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Interventions and Management

1. Am J Phys Med Rehabil. 2012 Jul 11. [Epub ahead of print]

Responsiveness of Edinburgh Visual Gait Score to Orthopedic Surgical Intervention of the Lower Limbs in Children with Cerebral Palsy.

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From the Department of Physiotherapy, Manipal College of Allied Health Science, Manipal University, Karnataka, India.

OBJECTIVE: The aim of this study was to report the responsiveness and minimal clinically important difference of the Edinburgh Visual Gait Score (EVGS), used to measure gait deviations in children with cerebral palsy. **DESIGN:** Fifty ambulant children with spastic diplegia (Gross Motor Function Classification System levels II and III) aged between 6 and 19 yrs were recruited for this longitudinal study. The participants were evaluated before surgery and at 6 and 12 mos after surgery. The change in EVGS at these time points was used to calculate effect sizes and minimal clinically important differences. **RESULTS:** Friedman analysis of variance showed a significant difference ($\chi^2 = 60.69$, $P = 0.000$) in the EVGS scores at 6 and 12 mos when compared with baseline. Effect sizes at 6 and 12 mos were large (1.19 and 1.22, respectively), indicating a visible difference in gait. The minimal clinically important differences of EVGS at 6 and 12 mos were 11 and 15, respectively. **CONCLUSIONS:** The EVGS is an outcome measure that can be used to evaluate the effect of orthopedic surgical intervention in children with cerebral palsy. Differences of 11 and 15 points on the EVGS are required to suggest that changes in gait are attributable to intervention when group means are considered.

[PMID: 22790796](https://pubmed.ncbi.nlm.nih.gov/22790796/) [PubMed - as supplied by publisher]

2. Arch Phys Med Rehabil. 2012 Jul 6. [Epub ahead of print]

Sonoelastographic evaluation of medial gastrocnemius muscles intrinsic stiffness after rehabilitation therapy with botulinum toxin A injection in spastic cerebral palsy.

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Department of Rehabilitation Medicine, Catholic University of Daegu School of Medicine, Daegu, Korea, 3056-6, Daemyung 4-Dong, Nam-Gu, Daegu, 705-718, South Korea.

OBJECTIVE: To investigate intrinsic stiffness changes using sonoelastography (SE) in the medial gastrocnemius muscle (GCM) after rehabilitation therapy with Botulinum toxin A (BTA) injection in spastic cerebral palsy (CP). **DESIGN:** Prospective study using ultrasonography and SE. **SETTING:** An inpatient rehabilitation clinic. **PARTICIPANTS:** Seventeen children with spastic cerebral palsy (mean age 57 (standard deviation 22, age range 26 - 110 months). **INTERVENTION:** Rehabilitation therapy and intramuscular injection of BTA in the both medial and lateral GCMs. **MAIN OUTCOME MEASURES:** SE was obtained on the medial GCM, and the elastic pattern of the medial GCM was graded from SE 1 (purple to green: soft) to SE 4 (red: stiff) based on color-scaled SE. SE score, color histogram, Modified Ashworth Scale (MAS) of the ankle plantar flexor muscles, and Gross Motor Function Measure (GMFM) were obtained before intervention and 4 weeks after intervention. The correlation among SE score, GMFM, and MAS were determined. Intra-rater reliability was also evaluated. **RESULTS:** Before and at 4 weeks after intervention, mean SE score decreased from 3.4 to 1.5 ($p < 0.05$), median red pixel intensity decreased from 112.5 to 101.3 ($p < 0.05$), median blue pixel intensity increased from 82.6 to 90.4 ($p < 0.05$), mean MAS of the ankle decreased from 2.7 to 1.3 ($p < 0.05$), and mean GMFM increased from 54.55% to 62.32%. Significant correlations were observed between SE score and MAS. Intra-rater reliability was high. **CONCLUSION:** Our results suggest that more information about the change of spastic muscle in CP after rehabilitation treatment with BTA may be gained by estimating muscle stiffness using SE combined with clinical scale measurements.

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3. IEEE Trans Neural Syst Rehabil Eng. 2012 Jul 3. [Epub ahead of print]

Robotics and Gaming to Improve Ankle Strength, Motor Control and Function in Children With Cerebral Palsy-A Case Study Series.

Burdea GC, Cioi D, Kale A, Janes WE, Ross SA, Engsberg JR.

Objective: To investigate the feasibility of gamebased robotic training of the ankle in children with cerebral palsy (CP). **Design:** Case study, 12 weeks intervention, with no follow-up. **Setting:** University research laboratory. **Participants:** A referred sample of 3 children with cerebral palsy, age 7 to 12, all male, were enrolled. All completed the intervention. **Interventions:** Participants trained on the Rutgers Ankle CP system for 36 rehabilitation sessions (12 weeks, 3 times/week), playing two custom virtual reality games. The games were played while participants were seated, and trained one ankle at-a-time for strength, motor control, and coordination. **Main Outcome Measures:** The primary study outcome measures were for impairment (DF/PF torques, DF initial contact angle and gait speed), function (GMFM) and quality of life (Peds QL). Secondary outcome measures relate to game performance (game scores as reflective of ankle motor control and endurance). **Results:** Gait function improved substantially in ankle kinematics, speed and endurance. Overall function (GMFM) indicated improvements that were typical of other ankle strength training programs. Quality of life increased beyond what would be considered a minimal clinical important difference. Game performance improved in both games during the intervention. **Conclusions:** This feasibility study supports the assumption that game-based robotic training of the ankle benefits gait in children with CP. Game technology is appropriate for the age group and was well accepted by the participants. Additional studies are needed however, to quantify the level of benefit and compare the approach presented here to traditional methods of therapy.

[PMID: 22773059](#) [PubMed - as supplied by publisher]

4. ISRN Pediatr. 2012;2012:163039. Epub 2012 Jun 25.

Frontal Plane Motion of the Pelvis and Hip during Gait Stance Discriminates Children with Diplegia Levels I and II of the GMFCS.

Kirkwood RN, Franco RD, Furtado SC, Barela AM, Deluzio KJ, Mancini MC.

Department of Physical Therapy, Universidade Federal de Minas Gerais, 31270-901 Belo Horizonte, MG, Brazil.

Objective. To determine if gait waveform could discriminate children with diplegic cerebral palsy of the GMFCS levels I and II. **Patients.** Twenty-two children with diplegia, 11 classified as level I and 11 as level II of the GMFCS,

aged 7 to 12 years. Methods. Gait kinematics included angular displacement of the pelvis and lower limb joints during the stance phase. Principal components (PCs) analyses followed by discriminant analysis were conducted. Results. PC1s of the pelvis and hip in the frontal plane differ significantly between groups and captured 80.5% and 86.1% of the variance, respectively. PC1s captured the magnitude of the pelvic obliquity and hip adduction angle during the stance phase. Children GMFCS level II walked with reduced pelvic obliquity and hip adduction angles, and these variables could discriminate the groups with a cross-validation of 95.5%. Conclusion. Reduced pelvic obliquity and hip adduction were observed between children GMFCS level II compared to level I. These results could help the classification process of mild-to-moderate children with diplegia. In addition, it highlights the importance of rehabilitation programs designed to improve pelvic and hip mobility in the frontal plane of diplegic cerebral palsy children level II of the GMFCS.

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5. Res Dev Disabil. 2012 Jul 6;33(6):2088-2098. [Epub ahead of print]

Matching accuracy in hemiparetic cerebral palsy during unimanual and bimanual movements with (mirror) visual feedback.

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In the present study participants with Spastic Hemiparetic Cerebral Palsy (SHCP) were asked to match the position of a target either with the impaired arm only (unimanual condition) or with both arms at the same time (bimanual condition). The target was placed at 4 different locations scaled to the individual maximum reaching distance. To test the effect of mirror visual feedback of the less-impaired arm on the matching accuracy, an opaque screen or a mirror was placed in between the arms which masked vision of the impaired arm. Absolute endpoint error was smaller in the bimanual condition compared to the unimanual condition, but there was no effect of mirror visual feedback. Inspection of the individual data, however, showed that 13 out of 23 participants did experience a positive effect of mirror visual feedback. A positive correlation between the baseline error (screen) and the improvement in accuracy with mirror visual feedback seems to suggest that individuals with lower proprioceptive accuracy in the baseline condition may benefit more from mirror visual feedback. Together these findings indicate that bimanual therapy and therapy with mirror visual feedback might be valuable approaches for rehabilitation for a subset of the individuals with SHCP.

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6. Int J Pediatr. 2012;2012:329284. Epub 2012 Jun 26.

Accelerometry: A Feasible Method to Quantify Physical Activity in Ambulatory and Nonambulatory Adolescents with Cerebral Palsy.

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Objective. To determine the feasibility of physical activity monitoring in adolescents with cerebral palsy (CP). Methods. A convenience sample of ambulatory and non-ambulatory adolescents (N = 23; 17 males, 6 females; mean age 13.5 y, SD 2.6 y; Gross Motor Function Classification System (GMFCS) distribution: n = 9 Level I, n = 5 Level II, n = 5 Level III, n = 4 Level IV) was recruited. Physical activity (PA) was objectively assessed using the ActiGraph GT1M activity monitor. Discomfort or adverse effects of wearing the accelerometers were recorded by participants. Levels of physical activity were determined as total PA, light PA (LPA), moderate PA (MPA), moderate-to-vigorous (MVPA), and vigorous PA (VPA) using cut-points recently validated for CP. Results. Most participants showed little reluctance. Mean daily MVPA for all participants was 30.7 minutes (SD 30.3), which corresponded to

2.7 (SD 2.4) minutes of MVPA per hour or 4.5% (SD 3.9) of the total monitoring time. Total PA and MVPA were greatest in ambulatory youth (GMFCS levels I and II) compared with youth who use a walking aid or wheelchair (GMFCS levels III and IV) ($P < 0.05$). Conclusion(s). The results support the use of the accelerometer as a feasible and useful measure of activity in ambulatory and nonambulatory adolescents with CP.

[PMID: 22792119](#) [PubMed - as supplied by publisher]

7. *Int J Pediatr.* 2012;2012:168209. Epub 2012 Jun 10.

Arterial Structure and Function in Ambulatory Adolescents with Cerebral Palsy Are Not Different from Healthy Controls.

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Physical inactivity in youth with cerebral palsy (CP) places them at increased risk of developing cardiovascular disease. The current study assessed indices of arterial health in adolescents with CP, classified as levels I-II of the Gross Motor Function Classification System (GMFCS) ($n = 11$, age 13.2 ± 2.1 yr), in comparison to age- and sex-matched controls ($n = 11$, age 12.4 ± 2.3 yr). Groups were similar in anthropometric measurements, resting blood pressures, and heart rates. There were no group differences in brachial flow-mediated dilation (11.1 ± 7.8 versus 6.1 ± 3.6), carotid intima-media thickness (0.42 ± 0.04 versus 0.41 ± 0.03 mm), and distensibility (0.008 ± 0.002 versus 0.008 ± 0.002 mmHg) or central (4.3 ± 0.6 versus 4.1 ± 0.9 m/s) and peripheral pulse wave velocity (7.1 ± 1.7 versus 7.6 ± 1.1 m/s); CP versus healthy controls, respectively. Vigorous intensity physical activity (PA) was lower in the CP group (CP: 38 ± 80 min versus controls: 196 ± 174 min); groups were similar in light and moderate intensity PA levels. Arterial health of ambulatory youth with CP is not different from a control group despite lower vigorous PA levels. Similar studies need to examine individuals with more pronounced mobility limitations (GMFCS level III-V).

[PMID: 22778755](#) [PubMed - as supplied by publisher] [PMCID: PMC3384943](#)

8. *J Intellect Dev Disabil.* 2012 Mar;37(1):11-26. Epub 2012 Feb 3.

Patterns of communicative interaction between a child with severe speech and physical impairments and her caregiver during a mealtime activity.

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BACKGROUND: Interaction between caregivers and children with severe impairments is closely related to the demands of daily activities. This study examines the relationship between interaction and the routine mealtime activity at home. **METHOD:** Patterns of interaction between a child (aged 6 years and 6 months) with severe speech and physical impairments and her caregiver (focus dyad) and a child without impairments (aged 6 years and 6 months) and her caregiver (comparison dyad) were analysed using video recordings and activity-based communication analysis. **RESULTS:** The focus dyad's interaction was unaided. The dyad did not use the Blissymbol board but communicated using words, vocalisations, word approximations, and body communication. Interaction in the focus dyad included relatively few pauses and frequent interchanges of short and sometimes simultaneous communicative contributions. Strong relations between patterns of interaction and immediate activity management goals such as assisting with eating, eating and drinking were found and compared for the two dyads. Results were discussed with regard to child development and communication intervention. **CONCLUSIONS:** The focus dyad showed interactive efficiency and the fulfilment of goals relating to basic understanding and closeness, but mainly with regard to immediate mealtime issues. The comparison child and caregiver were more independent in the activity which made it possible for them to reach more extensive, and from a child perspective, age-adequate goals than the focus dyad.

[PMID: 22300257](#) [PubMed - indexed for MEDLINE]

9. Vojnosanit Pregl. 2012 Jun;69(6):488-91.**Tongue mobility in patients with cerebral palsy.**

Zivković Z, Golubović S.

Special Hospital for the Cerebral Palsy and Developmental Neurology, Belgrade, Serbia.

BACKGROUND/AIM: In children with cerebral palsy speech is a big problem. Speech of these children is more or less understandable, depending on the degree of reduced mobility of articulatory organs. Reduced mobility is affected by inability to control facial grimacing and poor muscle strength when performing targeted movements. The aim of this study was to determine the mobility of tongue in patients with cerebral palsy. **METHODS:** The study included a sample of 34 children--patients with cerebral palsy who had been treated in the Special Hospital for the Cerebral Palsy and Developmental Neurology in Belgrade. The patients were divided according to the determined diagnosis into two groups: Quadripareisis spastica (n = 11) and Morbus Little (n = 16). The children, aged 8-12 years, had preserved intellectual abilities, and all of them had preserved hearing. The study was conducted during the period from January to September 2009. The functional state of articulatory organs in both groups was tested by the C-test that examines the anatomic structure and mobility of the articulatory organs. **RESULTS:** Our research showed that both groups of the patients had impaired functional state of the tongue - the most mobile articulatory organ. Also, the research showed that the functional state of the tongue was worse in children diagnosed with Quadripareisis spastica. A statistically significant correlation between the diagnosis and the functional state of the tongue, the tongue test performance and the retention of the tongue in a given position was found ($r = 0.594$, $p < 0.005$; $r = 0.816$, $p < 0.01$ and $r = 0.738$, $p < 0.001$, respectively). **CONCLUSION:** A large percentage of children with cerebral palsy were not able to establish control over the position of articulatory organs, especially the tongue, and its retention in a given position, all of which affect the quality of speech.

[PMID: 22779293](#) [PubMed - in process]**10. J Pediatr Gastroenterol Nutr. 2012 Jul 9. [Epub ahead of print]****Antireflux Surgery in Children with Neurological Impairment: Caregiver Perceptions and Complications.**

O'Loughlin EV, Somerville H, Shun A, Gangemi R, La Hei E, Desphande A, O'Loughlin TF.

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OBJECTIVES: To report caregiver perceptions to antireflux surgery and gastrostomy in children with severe neurological impairment and to report the complications of the surgery. **METHODS:** Children were identified from a clinic data base and clinical information and surgical complications were extracted from the data base and hospital medical records. A cross-sectional questionnaire addressing severity of symptoms was administered to parents/caregivers and scored with a 5 point Likert scale (1 is much better to 5, much worse). **RESULTS:** 122 children median age 74 months (interquartile range 29-124), 63% spastic quadriplegic cerebral palsy had antireflux surgery. Laparoscopic surgery was performed in 77/122 (63%) and 117/122 (96%) had gastrostomy insertion. Questionnaire was completed by 89/122 (73%), median duration of time from fundoplication to questionnaire, 77 months (43-89). The majority of caregivers indicated that surgery improved or greatly improved weight gain, chest infections, vomiting and feeding tolerance. Only 2 caregivers reported that they regretted consenting to surgery. Serious surgical complications occurred in 10%. **CONCLUSIONS:** Serious complications were uncommon in this series of antireflux surgery in neurologically impaired children. While gagging and retching were common following surgery, a high percentage of caregivers reported improved nutrition, reflux related symptoms and high levels of satisfaction.

[PMID: 22785414](#) [PubMed - as supplied by publisher]

11. Dev Med Child Neurol. 2012 Jul 13. doi: 10.1111/j.1469-8749.2012.04360.x. [Epub ahead of print]

Cerebral palsy, neurogenic bladder, and outcomes of lifetime care.

Murphy KP, Boutin SA, Ide KR.

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Aim: To determine the prevalence of symptomatic neurogenic bladder (SNB) and social and functional variables in a large sample of people with cerebral palsy (CP). **Method:** The medical records of 214 individuals (96 females, 118 males) with CP between the years 1990 and 2000 were retrospectively reviewed. Individuals with frequency, urgency, or incontinence were assigned Gross Motor Function Classification System levels and underwent cystometrogram/electromyogram studies. Neurogenic bladders were classified according to the nomenclature of the International Continence Society. **Results:** Fifty-two patients had hemiplegia, 42 diplegia, 117 quadriplegia, and three dyskinesia. Educational levels ranged from full special education to those with graduate degrees. Thirty-five individuals in our group aged 5 to 66 years had SNB with a prevalence of 16.4%. The median age for the entire population was 9 years 7 months and for those with SNB 12 years 4 months (range 5-57y). Over 80% of individuals who underwent investigation were found to have spastic hyper-reflexic type bladders. Ninety-one percent obtained total continence or major improvement with conservative care. SNB was documented across the lifespan, educational spectrum, and functional level. Upper urinary tract pathology was infrequent. **Interpretation:** SNB is a common finding in individuals with CP. In most patients it is readily diagnosed and treated with conservative interventions.

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12. Dev Med Child Neurol. 2012 Jul 13. doi: 10.1111/j.1469-8749.2012.04363.x. [Epub ahead of print]

An urgency about bladder dysfunction in cerebral palsy.

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[PMID: 22788962](#) [PubMed - as supplied by publisher]

13. Dev Med Child Neurol. 2012 Jul 11. doi: 10.1111/j.1469-8749.2012.04341.x. [Epub ahead of print]

Parent-reported participation in children with cerebral palsy: the contribution of recurrent musculoskeletal pain and child mental health problems.

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Department of Clinical Neurosciences for Children, Women and Children's Division, Oslo University Hospital, Oslo Woman and Children's Clinic, Drammen Hospital, Drammen University of Oslo, Faculty for Clinical Medicine, Oslo, Norway.

Aim: The aim of the study was to explore the contribution of recurrent musculoskeletal pain and mental health to aspects of participation in children with cerebral palsy (CP). **Method:** A total of 105 participants (54 males, 51 females); mean age 14y (SD 3) were assessed by clinical examination, interview, and parental questionnaires. CP type distribution was as follows: spastic unilateral, 37%; spastic bilateral, 56%; and dyskinetic, 7%. Motor function assessed using the Gross Motor Function Classification System was level I, 33%; level II, 40%; level III, 15%; and level IV/V, 11%. Parents reported child participation using the Assessment of Life Habits, child mental health problems using the Strengths and Difficulties Questionnaire, their own mental health using the General Health Questionnaire, and their socioeconomic status. **Results:** Recurrent musculoskeletal pain was associated with

reduced accomplishment of daily activities ($B=-1.22$, $p=0.02$) and social roles ($B=-1.17$, $p=0.03$), and with reduced parental satisfaction with the accomplishment of daily activities ($B=-1.14$, $p=0.03$) and social roles ($B=-1.48$, $p<0.01$). Increasing levels of child mental health problems was associated with reduced accomplishment of daily activities ($B=-0.10$, $p=0.02$) and social roles ($B=-0.11$, $p<0.01$), and with reduced parental satisfaction with the accomplishment of social roles ($B=-0.21$, $p<0.01$). Interpretation: Pain and child mental health should be considered in most participation models in CP. Regarding participation as an objective outcome measure is questionable.

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14. Dtsch Arztebl Int. 2012 Jun;109(24):431-5. Epub 2012 Jun 15.

Screening in child health: studies of the efficacy and relevance of preventive care practices.

Weber P, Jenni O.

BACKGROUND: Pediatric screening enables the prevention or early detection of diseases and developmental disturbances in infancy and childhood. Screening is a standard component of pediatric practice in many countries, but its scientific basis is not well known. **METHODS:** The scientific justification for pediatric screening beyond the neonatal period is presented on the basis of a selective review of the literature on some aspects of pediatric screening. **RESULTS:** The level of evidence varies highly among pediatric screening interventions and can be difficult to determine because of confounding variables. Parent counseling is associated with improvements in child-raising competence, accident prevention, and reading behavior. The early detection of abnormalities in a child's motor, linguistic, mental, or social development is possible and often leads to effective early interventions. Cyanotic congenital heart defects can be detected with 63% sensitivity and 99.8% specificity; cerebral palsy can be diagnosed with 33% to 100% sensitivity and 52.3% to 100% specificity (different figures from multiple studies). Physical therapy seems to improve some manifestations of cerebral palsy. Motor development at 90 days is correlated with motor development at 57 months (72% sensitivity, 91% specificity). A developmental quotient above 85 in a two-year-old child is correlated with an intelligence quotient above 85 when the child is 7 years old. **CONCLUSION:** There is an increasing amount of scientific evidence in favor of pediatric screening. Nonetheless, further epidemiological studies are needed.

[PMID: 22787505](#) [PubMed - in process]

15. J Autism Dev Disord. 2012 Jul 13. [Epub ahead of print]

The Impact of Parenting Stress: A Meta-analysis of Studies Comparing the Experience of Parenting Stress in Parents of Children With and Without Autism Spectrum Disorder.

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Researchers commonly report that families of children with autism spectrum disorder (ASD) experience more parenting stress than families of typically developing (TD) children or those diagnosed with other disabilities [e.g., Down syndrome (DS), cerebral palsy, intellectual disability]. The authors reexamined the research using comparison groups to investigate parenting stress and conducted a meta-analysis to pool results across studies. The experience of stress in families of children with ASD versus families of TD children resulted in a large effect size. Comparisons between families of children of ASD and families with other disabilities also generated a large effect size however, this result should be interpreted with caution as it may be associated with the specific experience of parenting a child with DS.

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16. Lancet. 2012 Jul 7;380(9836):65-71.

Paralympic medicine.

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Paralympic medicine describes the health-care issues of those 4500 or so athletes who gather every 4 years to compete in 20 sports at the Summer Paralympic Games and in five sports at the Winter Paralympic Games. Paralympic athletes compete within six impairment groups: amputation or limb deficiencies, cerebral palsy, spinal cord-related disability, visual impairment, intellectual impairment, or a range of physically impairing disorders that do not fall into the other classification categories, known as les autres. The variety of impairments, many of which are severe, fluctuating, or progressive disorders (and are sometimes rare), makes maintenance of health in thousands of Paralympians while they undertake elite competition an unusual demand on health-care resources. The increased physical fitness of athletes with disabilities has important implications for cardiovascular risk reduction in a population for whom the prevalence of risk factors can be high.

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[PMID: 22770458](#) [PubMed - in process]

Prevention and Cure

17. Am J Perinatol. 2012 Jul 6. [Epub ahead of print]

Neonatal Effects of Magnesium Sulfate Given to the Mother.

Abbassi-Ghanavati M, Alexander JM, McIntire DD, Savani RC, Leveno KJ.

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Objective: Magnesium historically has been used for treatment and/or prevention of eclampsia or preterm labor. More recently, antepartum magnesium sulfate has been suggested for prevention of cerebral palsy in preterm infants. Although adverse effects and toxicity of magnesium in pregnant women are well known, the fetal-neonatal effects of magnesium are less clear. The objective of this study was to evaluate the effects of magnesium on the newborn infant. Study Design: This is a retrospective cohort analysis of women who received antepartum magnesium sulfate for prevention or treatment of eclampsia. Magnesium sulfate was given intravenously beginning with a 6-g dose, followed by 2- to 3-g/h infusion. Newborn hypotonia was diagnosed if an infant exhibited less than normal tone/activity upon admission to the nursery. Results: Between January 2000 and February 2009, a total of 6654 women with preeclampsia were treated with intravenous magnesium sulfate as described; 88 (6%) of the infants were diagnosed with hypotonia. Lower 1-minute and 5-minute Apgar scores, intubation in the delivery room, admission to special care nursery, and hypotonia were all significantly increased as maternal serum magnesium concentrations increased before birth. Conclusion: Several neonatal complications are significantly related to increasing concentrations of magnesium in the maternal circulation.

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18. Am J Perinatol. 2012 Jul 6. [Epub ahead of print]**Effect of Clinical and Histological Chorioamnionitis on the Outcome of Preterm Infants.**

Nasef N, Shabaan AE, Schurr P, Iaboni D, Choudhury J, Church P, Dunn MS.

Women and Babies Program, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada.

Chorioamnionitis contributes to neonatal and maternal morbidity and mortality. We aimed to evaluate of the impact of clinical and histological chorioamnionitis on mortality and morbidity of preterm infants. Maternal and neonatal data were collected in a retrospective cohort of preterm infants less than 30 weeks' gestation. Infants were divided into three groups: those born to mothers with clinical chorioamnionitis, histological chorioamnionitis, or no chorioamnionitis. Of 274 identified preterm infants, 33 infants were born to mothers with clinical chorioamnionitis, 95 to mothers with histological chorioamnionitis, and 146 to mothers with no chorioamnionitis. Data were available for 180 (78%) of the 230 survivors at 18 months corrected age. Infants in the study groups were similar in gestational age, birth weight, and sex distribution. Clinical and histological chorioamnionitis were not predictive of infant mortality, cerebral palsy, bronchopulmonary dysplasia, periventricular leukomalacia, or retinopathy of prematurity. Infants in the clinical chorioamnionitis group had significantly lower cognitive (88 ± 10), language (82 ± 12), and motor (89 ± 11) scores compared with infants in the histological chorioamnionitis group (101 ± 13 , $p < 0.01$; 91 ± 13 , $p < 0.05$; and 99 ± 13 , $p < 0.05$, respectively) and to infants in the no chorioamnionitis group (99 ± 13 , $p < 0.01$; 92 ± 15 , $p < 0.05$; and 97 ± 13 , $p < 0.05$, respectively). Clinical chorioamnionitis is associated with developmental delay in preterm infants despite adequate treatment.

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[PMID: 22773280](#) [PubMed - as supplied by publisher]

19. Cochrane Database Syst Rev. 2012 Jul 11;7:CD008968.**Immediate versus deferred delivery of the preterm baby with suspected fetal compromise for improving outcomes.**

Stock SJ, Bricker L, Norman JE.

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BACKGROUND: Immediate delivery of the preterm fetus with suspected compromise may decrease the risk of damage due to intrauterine hypoxia. However, it may also increase the risks of prematurity. **OBJECTIVES:** To assess the effects of immediate versus deferred delivery of preterm babies with suspected fetal compromise on neonatal, maternal and long-term outcomes. **SEARCH METHODS:** We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (27 February 2012). **SELECTION CRITERIA:** Randomised trials comparing a policy of immediate delivery with deferred delivery or expectant management in preterm fetuses with suspected in utero compromise. Quasi-randomised trials and trials employing a cluster-randomised design were eligible for inclusion but none were identified. **DATA COLLECTION AND ANALYSIS:** Two review authors independently evaluated trials for inclusion into the review. Two review authors assessed trial quality and extracted data. Data were checked for accuracy. **MAIN RESULTS:** We included one trial of 548 women (588 babies) in the review. There was no difference in the primary outcomes of extended perinatal mortality (risk ratio (RR) 1.17, 95% confidence interval (CI) 0.67 to 2.04) or the composite outcome of death or disability at or after two years (RR 1.22, 95% CI 0.85 to 1.75) with immediate delivery compared to deferred delivery. More babies in the immediate delivery group were ventilated for more than 24 hours (RR 1.54, 95% CI 1.20 to 1.97). There were no differences between the immediate delivery and deferred delivery groups in any other individual neonatal morbidity or markers of neonatal morbidity (cord pH less than 7.00, Apgar less than seven at five minutes, convulsions, interventricular haemorrhage or germinal matrix haemorrhage, necrotising enterocolitis and periventricular leucomalacia or ventriculomegaly). More children in the immediate delivery group had cerebral palsy at or after two years of age (RR 5.88, 95% CI 1.33 to 26.02). There were, however, no differences in neurodevelopment impairment at or after two years (RR 1.72, 95% CI 0.86 to 3.41) or death or disability in childhood (six to 13 years of age) (RR 0.82, 95% CI 0.48 to 1.40). More women in the immediate delivery group had caesarean delivery than in the deferred delivery group (RR 1.15, 95% CI 1.07 to 1.24). Data were not available on any other maternal outcomes. **AUTHORS'**

CONCLUSIONS: Currently there is insufficient evidence on the benefits and harms of immediate delivery compared with deferred delivery in cases of suspected fetal compromise at preterm gestations to make firm recommendations to guide clinical practice. Where there is uncertainty whether or not to deliver a preterm fetus with suspected fetal compromise, there seems to be no benefit to immediate delivery. Deferring delivery until test results worsen or increasing gestation favours delivery may improve the outcomes for mother and baby. More research is needed to guide clinical practice.

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20. Indian Pediatr. 2012 Apr 1. pii: S097475591100706-1. [Epub ahead of print]

Neurodevelopmental Evaluation of Very Low Birth Weight Infants With Transient Hypothyroxinemia at Corrected Age of 18-24 Months.

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OBJECTIVE: To perform neurodevelopmental evaluation at 18 to 24 months corrected age in very low birth infants (VLBW) with transient hypothyroxinemia. **DESIGN:** Cohort study. **SETTING:** Maternity teaching hospital. **PATIENTS:** Premature infants who were previously evaluated for thyroid hormone values in the first weeks of life were included. **INTERVENTION:** Data of these infants who weighed <1500 g and <32 weeks of gestation were retrieved for the current study. Available subjects (n=56) were evaluated for neurodevelopmental status at 18 to 24 months of corrected age. Bayley Scales of Infant Development Second Edition (BSID-II) was performed to define Mental developmental index (MDI) and Psychomotor developmental index (PDI). **RESULTS:** The mean MDI and PDI scores were similar between the infants with and without transient hypothyroxinemia of prematurity (THOP) [79.9 ± 14.9 vs 70 ± 20.7 , respectively ($P=0.54$); and 92.2 ± 16.4 vs 85.6 ± 18.9 , respectively ($P=0.68$)]. After adjustment for gestational age and multiple prenatal, perinatal, and early and late neonatal variables, THOP was not associated with an increased risk of disabling cerebral palsy, or a reduction of MDI and PDI scores. **CONCLUSIONS:** THOP may not be an important cause of problems in neurologic and mental development detected at the age of 18 to 24 months corrected age.

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21. J Cereb Blood Flow Metab. 2012 Jul 11. doi: 10.1038/jcbfm.2012.99. [Epub ahead of print]

Effects of therapeutic hypothermia on inflammasome signaling after traumatic brain injury.

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Traumatic brain injury (TBI) activates the NALP1/NLRP1 inflammasome, which is an important component of the early innate inflammatory response to injury. We investigated the influence of therapeutic hypothermia on inflammasome activation after TBI. Adult male Sprague-Dawley rats were subjected to moderate fluid percussion brain injury. Temperature manipulation (33°C or 37°C) was initiated 30 minutes after TBI and maintained for 4 hours. At 4 or 24 hours after TBI, traumatized cortex and hippocampus were prepared for immunoblot or immunohistochemical analysis. In the normothermic groups, caspase-1, caspase-11 and expression of the purinergic receptor P2X7 increased at 24 hours after TBI. Posttraumatic hypothermia lead to decreased expression of these proteins at 24 hours compared with normothermic levels. Immunocytochemical studies showed that posttraumatic hypothermia also decreased caspase-1 staining in cerebral cortical neurons compared with normothermic TBI. Cultured cortical neurons subjected to stretch injury demonstrated significant secretion of caspase-1 into the culture medium and caspase-3 activation, both results reduced by hypothermic treatment. Posttraumatic hypothermia decreases inflammasome signaling in neurons and reduces the innate immune

response to TBI at 24 hours after injury. Therapeutic hypothermia may protect the injured central nervous system by targeting the detrimental consequences of the innate immune response to injury. *Journal of Cerebral Blood Flow & Metabolism* advance online publication, 11 July 2012; doi:10.1038/jcbfm.2012.99.

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