Cerebral Palsy Research NEWS

Monday 7 December 2015

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. Find out more at research.cerebralpalsy.org.au

Professor Nadia Badawi AM
Macquarie Group Foundation Chair of Cerebral Palsy

Subscribe to CP Research News

Interventions and Management

1. J Hand Surg Am. 2015 Nov 21. pii: S0363-5023(15)01228-9. doi: 10.1016/j.jhsa.2015.06.126. [Epub ahead of print]

The Effect of Treatment on Stereognosis in Children With Hemiplegic Cerebral Palsy.

Petersen E, Tomhave W, Agel J, Bagley A, James M, Van Heest A.

PURPOSE: To determine if rehabilitation alone or combined with surgery or botulinum toxin injection improved stereognosis in children with hemiplegic cerebral palsy. METHODS: Inclusion criteria were children with spastic hemiplegic cerebral palsy who had stereognosis testing 2 separate times with documentation of intervening treatment. Sixty-three children were included, 30 girls and 33 boys at an average age of 9.1 years (range, 4.4-16.0 years). Twelve standardized objects were used for manual identification. Baseline and postintervention stereognosis results were recorded for the hemiplegic and the dominant limb of each patient. The patients were separated into 3 groups based on intervening treatment: surgery with rehabilitation (27 patients), botulinum toxin injection with rehabilitation (19 subjects), and rehabilitation alone (7 subjects). Results were also analyzed by patient age group. RESULTS:
Baseline testing of the hemiplegic limb revealed that 27 patients (43%) exhibited severe stereognosis impairment (0-4 objects identified correctly), 18 (28%) were moderately impaired (5-8 objects), 13 (21%) were mildly impaired (9-11 objects), and 5 (8%) had intact stereognosis (12 objects). There was no statistically significant difference in change in stereognosis scores postintervention among the 3 different treatment groups or between patients who had surgery and those who did not have surgery. There was no statistically significant difference in stereognosis function or postintervention change based on patient age at time of testing. CONCLUSIONS: In this study, 92% of children with spastic hemiplegic cerebral palsy had stereognosis impairment with a wide spectrum of severity. After operative or nonoperative treatment interventions, stereognosis as a secondary outcome measure was not changed. TYPE OF STUDY/LEVEL OF EVIDENCE: Therapeutic III.

PMID: 26614592

2. PLoS One. 2015 Dec 2;10(12):e0143967. doi: 10.1371/journal.pone.0143967. eCollection 2015.

Leg and Joint Stiffness in Children with Spastic Diplegic Cerebral Palsy during Level Walking.

Wang TM, Huang HP, Li JD, Hong SW, Lo WC, Lu TW.

Individual joint deviations are often identified in the analysis of cerebral palsy (CP) gait. However, knowledge is

limited as to how these deviations affect the control of the locomotor system as a whole when striving to meet the demands of walking. The current study aimed to bridge the gap by describing the control of the locomotor system in children with diplegic CP in terms of their leg stiffness, both skeletal and muscular components, and associated joint stiffness during gait. Twelve children with spastic diplegia CP and 12 healthy controls walked at a self-selected pace in a gait laboratory while their kinematic and forceplate data were measured and analyzed during loading response, mid-stance, terminal stance and pre-swing. For calculating the leg stiffness, each of the lower limbs was modeled as a non-linear spring, connecting the hip joint center and the corresponding center of pressure, with varying stiffness that was calculated as the slope (gradient) of the axial force vs. the deformation curve. The leg stiffness was further decomposed into skeletal and muscular components considering the alignment of the lower limb. The ankle, knee and hip of the limb were modeled as revolute joints with torsional springs whose stiffness was calculated as the slope of the moment vs. the angle curve of the joint. Independent t-tests were performed for between-group comparisons of all the variables. The CP group significantly decreased the leg stiffness but increased the joint stiffness during stance phase, except during terminal stance where the leg stiffness was increased. They appeared to rely more on muscular contributions to achieve the required leg stiffness, increasing the muscular demands in maintaining the body posture against collapse. Leg stiffness plays a critical role in modulating the kinematics and kinetics of the locomotor system during gait in the diplegic CP.

PMID: 26629700

3. Yonsei Med J. 2016 Jan;57(1):217-24. doi: 10.3349/ymj.2016.57.1.217.

Relationships between Isometric Muscle Strength, Gait Parameters, and Gross Motor Function Measure in Patients with Cerebral Palsy.

Shin HI, Sung KH, Chung CY, Lee KM, Lee SY, Lee IH, Park MS.

PURPOSE: This study investigated the correlation between isometric muscle strength, gross motor function, and gait parameters in patients with spastic cerebral palsy and to find which muscle groups play an important role for gait pattern in a flexed knee gait. MATERIALS AND METHODS: Twenty-four ambulatory patients (mean age, 10.0 years) with spastic cerebral palsy who were scheduled for single event multilevel surgery, including distal hamstring lengthening, were included. Preoperatively, peak isometric muscle strength was measured for the hip flexor, hip extensor, knee flexor, and knee extensor muscle groups using a handheld dynamometer, and three-dimensional (3D) gait analysis and gross motor function measure (GMFM) scoring were also performed. Correlations between peak isometric strength and GMFM, gait kinematics, and gait kinetics were analyzed. RESULTS: Peak isometric muscle strength of all muscle groups was not related to the GMFM score and the gross motor function classification system level. Peak isometric strength of the hip extensor and knee extensor was significantly correlated with the mean pelvic tilt (r=-0.588, p=0.003 and r=-0.436, p=0.033) and maximum pelvic obliquity (r=-0.450, p=0.031 and r=-0.419, p=0.041). There were significant correlations between peak isometric strength of the knee extensor and peak knee extensor moment in early stance (r=0.467, p=0.021) and in terminal stance (r=0.416, p=0.043). CONCLUSION:
There is no correlation between muscle strength and gross motor function. However, this study showed that muscle strength, especially of the extensor muscle group of the hip and knee joints, might play a critical role in gait by stabilizing pelvic motion and decreasing energy consumption in a flexed knee gait.

PMID: 26632404

4. J Pediatr Orthop. 2015 Dec 3. [Epub ahead of print]

Persistence and Recurrence Following Femoral Derotational Osteotomy in Ambulatory Children With Cerebral Palsy.

Church C, Lennon N, Pineault K, Abousamra O, Niiler T, Henley J, Dabney K, Miller F.

BACKGROUND: Excessive hip internal rotation is frequently seen in children with cerebral palsy (CP). Femoral derotational osteotomy (FDO) is effective in the short term, but factors associated with long-term correction remain unclear. The purposes of this study were to define the incidence of persistence and recurrence of hip internal

rotation following FDO in ambulatory children with CP and to evaluate factors that influence outcome. METHODS: Following IRB approval, kinematic and passive range of motion (PROM) variables were retrospectively evaluated in children with spastic CP who had FDO to correct hip internal rotation as part of clinical care at a children's specialty hospital. Children included had a preoperative evaluation (Vpre), a short-term postoperative evaluation (Vshort, 1 to 3 y post), and, in some cases, a long-term postoperative evaluation (Vlong, ≥5 y post). Age at surgery, physical exam measures, and kinematics variables were evaluated as predictors for dynamic and static recurrence. RESULTS: Kinematic hip rotation improved from 14±12 degrees (Vpre; internal positive) to 4±13 degrees (Vshort) and relapsed to 9±15 degrees long term (P<0.05 Vpre/Vshort/Vlong; 99 limbs). Hip PROM midpoint improved from 23±9 degrees (Vpre) to 8±11 degrees (Vshort) and relapsed to 14±13 degrees (P<0.01 Vpre/Vshort/Vlong). Persistent hip internal rotation was noted in 41% (kinematics) and 18% (PROM) of limbs at Vshort (105 children, 178 limbs). Of limbs that showed initial improvement at Vshort (62 children, 95 limbs), recurrence was seen in 40% (kinematic hip rotation) and 39% (hip midpoint) at Vlong. Comparing children who had recurrent hip internal rotation and those who maintained long-term correction, we saw higher levels of spasticity and lower gait velocity in the recurrent group (P<0.05).
CONCLUSIONS: Although FDO is an accepted treatment in children with CP, persistence and recurrence of hip internal rotation can occur. Recurrence is associated with spasticity and slower gait velocity. Predictor variables may be useful for surgeons during preoperative discussions of expected outcome with families of FDO candidates. LEVEL OF EVIDENCE: Level III.

PMID: 26636742

5. J Neurosurg Sci. 2015 Dec;59(4):393-404.

Ablative neurosurgery for movement disorders related to cerebral palsy.

Sitthinamsuwan B, Nunta-Aree S.

This article aims to describe the roles, operative strategies and outcomes of neuroablative procedures in treatment of movement disorders related to cerebral palsy (CP). The authors reviewed relevant medical literatures concerning ablative neurosurgical procedures for CP. Neurosurgery is an appropriate option for treatment of intractable movement disorders in CP. Destructive therapies can be selectively operated upon, on the brain, spinal cord, nerve root and peripheral nerve. Because all of them carry irreversible properties, presurgical evaluation and decision making for the surgery are critical. Selection of the procedures should be tailored for individual cases. Selective dorsal rhizotomy (SDR) is mostly suitable for CP children with spastic diplegia who are potential ambulators. Selective peripheral neurotomy (SPN) aims to diminish localized hypertonia. Intractable painful spasticity in an entire useless limb can be effectively treated by dorsal root entry zone lesion (DREZotomy). Stereotactic coagulation of specific targets in the brain is appropriate for more diffuse movement disorders or hyperkinesias confined to one side of the body. Combined surgery should be employed in management of more complicated abnormalities or coexisting neurologic and orthopedic disorders. Neuroablation remains an alternative to neuromodulation therapy, especially in circumstances when the latter is unavailable.

PMID: 26635190

6. Dev Med Child Neurol. 2015 Nov 30. doi: 10.1111/dmcn.12965.

Burke-Fahn-Marsden dystonia severity, Gross Motor, Manual Ability, and Communication Function Classification scales in childhood hyperkinetic movement disorders including cerebral palsy: a 'Rosetta Stone' study.

Elze MC, Gimeno H, Tustin K, Baker L, Lumsden DE, Hutton JL, Lin JS.

AIM: Hyperkinetic movement disorders (HMDs) can be assessed using impairment-based scales or functional classifications. The Burke-Fahn-Marsden Dystonia Rating Scale-movement (BFM-M) evaluates dystonia impairment, but may not reflect functional ability. The Gross Motor Function Classification System (GMFCS), Manual Ability Classification System (MACS), and Communication Function Classification System (CFCS) are widely used in the literature on cerebral palsy to classify functional ability, but not in childhood movement disorders.

We explore the concordance of these three functional scales in a large sample of paediatric HMDs and the impact of dystonia severity on these scales. METHOD: Children with HMDs (n=161; median age 10y 3mo, range 2y 6mo-21y) were assessed using the BFM-M, GMFCS, MACS, and CFCS from 2007 to 2013. This cross-sectional study contrasts the information provided by these scales. RESULTS: All four scales were strongly associated (all Spearman's rank correlation coefficient rs >0.72, p<0.001), with worse dystonia severity implying worse function. Secondary dystonias had worse dystonia and less function than primary dystonias (p<0.001). A longer proportion of life lived with dystonia is associated with more severe dystonia (rs =0.42, p<0.001). INTERPRETATION: The BFM-M is strongly linked with the GMFCS, MACS, and CFCS, irrespective of aetiology. Each scale offers interrelated but complementary information and is applicable to all aetiologies. Movement disorders including cerebral palsy can be effectively evaluated using these scales.

PMID: 26616635

7. Int J Clin Exp Med. 2015 Sep 15;8(9):16238-16244.

Consequence of dexmedetomidine on emergence delirium following sevoflurane anesthesia in children with cerebral palsy.

Liu Y, Kang DL, Na HY, Li BL, Xu YY, Ni J, Wu JZ.

Children with cerebral palsy can demonstrate irritability following emergence from general anaesthesia. As well, an elevated rate of emergence delirium (ED) in children has been associated with the application of sevoflurane. The current study's intent is to administer dexmedetomidine, in a single dosage administration, at the initial phase of sevoflurane based anesthesia with regard to the occurrence and severity of ED in children afflicted with cerebral palsy. Participating in the study (American Society of Anesthesiologists I-II) are eighty children ranging in ages two through twelve years. They would be anaesthetised with sevoflurane based anesthesia while undergoing lower limb surgical procedures. The participants were equally distributed to either Group c or Group D. Group C was administered 10 ml saline 0.9%, and Group D was administered dexmedetomidine 0.5 μg•kg-1. Five minutes prior to commencement of the surgical procedures, the participants received the prescribed pharmaceutical dosages under the anesthesia of sevoflurane. In order to sustain the BIS values in a range of 45 and 55, at 60 second increments, endtidal sevoflurane concentrations (ETsev) were modified. After conclusion of the surgical procedures, in post anesthesia care unit (PACU), the frequency of ED was gauged with Aonos four point scale and the severity of ED was gauged with pediatric anesthesia emergence delirium scale upon admission (T0), after intervals of five minutes (T5), fifteen minutes (T15) and thirty minutes (T30). Extubation time, emergence time and length of at stay at the PACU were assessed. Relative to Group C, participants of Group D exhibited noticeably shortened times of emergence, extubation and PACU duration of stay. Prior to surgical incision, ETsev was elevated in the control group, (1.9±0.2 vs 1.6±0.3; P = 0.023) and amid the initial 20 minutes following the surgical incision (1.6±0.2 vs 1.1±0.2; P = 0.016). At intervals of commencement, T0, of five minutes (T5) and fifteen minutes T15, Group D exhibited lower occurrences and severity of ED than those participants in Group C. Dexmedetomidine, given as a bolus dose post induction, was effective in reducing the occurrence and severity of emergence delirium in children with cerebral palsy who were undergoing lower limb surgical procedures under sevoflurane anaesthesia.

PMID: 26629139

8. Dev Med Child Neurol. 2015 Nov 27. doi: 10.1111/dmcn.12988. [Epub ahead of print]

Efficacy of suit therapy on functioning in children and adolescents with cerebral palsy: a systematic review and meta-analysis.

Martins E, Cordovil R, Oliveira R, Letras S, Lourenço S, Pereira I, Ferro A, Lopes I, Silva CR, Marques M.

AIM: This systematic review and meta-analysis presents an overview of the efficacy of suit therapy on functioning in children and adolescents with cerebral palsy (CP). METHOD: A systematic review with meta-analysis was conducted. A comprehensive search of peer-reviewed articles was performed on electronic databases, from their inception to May 2014. Studies included were rated for methodological quality using the Physiotherapy Evidence

Database scale. Effects of suit therapy on functioning were assessed using meta-analytic techniques. RESULTS: From the 46 identified studies, four met the inclusion criteria and were included in the meta-analysis. Small, pooled effect sizes were found for gross motor function at post-treatment (g=0.46, 95% confidence interval [CI] 0.10-0.82) and follow-up (g=0.47, 95% CI 0.03-0.90). INTERPRETATION: The small number of studies, the variability between them, and the low sample sizes are limitations of this review. Findings suggest that to weigh and balance benefits against harms, clinicians, patients, and families need better evidence to examine and prove the effects of short intensive treatment such as suit therapy on gross motor function in children and adolescents with CP. Therefore, more research based on high-quality studies focusing on functioning in all dimensions of the International Classification of Functioning, Disability and Health perspective is necessary to clarify the impact of suit therapy.

PMID: 26613800

9. Nutr Hosp. 2015 Dec 1;32(s02):10304.

Fluid needs of aging cerebral palsy patients.

Gonzalez-Alonso M, Matía Cubillo A.

Introduction: Aging people with cerebral palsy have raised present dehydration that can cause serious physical and psychological damage risk. Objective: This study analyzes the water needs of agingpeople with cerebral palsy. Method: A descriptive-interpretative study on water necessitiesis performed. In Cerebral Palsy Association of Burgos, 26 adults (8 females, 18 males) with an average age of 40 years were selected to answer the questions; the oldest participant was 65 years old. All persons were classified with the Gross Motor Function Classification System GMFCS), the Ability Classification System Manual (MACS), the Communication Function Classification System (CFCS) and the interviews on water needs. A statistical frequency analysis was conducted. Results: The participants had 88% GMFCS level V and IV, 53% MACS level V and 38% CFCS level III. The factors that determine the fluid needs are their ability to move, swallowing disorders, medication and fear of incontinence. Conclusions: It was confirmed that the people with a severe degree of disability presented a higher average of liquid needs. The adequate intake of water has been established to prevent the effects of dehydration. The degree of hydration can influence the health and welfare of people with cerebral palsy.

PMID: 26615274

10. Eur J Phys Rehabil Med. 2015 Dec 1. [Epub ahead of print]

Presentation of recommendations for the rehabilitation of children with cerebral palsy.

Fazzi E, Castelli E.

The SINPIA-SIMFER (Italian Society of Child and Adolescent Neuropsychiatry-Italian Society of Physical Medicine and Rehabilitation) Intersociety Commission was set up in December 2000 and is made up of members of each of these two scientific societiesa, all experts in the field of rehabilitation of patients with cerebral palsy (CP). In accordance with the indications of the Italian Health Ministry's Planning Department, in 1999 this Commission was entrusted with the task of drawing up "Guidelines for the Rehabilitation of Children Affected by Cerebral Palsy" and to revise and update the same at five-yearly intervals. The present document is a summary of the latest update, drawn up through meetings of the Intersociety Commission, held in 2012 and 2013, and discussed and approved at the annual SINPIA-SIMFER meeting held in Brindisi in October 2013. The current version of the Recommendations extends and updates the previous ones, also addressing new areas of intervention and adding some in-depth analyses. The document as a whole is not so much a proposal for treatment updated on the basis of advancing knowledge in the field of rehabilitation of CP, as a presentation of the method that should be applied by professionals seeking to define the most appropriate intervention and treatment strategies. The text is the product of a process of careful exchanges, conducted in a collegial and collaborative fashion, between professionals working in different fields (rehabilitation medicine and child neuropsychiatry) and in healthcare settings of different levels (ranging from first-level local settings to third-level national ones) and different types (affiliated outpatient The SINPIA-SIMFER (Italian Society of Child and Adolescent Neuropsychiatry-Italian Society of Physical Medicine and Rehabilitation) Intersociety Commission was set up in December 2000 and is made up of members of each of these

two scientific societiesa, all experts in the field of rehabilitation of patients with cerebral palsy (CP). In accordance with the indications of the Italian Health Ministry's Planning Department, in 1999 this Commission was entrusted with the task of drawing up "Guidelines for the Rehabilitation of Children Affected by Cerebral Palsy" and to revise and update the same at five-yearly intervals. The present document is a summary of the latest update, drawn up through meetings of the Intersociety Commission, held in 2012 and 2013, and discussed and approved at the annual SINPIA-SIMFER meeting held in Brindisi in October 2013. The current version of the Recommendations extends and updates the previous ones, also addressing new areas of intervention and adding some in-depth analyses. The document as a whole is not so much a proposal for treatment updated on the basis of advancing knowledge in the field of rehabilitation of CP, as a presentation of the method that should be applied by professionals seeking to define the most appropriate intervention and treatment strategies. The text is the product of a process of careful exchanges, conducted in a collegial and collaborative fashion, between professionals working in different fields (rehabilitation medicine and child neuropsychiatry) and in healthcare settings of different levels (ranging from first-level local settings to third-level national ones) and different types (affiliated outpatient clinics and centers, local health authorities, hospitals, "IRCCS" research hospitals, universities).

PMID: 26629842

11. Pol Merkur Lekarski. 2015 Nov 28;39(233):311-315.

[Analysis of using assistive devices by patients suffering from cerebral palsy - preliminary report].

[Article in Polish]

Zeńczak-Praga K, Zgorzalewicz-Stachowiak M, Cesar K.

Cerebral palsy (CP) is still significant health and social issue in the world. Adults who suffer from that illness have problem with mobility which make their functioning much harder. Common symptoms include spasticity, chronic pain of musculoskeletal system, disturbance of sensation, epilepsy or mental retardation. AIM: The aim of the study was analysis of assistive devices used by patients with CP through childhood and adulthood. The results were compared with the situation in this field of CP patients in other countries. MATERIALS AND METHODS: The study involved 30 patients with CP in age between 20-43 living in Poznan and under the care of Occupational Therapy Workshop and Enviromental Self-help Houses. The research method was questionnaire which was directed to caregivers of adults with CP. They were asked about diagnosis, accompanying symptoms as well as assistive devices used during childhood and adulthood. RESULTS: During childhood wheelchair and standing frame were used the most often while during adulthood the most common were also the first mentioned above as well as rehabilitation lift. Although unfavourable evaluation of fitting assistive devices, majority of caregivers of CP sufferer claimed that there was varying improvement in patients motor functionality. CONCLUSIONS: Comprehensive rehabilitation and assistive devices are necessary for patients with CP during adulthood not less than during childhood. Wheelchairs are even more essential for adults than for children.

PMID: 26637097

12. R I Med J (2013). 2015 Dec 1;98(12):26-31.

Orthopaedic Management of Spasticity.

Pidgeon TS, Ramirez JM, Schiller JR.

Spasticity is a common manifestation of many neurological conditions including multiple sclerosis, stroke, cerebral palsy, traumatic brain injury, and spinal cord injuries. Management of spasticity seeks to reduce its burden on patients and to limit secondary complications. Non-operative interventions including stretching/splinting, postural management, physical therapy/strengthening, anti-spasticity medications, and botulinum toxin injections may help patients with spasticity. Surgical management of these conditions, however, is often necessary to improve quality of life and prevent complications. Orthopaedic surgeons manage numerous sequelae of spasticity, including joint contractures, hip dislocations, scoliosis, and deformed extremities. When combined with the efforts of rehabilitation

specialists, neurologists, and physical/occupational therapists, the orthopaedic management of spasticity can help patients maintain and regain function and independence as well as reduce the risk of long-term complications.

PMID: 26623452

13. JAMA. 2015 Dec 1;314(21):2303-5. doi: 10.1001/jama.2015.11025.

Chronic Conditions in Adults With Cerebral Palsy.

This study uses US Medical Expenditure Panel Survey data between 2002 and 2010 to estimate the risk of 8 chronic conditions in adults with cerebral palsy. Adults with cerebral palsy (CP) represent an increasing population whose health status and health care needs are poorly understood.1 Mortality records reveal that death due to ischemic heart disease and cancer is higher among adults with CP2; however, there have been no national surveillance efforts to track disease risk in this population. We examined estimates of chronic conditions in a population-representative sample of adults with CP.

Peterson MD, Ryan JM, Hurvitz EA, Mahmoudi E.

PMID: 26624831

Prevention and Cure

14. Res Dev Disabil. 2015 Nov 26;48:253-261. doi: 10.1016/j.ridd.2015.11.014. [Epub ahead of print]

Early motor development of children with a congenital cytomegalovirus infection.

De Kegel A, Maes L, Dhooge I, van Hoecke H, De Leenheer E, Van Waelvelde H.

BACKGROUND: Congenital cytomegalovirus (cCMV) infection is the most important etiology of non-hereditary childhood hearing loss and an important cause of neurodevelopmental delay. The current study aimed to investigate the early motor development of symptomatic and asymptomatic cCMV infected children with and without sensorineural hearing loss (SNHL). METHODS: Sixty-four children with a cCMV infection, without cerebral palsy, were compared to a control group of 107 normal hearing children. They were assessed around the ages of 6, 12, and 24 months with the Peabody Developmental Motor Scales-2 (PDMS-2), Alberta Infant Motor Scales (AIMS), and Ghent Developmental Balance Test (GDBT). The cCMV infected children were subdivided into a symptomatic (n=26) and asymptomatic cCMV group (n=38) but also into a cCMV group with SNHL (n=19) and without SNHL (n=45). RESULTS: Symptomatic cCMV infected children and cCMV infected children with SNHL performed significantly weaker for all gross motor outcome measures. CONCLUSION: A congenital CMV infection is a risk factor for a delay in the early motor development. Follow-up will be necessary to gain insight into the exact cause of this motor delay and to define the predictive value of early motor assessment of cCMV infected children.

PMID: 26630616

15. Biomed Rep. 2015 Nov;3(6):849-852. Epub 2015 Sep 25.

Candidate single-nucleotide polymorphisms and cerebral palsy: A case-control study.

He XG, Peng QI, Chen YH, He T, Huang H, Ma ZK, Fan XJ, Luo L, Liu SJ, Lu XM.

Certain genetic polymorphisms have been suggested to be associated with cerebral palsy; the candidate genes are involved in thrombophilia, inflammation and preterm labor, but the mechanism remains to be elucidated. The aim of the present study was to investigate the associations between selected single-nucleotide polymorphisms (SNPs) and cerebral palsy among children. A case-control study was conducted, including 74 infants with cerebral palsy (case group) and 99 healthy infants (control group). The distributions of the allele and genotype frequencies were

examined for the total cerebral palsy patient population in addition to subgroups divided according to gestational age (preterm versus full-term). The results showed that the rs1042714 variant in adrenergic receptor β-2 (ADRB2) and heterozygosity for ADRB2 were associated with the cerebral palsy risk among the preterm infants. No significant differences in the allele or genotype frequencies were observed between the total cerebral palsy patient population and controls for the eight SNPs investigated.

PMID: 26623029

16. J Obstet Gynaecol Can. 2015 Nov;37(11):975-87.

Magnesium Sulphate for Eclampsia and Fetal Neuroprotection: A Comparative Analysis of Protocols Across Canadian Tertiary Perinatal Centres.

De Silva DA, Sawchuck D, von Dadelszen P, Basso M, Synnes AR, Liston RM, Magee LA.

BACKGROUND: Magnesium sulphate (MgSO4) has been recommended for fetal neuroprotection to prevent cerebral palsy, with national societies adopting new guidelines for its use. A knowledge translation project to implement Canadian guidelines is ongoing. Discussion about MgSO4 for fetal neuroprotection could not occur distinct from MgSO4 for eclampsia prophylaxis and treatment. Thus, in order to explore standardization of MgSO4 use in Canada, we sought to compare local protocols for eclampsia and fetal neuroprotection across tertiary perinatal centres. METHODS: Twenty-five Canadian tertiary perinatal centres were asked to submit their protocols for use of MgSO4 for eclampsia prophylaxis/treatment and fetal neuroprotection. Information abstracted included date of protocol, definitions of indications for treatment, details of MgSO4 administration, maternal and fetal monitoring, antidote for toxicity, and abnormal signs requiring physician attention. Descriptive analyses were used to compare site protocols with known definitions of preeclampsia. Data from the Canadian Perinatal Network (CPN) were used to verify what was done in clinical practice. RESULTS: Twenty-two of the 25 centres submitted protocols for eclampsia prevention/treatment. Eleven of these provided a definition of preeclampsia that warranted treatment; five of the 22 advised treatment of severe preeclampsia only. Criteria for treatment and monitoring procedures varied across centres. Sixteen of the 22 sites with protocols had data from the CPN. Of 635 women with pre-eclampsia, 422 (66.5%) received MgSO4. Twenty of 25 centres provided protocols for fetal neuroprotection. Definitions of indications were consistent across sites, except for gestational age cut-off. CONCLUSION: This study suggests that local protocols are often inconsistent with published evidence. While this may be related to local institutional practices, relevant processes must be put in place to maximize uniformity of practice and improve patient care.

PMID: 26629718

17. N Engl J Med. 2015 Dec 3;373(23):2288. doi: 10.1056/NEJMc1512559#SA1.

Prenatal Factors in Cerebral Palsy.

Meller CH, Izbizky GH, Otaño L.

Comment in Prenatal Factors in Cerebral Palsy. [N Engl J Med. 2015]

Comment on Prenatal Factors in Singletons with Cerebral Palsy Born at or near Term. [N Engl J Med. 2015]

PMID: 26630149

18. N Engl J Med. 2015 Dec 3;373(23):2288-9. doi: 10.1056/NEJMc1512559.

Prenatal Factors in Cerebral Palsy.

Nelson KB, Blair E.

Comment on Prenatal Factors in Singletons with Cerebral Palsy Born at or near Term. [N Engl J Med. 2015]
Prenatal Factors in Cerebral Palsy. [N Engl J Med. 2015]

PMID: 26630148