Hip Surveillance Guidelines

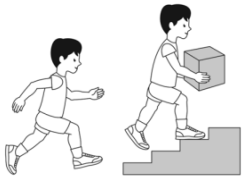
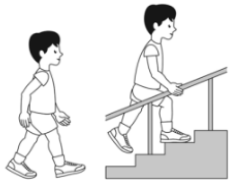
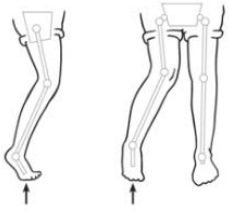
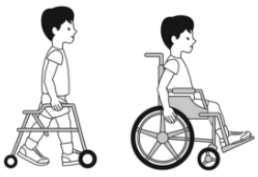
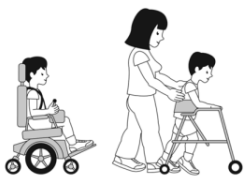
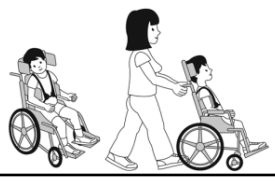
The American Academy for Cerebral Palsy and Developmental Medicine (AACPDM) has published a Hip Surveillance Care Pathway based upon successful and published guidelines from North America, Europe, and Australia.

The common thread between all hip surveillance guidelines is that children with more severe cerebral palsy will require more frequent clinical assessments and x-rays.

You can find PDFs of the complete guidelines in the **Complete Hip Surveillance Guidelines tab**. Summaries of the AACPDM, Australian, British Columbia, and Swedish Hip Surveillance Guidelines are included in the pages below.

AACPDM Hip Surveillance Care Pathway

Adapted from www.aacpdm.org.

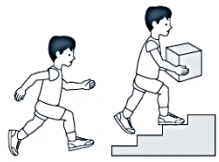
GMFCS Level I 	• Age 2: Clinical Exam • Age 4: Clinical Exam • Age 6: Clinical Exam
GMFCS Level II 	• Age 2: **Pelvis X-ray** and Clinical Exam • Age 4: Clinical Exam • Age 6: **Pelvis X-ray** and Clinical Exam • Age 8: Clinical Exam • Age 10: **Pelvis X-ray** and Clinical Exam. Discharge from surveillance if MP ≤ 30% at age 10
Group IV Hemiplegia  *Features: Pelvic rotation, hip flexion-adduction-internal rotation, knee flexion, ankle equinus. Can be GMFCS Level I or II.*	• Age 2: **Pelvis X-ray** and Clinical Exam • Age 4: Clinical Exam • Age 6: **Pelvis X-ray** and Clinical Exam • Age 8: Clinical Exam • Age 10: **Pelvis X-ray** and Clinical Exam • Age 12 – 16 (or skeletal maturity): **Pelvis X-ray** and Clinical Exam every 2 years • Discharge from surveillance if skeletally mature and MP ≤ 30%. Continue surveillance beyond skeletal maturity if pelvic obliquity associated with increasing scoliosis is present.
GMFCS Level III 	• Age 2 – 8: **Pelvis X-ray** and Clinical Exam every year • Age 10 – 16 (or skeletal maturity): **Pelvis X-Ray** and Clinical Exam every 2 years • Discharge from surveillance if skeletally mature and MP ≤ 30%. Continue surveillance beyond skeletal maturity if pelvic obliquity associated with increasing scoliosis is present.
GMFCS Level IV  **GMFCS Level V** 	• Ages 2 – 3: **Pelvis X-ray** and Clinical Exam every 6 months • Ages 4 – 11: **Pelvis X-ray** and Clinical Exam every year. Increase frequency to every 6 months if: 24 months of surveillance has not yet been completed, MP changes > 10% in a 12 month period, or MP > 30%. • Ages 12 – 16 (or skeletal maturity): **Pelvis X-ray** and Clinical Exam every year • Discharge from surveillance if skeletally mature and MP ≤ 30%. Continue surveillance beyond skeletal maturity if pelvic obliquity associated with increasing scoliosis is present.

Australian Hip Surveillance Guidelines 2014

Adapted from www.ausacpdm.org.au.

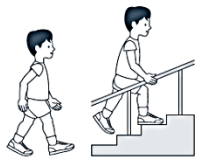
GMFCS I

- Initial clinical assessment and antero-posterior (AP) pelvic radiograph at 12-24 months of age (or at identification if older than 24 months)
- Review at 3 years of age
  - Verify GMFCS level
    - If GMFCS I is confirmed, repeat clinical assessment. AP pelvic radiograph is **NOT** required
    - If GMFCS level has changed, ongoing surveillance according to confirmed classification
  - If identified as Winters, Gage and Hicks (WGH) IV hemiplegia, ongoing surveillance according to WGH IV classification
- Review at 5 years of age
  - Verify GMFCS level
    - If GMFCS I is confirmed, repeat clinical assessment. AP pelvic radiograph is **NOT** required and if nil other significant signs, discharge from surveillance
    - If GMFCS level has changed, ongoing surveillance according to confirmed classification
  - If identified as WGH IV hemiplegia, ongoing surveillance according to WGH IV classification



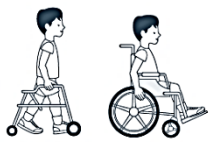
GMFCS II

- Initial clinical assessment and AP pelvic radiograph at 12-24 months of age (or at identification if older than 24 months)
- Review 12 months later
  - Verify GMFCS level
    - If GMFCS II confirmed, repeat clinical assessment and AP pelvic radiograph
    - If GMFCS level has changed, ongoing surveillance according to confirmed classification
  - If MP is abnormal and/or unstable, continue 12 monthly surveillance until stability is established
  - When MP is stable, review at 4-5 years of age
- Review at 4-5 years of age
  - Verify GMFCS level
    - If GMFCS II confirmed, repeat clinical assessment and AP pelvic radiograph
    - If GMFCS level has changed, or if identified as WGH IV hemiplegia, ongoing surveillance according to confirmed classification
  - If MP is stable, review at 8-10 years of age
  - If MP is abnormal and/or unstable, continue 12 monthly surveillance until stability is established
- Review at 8-10 years of age, prepuberty
  - Verify GMFCS level
    - If GMFCS II confirmed, repeat clinical assessment and AP pelvic radiograph
    - If GMFCS level has changed, or if identified as WGH IV hemiplegia, ongoing surveillance according to confirmed classification
  - If MP is stable, discharge from surveillance
  - If MP is abnormal and/or unstable, continue 12 monthly surveillance until stability is established or skeletal maturity
- In the presence of pelvic obliquity, leg length discrepancy or deteriorating gait, continue 12 monthly surveillance



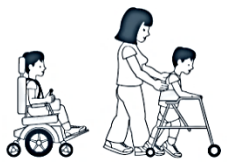
GMFCS III

- Initial clinical assessment and AP pelvic radiograph at 12-24 months of age
- Review 6 months later
  - Verify GMFCS level
    - If GMFCS III confirmed, repeat clinical assessment and AP pelvic radiograph
    - If GMFCS level has changed, ongoing surveillance according to confirmed classification
  - If MP is abnormal and/or unstable, continue 6 monthly surveillance until MP stability is established
  - When MP is stable, reduce frequency to 12 monthly surveillance
- Review at 7 years of age
  - Verify GMFCS level
    - If GMFCS III confirmed, repeat clinical assessment and AP pelvic radiograph
    - If GMFCS level has changed, ongoing surveillance according to confirmed classification
  - If MP is abnormal and/or unstable, continue 6 monthly surveillance until MP stability is established
- If MP is stable, below 30%, and gross motor function is stable, AP pelvic radiographs may be discontinued until prepuberty
  - 12 monthly AP pelvic radiographs must resume prepuberty and continue until skeletal maturity
- At skeletal maturity, in the presence of pelvic obliquity, leg length discrepancy or deteriorating gait, continue 12 monthly surveillance



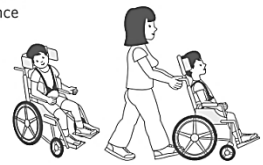
GMFCS IV

- Initial clinical assessment and AP pelvic radiograph at 12-24 months of age
- Review 6 months later
  - Verify GMFCS level
    - If GMFCS IV confirmed, repeat clinical assessment and AP pelvic radiograph
    - If GMFCS level has changed, ongoing surveillance according to confirmed classification
  - If MP is abnormal and/or unstable, continue 6 monthly surveillance until MP stability is established
  - When MP is stable, reduce frequency of surveillance to 12 monthly
- Review at 7 years of age
  - If MP is stable, below 30% and gross motor function is stable, surveillance may be discontinued until prepuberty
  - 12 monthly AP pelvic radiographs must resume prepuberty and continue until skeletal maturity
- Independent of MP, when clinical and/or radiographic evidence of scoliosis or pelvic obliquity is present, 6 monthly surveillance is required until skeletal maturity
- At skeletal maturity, if MP is abnormal and progressive scoliosis or significant pelvic obliquity is present continue 12 monthly surveillance



GMFCS V

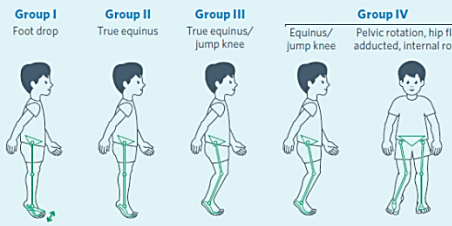
- Initial clinical assessment and AP pelvic radiograph at 12-24 months of age
- Review 6 months later
- Repeat clinical assessment and AP pelvic radiograph
  - Verify GMFCS level
    - If GMFCS V confirmed, continue 6 monthly surveillance until 7 years of age or until MP stability is established
    - If GMFCS level has changed, ongoing surveillance according to confirmed classification
- Review at 7 years of age
  - If MP is stable, below 30% and gross motor function is stable, continue 12 monthly surveillance until skeletal maturity
- Independent of MP, when clinical and/or radiographic evidence of scoliosis or pelvic obliquity is present, 6 monthly surveillance is required until skeletal maturity
- At skeletal maturity, if MP is abnormal and progressive scoliosis or significant pelvic obliquity is present, continue 12 monthly surveillance



Winters, Gage and Hicks hemiplegia group IV (WGH IV)

WGH IV gait pattern clearly declares itself by 4-5 years of age. The child with a classification of WGH IV has the potential for late onset progressive hip displacement regardless of GMFCS level.

- Review at 5 years of age
  - Verify WGH and GMFCS
    - If WGH I-III, ongoing hip surveillance according to confirmed GMFCS
    - If WGH IV and MP stable, review 10 years of age
  - If MP is abnormal and/or unstable, continue 12 monthly surveillance until MP stability established
- Review at 10 years of age
  - Verify WGH IV
    - If WGH IV confirmed, repeat clinical assessment and AP pelvic radiograph
    - Continue 12 monthly surveillance until skeletal maturity
- At skeletal maturity if significant scoliosis, pelvic obliquity, leg length discrepancy or deteriorating gait, continue 12 monthly surveillance

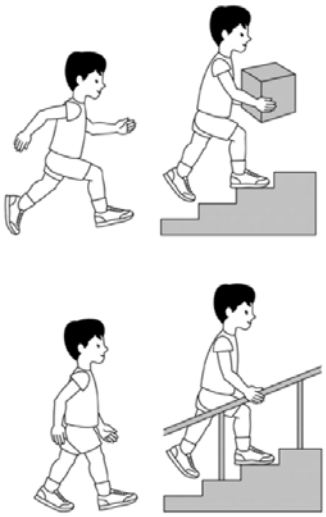


Gait patterns in hemiplegia (Winters, Gage and Hicks, 1987)

British Columbia Hip Surveillance Guidelines

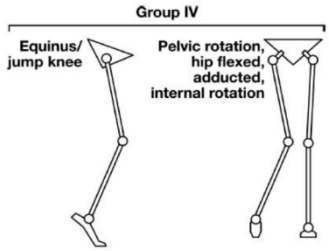
Adapted from www.childhealthbc.ca.

GMFCS 1 & II



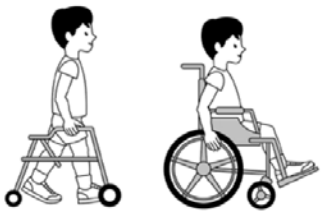
- At each Clinical Exam, verify GMFCS level and identify children with a Group IV gait
- If GMFCS level has changed or child is identified as having a Group IV gait, ongoing surveillance according to confirmed classification
- Initial Clinical Exam at identification of CP
- Review annually with Clinical Exam
- Review at 5 years of age with Clinical Exam and AP pelvic radiograph
- If radiograph findings are normal at 5 years, discharge from surveillance

Hemiplegia Group IV



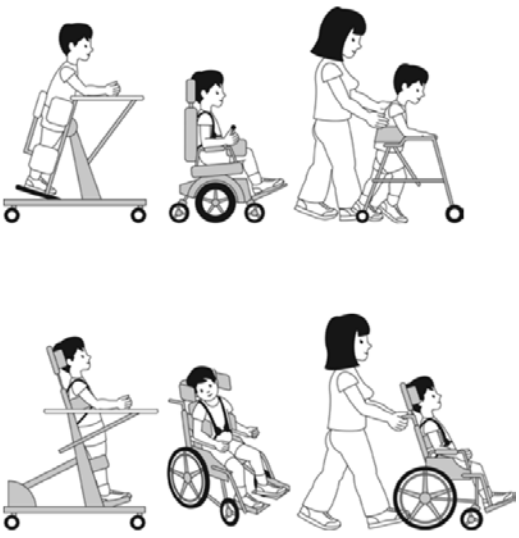
- Until 5 years of age, surveillance as per recommendations for children at GMFCS I & II
- After 5 years of age, Clinical Exam and AP pelvic x-ray 12 monthly until skeletal maturity

GMFCS III



- At each Clinical Exam, verify GMFCS level; if GMFCS level has changed, ongoing surveillance according to confirmed classification
- Initial Clinical Exam at identification of CP
- Clinical Exam and initial AP pelvic radiograph at 24 months of age
- Clinical Exam and AP pelvic radiograph 12 monthly until 6 years of age
- After 6 years of age, until skeletal maturity, review with:
  - Clinical Exam 12 monthly
  - AP pelvic radiograph 24 monthly

GMFCS IV & V



- At each Clinical Exam, verify GMFCS level; if GMFCS level has changed, ongoing surveillance according to confirmed classification
- Initial Clinical Exam at identification of CP
- Clinical Exam and initial AP radiograph at 24 months of age
- Clinical Exam and AP pelvic radiograph 6 monthly until 6 years of age
- After 6 years of age, continue Clinical Exam and AP pelvic radiograph 12 monthly until skeletal maturity

Swedish Hip Surveillance Guidelines

Adapted from www.cpup.se.

Radiographic follow-up in CPUP to prevent hip dislocation

Children with cerebral palsy (CP) have an increased risk of hip dislocation. Without a surveillance program, combined with subsequent indicated treatment, 10-20% of all children with CP develop hip dislocation. Several risk factors are known *, but also children without these established risk factors are at risk of developing hip dislocation. To prevent hip dislocation, the child's hips should be followed both clinically and radiographically during the entire growth period.

* Risk factors
- GMFCS III-V
- Scoliosis
- Windswept deformity
- Adduction – flexion contracture
- Spasticity of hip adductor and flexor muscles

Follow-up program

The program is based on the child's age and GMFCS level. The findings at the clinical examination must also be taken into account in the overall assessment. At times, it will be necessary to deviate from the program and perform examinations more often than the care program recommends.

GMFCS I	No radiographic examination, unless deterioration of hip and/or spine is noted during the clinical examinations.
GMFCS II	Radiographic examinations at 2 and 6 years of age. If MP is <33% and no deterioration is noted during the clinical examinations, no additional radiographic examinations are needed.
GMFCS III-V	Radiographic examination immediately following a confirmed/suspected diagnosis of CP followed by annual radiographic examinations until eight years of age. After age 8, the time interval between examinations is determined individually based on the result of the previous clinical and radiological examinations. Children> 8 years with normal radiology for several years and no deterioration noted during the clinical examinations are recommended to undergo radiographic examinations every two years until growth plate closure.

Children with pure ataxia or athetosis at GMFCS levels II-III and without deterioration noted during the clinical examinations may be excluded from further radiographic examinations - provided that the first radiographic examination is normal.