust Occup Ther J. 2009 Dec;56(6):403-8.

Rater reliability of the adapted scoring criteria of the Minnesota Handwriting Assessment for children with cerebral palsy.

Tam C, Ryan SE, Rigby P, Sophianopoulos MB.

Bloorview Kids Rehab, Toronto, Ontario, Canada.

Background/aim: Current handwriting assessment tools are standardised mostly on typically developing students. This study estimated the intrarater and interrater reliabilities of the adapted scoring criteria, titled the Minnesota Handwriting Assessment-Cerebral Palsy (MHA-CP), for evaluating the effectiveness of handwriting interventions for children with cerebral palsy. **Methods:** We scored two batches of 20 random samples each from 80 handwriting samples produced by 30 children with cerebral palsy using the MHA-CP to estimate the intrarater and interrater reliabilities, respectively. **Results:** Intraclass correlation coefficients exceeded 0.95 for both intrarater and interrater reliabilities for all quality subscales of the MHA-CP. **Conclusions:** The MHA-CP is shown to be a reliable measure of the manuscript handwriting performance of children with cerebral palsy who are in Grades 1 and 2. Further empirical testing is recommended to confirm its validity as an outcome measure for this population.

PMID: 20854551 [PubMed - in process]

14. Aust Occup Ther J. 2009 Aug;56(4):295-6.

The Assisting Hand Assessment is a reliable and valid measure of assessing hand function for children with hemiplegic cerebral palsy and obstetric brachial plexus palsy.

Urlic K, Wallen M.

CAPs Advisory Board Member.

PMID: 20854531 [PubMed - in process]

15. Aust Occup Ther J. 2009 Aug;56(4):229-38.

Employer-sponsored occupational therapy professional development in a multicampus facility: A quality project.

Cusick A, Convey M, Novak I, McIntyre S.

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To critically assess and develop recommendations for professional development (PD) for occupational therapists in

a multisite specialist cerebral palsy occupational therapy service. Method: Quality improvement project based on principles of participatory action research: audit of PD resources/activity; stakeholder consultations and literature review. Results: The PD program goal, resources, strategies, activities and evaluations conducted at the centre were identified and described. Areas for improvement were identified by critically considering the PD program in the context of reviewed literature. There was an assumption that personal change through PD would help attain the organisational goal of clinically competent practitioners who use evidence-based practice in a family-centred context. Recommendations: Future PD plans and evaluations need to explicitly address this assumption. The use of structured reflection and the 'clinical reasoning' conceptual framework was recommended as one way to help personal change from PD to have workplace impact. This project provides a precedent and guide to occupational therapy PD planners regarding a whole-of-organisation approach to developing and maintaining competence through PD.

PMID: 20854523 [PubMed - in process]

16. Aust Occup Ther J. 2009 Jun;56(3):156-66.

Identification of occupational therapy clinical expertise: Decision-making characteristics.

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Background: Experts are usually determined on the basis of length of experience, reputation, peer acknowledgement, and certification. While these characteristics are important they may, however, not be sufficient for this purpose. Another method for determining clinical expertise is to look at how individuals make decisions in their area of expertise. This study aims to identify clinician expertise on the basis of participants' decision performance and examines this in relation to their length of experience and type of decision-making. Methods: The Cochran-Weiss-Shanteau (CWS) is a statistical method that can be used to examine individuals' expertise on the basis of how they discriminate between hypothetical cases and consistency in their decision-making. Participants comprised 18 occupational therapists, each with more than 5 years of experience working with children with cerebral palsy. They were required to make treatment judgements for 110 cases (20 of which were repeated) of children with cerebral palsy. The CWS was calculated for each participant. Results and conclusions: Two groups of participants were identified on the basis of their CWS index - one with both high consistency in decision-making and the ability to discriminate between cases, the other with low consistency and poor discrimination. These two groups did not differ significantly on the basis of length of experience or work setting but did differ on the basis of intervention chosen and their type of decision-making. The CWS method seems to offer promise as a means of determining clinical expertise on the basis of clinical decision-making. Its application to the investigation of clinical reasoning and education is discussed.

PMID: 20854509 [PubMed - in process]

17. Aust Occup Ther J. 2009 Feb;56(1):24-32.

The relationship between physical performance and self-perception in children with and without cerebral palsy.

Ziebell M, Imms C, Froude EH, McCoy A, Galea M.

Domiciliary Care, Peninsula Health, Mt Eliza, Victoria, Australia.

Aim: This study examined the relationship between physical performance and perceived self-competence and global self-worth in children with and without spastic diplegia. Method: A matched-pairs design, including eight children with spastic diplegia and eight typically developing children, was used to compare the children's performance and to examine relationships. Children aged 7 to 11 years were assessed to determine their gross and fine motor abilities and they completed a modified version of the Harter Self-Perception Profile for Children. Results: Children with diplegia performed at lower levels in all gross and fine motor assessments compared with children without diplegia. Self-perception was lower in children with diplegia in fine motor competence ($P = 0.03$) and global self-worth ($P = 0.05$). Clinically important differences ($> 10\%$) in gross motor and athletic competence were also found. Posi-

tive correlations between physical performance assessments and some self-perception domains were present, although strength and direction of relationships differed for each group in some instances. Conclusion: This small study found that in addition to having reduced physical skills, children with spastic diplegia may experience a less positive global self-worth than typically developing children. These findings are in contrast to some previous research. Future research should examine the hypothesised relationship more definitively to determine whether improvement in physical skills results in a higher level of self-competence and consequently a higher global self-worth. This might further justify interventions aimed at improving fine and gross motor skills of children with cerebral palsy. Clinicians should be mindful of addressing both physical issues and self-worth with clients.

PMID: 20854486 [PubMed - in process]

18. Aust Occup Ther J. 2009 Feb;56(1):75-6.

Preliminary evidence suggests that hand-arm bimanual intensive therapy (HABIT) improves bimanual upper limb performance in children with mild to moderate hemiplegic cerebral palsy.

Wallen M, Hoare B.

CAPs Advisory Panel Member.

PMID: 20854493 [PubMed - in process]

Epidemiology / Aetiology / Diagnosis & Early Treatment

Please note: This is not yet a comprehensive outline of cerebral palsy prevention literature. It is expected that more research will be included when the search terms are expanded to include key terms other than "cerebral palsy". It is a work-in-progress and it will be expanded in coming months.

19. Obstet Gynecol. 2010 Oct;116(4):835-42.

Effectiveness of timing strategies for delivery of individuals with placenta previa and accreta.

Robinson BK, Grobman WA.

From the Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Prentice Women's Hospital, Northwestern University, Feinberg School of Medicine, Chicago, Illinois.

OBJECTIVE: To compare strategies for the timing of delivery in individuals with placenta previa and ultrasonographic evidence of placenta accreta, and to determine the optimal gestational age at which to deliver individuals. **METHODS:** A decision tree was designed comparing nine strategies for delivery timing in an individual with placenta previa and ultrasonographic evidence of placenta accreta. The strategies ranged from a scheduled delivery at 34, 35, 36, 37, 38, or 39 weeks of gestation to a scheduled delivery at 36, 37, or 38 weeks of gestation only after amniocentesis confirmation of fetal lung maturity. Outcomes factored into the model included maternal intensive care unit admission, perinatal mortality, infant mortality, respiratory distress syndrome, mental retardation, and cerebral palsy. **RESULTS:** A scheduled delivery at 34 weeks of gestation was the preferred strategy and resulted in the highest quality-adjusted life years under the base case assumptions. Strategies awaiting confirmation of fetal lung maturity failed to result in better outcome than strategies that delivered at the corresponding gestational age without amniocentesis. After sensitivity analyses, delivery at 37 weeks of gestation without amniocentesis was the preferred strategy in limited situations, and delivery at 39 weeks of gestation was the preferred strategy only in unlikely situations. **CONCLUSION:** This decision analysis suggests the preferred strategy for timing of delivery in individuals with ultrasonographic evidence of placenta previa and placenta accreta under a variety of circumstances is delivery at 34 weeks of gestation. At any given gestational age, incorporating amniocentesis for verification of fetal lung maturity does not assist in the management of such individuals.

LEVEL OF EVIDENCE: III.

PMID: 20859146 [PubMed - in process]

20. Anesth Analg. 2010 Sep 22. [Epub ahead of print]

Labor Epidural Analgesia and Maternal Fever.

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Women in labor who receive epidural analgesia are more likely to experience hyperthermia and overt clinical fever. The gradual development of modest hyperthermia observed in laboring women with epidural analgesia is not seen in those electing other forms of analgesia or unmedicated labor. Clinical fever is also far more likely in women laboring with epidural analgesia. It is possible that the observed slow increase in mean temperature is an artifact of averaging the temperature curves of a small group of women who eventually develop fever with a larger group who remain afebrile throughout labor. Selection bias confounds the association between epidural analgesia and fever, because women at risk for fever-due to longer duration of ruptured membranes, longer labor, more frequent cervical examinations, and other interventions-are also more likely to select epidural analgesia. However, even randomized trials have confirmed a higher incidence of fever in epidural-exposed women, suggesting a causal relationship. The mechanisms of epidural-associated fever remain incompletely understood. Altered thermoregulation and an antipyretic effect of opioids given to women without epidural analgesia may explain part of the phenomenon, but the most likely etiology is inflammation, most commonly in the placenta and membranes (chorioamnionitis). The consequences of maternal fever are diverse. Obstetricians are more likely to intervene surgically in laboring women with fever, and neonatologists are more likely to evaluate neonates of febrile women for sepsis. More ominously, maternal inflammatory fever is associated with neonatal brain injury, manifest as cerebral palsy, encephalopathy, and learning deficits in later childhood. At present, there are no safe and effective means to inhibit epidural-associated fever. Future research should define the etiology of this fever and search for safe and effective interventions to prevent it and to inhibit its potential adverse effects on the neonatal brain.

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21. J Am Chem Soc. 2010 Sep 21. [Epub ahead of print]

Unexpected Binding Modes of Nitric Oxide Synthase Inhibitors Effective in the Prevention of a Cerebral Palsy Phenotype in an Animal Model.

Delker SL, Ji H, Li H, Jamal J, Fang J, Xue F, Silverman RB, Poulos TL.

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Neurological soft signs in pervasive developmental disorders. [Article in French]

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BACKGROUND: Many studies have focused on specific motor signs in autism and Asperger's syndrome, but few has been published on the complete range of neurological soft signs (NSS) in children with pervasive developmental disorder (PDD). Scarce are the studies evaluating NSS in children suffering from PDD not otherwise specified (PDDNOS). **METHODS:** This study compared performance of 11 autistic children (AD) and 10 children with PDDNOS, with controls matched on age, sex and cognitive performance on Krebs et al.'s NSS scale. Because of the duration of the assessments and specific difficulties encountered in managing some items, an adaptation of the scale had to be made during a pilot study with the agreement of the author. To be eligible, patients had to meet the following inclusion criteria: an age range of 6-16 years, a diagnosis of autistic disorder or PDDNOS based on the DSM IV criteria (American Psychiatric Association 1994). The autism diagnostic interview-revised (ADI-R) was used

in order to confirm the diagnosis and to evaluate the association of the symptoms to the severity of the NSS. The childhood autism rating scale (CARS) was completed for the patients in order to evaluate symptoms at the time of the NSS examination. Cognitive ability was assessed with Raven's progressive matrices. Were excluded patients with: history of cerebral palsy, congenital anomaly of the central nervous system, epilepsy, known genetic syndrome, tuberous sclerosis, neurofibromatosis, antecedent of severe head trauma, Asperger's syndrome, obvious physical deformities or sensory deficits that would interfere with neurological assessment, deep mental retardation and recent or chronic substance use or abuse. Healthy controls shared the same exclusion criteria, with no personal history of neurological, psychiatric disorder or substance abuse, no family history of psychiatric disorder and normal or retardation in schooling. All study procedures were approved by the local Ethics Committee (Comité d'éthique, Razi Hospital), according to the declaration of Helsinki. **RESULTS:** There was no difference between patients and controls with respect to sex, age and cognitive function. All children had an IQ higher than 81. Significant differences were found between AD children and control group in the motor integration function and sensory integration function. Different NSS scores were significantly higher in the PDDNOS group than in controls: the total scores, motor coordination, motor integration function, sensory integration and abnormal movements. Lower performance in motor coordination skills was associated with higher ADI-R communication score in the AD group. No relationship was found between NSS and CARS' total score. **CONCLUSION:** This study confirms the impaired neurological functioning in autistic as well as PDDNOS children. The association of motor impairment with autistic symptoms highlights the argument that motor control problems can be part of the autism spectrum disorders. The lack of relationship between NSS and intellectual aptitude in the clinical sample provides new elements for the neurodevelopment model of the autism spectrum.

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