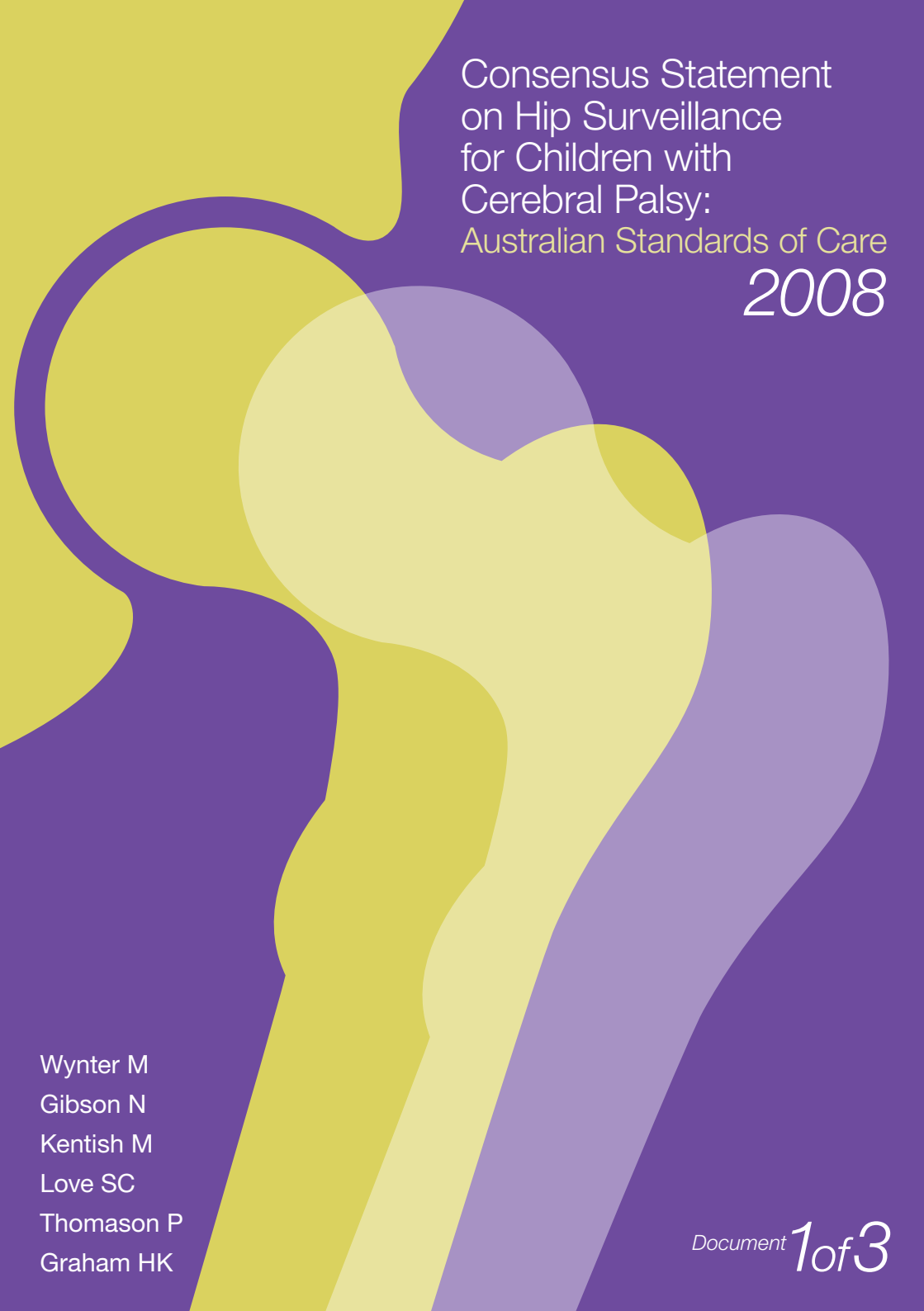
Consensus Statement on Hip Surveillance for Children with Cerebral Palsy: Australian Standards of Care 2008



Wynter M
Gibson N
Kentish M
Love SC
Thomason P
Graham HK

Document 1 of 3

Consensus Statement on Hip Surveillance for Children with Cerebral Palsy: Australian Standards of Care *2008*

This document is endorsed by:

Australasian Academy of Cerebral Palsy and Developmental Medicine

This document can be downloaded from:
www.cpaustralia.com.au/ausacpdm

The **Royal Children's Hospital** Melbourne

Queensland Government
Queensland Health

Government of **Western Australia**
Department of **Health**
Child and Adolescent Health Service
Princess Margaret Hospital

Every child should be referred for hip surveillance[1] at the time cerebral palsy (CP)[2] is identified.

The reported rates of hip displacement[3] and hip dislocation[3] in children with CP[2] vary widely in studies based on referral cohorts and has been reported from 2% to 75% (Bagg et al. 1993). However in two recent population studies, (Soo et al. 2006, Hagglund et al. 2007) the rate of hip displacement[3] was found to be one-third and was not related to the movement disorder but was directly related to gross motor function as determined by the Gross Motor Function Classification System (GMFCS)[4]. Hip dislocation[3] is preventable through early identification and intervention.

Hip surveillance[1] is the process of identifying and monitoring the critical early indicators of progressive hip displacement[3]. Early identification is an essential part of the strategy for prevention of hip displacement[3] and its sequelae[3]. Surgical recommendations and management guidelines are beyond the scope of this document. The Hip Surveillance[1] Standards of Care, document the recommended process for screening, monitoring and triaging to orthopaedic services as part of the overall prevention of hip dislocation[3]. Although the relative risk **(Figure 1)** of hip displacement[3] is directly related to the GMFCS[4] level, hip surveillance[1] is required for every child with CP[2] regardless of gross motor functional ability[5].

The commencement of hip surveillance[1] is dependent on corrected age[6] and the frequency of ongoing hip surveillance[1] is determined by radiological measures[7], GMFCS[4] level and clinical assessment[8].

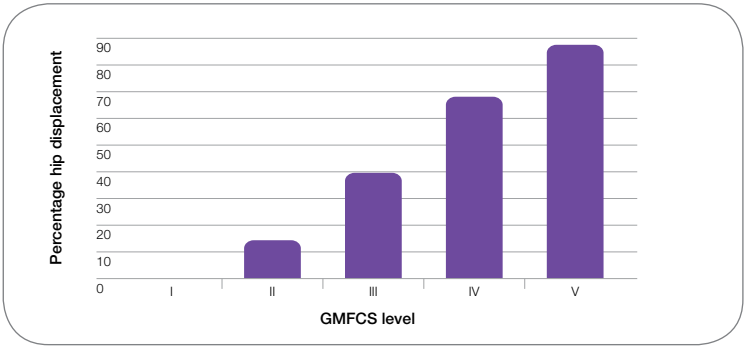


Figure 1: Hip displacement (migration percentage >30%) by GMFCS Level (Soo et al. 2006)

The prime radiological measure[7] for hip surveillance[1] is migration percentage (MP)[9]. Changes in, or stability[10] of MP[9] over time, is more relevant than a single MP[9] measure, hence the recommendation for repeated measures at specific intervals.

Recommended frequency of hip surveillance

GMFCS I

GMFCS I

- Initial clinical assessment[8] and antero-posterior (AP) pelvic radiograph[11] at 12–24 months of age[6] (or at identification if older than 24 months)
- Review at 3 years of age[6]
  - Repeat clinical assessment[8]
  - Verify GMFCS[4] level
    - If GMFCS[4] level has changed or if identified as group IV hemiplegia as described by Winters, Gage and Hicks (WGH IV)[12] (**Figure 2**); ongoing surveillance[1] according to confirmed[13] classification
- Review at 5 years of age[6]
  - Repeat clinical assessment[8]
  - Verify GMFCS[4] level
    - If GMFCS[4] level has changed or if identified as hemiplegia WGH IV[12] **(Figure 2)**; ongoing surveillance[1] according to confirmed[13] classification
    - If GMFCS[4] level I, and no other significant signs, discharge[14] from surveillance[1]

GMFCS II

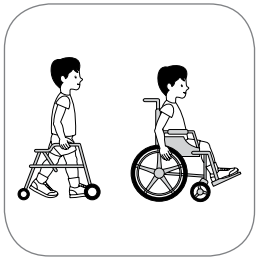
GMFCS II

- Initial clinical assessment[8] and AP pelvic radiograph[11] at 12–24 months of age[6] (or at identification if older than 24 months)
- Repeat clinical assessment[8] and radiograph[11] via 12 monthly surveillance[1] until MP[9] stability[10] is established
  - If MP[9] is abnormal[15] and/or unstable[10], continue 12 monthly surveillance until MP[9] stability[10] is established
  - When MP[9] is stable[10], review at 4–5 years of age[6]
- Review at 4–5 years of age[6]
  - Repeat clinical assessment[8] and radiograph[11]
  - Verify GMFCS[4] level
    - If GMFCS[4] level has changed or if identified as hemiplegia WGH IV[12] **(Figure 2)**, plan ongoing surveillance[1] according to confirmed[13] classification
    - If MP[9] is stable[10], review at 8–10 years of age[6]
    - If unstable[10], continue 12 monthly surveillance[1] until stability[10] is established

- Review at 8 – 10 years of age[6]
  - Repeat clinical assessment[8] and radiograph[11]
    - If MP[9] is stable[10], discharge[14]
    - If unstable[10], continue 12 monthly surveillance[1] until stability[10] is established
  - Verify GMFCS[4] level
    - If GMFCS[4] level has changed; ongoing surveillance[1] according to confirmed[13] classification

GMFCS III

- Initial clinical assessment[8] and AP pelvic radiograph[11] at 12 – 24 months of age[6]
- Repeat clinical assessment[8] and radiograph[11] 6 months later
  - Verify GMFCS[4] level
    - If GMFCS[4] level has changed, ongoing surveillance[1] according to confirmed[13] classification
  - Repeat 6 monthly surveillance[1] until MP[9] stability[10] is established
  - If MP[9] is abnormal[15] and/or unstable[10] continue 6 monthly surveillance[1]
  - When MP[9] is stable[10], reduce frequency to 12 monthly surveillance[1]
  - Review at 7 years of age[6]
    - If MP[9] is stable[10], and below 30%, and gross motor function[5] is stable radiographs[11] may be temporarily discontinued until pre-puberty[16]
    - Twelve monthly radiographs[11] must resume pre-puberty[16] and continue until skeletal maturity[17]

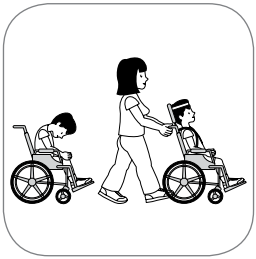


GMFCS III

GMFCS IV

- Initial clinical assessment[8] and AP pelvic radiograph[11] at 12 – 24 months of age[6]
- Repeat clinical assessment[8] and radiograph[11] 6 monthly
  - Verify GMFCS[4] level
    - If GMFCS[4] level has changed; ongoing surveillance[1] according to confirmed[13] classification
  - If MP[9] is abnormal[15] and/or unstable[10] repeat 6 monthly surveillance[1] until MP[9] stability[10] is established
    - When MP[9] is stable[10], reduce frequency of surveillance[1] to 12 monthly
  - Review at 7 years of age[6]
    - If MP[9] is stable[10], below 30% and gross motor function[5] is stable, surveillance[1] may be temporarily discontinued until pre-puberty[16]
    - 12 monthly radiographs[11] must resume pre-puberty[16] and continue until skeletal maturity[17]
  - Independent of MP[9], if clinical[8] and/or radiographic evidence of scoliosis[18] or pelvic obliquity[19] is present, 6 monthly surveillance[1] is required until skeletal maturity[17]

GMFCS IV



GMFCS V

GMFCS V

- Initial clinical assessment[8] and AP pelvic radiograph[11] at 12–24 months of age[6]
  - Continue 6 monthly surveillance[1] until 7 years of age[6]
  - Verify GMFCS[4] level
    - If GMFCS[4] level has changed, ongoing surveillance[1] according to confirmed[13] classification
  - If MP[9] is stable[10], below 30% and gross motor function[5] is stable, continue 12 monthly surveillance[1] until skeletal maturity[17]
  - Independent of MP[9], if clinical[8] and/or radiographic evidence of scoliosis[18] or pelvic obliquity[19] is present, 6 monthly surveillance[1] is required until skeletal maturity[17]

Winters, Gage and Hicks hemiplegia group IV (WGH IV)[12]

WGH IV[12] gait[20] pattern clearly declares itself by 4–5 years of age[6]

The child with a classification of WGH IV[12] has the potential for late onset progressive hip displacement[3] regardless of GMFCS[4] level

- Verify WGH IV[12]
- Hip surveillance[1] continues 12 monthly until skeletal maturity[17]

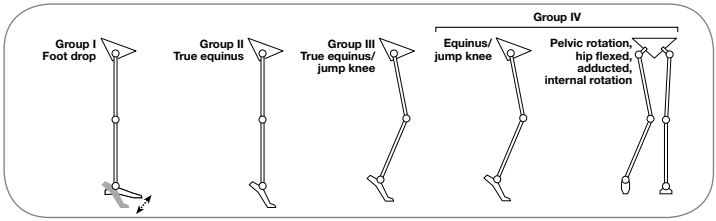


Figure 2: Hemiplegia gait patterns (Winters Gage and Hicks 1987).

Increased frequency of hip surveillance will be required when:

- Deterioration occurs in musculoskeletal measures[21] relating to the hip
  - reduced range of movement[21], reduced muscle length[21]
  - change in muscle tone[22], including, but not limited to, increasing levels of spasticity[23]
- Deterioration occurs in function[5] including altered gait[20], decreased ability or tolerance of sitting or standing
- Presence of spinal deformity[18], pelvic obliquity[19], or significant leg length difference[19]
- Increased/newly developed postural or fixed asymmetry[24]
- Increased difficulty of care/hygiene occurs
- Onset of or increase in pain referrable to the hip[25]
- Pain[25] of unknown origin that requires investigation

Referral to orthopaedic surgeon should occur when:

- MP[9] is unstable[10] and/or progresses to greater than 30%[15]
- There is pain related to the hip[25]
- Other orthopaedic conditions[26] are identified

The intention of hip surveillance[1] is that orthopaedic review occurs at the appropriate time. Every child referred to orthopaedic services should be managed with an individualised management plan[27] which may or may not include ongoing hip surveillance[1].

Australasian Academy of Cerebral Palsy and Developmental Medicine

These hip surveillance standards of care for children with cerebral palsy were endorsed by the Australasian Academy of Cerebral Palsy and Developmental Medicine (AusACPDM) on 28th October 2008. Endorsement by AusACPDM is granted for a period not exceeding five years, at which date the approval expires. The AusACPDM expects that these standards of care will be reviewed no less than once every five years.

These Standards of Care are due for review by 28/10/2011

This document is one of three:

1. Consensus Statement on Hip Surveillance for Children with Cerebral Palsy: Australian Standards of Care

2. Annotations and References for the Consensus Statement on Hip Surveillance for Children with Cerebral Palsy: Australian Standards of Care

3. Explanatory Statement to Accompany the Consensus Statement on Hip Surveillance for Children with Cerebral Palsy: Australian Standards of Care

Disclaimer

This document is endorsed as a general outline of appropriate clinical practice, based on a review of the best evidence available at the time of publication, and is to be followed subject to the clinician's judgment and the patient's preference in each individual case. The AusACPDM takes no responsibility for evidence or information published subsequent to this review.

ERC: 081605 December 2008