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Interventions and Management

1.Upper-limb movement in infants at risk for unilateral spastic cerebral palsy: A scoping review

Cornelia H Verhage, Martijn Kooij, Linda S De Vries, Jan Willem Gorter, Niek E Van Der Aa, Marco Van Brussel

Developmental Medicine & Child Neurology · Online ahead of print (May 8, 2026)

Aim: To identify and map current knowledge regarding early upper-limb movement in infants from birth to 12 months, which are indicative for development of unilateral spastic cerebral palsy (USCP).
Method: A scoping review was conducted involving a comprehensive and systematic literature search in PubMed/MEDLINE, Embase, and CINAHL. Articles were screened according to title and abstract and relevant data were extracted. Studies were eligible if they included infants aged 0 to 12 months at risk of developing USCP and reported early upper-limb movement characteristics indicative of USCP.
Results: Twelve of 5482 studies were included. Three categories of assessments were recognized: spontaneous upper-limb movements, pre-reaching, and upper-limb skills. Across these categories, asymmetry was observed, namely in spontaneous wrist and digit movements, pre-reaching trajectories, and reduced use of the contralesional hand in infants who developed USCP. From 15 weeks of age onwards, asymmetry was more evident not only in upper-limb movement patterns but also in object-related upper-limb skills.
Interpretation: Clinical signs of USCP in upper-limb movements are noticeable from the age of 12 weeks. Preceding signs may be subtle. Three-dimensional motion analysis and wearable sensors may enhance early detection, enabling timely diagnosis and intervention.
PMID: 42102225

2.The role of asymmetrical finger postures during fidgety age in the prediction of unilateral cerebral palsy

Karianne E Kraft, Annemiek M Roescher, Dyvonne H Baptist, Arend F Bos

Early Human Development · Online ahead of print (May 4, 2026)

Aim: To determine whether the combination of normal or abnormal exaggerated Fidgety Movements (FMs) and asymmetrical finger postures at 3 months corrected age is associated with an increased risk of unilateral cerebral palsy (CP).
Method: Prospective cohort study in 139 children born before 30 weeks' gestation and/or with birth weight below 1000 g. At 11.3–13.6 weeks corrected age, we evaluated FMs, finger postures, segmental wrist movements, and head position from 10 min video recordings according to Prechtl General Movements Assessment. Results of neonatal cerebral ultrasound and information about CP diagnosis at five years were extracted from medical records.
Results: Sixteen out of 132 children (12.1%) who exhibited normal or abnormal exaggerated FMs demonstrated asymmetrical finger postures. None of those 16 children with asymmetrical finger postures showed asymmetrical segmental wrist movements. We also did not observe any relation with head position. Cerebral ultrasound revealed uni- or bilateral intraventricular hemorrhage (IVH) grade 1 at most, in four and two out of the 16 children, respectively. By the age of five, none of the 14 children for whom follow-up data were available had developed CP.
Conclusion: In this cohort of preterm-born infants with no or low-grade IVH, asymmetrical finger postures at 3 months corrected age were not associated with unilateral CP at five years if both symmetrical segmental wrist movements and normal or abnormal exaggerated FMs were present.
PMID: 42097081

3.Implementation strategies for early hand therapy for young children with cerebral palsy

Alicia J Hilderley, Dejana Nikitovic, Darcy Fehlings, John Andersen, Eleanor Heptonstall, Christine Cassidy, Adam Kirton

Developmental Medicine & Child Neurology · Online ahead of print (May 4, 2026)

Aim: To select and prioritize implementation strategies for early hand therapy for children under 2 years old with suspected or confirmed cerebral palsy.
Method: This implementation study used a mixed-methods sequential explanatory design guided by the Consolidated Framework for Implementation Research. First, implementation strategies were mapped to previously identified Canadian barriers and facilitators to early hand therapy delivery. Semi-structured interviews regarding these strategies were conducted with three participant groups across Canada: parents of children aged 6 years or younger with cerebral palsy (n = 9); paediatric occupational therapists (n = 10); and leads or managers of paediatric occupational therapy programmes (n = 6). Interview data were analysed thematically. Next, 12 participants (n = 4 per participant group) completed a modified nominal group technique exercise to create actionable descriptions and prioritize strategies.
Results: Twenty-one implementation strategies were mapped to identified barriers and facilitators. Thematic analysis of semi-structured interviews identified 11 strategies within three categories based on the source: occupational therapists and clinics; research and community groups; and health care systems. The nominal group technique prioritized the top three strategies: (1) develop a roadmap to therapy; (2) raise awareness; and (3) create a therapy guidebook.
Interpretation: Eleven actionable strategies were identified to support early hand therapy delivery for young children with cerebral palsy.
PMID: 42083152

4.Reconstructive hip surgery short-term outcomes and redislocation rate in non-ambulatory children with spastic cerebral palsy: a prospective cohort study

Ahmed S Nagy, Mazen S Aboulesaad, Ahmed M Saied, Khaled Zaghloul

BMC Musculoskeletal Disorders · May 7, 2026

Background: Hip displacement is a major cause of pain and reduced quality of life in non-ambulatory children with spastic cerebral palsy. Reconstructive hip surgery aims to restore stable femoral head containment, improve comfort, and facilitate daily care. This study evaluated short-term radiographic and caregiver-reported outcomes after reconstructive hip surgery in non-ambulatory children with spastic cerebral palsy, including exploratory subgroup analyses of varus derotational osteotomy (VDRO) alone and VDRO combined with Dega pelvic osteotomy, and the 12-month redislocation rate. Methods: This prospective cohort study included 40 non-ambulatory children with spastic cerebral palsy (50 hips; mean age 6.54 ± 1.07 years). Procedure selection was based on preoperative radiographic findings and intraoperative hip stability. Thirteen hips underwent VDRO alone, and 37 hips underwent VDRO combined with Dega pelvic osteotomy for acetabular dysplasia (acetabular index > 25°) or intraoperative posterolateral instability. Primary aim was to measure migration percentage and acetabular index preoperatively and during 12-months follow-up. Secondary aim was to assess 12-month redislocation rate and caregiver-reported quality of life using the Caregiver Priorities and Child Health Index of Life with Disabilities (CPCHILD) questionnaire at baseline and 12 months. Analyses used generalized estimating equation models (GEE) to account for bilateral hips and repeated measures. Results: In the overall cohort, migration percentage improved from 88.12 to 20.64 and acetabular index from 30.65 to 25.01 at 12 months (both $p < 0.001$). In exploratory subgroup analyses, 12-month migration percentage decreased from 70.83 to 33.15 after VDRO alone and from 93.94 to 15.99 after VDRO + Dega. Redislocation occurred in 8 of 50 hips (16.0%) overall, including 46.2% after VDRO alone and 5.4% after VDRO + Dega. CPCHILD total scores improved significantly in both groups, with no significant between-group difference in change. Conclusions: Reconstructive hip surgery was associated with short-term radiographic improvement and improved caregiver-reported outcomes in this cohort of non-ambulatory children with spastic cerebral palsy. Although 12-month redislocation was lower after VDRO + Dega, the non-randomized design, baseline imbalance, and short follow-up limit comparative inference.
PMID: 42098684

5.Functional gait outcomes following derotation osteotomy for transverse plane malalignment in unilateral cerebral palsy

Stefanos Tsitlakidis, Nicholas A Beckmann, Sebastian I Wolf, Paul Mick

BMC Pediatrics · May 5, 2026

Abstract
Transverse plane malalignment is a deformity often encountered in patients with Cerebral Palsy (CP) and derotational osteotomy (DO) represents the gold standard for correction of this condition. Reports specifically on unilaterally involved individuals are limited and it remains unclear whether DO is capable to additionally improve hip abductor lever arm dysfunction. 20 individuals with unilateral CP matched the inclusion criteria. Pre- and postoperative (short-term after unilateral DO) 3D-instrumented gait analyses (IGA) were compared and assessed for changes in transverse plane kinematics. Pelvic/trunk kinematics as well as coronal hip kinetics were included. Most remarkable findings were an improved/reduced, yet not physiological, pelvic retraction, significantly improved internal rotation of the hip and significantly improved foot progression. Trunk obliquity worsened postoperatively in the GMFCS level I subgroup. DO effectively improves internal hip rotation and foot progression. There were no relevant changes evident concerning trunk lean, indicating that DO does not relevantly improve hip abductor lever arm dysfunction in unilateral CP at short-term.
PMID: 42087093

6.Comparative effects of bilateral and unilateral ankle-foot orthoses on balance and gait in children with spastic unilateral cerebral palsy

Hasan Hüseyin Babayiğit, Merve Yılmaz, Ali İmran Yalçın, Esra Atılgan, Semra Topuz

Gait & Posture · Online ahead of print (May 2, 2026)

Background: Ankle-foot orthoses (AFOs) are commonly prescribed to improve gait mechanics and postural stability in children with spastic unilateral cerebral palsy (CP). While unilateral AFO use is well studied and widely accepted clinically, evidence comparing unilateral and bilateral AFO use—particularly regarding balance control—remains limited. This study compared the effects of unilateral and bilateral AFOs on static balance and spatiotemporal gait parameters in children with spastic unilateral CP.
Methods: Nineteen children with spastic unilateral CP (aged 4–12 years) who were habitual bilateral AFO users participated. Assessments were conducted under three conditions: no orthosis, unilateral AFO, and bilateral AFOs. Static balance was evaluated using force platform (Bertec Corporation), and spatiotemporal gait parameters were measured using GAITRite® electronic walkway. A randomized crossover design minimized order effects.
Results: Bilateral AFOs significantly reduced lateral sway amplitude on firm surface with both eyes open ($p = 0.020$) and eyes closed ($p = 0.022$) compared with no orthosis, indicating improved static balance. No significant differences were observed in anterior-posterior sway across conditions. Bilateral AFOs also significantly reduced cadence ($p < 0.001$) while increasing step and stride times on both the affected and unaffected sides, suggesting longer stance and support phases and more controlled gait pattern. Unilateral AFO use produced shorter step time on the affected side.
Conclusion: Bilateral AFOs promote more balanced foot placement and safer gait strategy in children with spastic unilateral CP by increasing lateral stability and reducing cadence. These findings support bilateral AFOs as preferred clinical option for improving gait and balance in children with spastic unilateral CP.
PMID: 42085936

7.Home-based therapy for upper limb activity in children and adolescents with unilateral cerebral palsy: systematic review and meta-analysis

Cristina Lirio-Romero, Hilde Feys, Purificación López-Muñoz, Roslyn N Boyd, María Coello-Villalón, Helena Romay-Barrero, Julián Ángel Basco-López, Giuseppina Sgandurra, Elena Beani, Rocío Palomo-Carrión

Review Disability and Rehabilitation · Online ahead of print (May 8, 2026)

Purpose: To analyze the effect of home-based therapy for upper limb activity in children and adolescents with unilateral cerebral palsy.
Methods: PubMed, Cochrane Central Register of Controlled Trials, CINAHL, PsycINFO, and PEDro were systematically searched from inception to March 2026 for experimental studies addressing the effect of home-based therapies in participants aged from 2 to 18 years old. The DerSimonian and Laird method was used to compute pooled estimates of the standardized mean differences (SMD) and their respective 95% confidence intervals (CI). Subgroup analyses were performed based on the dosage of interventions.
Results: Seventeen studies were included in this systematic review. Home-based therapies showed improvement in upper limb activity (SMD = 0.45; 95% CI: 0.30–0.60). No statistically significant differences were observed in relation to the intensity of intervention (hours per week). Meta-regression analysis revealed that none of the implementation-related moderators—including parental involvement, delivery format, dose profile, task relevance, and contextual support—had a statistically significant effect on intervention outcomes ($p > 0.05$).
Conclusions: High-intensity home-based therapies have demonstrated promising findings in improving upper limb activity in children and adolescents with unilateral cerebral palsy. Further high-quality studies may assess the influence of intervention characteristics.
Plain language summary: Home-based therapy appears to be a promising approach for improving upper limb activity in children and adolescents with unilateral cerebral palsy, offering a feasible way to integrate therapy into everyday routines. Intensive programs delivering ten or more hours of therapy per week can produce meaningful gains in upper limb activity, even when delivered over shorter than eight weeks, suggesting that the total amount of practice may be relevant. The overall certainty of the evidence remains low, and results should therefore be interpreted with caution.
PMID: 42104635

8.Advances in music therapy for neurological rehabilitation

Miao Yu, Yuxuan Song, Haochong Song, Haoyang Duan, Guodong Zhang

Frontiers in Neurology · April 22, 2026

Abstract
This review systematically examines the advances, mechanisms, and clinical applications of music therapy in neurorehabilitation. The article first delineates the conceptual origins of music therapy and the developmental trajectory of neurologic music therapy, introducing the major technical classifications including receptive methods, active methods, improvisational approaches, and vibroacoustic music therapy. The core section elaborates on the multidimensional mechanisms underlying music therapy in neurorehabilitation, encompassing neuroanatomical networks, neurotransmitter and endocrine systems, neuroplasticity, and psychobehavioral dimensions, elucidating the functional recovery pathways through auditory-motor integration, neural network reorganization, and neuroplasticity enhancement. Regarding clinical applications, the article comprehensively discusses the specific implementations and evidence-based efficacy of music therapy in the rehabilitation of stroke, Parkinson's disease, and cerebral palsy, including improvements in motor, speech, and cognitive impairments. Finally, the article summarizes current challenges and outlines future directions, aiming to provide theoretical foundations and practical references for the standardized and precision application of music therapy in neurorehabilitation.
PMID: 42099975

9.Impact of adapted folk games on activity and participation in individuals with cerebral palsy – an exploratory proof of concept study

Mansoor Rahman A, Jagadish Kumar, Kavitha Raja

Disability and Rehabilitation: Assistive Technology · Online ahead of print (May 6, 2026)

Purpose: This exploratory study aimed to evaluate the feasibility and preliminary impact of adapted traditional Indian folk games on physical activity (PA) and participation in individuals with cerebral palsy (CP) in low-resource settings.
Materials and methods: A two-phase exploratory design was employed. Phase I involved the systematic adaptation of traditional games (e.g. THOTTATUM, GUTTE) using the CHANGE IT framework, tailoring equipment and rules to functional levels (GMFCS I–IV). In Phase II, 36 participants with CP (GMFCS I–IV) underwent a structured intervention using these adapted games. Outcome measures included Brockport Physical Fitness [BPFT], Gross Motor Function Measure 88 and a functional HRQoL questionnaire covering physical, emotional, social, and school domains.
Results: Post-intervention analysis of the total cohort showed significant improvements in handgrip strength and skinfold measurement. Significant positive shifts were observed in HRQoL domains, specifically physical ($p < 0.05$), emotional ($p < 0.05$), and school functioning. Qualitative feedback from parents and teachers corroborated these findings, noting improved activities of daily living (e.g. buttoning, brushing) and social interaction. Subgroup analysis indicated that while all levels benefitted, those at GMFCS Levels I–III showed the most pronounced gains in motor-related tasks.
Conclusions: Adapted traditional folk games serve as a feasible, culturally relevant, and cost-effective form of assistive technology and rehabilitation. This approach effectively bridges the gap in accessible physical education for individuals with CP in Low and Middle Income Countries (LMICs), providing a scalable model for inclusive activity and participation.
Plain language summary: Low-Cost Clinical Intervention: Adapted traditional folk games provide a cost-effective, culturally familiar method to enhance activity and participation in individuals with cerebral palsy. This approach is particularly valuable in low-resource settings where expensive specialised exercise equipment and high-tech assistive devices are often inaccessible. Systematic Adaptation Framework: The study provides a structured framework (using the CHANGE IT model) for clinicians to adapt traditional games of various geographical origins. By modifying game rules, equipment (e.g., adaptive stone moulds), and environments (e.g., wheelchair-integrated boards), rehabilitation professionals can tailor culturally relevant activities to match a participant's specific functional level (GMFCS I-IV).Social and Educational Integration: These adapted games facilitate inclusive physical education and social bonding, as evidenced by improved HRQoL in physical, emotional, and academic domains. This model supports the integration of rehabilitation goals into daily school curricula and community life, fostering social participation alongside motor improvement.
PMID: 42090600

10.Efficacy of Manual Massage Therapy on Spasticity in Patients with Stroke and Cerebral Palsy: A Systematic Review and Meta-Analysis

Hankyu Park, Byoungha Hwang, Minbong Kang

NeuroRehabilitation · Online ahead of print (May 6, 2026)

Background: Spasticity commonly complicates upper motor neuron syndromes, reducing quality of life. While manual massage is widely used to manage muscle tone, its overall efficacy remains unquantified.
Objective To evaluate the effectiveness of pure manual massage interventions (without instruments) for reducing spasticity in patients with stroke and cerebral palsy and clarify its clinical neurorehabilitation role.
Methods: A systematic search of multiple databases identified randomized controlled trials (RCTs) investigating manual massage for spasticity in patients with stroke or cerebral palsy. The primary outcome was spasticity measured by the Modified Ashworth Scale. Bias was assessed using RoB 2.0. We conducted a random-effects meta-analysis calculating pooled standardized mean differences (SMDs).
Results: Four RCTs (n = 253) were included. Manual massage was associated with reduced spasticity compared with controls (SMD = 0.59, 95% CI 0.31–0.87), with low-to-moderate heterogeneity ($I^2 = 35.7\%$). Subgroup analysis demonstrated consistent, significant improvements in children with cerebral palsy (SMD = 0.56, $I^2 = 0\%$). Conversely, results in adult stroke populations were non-significant with substantial heterogeneity (SMD = 0.78, $I^2 = 73\%$). Despite spasticity reductions, downstream functional outcomes were not consistently improved.
Conclusions: Manual massage may be considered as a preparatory adjunct for reducing spasticity, particularly in children with cerebral palsy. However, the evidence base remains limited, most included interventions were delivered alongside conventional rehabilitation, and functional benefits were not consistently demonstrated.
PMID: 42089766

11.Outcomes of strabismus surgery in patients with cerebral palsy

André Leite, Juliana Friedenberg, Nilce Tiemi Shiwaku Kamida, Monica Fialho Cronemberger

Strabismus · Online ahead of print (May 5, 2026)

Purpose: To evaluate the outcomes of strabismus surgery in patients with cerebral palsy (CP) and identify factors influencing surgical success.
Methods: A retrospective chart review was conducted at the Ophthalmology Outpatient Clinic of Associação de Assistência à Criança Deficiente in São Paulo, Brazil, including patients with CP who underwent strabismus surgery between January 2016 and December 2022. Patients were divided into two groups based on their preoperative diagnosis of esotropia or exotropia. Surgical success was defined as a deviation ≤ 10 prism diopters (PD) at the final follow-up visit. Patients with <6 months of follow-up were excluded.
Results: A total of 83 patients were included: 47 (56.6%) with exotropia and 36 (43.4%) with esotropia. The mean preoperative deviation was 50.5 ± 15.9 PD and 36.3 ± 14.0 PD in the exotropia and esotropia group, respectively ($p < .001$). Surgical success was achieved in 63.8% of the exotropia group and 47.2% of the esotropia group ($p = .078$). Exotropia cases exhibited more undercorrection (36.2% vs. 22.2%), whereas overcorrection was seen only in the esotropia group (30.6%). A longer postoperative follow-up ($p = .006$), younger age at surgery ($p = .003$), and larger preoperative deviation ($p < .001$) were associated with poorer surgical outcomes.
Conclusions: Strabismus surgery in patients with CP demonstrates moderate success rates, with notable tendency toward postoperative drift, particularly toward divergence. Poorer outcomes were associated with younger age at surgery, larger preoperative deviations, and longer follow-up periods.
PMID: 42084161

12.Influence of surgical intervention on pre- and post-surgery patient specific muscle synergies in children with cerebral palsy

Tiana Breust, Jiayin Lin, Vincent C K Cheung, Firooz Salami, Sebastian I Wolf, Gursel Alici, Manish Sreenivasa

Experimental Brain Research · May 4, 2026

Abstract
Muscle synergy analysis has been explored as means to better understand changes in motor control, with the aim to improve treatment outcomes after Single Event Multilevel Surgery (SEMLS) for children with cerebral palsy (CP). In this single-group study, we assess changes between pre- and post-surgery muscle synergies at both patient specific, and cohort levels after surgical intervention for children with CP. We analysed the walking data of 11 patients between the ages of 7–18 years old, including surface electromyography, joint angles and ground reaction forces, recorded before and after surgery. Muscle synergies were extracted and assessed for changes in dimensionality and sparseness between pre- and post-surgery. Our results show that at a patient specific level, pre- and post-surgery muscle synergies were not highly similar, with only 41% of paired synergies showing high correlation (>0.8) after surgery, and an overall mean correlation of 0.53 ± 0.25. On the other hand, synergies obtained at the cohort level were highly similar post-surgery (>0.87). These findings suggest that at an individual level, pre-surgery motor control cannot be assumed to be preserved post-surgery. CP synergies obtained at the cohort level from pre-surgery data can demonstrate more reliable preservation in post-surgery motor control. We also observed sparseness increasing with the number of synergies, which provides an interesting future research direction exploring the link with more complex motor control and a more typical gait pattern.
PMID: 42081106

13.Urodynamic patterns in pediatric patients with cognitive developmental disorders: A retrospective descriptive study

Sebastian Tobia-Gonzalez, Natalie Barganski, Melissa Miller, Amarachi Ezekwere, Muhammad Owais, Salaar Khan, McKynna Beck, Oluwafemi Ojo, Leon Smith-Harrison, Juan Carlos Prieto

Journal of Pediatric Urology · Online ahead of print (April 17, 2026)

Purpose: Cognitive developmental disorders (CDD) including intellectual disability (ID), cerebral palsy (CP), Down's syndrome (DS), and autism spectrum disorder (ASD) are often associated with lower urinary tract dysfunction. This study aimed to characterize urodynamic (UD) patterns in pediatric patients with CDD and analyze their relationship with clinical variables and treatment outcomes.
Materials and methods: A retrospective observational study was conducted including 79 pediatric patients (ages 4–17) with confirmed CDD who underwent comprehensive video urodynamic evaluations between 2009 and 2024 at a tertiary pediatric center. Data analyzed included age, sex, diagnosis, urodynamic parameters (detrusor overactivity, bladder compliance, detrusor -sphincter dyssynergia, bladder sensation), vesicoureteral reflux (VUR), and treatment modalities. Statistical associations between CDD type and UD parameters were examined using chi-square tests ($p < 0.05$).
Results: The mean age was 9.2 years, with male predominance (70.9%). Diagnoses included CP (38.0%), ID (32.9%), ASD (24.1%), and DS (5.1%). Dysfunctional voiding was the most frequent diagnosis (32.9%), particularly in CP (43.3%) and ASD (36.8%). Detrusor overactivity was common in ID (57.7%) and CP (40.0%) but rare in ASD (5.3%). Detrusor-sphincter dyssynergia was seen in 56.7% of CP and 26.9% of ID patients and absent in ASD. Decreased bladder compliance (<20 ml/cmH2O) occurred in 90.0% of ID and 57.7% of CP patients but was preserved in ASD. Absent urgency sensation was found in 50.0% of CP and 19.2% of ID patients. VUR was present in 10.5% of ASD and 6.7% of CP patients. Clinical management was most frequent in ID (96.2%) and ASD (94.7%) patients. Clean intermittent catheterization was required in 43.3% of CP and 12.5% of ID cases. Surgical intervention was necessary in 12.7% of patients, mainly in CP (20.0%).
Conclusions: Distinct urodynamic patterns were observed across cognitive developmental disorders. CP patients showed predominantly neurogenic patterns with high rates of detrusor-sphincter dyssynergia and need for invasive management. ID patients exhibited storage-phase dysfunction responsive to medical therapy, while ASD patients showed preserved motor coordination and compliance, suggesting primarily behavioral or sensory dysfunction. Urodynamic studies are crucial for individualized diagnosis and management in children with cognitive developmental disorders.
PMID: 42097120

14.FunVis: evaluating a brief functional vision assessment for non-vision specialists working with non-speaking children with bilateral cerebral palsy

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Disability and Rehabilitation · Online ahead of print (May 7, 2026)

Purpose: This study evaluated a brief functional vision assessment (FunVis) for use by non-vision specialists working with non-speaking children with cerebral palsy. FunVis evaluates children's ability to fixate, shift gaze, and track a moving object.
Methods: Forty-four children participated. We analysed relationships between FunVis performance: (i) when scored by school staff and separately by a vision specialist; (ii) and the Eye-Pointing Classification Scale; (iii) and child characteristics; and (iv) the presence of visual impairments.
Findings: Agreement between non-vision specialists and the vision specialist ranged from substantial to fair, with the strongest agreement for gaze fixation. FunVis performance was significantly associated with functional descriptors on the Eye-Pointing Classification Scale, as well as with child language and non-verbal cognition. No associations were found with chronological age or gross motor ability. Children who had difficulty with one or more FunVis items were more likely to have clinically identified visual impairments than those who successfully fixated, shifted gaze, and tracked.
Conclusions: FunVis appears valuable for supporting school staff in recognising functional vision abilities and providing a structured method for documenting visual behaviours that might otherwise go unnoticed.
Plain language summary: For non-speaking children with bilateral cerebral palsy, using vision functionally, for example by eye -pointing, can be a valuable resource for communication For non-vision professionals it can be challenging to establish the repertoire of children’s functional vision The FunVis procedure, designed for use by non-vision professionals, offers valuable insights into children’s functional use of vision.
PMID: 42095414

15.First steps toward pain classification among adults with cerebral palsy: A modified Delphi study

Mary E Gannotti, David J Kohns, Garey H Noritz, Duncan O Wyeth, Elizabeth J Lucas, Elisabeth B Bates, Hana Azizi, Cristina A Sarmiento, Deborah E Thorpe, Stephen A Nichols, Jodi M Kreschmer, Susan L Koller, Lee Y Schuh, Elizabeth R Boyer, Mary M Schmidt, Linda E Krach, Karen Pleasant, Eric M Chin, Edward A Hurvitz, Amy F Bailes

Disability and Health Journal · Online ahead of print (April 28, 2026)

Background: Adults with cerebral palsy (CP) commonly experience chronic pain that is often misclassified, contributing to suboptimal treatment. For adults that can self-report, use of patient-reported measures to assess pain or light phenotype assessment is a feasible approach for routine outpatient clinics, but consensus on relevant domains and items is lacking.
Objective: To establish expert consensus on key domains and corresponding items for light phenotype pain assessment during routine outpatient visits for adults with CP.
Methods: We conducted a nine-month modified Delphi study involving 21 stakeholders—including clinicians, pain experts, and individuals with lived experience affiliated with the Cerebral Palsy Research Network (CPRN). Through nine meetings and ten iterative surveys, we used the ACCORD guideline to ensure rigorous consensus development. Agreement was defined as ≥75% endorsement. The process included three stages: domain identification, domain selection, and item evaluation and selection. Survey formats included ratings, rankings, yes/no confirmations, and free-text responses.
Results: The expert panel identified and prioritized four domains essential for light phenotype assessment: pain location, onset, quality, and intensity. Four standardized items were selected for each domain, including the Michigan Body Map for location, a three-month duration item for onset, descriptive terms for quality, and a 0-10 numeric rating for intensity. The four selected items exceeded the 75% consensus threshold (90–100% agreement).
Conclusions: This modified Delphi study achieved consensus on a pragmatic and stakeholder-informed framework for pain assessment in adults with CP. Identified domains and items will be implemented and evaluated in future quality improvement initiatives.
PMID: 42086434

16.Undernutrition in children with cerebral palsy: comparison of anthropometric measures across gross motor function levels

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Nutritional Neuroscience · Online ahead of print (May 5, 2026)

Objective: Nutritional assessment in children with cerebral palsy (CP) remains challenging because growth patterns, body composition, and the feasibility of anthropometric measurements vary according to motor severity. This study aimed to compare anthropometric indicators of undernutrition in children with CP according to Gross Motor Function Classification System (GMFCS) levels.
Methods: In this observational cross-sectional study, forty-three children with CP aged 2–18 years were evaluated. Patients were grouped as GMFCS I–II–III and IV–V. Anthropometric, demographic, and clinical data were analyzed. Undernutrition was defined using age-specific z-scores for height, weight, body mass index (BMI), mid-upper arm circumference (MUAC), and triceps skinfold thickness (TST) based on Centers for Disease Control and Prevention growth charts. Weight-based undernutrition was also re-evaluated using CP-specific Brooks weight-for-age percentiles in a sensitivity analysis.
Results: Undernutrition was identified in 33% of patients based on height-for-age z-scores, 49% based on weight-for-age and BMI z-scores, 47% based on MUAC z-scores, and 28% based on TST z-scores. Children in GMFCS IV–V had significantly lower height-for-age, weight-for-age, and MUAC z-scores than those in GMFCS I–II–III ($p = 0.02$, $p < 0.001$, $p = 0.02$, respectively). BMI z-score identified undernutrition more frequently in GMFCS I–II–III, whereas weight-for-age and MUAC z -scores were more informative in GMFCS IV–V. In sensitivity analysis, the higher rate of low weight in the GMFCS IV–V group was less marked with CP-specific Brooks references.
Discussion: Undernutrition is frequent in children with CP, particularly in those with more severe motor impairment. Nutritional risk assessment appears to be method- and reference-dependent, supporting a multidimensional anthropometric approach in clinical practice.
PMID: 42083482

17.Feasibility of Non-Sedate Magnetic Resonance Imaging for Children with Cerebral Palsy: Tolerance and Structural Analysis Considerations

Stefanie S Bradley, Elizabeth Pulcine, F Virginia Wright, Manohar Shroff, Kevin Chung, Tom Chau

Children (Basel) · April 17, 2026

Background/Objectives: Non-sedate magnetic resonance imaging (MRI) can be challenging for young children with neuromotor disabilities, often resulting in motion-degraded images that complicate interpretation in the context of underlying neuropathology. This study aimed to characterize tolerance factors and barriers related to awake MRI of the pediatric brain and to examine additional considerations in analyzing structural scans affected by motion and pathology.
Methods: 10 children (mean age 5y9m; 5 girls; GMFCS level IV) with cerebral palsy (CP) underwent non-sedate 3T MRI of the brain. Tolerance factors and challenges were documented. MRI quality and automated structural preprocessing with Freesurfer v.8.0 were reviewed by a pediatric neuroradiologist and neurologist. To assess the impact of motion, automated basal ganglia segmentation was compared with manual segmentation. Segmentation accuracy was characterized using Dice Coefficient (D).
Results: Five participants (50%) tolerated non-sedate structural MRI, although two of them were unable to remain still. Factors affecting MRI tolerance included sensitivity to scanner noise ($n = 4$), hyperkinetic movement ($n = 2$), difficulty with positioning/padding ($n = 4$), fear of clinical environment ($n = 2$) or confined scanner interior ($n = 2$), and earbud discomfort ($n = 3$). Automated structural preprocessing with Freesurfer yielded discrepancies in gray-white matter boundaries in motion-degraded scans, necessitating manual correction. Automated segmentation of motion-compromised scans closely agreed with manual delineation of the caudate ($D \geq 0.85$) and putamen ($D \geq 0.78$), while the pallidum was least reproducible ($D = 0.58$).
Conclusions: Tailored acquisition and processing strategies are necessary to support non-sedate MRI in children with CP, preserve downstream neuroimaging analyses, and promote inclusion of underrepresented populations in research.
PMID: 42073137

18.Motor difficulties and associated risk factors at 12 years in children born extremely preterm: a population-based cohort study

Maria Örtqvist, Nelly Padilla, Cecilia Montgomery, Karin Sävman, Thomas Abrahamsson, Aijaz Farooqi, Fredrik Serenius, Lisa B Thorell, Ulrika Ådén

Archives of Disease in Childhood · Online ahead of print (May 8, 2026)

Objective: To determine the prevalence of significant motor difficulties at 12 years of age in children born extremely preterm (EPT, <28 weeks' gestational age) compared with term-born peers and to identify associated risk factors and comorbidities.
Design: Population-based cohort study.
Setting: National cohort from the Extremely Preterm Infants in Sweden Study, including children born from 2004 to 2007.
Patients: Children born <27 weeks' gestational age without cerebral palsy and/or severe neurodevelopmental impairment and term-born controls.
Interventions: Motor function was assessed at 12 years using the Movement Assessment Battery for Children, second edition (MABC-2). Logistic regression identified risk factors for motor difficulties.
Main outcome measures: Prevalence of significant motor difficulties, defined as scores ≤ fifth percentile on MABC-2.
Results: A total of 268 EPT-born and 196 term-born children were assessed. Significant motor difficulties were found in 30% of EPT-born children compared with 3% of term-born peers (adjusted OR 16.99; 95% CI 6.64–43.47). Male sex and lower gestational age were independently associated with higher risk. Among EPT-born children with motor difficulties, comorbidities were common, including autism spectrum disorders and attention deficit hyperactivity disorders. Only 9.5% of affected children had received physiotherapy in the previous year.
Conclusions: Children born EPT, even in the absence of cerebral palsy and/or severe neurodevelopmental impairment, have a markedly increased risk of motor difficulties and associated neurodevelopmental comorbidities by age 12. Structured follow-up into mid-school age is essential to enable timely interventions.
PMID: 42103362

19.Clinical characteristics, functional impact and caregivers' priorities in Malaysian children with dystonic cerebral palsy

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Journal of Pediatric Rehabilitation Medicine · Online ahead of print (May 6, 2026)

Background Dystonic cerebral palsy is a severely disabling condition that poses significant management challenges, compounded by multiple associated comorbidities and the limited availability of effective treatment options.
Objective This study aimed to study the clinical characteristics, functional impact and caregivers' priorities among children with dystonic cerebral palsy.
Methods This was a cross-sectional observational study (n = 50) among children with dystonic cerebral palsy aged four to 18 years. The Hypertonia Assessment Tool and Barry-Albright Dystonia Scale were used to identify and measure the severity of dystonia. The Dyskinetic Cerebral Palsy Functional Impact Scale was used to assess the daily impact of dystonia and caregivers' priorities.
Results Fifty children (70% male, mean age 8.6 years old) with majority functional status from level III to V across all functional classification systems were included. Significant correlation was observed between functional impact with dystonia severity scores (p = 0.003). The caregivers' priorities were beyond gross motor and mobility concerns.
Conclusions Understanding the clinical characteristics, comorbidities, functional profiles and caregivers' priorities is imperative in tailoring interventions to those most relevant and important for children with dystonic cerebral palsy and their families.
PMID: 42089772

20.The Participation and Environment Measure-Children and Youth (PEM-CY): Cultural Adaptation, Validity, and Reliability of the Persian Version for 5- to 17-Year-Old Children With Cerebral Palsy

Marzieh Pashmdarfard, Sara Zamiran, Navid Mirzakhani, Ebrahim Mahmoudi

Occupational Therapy International · 2026

Background: Participation in daily activities is essential for health and well-being. It helps in physical, mental, and emotional health and plays a significant role in the positive development of children and young people. As it is a crucial goal for health and rehabilitation services, the purpose of this study was to translate and assess the psychometric properties of the Persian version of the Participation and Environment Measure-Children and Youth (PEM-CY) in 5- to 17-year-old children with cerebral palsy.
Method: The study involved 150 parents of children with CP (n = 100) and typically developing peers (n = 50), aged 5–17 years. To evaluate face and content validity, we consulted occupational therapists and parents of children with CP. Moreover, the Mann-Whitney test was used to assess divergent validity. Internal consistency was assessed using Cronbach's alpha, whereas test-retest reliability was evaluated using intraclass correlation coefficients.
Results: The internal consistency (0.77–0.95) and test-retest reliability (0.85–0.95) of various summary scores ranged from moderate to very strong. The divergent validity of the Persian version of PEM-CY was supported by significant differences between children with and without disabilities on the participation and environment scales ($p < 0.05$).
Conclusions: The Persian version of the PEM-CY is a valid and reliable tool to determine participation and environmental factors in the home, at school, and in community settings in Persian children and youth aged 5–17 years with cerebral palsy.
PMID: 42083425

21.Stratification of Phenotypes in Childhood-Onset COL4A1/COL4A2-Related Disorders Based on Age of Presentation

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Neurology Genetics · May 4, 2026

Background and objectives: Variants in *COL4A1* and *COL4A2* are associated with a multisystem disorder characterized by prominent neurologic involvement that includes intracranial hemorrhages, white matter injury, neurodevelopmental impairment, and epilepsy. The phenotypic spectrum, however, is broad, and disease subgroups have not been robustly identified. The objective of this study was to distinguish pediatric subgroups based on age at symptom onset.
Methods: This was a retrospective cohort study of pediatric patients with variants in *COL4A1* or *COL4A2* seen at a single center between January 2008 and October 2024. Patients were included if they had likely pathogenic/pathogenic variants or variants of uncertain significance with consistent clinical phenotype and were followed for ≥6 months. Medical records, laboratory data, and neuroimaging were reviewed. Patients were stratified by age at symptom onset into perinatal, early childhood, and late childhood onset (up to 28 days, up to 4 years, and up to 18 years, respectively). Results: Of the 44 patients meeting inclusion criteria, 33 had variants in *COL4A1*, 10 in *COL4A2*, and 1 in both. Neurologic features, such as global developmental delay, cerebral palsy, and epilepsy, were common in perinatal and early childhood cases. In *COL4A1* -related disease, such neurologic features were present in 14/17 and 8/9 cases, respectively. These features similarly occurred in all patients with perinatal (n = 3) and early childhood (n = 6) onset of *COL4A2*-related disease. Conversely, these manifestations were less common in late childhood presentations of either disorder (n = 6 total), occurring in 33% of patients. Extracentral nervous system manifestations, particularly ocular abnormalities and renal disease, were predominantly seen in *COL4A1*-related disease. Neuroimaging in perinatal and early childhood presentations frequently demonstrated periventricular hemorrhagic infarction (20/26 and 6/9 of *COL4A1* and *COL4A2* patients). Isolated leukoencephalopathy was universally present in late childhood onset patients. Discussion: The pediatric phenotype of *COL4A1/2*-related disorder varies by age at disease onset. Perinatal and early childhood presentations (≤4 years) have a prominent neurologic phenotype with severe developmental delays, cerebral palsy, and epilepsy, correlating on imaging with sequelae from brain injury during prenatal brain development. Late childhood presentations (>4 years) have a milder phenotype, typically with isolated leukoencephalopathy on imaging.
PMID: 42099677

22.REASON CP: a systems-based framework for clinical reasoning to support participation across the lifespan in childhood-onset neurodisability

Margaret Mayston, Sarah Foley, Kelly Reynolds, Willeke Walsh, Gillian Saloojee

Frontiers in Public Health · April 21, 2026

Abstract
Cerebral palsy, a common example of childhood-onset neurodisability (COND), is a heterogeneous neurodevelopmental condition characterized by complexity and variability across individuals. Children, families, and clinicians must navigate a maze of potential interventions, a challenge compounded by inconsistent quality of systematic reviews and lack of evidence for certain sub-groups, resulting in clinical decision-making uncertainty. Existing frameworks tend to focus on what intervention to use, rarely addressing the underlying reasoning processes that determine why a particular approach is most appropriate for a specific individual at a given point in time. This gap in clinical reasoning (CR) represents a significant barrier to optimizing outcomes for people with movement disorders. REASON CP an acronym for Reflect, Evaluate, Activate, Support, Optimize, Navigate via Clinical reasoning for Participation was developed with the aim to address this gap. It is an innovative, structured, systems-based approach to CR, designed to support the selection of the right intervention for the right person at the right time, for the right reason. By integrating systems science with the International Classification of Functioning, Disability and Health (ICF), REASON CP is particularly well suited to the complexity of COND. By making the reasoning process explicit and collaborative, the framework strengthens shared decision-making between clinicians, families, and individuals, while supporting individualized, lifespan-oriented care across diverse settings. By explicitly defining and operationalizing CR, REASON CP addresses a critical limitation in current practice, particularly the challenge of decision-making when robust evidence is unavailable. The framework supports individualized, family-centered care in any context and provides a transparent foundation for more relevant and rigorous research. A training module to support therapists in utilizing REASON CP in clinical practice is currently under development.
PMID: 42094902

23.The Social Context of Pain in Youth With Cerebral Palsy: The Role of Caregiver Mental Health, Parenting Style and Protective Responses to Pain

Kendra A Mueri, Cara G Nania, Melanie Noel, Christopher Clark, Daniel Kopala-Sibley, Elizabeth G Condliffe, Sandra J Mish, Laura Brunton, Carly A McMorris

Child: Care, Health and Development · May 2026

Background: Cerebral palsy (CP) is a neurodevelopmental disability in which 75% of youth with CP report experiencing pain. Caregiver mental health, parenting style (e.g., authoritarian) and protective responses to pain (i.e., responses that reinforce pain behaviours and avoidance) have been linked to child pain outcomes. Although caregivers of children with neurodevelopmental disabilities experience heightened stress, little is known about the influence of caregiver mental health and parenting style on pain outcomes in youth with CP.
Objectives: The present study investigated if caregiver mental health symptoms (i.e., depression and anxiety) and general parenting style (i.e., authoritarian, authoritative and permissive) were associated with child-reported pain (i.e., pain intensity and pain interference), and whether protective responses to pain mediated these proposed associations.
Methods: Forty-three pairs of youth with CP and their caregiver were recruited from Canadian agencies, organizations and social media advertisements. Participants completed cross-sectional measures of child-reported pain and caregiver-reported mental health, parenting style and protective responses to pain.
Results: Caregiver mental health and authoritarian parenting style were significant predictors of youth pain interference (p's ≤ 0.05); however, unexpectedly, protective responses to pain did not mediate these associations (confidence intervals containing 0).
Conclusions: These findings highlight the need for future investigations of family-based interventions targeting general parenting style and caregiver mental health and their potential to reduce symptoms associated with secondary conditions, such as pain, that youth with CP experience.
PMID: 42087068

24.The concerns of mothers of female youth with physical disabilities in transitioning to adulthood: A qualitative study

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Journal of Pediatric Rehabilitation Medicine · Online ahead of print (May 5, 2026)

Purpose Mothers of female youth with a physical disability experience stress as their child prepares for adulthood. Interventions that promote parental coping are needed to better support families. This study sought to identify the concerns and coping strategies of mothers of female youth with physical disabilities to inform a family-centered intervention.
Methods: One-on-one semi-structured interviews probed mothers' concerns and coping strategies as their daughters with physical disabilities prepared for adulthood. Dual review of de-identified transcripts was used to identify relevant themes using interpretive phenomenological analysis.
Results: Twenty-one mothers of daughters with physical disabilities participated. Five overarching themes describing mothers' concerns for their daughters emerged. Mothers were concerned about barriers in helping their daughters 1) maximize independence in life skills, 2) achieve empowerment, 3) develop meaningful relationships, 4) maintain good health, and 5) successfully transition to legal adulthood. Mothers described coping strategies to address these concerns, including intentionality and persistence in teaching their daughters new skills, surrounding their daughters with affirming adults, and adapting their own goals.
Conclusions: Mothers' concerns centered around how barriers, biases, and lived experiences challenged their life goals for their daughters. Nonetheless, they identified several coping strategies to overcome most of these concerns.
PMID: 42084417

25.Progress in cell therapies for neonatal conditions: Proceedings of the Third Neonatal Cell Therapies Symposium (2025)

Abdul Razak, Suzanne L Miller, Courtney A McDonald, Madison C B Paton, Sophie Sinistaj, Won Soon Park, Augusto Zani, Ishmael M Inocencio, Salvatore Pepe, Bobbi Fleiss, Pierre Gressens, Tim Wolfs, Nancy Messino, Hannah Tribe, Atul Malhotra

Pediatric Research · Online ahead of print (May 5, 2026)

Abstract
This special article synthesizes transformative insights from a recent international neonatal cell therapy symposium (held in Noosa, Australia) where leading experts convened to explore regenerative solutions for serious perinatal and neonatal conditions. The discussions highlighted pioneering cell-based therapies targeting preterm brain injury, bronchopulmonary dysplasia, fetal growth restriction, hypoplastic left heart syndrome and congenital diaphragmatic hernia; neonatal conditions that present both neonatal challenges and long-term morbidities, demanding innovation beyond conventional medical, surgical and supportive care. Advances in regenerative medicine, particularly those leveraging umbilical cord blood-derived cells, mesenchymal stromal cells from various sources, amniotic fluid and human amnion epithelial derived cells and extracellular vesicles, are redefining therapeutic possibilities through paracrine signaling, immunomodulation, and tissue repair to counteract shared mechanisms of inflammation, oxidative stress, apoptosis, and impaired regeneration. This article integrates the symposium's key clinical and translational perspectives, emphasizing system-specific developments across cardiovascular, pulmonary, neurological, and systemic domains, with a particular focus on scalable production strategies, and the importance of multidisciplinary collaboration. IMPACT: Synthesizes global evidence from preclinical and clinical studies to define the current translational trajectory of cell therapies across major neonatal conditions. Highlights integrative frameworks combining advanced preclinical modeling, clinical trials, scalable manufacturing and stakeholder collaboration to accelerate translation in neonatal regenerative medicine.
PMID: 42082735

26.Development and preliminary validation of a multimodal instrument for spasticity quantification using a composite index: A pilot study

Juan Manuel Rosero Ñañez, Sabrina Schaly, Elizabeth Roldán Gonzalez, María de Los Ángeles Urbano Díaz, Julián Antonio Villamarín Muñoz

PLOS ONE · May 4, 2026

Abstract
Spasticity is a frequent neuromuscular impairment associated with cerebral palsy, stroke, and spinal cord injury, commonly assessed using subjective clinical scales. This exploratory pilot study aimed to develop and preliminarily validate a multimodal instrument for the objective quantification and stratification of spasticity in nine individuals (3 female, 6 male) with upper-limb spasticity due to cerebral palsy ($n = 5$) or stroke ($n = 4$). A wearable system integrating surface electromyography, inertial measurement units, and force sensing resistors was designed to simultaneously capture muscle activation, joint kinematics, and generalized resistance force during standardized passive mobilizations. Simple indicators six area under the curve-based indicators were derived: force, sEMG, and angular velocity under two conditions (R1, R2) and given distinct weights depending on their contribution. Principal component analysis revealed that three latent components accounted for 83.86% of the total variance observed across participants. Based on these indicators, a Composite Index was constructed using min-max normalization and weighted linear aggregation. Within the pilot study, the Composite Index could differentiate between spasticity severity levels ($F = 6.38$, $p = 0.0327$, $\eta^2 = 0.68$), with sEMG activity during slow stretch (AUC sEMG R2) the most influential contributor indicators. The proposed multimodal instrument demonstrates preliminary feasibility as a non-invasive and portable approach for objective spasticity quantification, warranting further validation in larger cohorts.
PMID: 42081544

Prevention and Cure

27.Spontaneous Leg Movements Measured by Wearable Sensors in Infancy Differentiate Later Risk for Cerebral Palsy

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Pediatric Neurology · Online ahead of print (April 16, 2026)

Background: To determine if early spontaneous leg movements of infants differentiate risk status for cerebral palsy (CP) in infants who had a perinatal brain injury.
Methods: Infants born at risk for CP (due to a perinatal brain injury) were classified as high risk for CP ($n = 33$) or not at high risk ($n = 21$), at 4 months of age, using General Movements Assessment and Test of Infant Motor Performance. Full-day leg movement data were recorded using wearable inertial sensors on each ankle (2 days per month, from age 1 to 4 months). Kinematic parameters were derived from accelerometer and gyroscope data as follows: (1) number of leg movements per hour awake; (2) median leg movement acceleration; (3) median leg movement duration; and (4) fuzzy entropy of peak leg movement acceleration. The leg kinematic parameters measured at month 1 and month 4 were analyzed using mixed-effects models.
Results: Infants classified as high risk for CP had statistically significantly fewer number of leg movements per hour awake and shorter median leg movement duration than infants not at high risk ($P = 0.0322$ and $P = 0.0023$, respectively).
Conclusions: The spontaneous movements of infants can be characterized in their natural environments using wearable sensors and have potential to inform recommendations for early intervention and follow-up with experts in CP diagnosis.
PMID: 42090915

28.A retrospective analysis of perinatal stroke: hemostasis abnormalities, neonatal seizures, epilepsy recurrence, and two-year neurological outcome

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Neuropediatrics · Online ahead of print (May 4, 2026)

Background: Neonatal stroke is a rare but potentially severe condition that may lead to long-term neurological impairment. Several factors may influence both its occurrence and outcomes.
Methods: In this retrospective single-center cohort study, 46 neonates diagnosed with perinatal stroke were included. We assessed (1) the prevalence and clinical relevance of hemostatic screening, (2) the occurrence and treatment of acute symptomatic seizures, and (3) long-term outcomes such as epilepsy, cerebral palsy, and developmental impairment.
Results: A total of 46 patients were included, of whom 24 were preterm and 22 were term. Coagulation screening was performed in 38 patients, revealing abnormal values in 8 cases. Continuous EEG monitoring was conducted in 40 patients, with 26 exhibiting neonatal seizures. Epilepsy developed in 5 children before the age of 2 years. Neurodevelopmental assessment was performed in 31 children, of whom 13 showed signs of developmental delay.
Discussion: Few patients had abnormal hemostatic tests. These findings were difficult to interpret due to confounding factors and literature show no association with recurrence. Therefore, routine screening is not currently recommended. Seizures occurred mainly in term infants with neonatal arterial ischemic stroke, usually controlled with one antiseizure medication. Prolonged treatment did not prevent epilepsy. Some developed epilepsy before age 2, at lower rates than reported, possibly due to limited follow-up. Developmental impairment was seen in a minority, mostly term infants. Status epilepticus did not affect outcome. Prospective studies with longer follow-up are needed to identify prognostic markers and guide personalized care.
PMID: 42082161

29.Chorioamnionitis and long-term neurodevelopment in preterm infants: What can we learn from the EPIPAGE-2 cohort study?

Fanny Salmon, Mathilde Letouzey, Emeline Maisonneuve, Gilles Kayem

Gynécologie Obstétrique Fertilité & Sénologie · Online ahead of print (April 30, 2026)

Abstract
In cases of premature birth, intrauterine inflammation is common and may be harmful to the developing brain. Three analyses from the EPIPAGE-2 national prospective population-based cohort were recently published. This review provides an overview of recent data on the association between birth in the context of clinical and/or histological chorioamnionitis and long-term neurodevelopment in preterm infants. A major strength of this work lies in the examination of neurodevelopment within a homogeneous birth context, in contrast to the majority of previous studies. Indeed, the various causes of prematurity are based on distinct pathophysiological mechanisms that may influence a child's neurodevelopment differently. This limitation may partially account for the divergence observed with previous publications. These three studies included, from the EPIPAGE-2 cohort, children born alive between 24 and 34 weeks of gestation, following spontaneous labor or premature rupture of membranes. Clinical chorioamnionitis and histological chorioamnionitis, diagnosed after a standardized placental examination, were studied separately. The children's neurodevelopment was assessed at 2 and 5 years of age using standardized tools. At 2 years of age, clinical chorioamnionitis was associated with an increased risk of cerebral palsy (aOR = 2.1; 95% CI: 1.1–4.1). In contrast, no significant association was observed between clinical chorioamnionitis and moderate-to-severe neurodevelopmental disorders at 5 years of age. Similarly, isolated histological chorioamnionitis was not associated with neurodevelopmental disorders at 2 or 5 years of age. Among children born prematurely following spontaneous labor or preterm rupture of membranes, exposure to clinical or histological chorioamnionitis does not appear to be associated with adverse neurodevelopmental outcomes at 5 years of age.
PMID: 42069082