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Interventions and Management

1. Disabil Rehabil. 2012 Mar 6. [Epub ahead of print]

Content identification of the interdisciplinary assessment of cerebral palsy using the International Classification of Functioning, Disability and Health as reference.

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Purpose: To identify relevant items and most frequent categories related to functioning and disability recorded by professionals involved in rehabilitation of children with cerebral palsy (CP) and to assess the filling of the records. **Methods:** A retrospective cross-sectional study based on the written documents provided by an interdisciplinary rehabilitation team. Participated in the study 40 patients with CP, aged 10 months to 17 years. Two raters extracted information from the patients' medical documents as recorded by physicians, physiotherapists, occupational therapists, speech therapists, social workers, psychologists and dieticians using the ICF-CY. Patients' records were scored (+functioning, -disability and *environmental factors) using 27 ICF-CY items to assess the filling of the records. **Results:** Eighty-one items in the medical records [body structure(15), bodily functions(32), activity(24) and environmental factors(10)] were identified as related to the evaluation of the different professions involved with neuro-rehabilitation. Physiotherapy and occupational therapy provided the most comprehensive assessments performed. Fourteen categories had a minimum frequency of 40% during the registration process. **Conclusions:** The content of the information involves categories related to the structures and body functions, activities and environmental factors. The information follows a heterogeneous pattern in content and number of categories. The most frequent items can comprise a set of codes for triage of CP. It is necessary to establish an interdisciplinary consensus based on ICF-CY for systematize the information's record. [Box: see text].

PMID: [22390414](https://pubmed.ncbi.nlm.nih.gov/22390414/) [PubMed - as supplied by publisher]

2. Phys Occup Ther Pediatr. 2012 Mar 5. [Epub ahead of print]

The Assessment of Preschool Children's Participation: Internal Consistency and Construct Validity.

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Participation in activities provides the means for young children to learn, play, develop skills, and develop a sense of personal identity. The Assessment of Preschool Children's Participation (APCP) is a newly developed measure to capture the participation of children aged 2 to 5 years and 11 months in the areas of play, skill development, active physical recreation, and social activities. Data from a clinical trial involving 120 children with cerebral palsy indicated that the APCP has moderate to very good internal consistency. The measure distinguishes between children below or above 4 years of age across levels of the Gross Motor Classification System, and between income levels below or above the median regional income range. The APCP, with a focus on preschool children, has potential use for assessment and identification of activity areas in which the child is participating and areas in which participation may be restricted.

[PMID: 22385259](#) [PubMed - as supplied by publisher]

3. *Can J Neurol Sci.* 2012 Jan;39(1):23-5.

Growing up with cerebral palsy: contemporary challenges of healthcare transition.

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Cerebral palsy is traditionally known as a major cause of chronic disability in childhood. With advances in neonatal care and improved survival, the majority of adolescents with cerebral palsy require ongoing services into adulthood. This paper highlights some of the challenges in their transition from pediatric to adult healthcare and proposes key elements to ensure a smooth transition process.

Comment in

Can J Neurol Sci. 2012 Jan;39(1):1-2.

[PMID: 22384484](#) [PubMed - in process]

4. *Med J Malaysia.* 2011 Dec;66(5):487-90.

Children with learning disabilities in the paediatric clinic, Hospital Tuanku Ja'afar Seremban: an overview.

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The aim of the study was to document the prevalence of learning disability among the children attending the Paediatric Clinic in Hospital Tuanku Ja'afar Seremban. The demographic distribution of these patients; the age of detection of the problem; the associated medical conditions and types of intervention received by these patients were documented. Patients who were between the ages of five to twelve years were included in the study. Learning disability was divided into three categories: speech and articulation problems, academic skills disorder and other categories which included developmental delay. Children with cerebral palsy were excluded from the study. Out of 1320 patients screened, 355 were found to have learning disorders. Majority were Malays, with the male to female ratio of 1.9:1. Most of the patients stayed in Seremban. The learning problem was most commonly detected at the age of 4 years and below. The commonest type of learning disorder was developmental delay, followed by academic skills disorder, speech and academic skills problems and speech disorders. Problems that were detected early were speech problems and developmental delay. Majority of the children had associated medical conditions. Most of the patients received some form of intervention but 11.3% did not attend any intervention program at all. A strategy should be formulated and implemented to help this group of children.

[PMID: 22390107](#) [PubMed - in process]

5. Turk J Pediatr. 2011 Nov-Dec;53(6):638-44.**Assessment of bone density in children with cerebral palsy by areal bone mineral density measurement.**

Esen I, Demirel F, Güven A, Değerliyurt A, Köse G.

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The aim of this cross-sectional study was to investigate the frequency of decreased areal bone mineral density (aBMD) among patients with cerebral palsy (CP), as estimated by using various aBMD Z-score adjustment methods. In addition, this study examined factors related to decreased aBMD scores. One hundred and two children between the ages of 3.2 and 17.8 years were examined. In patients with severe CP, the incidences of decreased aBMD according to various adjusting methods based on decimal age, bone age, height age, and height-for-age Z-score (HAZ) were 79.5%, 69.5%, 51.9%, and 38.3%, respectively. Abnormal levels of calcium, phosphorus, alkaline phosphatase, parathyroid hormone, or anticonvulsant were not predictive for a decreased aBMD. Mean aBMD Z-scores were significantly lower in all aBMD Z-score adjustment methods in patients with severe CP compared to patients with mild-to-moderate CP, except for the adjustment method based on HAZ.

[PMID: 22389986](#) [PubMed - in process]

6. Am J Occup Ther. 2012 Jan-Feb;66(1):15-23.**Multicenter randomized controlled trial of pediatric constraint-induced movement therapy: 6-month follow-up.**

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OBJECTIVE: Pediatric constraint-induced movement therapy (CIMT) is a promising intervention for children with unilateral cerebral palsy (CP). This multisite randomized controlled trial (RCT) tested the hypothesis that 6 hr versus 3 hr per day for 21 days would produce larger maintenance of gains 6 mo posttreatment. **METHOD:** Three sites recruited 18 children (6 per site) ages 3-6 yr with unilateral CP. Children were randomly assigned 3 to 6 hr/day of CIMT for 21 days and wore a cast on the unaffected extremity the first 18 days. Occupational therapists applied a standardized pediatric CIMT protocol. Evaluators blinded to condition administered the ASsisted Hand Assessment and the Quality of Upper Extremity Skills Test, and parents completed the Pediatric Motor Activity Log pre- and posttreatment (1 wk, 1 mo, and 6 mo). **RESULTS:** Both CIMT dosage groups showed significant gains on all five assessments with no significant group differences at 6 mo follow-up. Effect sizes ($n = 15$) comparing preintervention to postintervention measures (partial η^2) ranged from .33 to .80. **CONCLUSION:** The first multisite RCT of pediatric CIMT confirmed the maintenance of positive effects at 6 mo follow-up across multiple functional performance measures. The hypothesis that maintenance of effects would differ for children who received 6 versus 3 hr/day of CIMT (126 vs. 63 total hr) was not supported.

[PMID: 22389937](#) [PubMed - in process]

7. Curr Pharm Des. 2012 Feb 27. [Epub ahead of print]**Vitamin A in Prevention of Bronchopulmonary Dysplasia.**

Guimarães H, Guedes MB, Rocha G, Tomé T, Albino-Teixeira A.

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Bronchopulmonary dysplasia (BPD) remains one of the most serious challenges in the care of the very preterm infants, affecting approximately one-quarter of infants born <1500g birth weight and 30% <1000g. Oxygen toxicity

may contribute to its pathogenesis. Vitamin A concentrations are lower in BPD infants which may result in a reduction of the antioxidant protection. It has been found to up regulate genes necessary for fetal lung growth and increase surfactant production in animal models and is also involved in the modulation of immunological and inflammatory responses by regulation of cytokine production. Retinoic acid plays a key role in lung development improving alveolar septation. Evidence exists that vitamin A supplementation for very low birth weight (VLBW) infants, beyond that routinely given in multivitamin preparations, is associated with a reduction in death or BPD. So, parenteral administration of vitamin A to the newborn is one of the current recommended preventive therapies for BPD (number needed to treat 12; 95% CI:6-94; The information on long-term neurodevelopmental status suggests no evidence of either benefit or harm. Estimates for cerebral palsy range from a number needed to treat of 11 to a number needed to harm of 33. Nowadays, it seems that administration of antenatal vitamin A to the mother in late pregnancy associated with neonatal supplementation can better prevent the development of BPD in areas of endemic vitamin A deficiency. The benefits, in terms of vitamin A status, safety and acceptability of delivering vitamin A in an intravenous emulsion compared with repeat intramuscular injections, the association of vitamin A prenatal and postnatal, as well as the effectiveness and safety of administered high dose vitamin A in ELBW infants waits evaluation and should be assessed in further trials.

[PMID: 22385062](#) [PubMed - as supplied by publisher]

Prevention and Cure

8. Exp Neurol. 2012 Feb;233(2):821-8. Epub 2011 Dec 14.

Posttraumatic hypothermia increases doublecortin expressing neurons in the dentate gyrus after traumatic brain injury in the rat.

Bregy A, Nixon R, Lotocki G, Alonso OF, Atkins CM, Tsoulfas P, Bramlett HM, Dietrich WD.

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Previous studies have demonstrated that moderate hypothermia reduces histopathological damage and improves behavioral outcome after experimental traumatic brain injury (TBI). Further investigations have clarified the mechanisms underlying the beneficial effects of hypothermia by showing that cooling reduces multiple cell injury cascades. The purpose of this study was to determine whether hypothermia could also enhance endogenous reparative processes following TBI such as neurogenesis and the replacement of lost neurons. Male Sprague-Dawley rats underwent moderate fluid-percussion brain injury and then were randomized into normothermia (37°C) or hypothermia (33°C) treatment. Animals received injections of 5-bromo-2'-deoxyuridine (BrdU) to detect mitotic cells after brain injury. After 3 or 7 days, animals were perfusion-fixed and processed for immunocytochemistry and confocal analysis. Sections were stained for markers selective for cell proliferation (BrdU), neuroblasts and immature neurons (doublecortin), and mature neurons (NeuN) and then analyzed using non-biased stereology to quantify neurogenesis in the dentate gyrus (DG). At 7 days after TBI, both normothermic and hypothermic TBI animals demonstrated a significant increase in the number of BrdU-immunoreactive cells in the DG as compared to sham-operated controls. At 7 days post-injury, hypothermia animals had a greater number of BrdU (ipsilateral cortex) and doublecortin (ipsilateral and contralateral cortex) immunoreactive cells in the DG as compared to normothermia animals. Because adult neurogenesis following injury may be associated with enhanced functional recovery, these data demonstrate that therapeutic hypothermia sustains the increase in neurogenesis induced by TBI and this may be one of the mechanisms by which hypothermia promotes reparative strategies in the injured nervous system.

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9. J Matern Fetal Neonatal Med. 2012 Mar 6. [Epub ahead of print]**Placental weight and neurologic outcome in the infant: a review.**

Teng J, Chang T, Reyes C, Nelson KB.

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Objective: To review the agreement of published standards on placental weights (PW) and fetal-placental (F/P) ratios, examine factors contributing to PW, and ask whether aberrant placental weight is associated with adverse neurologic outcome. **Methods:** We conducted a literature search for standards of PW, F/P ratio, and the relationship of PW to perinatal death, neonatal encephalopathy, or cerebral palsy. We reviewed 17 studies of normative PW and 10 of F/P ratios. Since 1990, seven studies compared mean and extreme percentile bounds between 35 and 42 weeks of gestation. Nine publications examined PW and neurologic outcome. **Results:** Untrimmed placentas were heavier by 131-193 grams. F/P ratios differed by 0.2-2.34 between trimmed and untrimmed placentas. Fresh, frozen, or fixed preparation prior to weighing had minimal effect on weight. Gender and race had negligible affect. Placentas from caesarean sections averaged 75 grams heavier than vaginal deliveries. There were no consistent associations of aberrant PW and neurologic outcome. **Conclusions:** Reference standards of recent studies on trimmed placentas were largely in agreement. Current findings relating aberrant PW and adverse neurologic outcome are inconclusive. Further study of the relationship between placental weight and neonatal encephalopathy or cerebral palsy is warranted,, in representative populations using within-study controls.

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10. J Matern Fetal Neonatal Med. 2012 Mar 2. [Epub ahead of print]**Premature birth and diseases in premature infants: common genetic background?**

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It has been proposed that during human evolution, development of obligate bipedalism, narrow birth canal cross-sectional area and the large brain have forced an adjustment in duration of pregnancy (scaling of gestational age; Plunkett 2011). Children compared to other mammals are born with proportionally small brains (compared to adult brains), suggesting shortening of pregnancy duration during recent evolution. Prevalence of both obstructed delivery and premature birth is still exceptionally high. In near term infants, functional maturity and viability is high, and gene variants predisposing to Respiratory Distress Syndrome (RDS) are rare. Advanced antenatal and neonatal treatment practices during the new era of medicine allowed survival of also very preterm infants (VLGA, gestation <32 weeks). Genetic factors may play a major role in predisposing these infants to common pulmonary (Bronchopulmonary Dysplasia; RDS) and intracerebral (Intraventricular Hemorrhage, Cerebral palsy) diseases. Fetal genes also influence the susceptibility to preterm labor and premature birth. Specific genes associating with diseases in preterm infants may also contribute to the susceptibility to preterm birth. Understanding and applying the knowledge of genetic interactions in normal and abnormal perinatal-neonatal development requires large, well-structured population cohorts, studies involving the whole genome and international interdisciplinary collaboration.

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11. Neonatal Netw. 2012 Mar 1;31(2):121-4.**The role of magnesium sulfate in the prevention of cerebral palsy.**

Scheans P.

MAGNESIUM SULFATE (MgSO₄) has been widely used in the perinatal arena for many decades. It has been used for tocolysis in the U.S. for more than 60 years. Estimations of MgSO₄ use for preterm labor (less than 34 weeks of gestation) run as high as 80 percent. Magnesium sulfate is a smooth, skeletal, and cardiac muscle depressant. It is used for preterm labor because of its potential to decrease muscle contractility by interfering with calcium uptake in

the cells. Thousands of moms and babies have been exposed to this medication even though tocolysis remains an off-label use, the exact mechanism of action is not completely understood, and there are studies that show that it is ineffective for this indication, and no evidence that it improves perinatal outcomes.¹⁻³ Additionally, it is a high alert medication because of its narrow therapeutic window and the risk of causing an immediate life-threatening condition (acute respiratory failure) if an error in administration occurs.⁴

[PMID: 22397798](#) [PubMed - in process]

12. Neurotherapeutics. 2012 Mar 8. [Epub ahead of print]

The Instrumented Fetal Sheep as a Model of Cerebral White Matter Injury in the Premature Infant.

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Despite advances in neonatal intensive care, survivors of premature birth remain highly susceptible to unique patterns of developmental brain injury that manifest as cerebral palsy and cognitive-learning disabilities. The developing brain is particularly susceptible to cerebral white matter injury related to hypoxia-ischemia. Cerebral white matter development in fetal sheep shares many anatomical and physiological similarities with humans. Thus, the fetal sheep has provided unique experimental access to the complex pathophysiological processes that contribute to injury to the human brain during successive periods in development. Recent refinements have resulted in models that replicate major features of acute and chronic human cerebral injury and have provided access to complex clinically relevant studies of cerebral blood flow and neuroimaging that are not feasible in smaller laboratory animals. Here, we focus on emerging insights and methodologies from studies in fetal sheep that have begun to define cellular and vascular factors that contribute to white matter injury. Recent advances include spatially defined measurements of cerebral blood flow in utero, the definition of cellular maturational factors that define the topography of injury and the application of high-field magnetic resonance imaging to define novel neuroimaging signatures for specific types of chronic white matter injury. Despite the higher costs and technical challenges of instrumented preterm fetal sheep models, they provide powerful access to clinically relevant studies that provide a more integrated analysis of the spectrum of insults that appear to contribute to cerebral injury in human preterm infants.

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13. Otolaryngol Pol. 2011 Nov-Dec;65(6):423-7.

New modification of Reynwald macroglossia reduction [Article in Polish]

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INTRODUCTION: Macroglossia usually occurs as isolated malformation, however it can coexist with some of the hereditary defect. Enlargement of the tongue can cause cosmetic and functional difficulties. **AIM:** The aim of this paper was to analyze patients with macroglossia operated with own modified Reynwald method. It was based on analysis of surgical treatment and rehabilitation of patients with: Down syndrome, oral-facial-digital syndrome and cerebral palsy, treated at the Department of Plastic, Reconstructive and Aesthetic Surgery, Medical University of Lodz. **MATERIAL AND METHODS:** 63 patients (32 females and 31 males) with Down syndrome (60), oral-facial-digital syndrome (2) and cerebral palsy (1) were operated at the Department of Plastic, Reconstructive and Aesthetic Surgery, Medical University of Lodz, because of hypertrophy of the tongue. 42 patients were operated with partial resection of macroglossia, 2 of them with additional correction of the tongue border and 21 patients with own modified Reynwald method. **RESULTS:** Postoperative treatment was non-complicated in all the patients. Early and long-lasting postoperative results were regarded as satisfactory, and lead to improvement of basic physiological functions. **CONCLUSIONS:** 1. 3–6 years are the optimal age to partial macroglossia reduction. 2. Analysis of surgical macroglossia treatment showed effectiveness of methods based on partial resection of tongue. Surgical treatment with own modified Reynwald method lead to increase of number of satisfied postoperative results. 3.

Partial resection of macroglossia influence on patients look, integration and environment acceptance; in children with deep retardation it simplify nursing.

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14. Radiology. 2012 Mar 8. [Epub ahead of print]

Neurodevelopmental Outcomes in Preterm Infants: Comparison of Infants with and without Diffuse Excessive High Signal Intensity on MR Images at Near-term-equivalent Age.

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Purpose: To compare the neurodevelopmental outcomes between preterm infants with diffuse excessive high signal intensity (DEHSI) and those without DEHSI on magnetic resonance (MR) images, in association with other white matter lesions. **Materials and Methods:** This retrospective study was approved by the institutional review board, and requirement to obtain informed consent was waived. High-risk preterm infants (n = 126) who underwent screening brain MR imaging at near-term-equivalent age were classified into two groups according to the presence of DEHSI. Bayley Scales of Infant Development-II, presence of cerebral palsy, and neurosensory impairment between 18 and 24 months of age were compared between the two groups. The associations of MR findings of other white matter lesions (cystic encephalomalacia, punctate lesions, loss of volume, ventricular dilatation, and delayed myelination) and subsequent outcomes were also analyzed. Outcome data were evaluated by using exact logistic regression analyses and Fisher exact test. **Results:** DEHSI was present in 75% (95 of 126) of infants. Subsequent neurodevelopmental outcomes did not differ significantly between the two groups. Severe motor delay and cerebral palsy were more common in infants with both DEHSI and other white matter lesions as compared with infants with normal white matter (P = .001 and P < .001, respectively). Among other white matter lesions, cystic encephalomalacia (odds ratio, 19.6; 95% confidence interval: 1.3, 333.3) and punctate lesions (odds ratio, 90.9; 95% confidence interval: 6.4, 1000) were significant predictors of cerebral palsy. **Conclusion:** Although the incidence of DEHSI was high (75%) in preterm infants at near-term-equivalent age MR imaging, DEHSI was not predictive of following adverse outcomes. Cystic encephalomalacia and punctate lesions were more significant predictors of cerebral palsy. © RSNA, 2012.

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