DEFINITIONS:
Hip surveillance is defined as: “The process of monitoring and identifying the critical early indicators of hip displacement.” Hip displacement refers to the displacement of the femoral head laterally out of the acetabulum and is measured using a migration percentage (MP). Hip subluxation refers to hip displacement where the femoral head is partially displaced from under the acetabulum while hip dislocation refers to hip displacement where the femoral head is completely displaced from under the acetabulum.

IMPACT: WHY IS HIP SURVEILLANCE IMPORTANT?
• Hip displacement and dislocation can lead to pain, reduced function and reduced quality of life.
• Children with cerebral palsy (CP) have an increased likelihood of hip displacement.
• Hip surveillance allows for early detection of hip displacement.
• Early detection enables referral for assessment and/or management.
• Hip surveillance for children with CP should be completed using a systematic approach.

TARGET POPULATION:
Pediatric/Children & Youth Population (age ≤19 years) diagnosed with CP or those children not yet diagnosed with CP but for whom there is a clinical suspicion of having CP.

TARGET CLINICAL PROVIDERS:
Pediatricians including Pediatric Sub-Specialists, Radiologists and Pediatric Orthopedic Surgeons, Therapists, Radiology Technicians, and Nurses providing musculoskeletal care for children/youth with CP.

ASSESSMENT
Hip surveillance involves a multi-step process for every child with CP. Surveillance consists of two components: a clinical examination and a radiographic examination which are completed at surveillance intervals which vary according to risk.

The clinical examination involves determining/re-confirming age, Gross Motor Function Classification System (GMFCS) level and Winters, Gage, Hicks (WGH) gait type at each surveillance interval in addition to inquiring re: pain during history taking. Hip abduction passive range of motion (PROM) is also measured with attention given to presence of pain on assessment.

Radiographic examination consists of measurement of migration percentage (MP) from a supine AP pelvis radiograph with standardized positioning.

FREQUENCY
Surveillance frequency is based on a child’s age, GMFCS level, and WGH gait type.

Surveillance is ideally initiated by 2 years of age, when a CP diagnosis is provided, or when CP is suspected. Surveillance frequency increases with increasing GMFCS level; frequency modifiers are based on absolute MP value and percentage change in MP.

Discharge criteria vary depending on GMFCS level and WGH gait type. Children at GMFCS levels III to V and those with a WGH Gait Type IV hemiplegia are discharged at skeletal maturity except those with a MP greater than 30% or those with pelvic obliquity in the presence of increasing scoliosis where continued surveillance is recommended. Children at GMFCS levels I and II are discharged earlier if MP is stable and under 30%.

REFERRAL
Referral to a pediatric physiatrist, developmental pediatrician or pediatric orthopedic surgeon with experience treating hip displacement in children with CP is recommended when there is presence of hip pain on history and/or physical examination. When the migration percentage is greater than 30% and/or there is less than 30 degrees of hip abduction with or without other findings, referral to a pediatric orthopaedic surgeon is recommended.
The purpose of this document is to provide health care professionals with key facts and recommendations for the assessment and treatment of dystonia in children and youth with cerebral palsy. This summary was produced by the AACPDM Dystonia Care Pathway Team (D Fehlings (team lead), L Brown, A Harvey, K Himmelmann, JP Lin, A MacIntosh, J Mink, E Monballu, J Rice, J Silver, L Switzer, I Walters). The summary is based on a systematic review being submitted for peer-reviewed publication. However, health care professionals should continue to use their own judgement and take into account additional relevant factors and context. The AACPDM is not liable for any damages, claims, liabilities, or costs arising from the use of these recommendations including loss or damages arising from any claims made by a third party.
The purpose of this document is to provide health care professionals with recommendations for hip surveillance of children and youth with cerebral palsy. This summary was produced by the AACPDM Hip Surveillance Care Pathway Team (M O’Donnell [team lead], T Maydon [project manager and clinical examination sub-group leader], S Miller [radiology sub-group leader], R Cairns, K Graham, S Love, F Miller, K Mulipuri, U Narayanan, H Read, B Shore, K Stannage, P Thompson, J Vargus-Adams, J Wiggins, K Willoughby, M Wynter). The summary is based on current evidence and expert consensus when evidence was insufficient. The care pathway and the methodology used to create it will be submitted for peer-reviewed publication. However, health care professionals should continue to use their own judgement and take into account additional relevant factors and context. The AACPDM is not liable for any damages, claims, liabilities, or costs arising from the use of these recommendations including loss or damages arising from any claims made by a third party.

### GMFCS Level with Winters Gage Hicks Gait Type IV

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<th>Age (Years)</th>
<th>GMFCS I</th>
<th>GMFCS II</th>
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<th>GMFCS IV &amp; V</th>
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**Legend:**
- **Clinical Examination:** 
- **AP Pelvis Radiograph:** 

GMFCS: Gross Motor Function Classification System (Palisano R et al., 1997. Illustrations reproduced with permission and copyright © Bill Reid, The Royal Children’s Hospital, Melbourne, AUS.)

WGH Gait Type IV: Winters, Gage, Hicks Gait Type IV Hemiplegia (Winters T, Gage J, Hicks R, 1987, Radna J & Graham HK, 2002. Illustrations reproduced with permission and copyright © Bill Reid, The Royal Children’s Hospital, Melbourne, AUS.)
Plain Language Summary

Hip surveillance is a plan for regular check-ups to watch for signs that your child’s hip may be moving out of joint (this is called hip displacement). Your child is at risk for hip displacement if your child has cerebral palsy. Cerebral Palsy (CP) affects a child’s ability to move. When children are late to stand and walk or can only do so with help, the hip joint may not develop as expected. In addition, the muscles that pull the legs together and up are often tight or stiff and may affect the muscle balance around the hip.

Hip displacement can lead to the hip coming completely out of the joint (hip dislocation). Hip displacement and dislocation can cause pain, difficulty moving the hip, and problems with sitting, standing, and walking.

Hip surveillance includes clinical examinations and hip x-rays at regularly scheduled times. Clinical examinations include asking you and your child about any hip pain, measuring hip movement and noting any pain on movement. Hip x-rays are done to view the hip joint because hip displacement can occur without any signs or symptoms. Taking part in Hip Surveillance allows your child’s health care team to find hip displacement early and help your child before the hip becomes dislocated.

Your child should begin Hip Surveillance when they are diagnosed or suspected of having CP. How often your child requires Clinical Examinations and x-rays after that depends on their ability to move. We use a scale called the Gross Motor Function Classification System (GMFCS) to help us with this.

The GMFCS is used to describe a child’s ability to move and includes five levels from Roman numeral I (1) to V (5). Your child’s physiotherapist, occupational therapist, family doctor, or pediatrician can help you determine your child’s GMFCS level in just a few minutes.
HIP SURVEILLANCE
Bottom Line ‘Evidence-Informed’ Recommendations for the Hip Surveillance in Individuals with Cerebral Palsy


- Risk for hip displacement is directly related to GMFCS level.
- Children whose ability to move is at GMFCS Level I have the lowest risk of hip displacement. They receive the fewest Clinical Examinations and x-rays.
- Children whose ability to move is at GMFCS Level V have the highest risk of hip displacement (8 out of 10 children that are at GMFCS Level V will have hip displacement). Clinical Examinations and x-rays are done most often for children that are at GMFCS Levels IV and V.
- In addition to GMFCS, children with hemiplegia (one side of the body affected) who walk with one hip turned and pulled inward (this is called a Gait Type IV pattern of walking) are at higher risk for hip displacement.

The table in the care pathway shows how often children need clinical examinations and hip x-rays.

Children at low risk will stop Hip Surveillance at age 6 years (ability to move at GMFCS I) or 10 years (ability to move at GMFCS II). Because hip displacement can occur while children and youth are growing, children who are at higher risk (ability to move is at GMFCS Levels III, IV, and V or a Hemiplegia Gait Type IV pattern of walking) take part in Hip Surveillance until an x-ray determines that their bones have stopped growing.

If your child’s health care team finds signs of hip displacement, they can refer your child to a doctor with experience treating hip displacement in children with CP to determine suitable next steps to prevent hip dislocation.

The above summary, aimed to support parents and families, was provided by the Child Health BC Hip Surveillance Program for Children with Cerebral Palsy in British Columbia, Canada. If replicated please acknowledge appropriately.