

Monday 26 September 2011

Cerebral Palsy Alliance is delighted to bring you this free weekly bulletin of the latest published research into cerebral palsy.

Our organisation is committed to supporting cerebral palsy research worldwide - through information, education, collaboration and funding. This free weekly bulletin is just one of our activities. Please find out more at www.cpresearch.org.au

Professor Nadia Badawi

Macquarie Group Foundation Chair of Cerebral Palsy
PO Box 560, Darlinghurst, New South Wales 2010 Australia

Interventions and Management

1. *Dev Med Child Neurol.* 2011 Sep 16. doi: 10.1111/j.1469-8749.2011.04086.x. [Epub ahead of print]

Modified constraint-induced therapy for children with hemiplegic cerebral palsy: a randomized trial.

Wallen M, Ziviani J, Naylor O, Evans R, Novak I, Herbert RD.

The Children's Hospital at Westmead, Sydney, NSW The University of Queensland, Brisbane, QLD Children's Allied Health Research, Queensland Health, Brisbane, QLD Princess Margaret Hospital, Subiaco, WA Department of Rehabilitation, The Children's Hospital at Westmead, Sydney, NSW Cerebral Palsy Alliance, University of Notre Dame, Sydney, NSW Musculoskeletal Division, The George Institute for Global Health, Sydney, NSW, Australia.

Aim: Conventional constraint-based therapies are intensive and demanding to implement, particularly for children. Modified forms of constraint-based therapies that are family-centred may be more acceptable and feasible for families of children with cerebral palsy (CP)-but require rigorous evaluation using randomized trials. The aim of this study was to determine the effects of modified constraint-induced therapy compared with intensive occupational therapy on activities of daily living and upper limb outcomes in children with hemiplegic CP. **Method:** In this assessor-blinded pragmatic randomized trial, 50 children (27 males, 23 females; age range 19mo-7y 10mo) with hemiplegic CP were randomized using a concealed allocation procedure to one of two 8-week interventions: intensive occupational therapy (n=25), or modified constraint-induced therapy (n=25). Manual Ability Classification System (MACS) levels of the participants were, level I n=2, II n=37, III n=8, and level IV n=1; Gross Motor Function Classification System (GMFCS) levels were, level I n=33, level II n=15, and level III n=1. Participants were recruited through three specialist CP centres in Australia and randomized between January 2008 and April 2010. Children randomized to modified constraint-induced therapy wore a mitt on the unaffected hand for 2 hours each day, during which time the children participated in targeted therapy. The primary outcome was the Canadian Occupational Performance Measure (COPM - measured on a 10-point scale) at completion of therapy. Other outcome measures were Goal Attainment Scaling, Assisting Hand Assessment, Pediatric Motor Activity Log, Modified Ashworth Scale, Modified Tardieu Scale, and a parent questionnaire. Assessments were carried out at 10 weeks and 6 months following randomization. **Results:** All participants were included in the analysis. Between-group differences for all outcomes were neither clinically important nor statistically significant. The mean difference in COPM was 0.3 (95% confidence interval [CI] -0.8 to 1.4; p=0.61) and mean difference in COPM satisfaction was 0.1 (95% CI -1.1 to 1.2; p=0.90). Minor adverse events were reported by five of the 25 participants in the modified constraint-induced therapy group and by one of the 25 in the intensive occupational therapy group. All adverse events were related to participants' lack of acceptance of therapy. **Interpretation:** Modified constraint-induced therapy is no more effective than intensive occupational therapy for improving completion of activities of daily living or upper limb function in children with hemiplegic CP.

© The Authors. Developmental Medicine & Child Neurology © 2011 Mac Keith Press.

[PMID: 21923854](#) [PubMed - as supplied by publisher]

2. Clin Orthop Relat Res. 2011 Sep 20. [Epub ahead of print]

Assessment Tools and Classification Systems Used For the Upper Extremity in Children With Cerebral Palsy.

Wagner LV, Davids JR.

Motion Analysis Laboratory, Shriners Hospital for Children, 950 West Faris Road, Greenville, SC, 29605, USA.

BACKGROUND: Clinicians interested in assessment and outcome measurement of upper extremity (UE) function and performance in children with cerebral palsy (CP) must choose from a wide range of tools. **QUESTIONS/PURPOSES:** We systematically reviewed the literature for UE assessment and classification tools for children with CP to compare instrument content, methodology, and clinical use. **METHODS:** We searched Health and Psychosocial Instruments (HaPI), US National Library of Medicine (PubMed), and Cumulative Index to Nursing and Allied Health Literature (CINAHL Plus) databases (1937 to the present) to identify UE assessment and outcomes tools. We identified 21 tools for further analysis and searched HaPI, PubMed, CINAHL Plus, and Google Scholar (<http://scholar.google.com/schhp?tab=ws>) databases to identify all validity and reliability studies, systematic reviews, and original references for each of the 21 tools. **RESULTS:** The tools identified covered ages birth to adulthood. International Classification of Functioning, Disability and Health domains addressed by these tools included body function, body structure, activities and participation, and environmental factors. Eleven of the tools were patient or family report, seven were clinician-based observations, and three tools could be used in either fashion. All of the tools had published evidence of validity. Nine of the tools were specifically designed for use in subjects with CP. Two of the tools required formal certification before use. Ten of the tools were provided free of charge by the investigators or institution who developed them. **CONCLUSIONS:** Familiarity with the psychometric and clinometric properties of assessment and classification tools for the UE in children with CP greatly enhances a clinician's ability to select and use these tools in daily clinical practice for both clinical decision-making and assessment of outcome.

[PMID: 21932104](#) [PubMed - as supplied by publisher]

3. Eur J Paediatr Neurol. 2011 Sep 20. [Epub ahead of print]

Arm and hand function in children with unilateral cerebral palsy: A one-year follow-up study.

Klingels K, Feys H, De Wit L, Jaspers E, Van de Winckel A, Verbeke G, De Cock P, Molenaers G.

Department of Rehabilitation Sciences, Faculty of Kinesiology and Rehabilitation Sciences, Katholieke Universiteit Leuven, Tervuursevest 101, 3001 Heverlee, Belgium.

BACKGROUND: In children with unilateral cerebral palsy (CP), development of arm and hand function is often compromised by the underlying motor and sensory impairments. However, knowledge about the evolution of arm and hand function in this population is limited. **AIM:** The aims were to map the evolution of scores on upper limb measures over one year in children with unilateral CP and to identify factors that influence time trends. **METHODS:** Eighty-one children (43 males, 38 females; mean age 9y11mo (SD 3y 3mo) range 5-15 y) were tested at baseline, at 6 and 12 months. According to the International Classification of Functioning, Disability and Health, body function measurements included passive range of motion, muscle tone, manual muscle strength and grip strength. Activity measurements included the Melbourne Assessment, the Jebsen-Taylor test, the Assisting Hand Assessment and the Abilhand-Kids questionnaire. Age, gender, etiology (congenital or acquired lesions) and Manual Ability Classification System (MACS) levels were analyzed as predictive factors, using mixed models. **RESULTS:** Scores for grip strength ($p = 0.001$) and manual dexterity (Jebsen-Taylor test, $p < 0.0001$) increased significantly over time. MACS level ($p = 0.03$) and etiology ($p = 0.02$) had a significant influence on the time evolution of the Jebsen-Taylor scores. Other assessments showed no significant changes. **CONCLUSION:** Motor impairments, movement quality and hemiplegic hand use in bimanual tasks do not spontaneously improve over one year, except for an age-related change in grip strength. However, an improvement was observed in manual dexterity, suggesting that some

children can learn more adaptive movement strategies.

Copyright © 2011 European Paediatric Neurology Society. Published by Elsevier Ltd. All rights reserved.

[PMID: 21940183](#) [PubMed - as supplied by publisher]

4. J Child Neurol. 2011 Sep 22. [Epub ahead of print]

Stimulus Evaluation, Event Preparation, and Motor Action Planning in Young Patients With Mild Spastic Cerebral Palsy: An Event-Related Brain Potential Study.

Hakkarainen E, Pirilä S, Kaartinen J, van der Meere JJ.

Department of Psychology, University of Tampere, Finland.

The study investigated stimulus evaluation time, event preparation, and motor action planning of patients with mild spastic cerebral palsy and a peer control group in the age range of 9 to 18 years. To this end, participants were carrying out a stimulus recognition task. Findings indicated an overall slowness and inaccurate reaction time performance of the patient group. An event-related potential analysis revealed that the stimulus evaluation processing, indexed by the parietal P300, was intact in the group of patients. Also event preparation and action planning, indexed by respectively the frontal late contingent negative variation and the frontal P2, were intact in the group of patients. It was concluded that patients' motor slowness reflected poor motor execution processes.

[PMID: 21940693](#) [PubMed - as supplied by publisher]

5. Gait Posture. 2011 Sep 17. [Epub ahead of print]

Rapid force generation is impaired in cerebral palsy and is related to decreased muscle size and functional mobility.

Moreau NG, Falvo MJ, Damiano DL.

Department of Health Professions, Medical University of South Carolina, 77 President St, MSC 700, Charleston, SC, United States.

Limb movements involving contraction times of 50-200ms occur in many everyday activities, such as gait, which is faster than the time required to generate maximal force. Therefore, the ability to rapidly produce force may be even more important for the performance of functional activities. In this study rate of force development (RFD) and impulse of the knee extensors were examined in 12 ambulatory children with cerebral palsy (CP) (age: 11.9±2.9 years) and 11 with typical development (TD) (Age: 11.3±3.0 years). The relationship with muscle architecture and functional mobility was also determined. RFD and impulse were calculated during a maximal isometric knee extension contraction. Rectus femoris (RF) cross-sectional area and RF and vastus lateralis (VL) muscle thickness (MT), fascicle length (FL), and fascicle angle (FA) were measured using ultrasound imaging. Gait temporal-spatial parameters, Pediatric Outcomes Data Collection Instrument (PODCI), and Activities Scale for Kids performance version (ASKp) were collected. Although VL MT was the primary determinant of RFD and impulse in CP, FA and FL were also significant predictors in the TD group. RFD and impulse were significantly lower in CP compared to TD (70% decrease) in addition to maximal strength (50% decrease). RFD and impulse were predictive of measures of functional mobility, including gait, transfers, and sports and higher level activities but not temporal-spatial gait measures. Results suggest that the ability to rapidly generate torque may be of greater importance than maximal strength during certain tasks, such as transfers and sports and higher level activities.

Copyright © 2011 Elsevier B.V. All rights reserved.

[PMID: 21930383](#) [PubMed - as supplied by publisher]

6. J Toxicol. 2012;2012:802893. Epub 2011 Sep 14.**Therapeutic Use of Botulinum Toxin in Neurorehabilitation.**

Intiso D.

Neuro-Rehabilitation Unit, Scientific Institute, Hospital IRCSS "Casa Sollievo della Sofferenza", Viale dei Cappuccini 1, 71013 San Giovanni Rotondo (Foggia), Italy.

The botulinum toxins (BTX), type A and type B by blocking vesicle acetylcholine release at neuro-muscular and neuro-secretory junctions can result efficacious therapeutic agents for the treatment of numerous disorders in patients requiring neuro-rehabilitative intervention. Its use for the reduction of focal spasticity following stroke, brain injury, and cerebral palsy is provided. Although the reduction of spasticity is widely demonstrated with BTX type A injection, its impact on the improvement of dexterity and functional outcome remains controversial. The use of BTX for the rehabilitation of children with obstetrical brachial plexus palsy and in treating sialorrhoea which can complicate the course of some severe neurological diseases such as amyotrophic lateral sclerosis and Parkinson's disease is also addressed. Adverse events and neutralizing antibodies formation after repeated BTX injections can occur. Since impaired neurological persons can have complex disabling feature, BTX treatment should be viewed as adjunct measure to other rehabilitative strategies that are based on the individual's residual ability and competence and targeted to achieve the best functional recovery. BTX therapy has high cost and transient effect, but its benefits outweigh these disadvantages. Future studies must clarify if this agent alone or adjunctive to other rehabilitative procedures works best on functional outcome.

[PMID: 21941544](#) [PubMed - as supplied by publisher]

7. Gait Posture. 2011 Sep 15. [Epub ahead of print]**Synergy of EMG patterns in gait as an objective measure of muscle selectivity in children with spastic cerebral palsy.**

Zwaan E, Becher JG, Harlaar J.

Department of Rehabilitation Medicine, Research institute MOVE, VU University Medical Center, De Boelelaan 1117, 1088 HV Amsterdam, The Netherlands.

Selective motor control (SMC) is an important determinant of functioning in cerebral palsy (CP). Currently its assessment is based on subjective clinical tests with a low sensitivity. Electromyography (EMG) profiles during gait represent muscle coordination and might be used to assess SMC. EMG measurements during gait were processed into a measure of extensor synergy and thigh synergy. This was obtained in two groups of children with CP, and 30 typically developing children. Extensor synergy in CP was higher (0.95) than in healthy children (0.77), thigh synergy was almost equal in both groups. GMFM scores in the first group of 39 children with CP did not correlate to EMG based synergy measures. In a second group of 38 children with CP, a clear relation of clinical SMC score with extensor synergy was found, but only a weak relation with thigh synergy. Although an extensor synergy was validated at group level, our results present no convincing evidence for the use of EMG during gait to assess SMC in individual subjects with CP. Since gait involves both synergistic and selective contractions, the inherent motor control properties of this task will not allow for an assessment of selectivity comparable to the ability to perform isolated movements. Nevertheless, our results support the sensitive nature of EMG to represent an aberrant motor control in CP.

Copyright © 2011 Elsevier B.V. All rights reserved.

[PMID: 21924909](#) [PubMed - as supplied by publisher]

8. J Pediatr Orthop. 2011 Oct-Nov;31(7):773-82.**Triple arthrodesis with lateral column lengthening for the treatment of planovalgus deformity.**

Frost NL, Grassbaugh JA, Baird G, Caskey P.

*Madigan Army Medical Center, Tacoma, WA ‡Shriner's Hospital, Spokane, WA †Womack Army Medical Center, Ft Bragg, NC.

BACKGROUND: The rigid planovalgus foot has historically been difficult to correct and maintain in a corrected position with triple arthrodesis (TA). The lateral column lengthening (LCL) is a procedure that corrects the position of the planovalgus foot. Combining the TA with LCL at the calcaneocuboid joint may improve ultimate position after fusion for patients with rigid planovalgus foot deformities. **METHODS:** A retrospective review of all patients who underwent TA with LCL through the calcaneocuboid joint for rigid planovalgus foot deformity was performed. Preoperative and postoperative radiographs were compared for foot alignment by measuring the talo-first metatarsal angle in the anterior-posterior and lateral planes, calcaneal pitch, talo-horizontal angle, metatarsal stacking angle, and medial/lateral column ratio. Clinical outcomes were evaluated for correlation with preoperative and postoperative deformity and surgical indications. Results were evaluated using radiographic and clinic outcome measures developed for TA and LCL. **RESULTS:** Twenty-nine surgeries were identified with solid fusions occurring in 27 patients by 12 weeks postoperatively. Two patients with cerebral palsy had persistent hindfoot valgus. At an average follow-up of 32 months after surgical intervention, correction of the talo-first metatarsal angle in the AP and lateral planes, calcaneal pitch, and talo-horizontal angles were statistically significant. There were 25 good clinical results with minimal or no pain with activity (86.2%) and 4 poor or fair results with moderate or severe pain (13.8%). There were 26 radiographic successes (89.7%) and 3 radiographic failures (10.3%). Cerebral palsy was associated with a higher rate of radiographic failures ($P=0.01$). There were 15 total complications in 11 feet (37.9%). These included 4 related to hardware, 3 involving neurological symptoms, 2 related to soft tissues, development of a symptomatic bony prominence in 2 patients, 1 forefoot deformity, 2 nonunions, and 1 case of Achilles tendonitis. **CONCLUSION:** Good correction can be obtained and maintained with LCL and TA for rigid planovalgus foot deformity. The procedure is associated with good short-term clinical and radiographic outcomes and improves the position of the foot with diminished risk of recurrent or continued deformity as compared with historical controls.

LEVEL OF EVIDENCE: Level IV (case series).

[PMID: 21926876](#) [PubMed - in process]

9. Int J Dev Neurosci. 2011 Sep 10. [Epub ahead of print]**Treadmill training induces plasticity in spinal motoneurons and sciatic nerve after sensorimotor restriction during early postnatal period: New insights into the clinical approach for children with cerebral palsy.**

Stigger F, do Nascimento PS, Dutra MF, Couto GK, Ilha J, Achaval M, Marcuzzo S.

Programa de Pós-Graduação em Neurociências, Instituto de Ciências Básicas da Saúde, Universidade Federal do Rio Grande do Sul, RS, Brazil; Laboratório de Histofisiologia Comparada, Departamento de Ciências Morfológicas, Instituto de Ciências Básicas da Saúde, Universidade Federal do Rio Grande do Sul, RS, Brazil.

The aim of the present study was to investigate whether locomotor stimulation training could have beneficial effects on the morphometric alterations of spinal cord and sciatic nerve consequent to sensorimotor restriction (SR). Male Wistar rats were exposed to SR from postnatal day 2 (P2) to P28. Control and experimental rats underwent locomotor stimulation training in a treadmill for three weeks (from P31 to P52). The cross-sectional area (CSA) of spinal motoneurons innervating hind limb muscles was determined. Both fiber and axonal CSA of myelinated fibers were also assessed. The growth-related increase in CSA of motoneurons in the SR group was less than controls. After SR, the mean motoneuron soma size was reduced with an increase in the proportion of motoneurons with a soma size of between 0 and 800 μm^2 . The changes in soma size of motoneurons were accompanied by a reduction in the mean fiber and axon CSA of sciatic nerve. The soma size of motoneurons was reestablished at the end of the training period reaching controls level. Our results suggest that SR during early postnatal life retards the growth-related increase in the cell body size of motoneurons in spinal cord and the development of sciatic nerve. Additionally, three weeks of locomotor stimulation using a treadmill seems to have a beneficial effect on motoneurons' soma size.

Copyright © 2011. Published by Elsevier Ltd.

[PMID: 21925584](#) [PubMed - as supplied by publisher]

10. J Bone Joint Surg Am. 2011 Jul 20;93(14):1367-74.

What's new in orthopaedic rehabilitation.

Hosalkar H, Pandya NK, Hsu J, Keenan MA.

Rady Children's Hospital, UCSD San Diego, 3030 Children's Way, Suite 410, San Diego, CA 92123, USA.
HHOSALKAR@rchsd.org

[PMID: 21792505](#) [PubMed - indexed for MEDLINE]

11. Childs Nerv Syst. 2011 Sep 18. [Epub ahead of print]

Osteopenia in children with cerebral palsy can be treated with oral alendronate.

Paksu MS, Vurucu S, Karaoglu A, Karacalioglu AO, Polat A, Yesilyurt O, Unay B, Akin R.

Department of Pediatrics, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey,
sukrupaksu@yahoo.com.

PURPOSE: Cerebral palsy is one of the most common reasons of osteopenia in childhood. Patients have a significantly decreased bone mineral density, and painful fractures with minor traumas are common. Biphosphonates in the treatment of childhood osteoporosis are increasingly being used. This study aimed to evaluate the efficacy of oral alendronate treatment in children with cerebral palsy. **METHODS:** Twenty-six children (16 boys and 10 girls) aged 3 to 17 years who had quadriplegic cerebral palsy and osteopenia were included in the study. The patients received alendronate (1 mg/kg/week), calcium (600 mg/day), and vitamin D(3) (400 U/day) over a year. A complete blood count, kidney and liver functional tests, plasma calcium, phosphate and alkaline phosphatase levels, and lumbar vertebral bone mineral density were measured before and after treatment. **RESULTS:** Compared with pretreatment values, bone mineral density, serum calcium, and phosphate levels of the patients statistically increased and alkaline phosphatase levels decreased after treatment. No patient needed to interrupt treatment because of side effects. **CONCLUSIONS:** Oral alendronate at a dose of 1 mg/kg/week for the treatment of osteopenia in children with cerebral palsy was found to be safe and effective.

[PMID: 21928064](#) [PubMed - as supplied by publisher]

12. Eur J Pediatr. 2011 Sep 20. [Epub ahead of print]

Clinical practice : Swallowing problems in cerebral palsy.

Erasmus CE, van Hulst K, Rotteveel JJ, Willemsen MA, Jongerius PH.

Donders Institute for Brain, Cognition and Behaviour, Department of Paediatric Neurology, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands, c.erasmus@neuro.umcn.nl.

Cerebral palsy (CP) is the most common physical disability in early childhood. The worldwide prevalence of CP is approximately 2-2.5 per 1,000 live births. It has been clinically defined as a group of motor, cognitive, and perceptive impairments secondary to a non-progressive defect or lesion of the developing brain. Children with CP can have swallowing problems with severe drooling as one of the consequences. Malnutrition and recurrent aspiration pneumonia can increase the risk of morbidity and mortality. Early attention should be given to dysphagia and excessive drooling and their substantial contribution to the burden of a child with CP and his/her family. This review displays the important functional and anatomical issues related to swallowing problems in children with CP based on relevant literature and expert opinion. Furthermore, based on our experience, we describe a plan for

approach of investigation and treatment of swallowing problems in cerebral palsy.

[PMID: 21932013](#) [PubMed - as supplied by publisher]

13. J Child Neurol. 2011 Sep 21. [Epub ahead of print]

Drooling: Are Botulinum Toxin Injections Into the Major Salivary Glands a Good Treatment Option?

Nordgarden H, Osterhus I, Møystad A, Asten P, Johnsen UL, Storhaug K, Loven JO.

National Resource Centre for Oral Health in Rare Medical Conditions, Lovisenberg Diakonale Hospital, Oslo, Norway.

There are several treatment options available for drooling; botulinum toxin injections into the major salivary glands are one. There is no consensus as to how many and which glands should be injected. A research project on this topic was terminated because of adverse effects. Individual results and the adverse effects are described and discussed in this article. Six individuals with cerebral palsy were randomly allocated to 2 treatment groups, with five individuals receiving ultrasound-guided injections to parotid and submandibular glands and one receiving injections to the submandibular glands only. Reduction of observed drooling was registered in 3, while 4 patients reported subjective improvement (Visual Analog Scale). Two participants reported adverse effects, including dysphagia, dysarthria, and increased salivary viscosity. Injections with botulinum toxin can be a useful treatment option but there is a risk of adverse effects. Multidisciplinary evaluation and informed discussions with patients/caregivers are important factors in the decision-making process.

[PMID: 21940695](#) [PubMed - as supplied by publisher]

Prevention and Cure

14. Obstet Gynecol. 2011 Oct;118(4):824-30.

Application of criteria developed by the task force on neonatal encephalopathy and cerebral palsy to acutely asphyxiated neonates.

Phelan JP, Korst LM, Martin GI.

From the Departments of Obstetrics and Gynecology and Neonatology, Citrus Valley Medical Center, West Covina, California; the Childbirth Injury Prevention Foundation, City of Industry, California; and the University of Southern California Keck School of Medicine, Department of Obstetrics and Gynecology, Los Angeles, California.

OBJECTIVE: To estimate whether term neonates with acute intrapartum hypoxic ischemic encephalopathy and permanent brain injury satisfied the criteria for causation of cerebral palsy developed by the Task Force on Neonatal Encephalopathy and Cerebral Palsy. **METHODS:** In this descriptive study, patients in the case group were obtained from a registry of singleton, liveborn, term, neurologically impaired neonates. Entry criteria included a reactive intrapartum fetal heart rate pattern followed by a sudden, rapid, and sustained deterioration of the fetal heart rate that lasted until delivery and an umbilical artery cord pH. All patients in the case group were then assessed to determine if they met the criteria developed by the Task Force on Neonatal Encephalopathy and Cerebral Palsy. **RESULTS:** Thirty-nine neonates met the entry criteria, and the proportion meeting each essential criterion was as follows: 38 of 39 (97.4%) had umbilical artery pH of less than 7.00 and 30 of 30 (100%) had a base deficit of 12 mmol/L or higher; 33 of 34 (97%) had either moderate or severe encephalopathy; 34 of 36 (94%) had spastic quadriplegia or dyskinetic cerebral palsy or death attributable to brain injury; and 39 of 39 (100%) had no identifiable reason for exclusion. **CONCLUSION:** Fetuses that underwent a sudden and sustained deterioration of the fetal heart rate and that subsequently were found to have cerebral palsy demonstrated characteristics consistent with criteria developed by the Task Force on Neonatal Encephalopathy and Cerebral Palsy for intrapartum asphyxial injury.

LEVEL OF EVIDENCE: III.

[PMID: 21934445](#) [PubMed - in process]

15. J Pediatr. 2011 Sep 17. [Epub ahead of print]

Outcome of Extremely Low Birth Weight Infants Who Received Delivery Room Cardiopulmonary Resuscitation.

Wyckoff MH, Salhab WA, Heyne RJ, Kendrick DE, Stoll BJ, Laptook AR; National Institute of Child Health and Human Development Neonatal Research Network.

Department of Pediatrics, University of Texas Southwestern Medical Center, Dallas, TX.

OBJECTIVE: To determine whether delivery room cardiopulmonary resuscitation (DR-CPR) independently predicts morbidities and neurodevelopmental impairment (NDI) in extremely low birth weight infants. **STUDY DESIGN:** We conducted a cohort study of infants born with birth weight of 401 to 1000 g and gestational age of 23 to 30 weeks. DR-CPR was defined as chest compressions, medications, or both. Logistic regression was used to determine associations among DR-CPR and morbidities, mortality, and NDI at 18 to 24 months of age (Bayley II mental or psychomotor index <70, cerebral palsy, blindness, or deafness). Data are adjusted ORs with 95% CIs. **RESULTS:** Of 8685 infants, 1333 (15%) received DR-CPR. Infants who received DR-CPR had lower birth weight (708±141 g versus 764±146g, P<.0001) and gestational age (25±2 weeks versus 26±2 weeks, P<.0001). Infants who received DR-CPR had more pneumothoraces (OR, 1.28; 95% CI, 1.48-2.99), grade 3 to 4 intraventricular hemorrhage (OR, 1.47; 95% CI, 1.23-1.74), bronchopulmonary dysplasia (OR, 1.34; 95% CI, 1.13-1.59), death by 12 hours (OR, 3.69; 95% CI, 2.98-4.57), and death by 120 days after birth (OR, 2.22; 95% CI, 1.93-2.57). Rates of NDI in survivors (OR, 1.23; 95% CI, 1.02-1.49) and death or NDI (OR, 1.70; 95% CI, 1.46-1.99) were higher for DR-CPR infants. Only 14% of DR-CPR recipients with 5-minute Apgar score <2 survived without NDI. **CONCLUSIONS:** DR-CPR is a prognostic marker for higher rates of mortality and NDI for extremely low birth weight infants. New DR-CPR strategies are needed for this population.

Copyright © 2011 Mosby, Inc. All rights reserved.

[PMID: 21930284](#) [PubMed - as supplied by publisher]

16. Dev Med Child Neurol. 2011 Sep 20. doi: 10.1111/j.1469-8749.2011.04104.x. [Epub ahead of print]

Metabolic testing in children with cerebral palsy: yield could be up to 20%

Whitehouse WP.

Clinical Senior Lecturer in Paediatric Neurology, University of Nottingham, Nottingham, UK.

[PMID: 21933175](#) [PubMed - as supplied by publisher]

17. J Child Neurol. 2011 Sep 21. [Epub ahead of print]

Is Oral Baclofen Effective in Neonatal Hypertonia?

Schulz E, Mathew OP.

Medical College of Georgia, Georgia Health Sciences University, Augusta, GA, USA.

Cerebral palsy is often associated with spasticity. This study was designed to evaluate the effect of oral baclofen in hypertonic neonates. Retrospective chart review of patients treated with oral baclofen (identified by means of pharmacy records) during a 3-year period was undertaken. Data on muscle tone evaluated using the Modified Ashworth Scale scores were analyzed for effectiveness. Twenty-nine infants had Modified Ashworth Scale scores

before and during oral baclofen therapy. The study infants had a mean gestational age of 25.7 ± 1.9 weeks. Baclofen was started at a postnatal age of 86.4 ± 33.6 days. Comparison of Modified Ashworth Scale scores after initiation of therapy to prebaclofen scores demonstrated no significant decrease in muscle tone. Results of our study show that there is no overall decrease in tone during oral baclofen therapy in hypertonic preterm neonates.

[PMID: 21940694](#) [PubMed - as supplied by publisher]

18. Zhonghua Er Ke Za Zhi. 2011 Jun;49(6):445-9.

Treatment of newborns with severe injured brain with transplantation of human neural precursor cells [Article in Chinese]

Luan Z, Liu WP, Qu SQ, Qu SQ, Hu XH, Wang ZY, He S, Liu CQ, Xiao M.

Department of Pediatrics, Navy General Hospital, Beijing 100048, China.

OBJECTIVE: To analyze the therapeutic effect of human neural precursor cells transplantation in treatment of neonates with severe brain injury. **METHOD:** The transplantation was performed on 6 newborns, one of them was diagnosed as extremely severe carbon monoxide poisoning at 5(th) day after birth; one of them was diagnosed as severe hypoglycemia; the others had asphyxia at birth with Apgar scores from 1 to 3 and were diagnosed as severe neonatal asphyxia, severe hypoxic ischemic encephalopathy according to images, electroencephalogram, biochemical examination and clinical manifestation. With the approval of hospital ethics committee and informed consent of the family members, the newborns received human neural precursor cells transplantation at the 4(th) to 20(th) day after birth. With the agreement of a pregnant woman, forebrain cells were obtained from the forebrain of her 12-week old fetus after spontaneous abortion. The cells from the fetal brain were amplified into human neural precursor cells in vitro and were injected into the cerebral ventricle of the patients. **RESULT:** On the 2(nd) day after transplantation, sucking and swallowing reflexes gradually appeared in all the patients, muscular tension was also improved, and convulsion stopped. NBNA scoring in 3 of the patients reached normal level on the 28(th) day after birth. The 6 patients were followed up for 12 months. Four patients were normal in psychomotor development and scores of each scale reached normal level. Two patients have cerebral palsy. **CONCLUSION:** hNPCs transplantation is safe and effective in treatment of severe neonatal brain injury. More clinical trials and further observation are needed.

[PMID: 21924058](#) [PubMed - in process]

Subscribe to CP Research News

To subscribe to this research bulletin, please complete the online form at www.cpresearch.org/subscribe/researchnews You can bookmark this form on the home screen of your smart phone and also email the link to a friend.

To unsubscribe, please email Robyn Cummins rcummins@cerebralpalsy.org.au with 'Unsubscribe to Cerebral Palsy Research News' in the subject line, and your name and email address in the body of the email.