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## Interventions and Management

**1. J Hand Microsurg. 2015 Jun;7(1):102-3. doi: 10.1007/s12593-014-0153-3. Epub 2014 Sep 13. Novel Uses for Botulinum Neurotoxin in Upper Limb Surgery.**

Metcalf CW, Naji S, McArthur P.

[PMID: 26078513](#) [PubMed] PMID: PMC4461618 [Available on 2016-06-01]

**2. J Biomech. 2015 Jun 5. pii: S0021-9290(15)00295-X. doi: 10.1016/j.jbiomech.2015.05.018. [Epub ahead of print]**

**A clinically relevant BTX-A injection protocol leads to persistent weakness, contractile material loss, and an altered mRNA expression phenotype in rabbit quadriceps muscles.**

Fortuna R, A Vaz M, Sawatsky A, A Hart D, Herzog W.

Botulinum toxin type-A (BTX-A) injections have become a common treatment modality for patients suffering from muscle spasticity. Despite its benefits, BTX-A treatments have been associated with adverse effects on target muscles. Currently, application of BTX-A is largely based on clinical experience, and research quantifying muscle structure following BTX-A treatment has not been performed systematically. The purpose of this study was to evaluate strength, muscle mass, and contractile material six months following a single or repeated (2 and 3) BTX-A injections into the quadriceps femoris of New Zealand white rabbits. Twenty three skeletally mature rabbits were divided into four groups: experimental group rabbits received 1, 2, or 3 injections at intervals of 3 months (1-BTX-A, 2-BTX-A, 3-BTX-A, respectively) while control group rabbits received volume-matched saline injections. Knee extensor strength, quadriceps muscle mass, and quadriceps contractile material of the experimental group rabbits were expressed as a percentage change relative to the control group rabbits. One-way ANOVA was used to determine group differences in outcome measures ( $\alpha=0.05$ ). Muscle strength and contractile material were significantly reduced in experimental compared to control group rabbits but did not differ between experimental groups. Muscle mass was the same in experimental BTX-A and control group rabbits. We concluded from these results that muscle strength and contractile material do not fully recover within six months of BTX-A treatment. Copyright © 2015 Elsevier Ltd. All rights reserved.

[PMID: 26087882](#) [PubMed - as supplied by publisher]

**3. J Child Neurol. 2015 Jun 15. pii: 0883073815588995. [Epub ahead of print]**

**Neuroplastic Sensorimotor Resting State Network Reorganization in Children With Hemiplegic Cerebral Palsy Treated With Constraint-Induced Movement Therapy.**

Manning KY, Menon RS, Gorter JW, Mesterman R, Campbell C, Switzer L, Fehlings D.

Using resting state functional magnetic resonance imaging (MRI), we aim to understand the neurologic basis of improved function in children with hemiplegic cerebral palsy treated with constraint-induced movement therapy. Eleven children including 4 untreated comparison subjects diagnosed with hemiplegic cerebral palsy were recruited from 3 clinical centers. MRI and clinical data were gathered at baseline and 1 month for both groups, and 6 months later for the case group only. After constraint therapy, the sensorimotor resting state network became more bilateral, with balanced contributions from each hemisphere, which was sustained 6 months later. Sensorimotor resting state network reorganization after therapy was correlated with a change in the Quality of Upper Extremity Skills Test score at 1 month ( $r = 0.79$ ,  $P = .06$ ), and Canadian Occupational Performance Measure scores at 6 months ( $r = 0.82$ ,  $P = .05$ ). This clinically correlated resting state network reorganization provides further evidence of the neuroplastic mechanisms underlying constraint-induced movement therapy.  
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**4. Spine (Phila Pa 1976). 2015 Jun 1;40(11):856-62. doi: 10.1097/BRS.0000000000000857.**

**Unplanned Hospital Readmissions and Reoperations After Pediatric Spinal Fusion Surgery.**

Jain A, Puvanesarajah V, Menga EN, Sponseller PD.

**STUDY DESIGN:** Retrospective review. **OBJECTIVE:** To investigate the rates and reasons for unplanned readmissions and reoperation after pediatric spinal fusion surgery at our institution and to identify risk factors by analyzing patient and surgical characteristics. Unplanned readmission and reoperation were defined as unplanned events within 90 days of the index surgery. **SUMMARY OF BACKGROUND DATA:** The rate of unplanned readmission and reoperation after pediatric spinal fusion surgery is not well established. **METHODS:** Clinical records were reviewed for all children who underwent spinal fusion surgical procedures for spinal deformity correction performed by 1 surgeon from 2000 through 2013 at our institution. Inclusion criteria were age of 10 to 18 years at surgery, fusion spanning more than 5 vertebral levels, and 3 months of clinical or radiographical follow-up (1002 patients met these criteria). Univariate and multivariate logistic regression models were created. Statistical significance was set at a P value of less than 0.05 for all analyses. **RESULTS:** The overall 90-day unplanned readmission and reoperation rates were 8.0% and 3.8%, respectively. The most common causes of readmission were wound dehiscence (1.8%), deep wound infection (1.5%), pulmonary complications (1%), and superficial wound infection (0.9%). Univariate analysis showed that readmission was significantly associated with a higher number of levels fused, greater estimated blood loss, longer length of stay, and certain diagnoses; reoperation was significantly associated with a higher number of levels fused and certain diagnoses. On multivariate analysis, only patient diagnosis was found to be significantly associated with readmission and reoperation; patients with congenital scoliosis, genetic or syndromic scoliosis, cerebral palsy, and other neuromuscular disorders had significantly higher rates. **CONCLUSION:** Unplanned readmission rate after pediatric spinal fusion surgery was 8%, most commonly for wound dehiscence and deep and superficial infections. Increased intraoperative blood loss, higher number of levels fused, and certain diagnoses are risk factors for unplanned readmission. **LEVEL OF EVIDENCE:** 4.

[PMID: 26091156](#) [PubMed - in process]

**5. PM R. 2015 Jun 12. pii: S1934-1482(15)00289-0. doi: 10.1016/j.pmrj.2015.06.003. [Epub ahead of print]**

**Biomechanical and clinical correlates of stance-phase knee flexion in spastic cerebral palsy.**

Rha DW, Cahill-Rowley K, Young J, Torburn L, Stephenson K, Rose J.

**OBJECTIVE:** To identify biomechanical and clinical parameters that influence knee flexion angle at initial contact (IC) and during single limb stance phase of gait in children with spastic cerebral palsy (CP) who walk with flexed-

knee gait. DESIGN: Retrospective analysis of gait kinematics and clinical data collected from 2010-2013. SETTING: Motion & Gait Analysis Laboratory at Lucile Packard Children's Hospital Stanford. PARTICIPANTS: Gait analysis data from individuals with spastic CP (GMFCS I-III) with no prior surgery were analyzed. Participants exhibiting knee flexion  $\geq 20^\circ$  at IC were included; the more-involved limb was analyzed. METHODS: Outcome measures were analyzed with respect to clinical findings, including: passive range of motion; Selective Motor Control Assessment for the Lower Extremity (SCALE); gait kinematics; and musculoskeletal models of muscle-tendon lengths during gait. MAIN OUTCOME MEASURES: Knee flexion at IC (KFIC) and minimum knee flexion during single limb support (KFSLs) were investigated. RESULTS: Thirty-four participants met the inclusion criteria and their data were analyzed (20 males, 14 females; age 10.1 years, range 5-20 years). Mean KFIC was  $34.4 \pm 8.4$  degrees and correlated with lower SCALE score ( $\rho = -.530$ ,  $p = .004$ ), later peak knee flexion during swing ( $\rho = .614$ ,  $p < .001$ ), and shorter maximal muscle length of semimembranosus ( $\rho = -.359$ ,  $p = .037$ ). Mean KFSLs was  $18.7 \pm 14.9$  and correlated to knee flexion contracture ( $\rho = .605$ ,  $p < .001$ ) and shorter maximal muscle length of semimembranosus ( $\rho = -.572$ ,  $p < .001$ ) and medial gastrocnemius ( $\rho = -.386$ ,  $p = .024$ ). GMFCS correlated more strongly to KFIC ( $\rho = .502$ ,  $p = .002$ ) than KFSLs ( $\rho = .371$ ,  $p = .031$ ). Linear regression found that both SCALE score ( $p = .001$ ) and delayed timing of peak knee flexion during swing ( $p = .001$ ) independently predicted KFIC. Knee flexion contracture ( $p = .026$ ) and maximal length of semimembranosus ( $p = .043$ ) independently predicted KFSLs. CONCLUSION: Correlates of KFIC differed from those for KFSLs and suggest that impaired selective motor control and later timing of swing phase knee flexion influence knee position at IC, whereas knee flexion contracture and muscle lengths influence minimal knee flexion in single-limb support (SLS), findings that have important treatment implications.

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## 6. Phys Ther. 2015 Jun 18. [Epub ahead of print]

### Predictors of Independent Walking in Young Children With Cerebral Palsy.

Begnoche DM, Chiarello LA, Palisano RJ, Gracely EJ, Westcott McCoy S, Orlin MN.

BACKGROUND: The attainment of walking is a focus of physical therapy intervention in children with cerebral palsy (CP) and may impact independence in mobility and participation in daily activities. However, knowledge of determinants of independent walking to guide physical therapy decision-making is lacking. OBJECTIVE: The aim of this study was to identify child factors (postural control, reciprocal lower limb movement, functional strength, and motivation) and family factors (family support to child and support to family) that predict independent walking one year later in young children with CP, Gross Motor Function Classification System (GMFCS) levels II-III. DESIGN: Secondary data analysis of an observational cohort study. METHODS: Participants were 80 children with CP, 2-6 years of age. Child factors were measured one year prior to the walking outcome. Parent-reported items representing family factors were collected seven months after study onset. The predictive model was analyzed using backward stepwise logistic regression. RESULTS: A measure of functional strength and dynamic postural control in a sit to stand activity was the only significant predictor of taking  $\geq 3$  steps independently. The positive likelihood ratio (LR+) for predicting a Walker was 3.26; negative likelihood ratio (LR-) was 0.74. The model correctly identified a Walker or Non-walker 75% of the time. LIMITATIONS: Prediction of walking ability was limited by the lack of specificity of child and family characteristics not prospectively selected, and measurement of postural control, reciprocal lower limb movement, and functional strength one year prior to the walking outcome. CONCLUSIONS: Sitting to/from standing predicted independent walking in young children with CP. Prospective longitudinal studies are recommended to determine indicators of readiness for independent walking.

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**7. Dev Med Child Neurol. 2015 Jun 17. doi: 10.1111/dmcn.12826. [Epub ahead of print]****Muscle synergies and complexity of neuromuscular control during gait in cerebral palsy.**

Steele KM, Rozumalski A, Schwartz MH.

**AIM:** Individuals with cerebral palsy (CP) have impaired movement due to a brain injury near birth. Understanding how neuromuscular control is altered in CP can provide insight into pathological movement. We sought to determine if individuals with CP demonstrate reduced complexity of neuromuscular control during gait compared with unimpaired individuals and if changes in control are related to functional ability. **METHOD:** Muscle synergies during gait were retrospectively analyzed for 633 individuals (age range 3.9-70y): 549 with CP (hemiplegia, n=122; diplegia, n=266; triplegia, n=73; quadriplegia, n=88) and 84 unimpaired individuals. Synergies were calculated using non-negative matrix factorization from surface electromyography collected during previous clinical gait analyses. Synergy complexity during gait was compared with diagnosis subtype, functional ability, and clinical examination measures. **RESULT:** Fewer synergies were required to describe muscle activity during gait in individuals with CP compared with unimpaired individuals. Changes in synergies were related to functional impairment and clinical examination measures including selective motor control, strength, and spasticity. **INTERPRETATION:** Individuals with CP use a simplified control strategy during gait compared with unimpaired individuals. These results were similar to synergies during walking among adult stroke survivors, suggesting similar neuromuscular control strategies between these clinical populations.

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[PMID: 26084733](#) [PubMed - as supplied by publisher]**8. J Pediatr Orthop. 2015 Jun 2. [Epub ahead of print]****Risk Factors for Hip Displacement in Children With Cerebral Palsy: Systematic Review.**

Pruszczynski B, Sees J, Miller F

**BACKGROUND:** When hip displacement in children with cerebral palsy (CP) is identified early, treatment is more successful. The standard test is a radiograph of the pelvis measuring the migration index (MI). Our study aims to review published literature of the natural history of hip dislocation among children with CP and to define related risk factors to develop screening criteria for early recognition. **METHODS:** The review included 10 studies with sample sizes greater than 20 children with CP below 18 years who had hips with no surgical intervention or dislocation at initial presentation, minimum 2-year follow-up, and recorded MI, pattern, and Gross Motor Function Classification System (GMFCS) level. **RESULTS:** On the basis of this review, we suggest screening with 1 radiograph for GMFCS I and II, or, if MI>30%, an annual radiograph between ages 2 and 8 years, followed by a radiograph every 2 years until the age of 18 years. For GMFCS III, IV, and V, we recommend an annual radiograph if MI<30% or 1 every 6 months if MI>30% between ages 2 and 8 years, followed by radiograph every 2 years until the age of 18 years. **CONCLUSIONS:** Applying a practical surveillance program for children with CP can prevent hip dislocation, provide early treatment, and ultimately lead to consistently better outcomes than those of neglected hip dislocations. The GMFCS level has a strong impact on subluxation risk and that the risk continues to the end of growth. **LEVEL OF EVIDENCE:** Level III-systematic review.

[PMID: 26090973](#) [PubMed - as supplied by publisher]**9. Phys Ther. 2015 Jun 18. [Epub ahead of print]****Reliability and Validity of Objective Measures of Physical Activity in Youth With Cerebral Palsy Who Are Ambulatory.**

O'Neil ME, Fragala-Pinkham M, Lennon N, George A, Forman J, Trost SG.

**BACKGROUND:** Physical therapy (PT) for youth with cerebral palsy (CP) who are ambulatory includes interventions to increase functional mobility and participation in physical activity (PA). Reliable and valid measures are thus needed to document PA in youth with CP. **OBJECTIVE:** To evaluate inter-instrument reliability and concurrent validity of three accelerometer-based motion sensors with indirect calorimetry as the criterion for

measuring PA intensity in youth with CP. **METHODS:** Fifty-seven youth with CP (mean age = 12.5 ± 3.3 years; 51% girls; 49.1% spastic hemiplegia) participated. Inclusion criteria were: youth aged 6-20 years; ambulatory; GMFCS levels I - III; able to follow directions; and able to complete the full PA protocol. Protocol activities included standardized activity trials with increasing PA intensity (resting, writing, household chores, active video games, and walking at three self-selected speeds) as measured by weight-relative oxygen uptake (VO<sub>2</sub> in ml/kg/min). During each trial participants wore bilateral accelerometers on the upper arms (BodyMedia SenseWear Armband), waist/hip (ActiGraph GT3X) and ankle (StepWatch), and a portable indirect calorimeter (Cosmed K4b2). Intra-class coefficient correlations (ICCs) were calculated to evaluate inter-instrument reliability (left to right accelerometer placement). Spearman correlations were used to examine concurrent validity between accelerometer output (activity and step counts) and indirect calorimetry. Friedman ANOVAs with post hoc analyses were conducted to examine the validity of accelerometers to discriminate PA intensity across activity trials. **RESULTS:** All accelerometers exhibited excellent inter-instrument reliability (ICCs: 0.94-0.99) and good concurrent validity (rho: 0.70 - 0.85). All accelerometers discriminated PA intensity across most activity trials. **LIMITATIONS:** This PA protocol consisted of controlled activity trials. **CONCLUSIONS:** Accelerometers provide valid and reliable measures of PA intensity among youth with CP.

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**10. Front Hum Neurosci. 2015 Jun 3;9:329. doi: 10.3389/fnhum.2015.00329. eCollection 2015.**

#### **Excitability properties of motor axons in adults with cerebral palsy.**

Klein CS, Zhou P, Marciniak C.

Cerebral palsy (CP) is a permanent disorder caused by a lesion to the developing brain that significantly impairs motor function. The neurophysiological mechanisms underlying motor impairment are not well understood. Specifically, few have addressed whether motoneuron or peripheral axon properties are altered in CP, even though disruption of descending inputs to the spinal cord may cause them to change. In the present study, we have compared nerve excitability properties in seven adults with CP and fourteen healthy controls using threshold tracking techniques by stimulating the median nerve at the wrist and recording the compound muscle action potential over the abductor pollicis brevis. The excitability properties in the CP subjects were found to be abnormal. Early and late depolarizing and hyperpolarizing threshold electrotonus was significantly larger (i.e., fanning out), and resting current-threshold (I/V) slope was smaller, in CP compared to control. In addition resting threshold and rheobase tended to be larger in CP. According to a modeling analysis of the data, an increase in leakage current under or through the myelin sheath, i.e., the Barrett-Barrett conductance, combined with a slight hyperpolarization of the resting membrane potential, best explained the group differences in excitability properties. There was a trend for those with greater impairment in gross motor function to have more abnormal axon properties. The findings indicate plasticity of motor axon properties far removed from the site of the lesion. We suspect that this plasticity is caused by disruption of descending inputs to the motoneurons at an early age around the time of their injury.

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**11. Acta Paediatr. 2015 Jun 19. doi: 10.1111/apa.13089. [Epub ahead of print]**

#### **Malnutrition is common in Ugandan children with cerebral palsy, particularly those over the age of five and those who had neonatal complications.**

Kakooza-Mwesige A, Tumwine JK, Eliasson AC, Namusoke HK, Forsberg H.

**AIM:** Poor growth and malnutrition are frequently reported in children with cerebral palsy in developed countries, but there is limited information from developing countries. We investigated the nutritional status of Ugandan children with cerebral palsy and described factors associated with poor nutrition. **METHODS:** We examined 135 children from two to 12 years with cerebral palsy, who attended Uganda's national referral hospital. A child was considered underweight, wasted, stunted or thin if the standard deviation scores for their weight for age, weight for height, height for age and body mass index for age were  $\leq -2.0$  using World Health Organization growth standards. Multivariable logistic regression identified factors associated with nutritional indicators. **RESULTS:** Over half (52%) of the children were malnourished, with underweight (42%) being the most common category, followed by stunting

(38%), thinness (21%), and wasting (18%). Factors that were independently associated with being malnourished were: presence of cognitive impairment, with an adjusted odds ratio (aOR) of 4.5, being five years or older (aOR = 3.4) and feeding difficulties in the perinatal period (aOR = 3.2). **CONCLUSION:** Malnutrition was common in Ugandan children with cerebral palsy and more likely if they were five years or more or had experienced neonatal complications.

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## 12. Turk Pediatr Ars. 2014 Jun 1;49(2):130-7. doi: 10.5152/tpa.2014.1238. eCollection 2014.

### Examination of the relation between body mass index, functional level and health-related quality of life in children with cerebral palsy.

Şimşek TT, Tuç G.

**AIM:** The aim of this study was to examine the relation between body mass index (BMI) and functional level and health-related quality of life in children with cerebral palsy (CP). **MATERIAL AND METHODS:** Two hundred seventy-eight children with CP aged between 2 and 18 years were included in the study. The sociodemographic properties of the children were recorded. Their functional independence levels were assessed with WeeFIM and their health-related quality of life levels were assessed with the Child Health Questionnaire-Parent Form (PF-50). Approval was obtained from the ethics committee of Abant İzzet Baysal University Medical Faculty for this study (Number: 2008/100-77). **RESULTS:** When classified by body mass index, 26.3% of the children had a normal body weight, 5.4% were overweight, 11.5% were obese and 56.8% had a low body weight. The rate of low body weight was higher in children with moderate and severe CP (52.7% and 53.8%, respectively), while the rate of obesity was higher in children with mild CP who could walk (7.1%). A significant difference was found in children with CP with a normal body weight, overweight children with CP, obese children with CP and children with CP with a low body weight in terms of the total WeeFIM score and the variables of quality of life including physical functionality and role/social limitations because of physical health ( $p < 0.05$ ). In the correlation analysis, a positive correlation was found between WeeFIM and BMI and the subdimensions of role/social limitations because of emotional or behavioral difficulties, pain and discomfort and self-esteem ( $p < 0.05$ ). **CONCLUSIONS:** Our results showed that BMI affected functional independence and health-related quality of life in children with CP and this was more prominent in children who had severe CP and low BMI values. More studies are needed in this area.

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## 13. Chin J Integr Med. 2015 Jun 18. [Epub ahead of print]

### Clinical research on intelligence seven needle therapy treated infants with brain damage syndrome.

Liu ZH1, Li YR, Lu YL, Chen JK.

**OBJECTIVE:** To assess whether the intelligence seven needle therapy administered in infants with perinatal brain damage syndrome (BDS) as early intervention would improve patients' neural development. **METHODS:** A randomized controlled trial was conducted. Sixty-four infants with BDS were randomly assigned to two groups: the comprehensive group and the control group. Both groups received routine early intervention; in addition, the comprehensive group received intelligence seven needle therapy. Before and after treatment, the Bayley Scale of Infant Development (BSID), Gesell Developmental Schedules, Gross Motor Function Measure (GMFM), transcranial doppler ultrasound (TCD), and cranial imaging examination were tested for contrast. **RESULTS:** After treatment, the comprehensive group showed significant difference in the Mental Development Index (MDI) scores of BSID compared with the control group ( $P < 0.05$ ), however, no significant discrepancy in psychomotor development index (PDI,  $P > 0.05$ ) was observed. The children's development quotients (DQ) of the comprehensive group exhibited a significant superiority in improving the social adaptation DQ of Gesell Developmental Schedules compared with the control group ( $P < 0.01$ ), as well as GMFM and linguistic and social intercourse ( $P < 0.05$ ). Again, no discrepancy in the fine movement DQ was found ( $P > 0.05$ ). The total scores of GMFM in the comprehensive group were higher than those in the control group ( $P < 0.05$ ). Comparing the two groups, the comprehensive group showed a significantly greater recovery rate than the control group on TCD after treatment ( $P < 0.05$ ). After 6-month follow-up, some recovery in both groups, specifically on broadening of brain outside space by cranial imaging

examination were observed. The comprehensive group demonstrated a significantly greater recovery rate than the control group ( $P < 0.05$ ). **CONCLUSION:** The developmental level of intelligence, motion function, linguistic competence and social intercourse can be promoted for infants with perinatal BDS by treating with the intelligence seven needle therapy. This approach can improve the brain blood supply and promote the growth of frontal and parietal lobes.

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#### 14. Disabil Rehabil. 2015 Jun 19:1-17. [Epub ahead of print]

##### **A grounded theory of Internet and social media use by young people who use augmentative and alternative communication (AAC).**

Hynan A, Goldbart J, Murray J

**PURPOSE:** This paper presents a conceptual grounded theory for how young people with a diagnosis of cerebral palsy who use augmentative and alternative communication (AAC), perceive using the Internet and social media. The aims of the research were to understand and contextualise their perceptions of access and use and explore implications for self-representation and social participation; to date literature on this topic is limited. **METHOD:** A constructivist grounded theory research approach concurrently collected and analysed interview data from 25 participants (aged 14-24 years) who use AAC and additional sources. **RESULTS:** A conceptual grounded theory was developed around an emergent core category that showed young people who use AAC have a clear desire to use the Internet and social media. This was underpinned by eight supporting categories: reported use, described support, online challenges, access technology, speech generating device (SGD) issues, self-determination, self-representation and online social ties. **CONCLUSION:** The conceptual grounded theory supports understanding of facilitators and challenges to use of the Internet and social media by young people with a diagnosis of cerebral palsy who use AAC. The grounded theory illustrates how the desire to use the Internet and social media is based upon perceived benefits for enriching social relationships and enhancing opportunities for self-representation and self-determination that are synonymous with identified antecedents for community-based social inclusion. Some of the participants are engaging with the Internet and social media through collaborative practice and the implications for how this phenomenon may impact on orthographic literacy and the personal care workforce are raised. **Implications for Rehabilitation** This research has created a conceptual grounded theory framework to support a deeper understanding of the perspectives of young people (with a diagnosis of cerebral palsy) who use augmentative and alternative communication (AAC) in relation to engaging with the Internet and social media. The conceptual framework illustrates factors that facilitate and/or challenge use of the Internet and social media and can be used to guide future research and funding organisations. The core message of the grounded theory is that the young people who use AAC have a desire to engage with the Internet and social media due to perceived benefits for enriching social relationships and enhancing opportunities for self-representation and self-determination. The paper illustrates how these digital communication benefits are synonymous with identified antecedents for perceptions of community-based social inclusion. Participants describe collaborating with others to use the Internet and social media which may have implications for the development of orthographic literacy and the personal care workforce.

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## Prevention and Cure

#### 15. Aust N Z J Obstet Gynaecol. 2015 Jun;55(3):233-8. doi: 10.1111/ajo.12334.

##### **Nonreceipt of antenatal magnesium sulphate for fetal neuroprotection at the Women's and Children's Hospital, Adelaide 2010-2013.**

Siwicki K, Bain E, Bubner T, Ashwood P, Middleton P, Crowther CA.

**BACKGROUND:** Australian and New Zealand clinical practice guidelines, endorsed by the NHMRC in 2010, recommend administration of antenatal magnesium sulphate to women at risk of imminent preterm birth at less than

30 weeks' gestation to reduce the risk of their very preterm babies dying or having cerebral palsy. The purpose of the ongoing Working to Improve Survival and Health for babies born very preterm (WISH) implementation project is to monitor and improve the uptake of this neuroprotective therapy across Australia and New Zealand. AIMS: To quantify and explore reasons for nonreceipt of antenatal magnesium sulphate at the Women's and Children's Hospital, in Adelaide, South Australia. MATERIALS AND METHODS: Data from the case records of women who gave birth between 23(+0) and 29(+6) weeks' gestation from 2010 to mid-2013 were reviewed to determine the proportion of eligible mothers not receiving antenatal magnesium sulphate and to explore reason(s) for nonreceipt over this time period. RESULTS: There was a reduction in the proportion of eligible mothers not receiving antenatal magnesium sulphate from 2010 (69.7%) to 2011 (26.9%), which was maintained in 2012 and 2013 (22.5%). In 2012-2013, nonreceipt was predominantly associated with immediately imminent (advanced labour, rapid progression of labour) or indicated emergent birth (actual or suspected maternal or fetal compromise). CONCLUSIONS: Use of antenatal magnesium sulphate at the Women's and Children's Hospital is now predominantly in-line with the binational guideline recommendations. Ongoing education and enhanced familiarity with procedures may facilitate timely administration in the context of some precipitous or immediately imminent births.

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