GUIDELINE

General Movement Video and Assessment

Scope (Staff):	Nursing and Medical Staff
Scope (Area):	NICU KEMH, NICU PCH, NETS WA

Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this disclaimer

Aim

Early identification of babies at increased risk of movement problems enables closer monitoring and earlier intervention. Having normal general movements in the face of an abnormal USS/MRI can also give some reassurance regarding normal motor outcomes.

Risk

Failure to identify babies at increased risk may lead to delayed interventions.

Background

Observation of the quality of spontaneous movements (also known as general movements, GM) of preterm and term infants can provide information on likely future motor function, in particular cerebral palsy.[1,2] The results of brain MRI in ex-preterm infants at term age and GM assessment have been shown to have complementary roles [4].

What is the Role of General Movement Assessments?

GMs display a developmental trajectory.

The **first stage** is writhing GMs present in utero and up to 46 weeks PMA. These are characterized by small to moderate amplitude and slow to moderate speed movements, which are elliptical in form.

- Abnormal GMs in the writhing period are poor repertoire (PR), cramped synchronised (CS) and chaotic.
- PR movements are monotonous movements that do not appear complex.

- CS are rigid movements where the limbs and trunk contract and relax simultaneously.
- Chaotic movements are large amplitude movements of all limbs that occur in a chaotic order without fluency and smoothness.

The **second stage** occurs at about 6-9 weeks post term where the writhing pattern of GMs is replaced by the fidgety pattern of GMs.

- These are small movements in all directions of moderate speed and variable acceleration in neck trunk and limbs.
- They are continuously present in an awake infant, except during focussed attention or crying. Abnormal fidgety movements are either absent (F-) if never observed between 6-20 weeks post term or exaggerated (abnormal fidgety AF) with increased amplitude speed and jerkiness. [1]

From a recent review GMs were shown to have a high sensitivity between 83.3-100%. [5] The sensitivity improves with increasing age. Thus, the GM assessment is very good at identifying the neonates who will have a normal outcome. The overall specificity is lower ranging in the recent review from 59-100%. Again, the specificity improves with increasing age, probably due to the large number of neonates identified as having poor repertoire in the term age writhing GM period who subsequently normalize and have normal fidgety movements at 12 weeks of age. During the fidgety period specificity is reported to be between 82-100%.

Thus, normal GM at any age have a likelihood ratio (LR) for cerebral palsy - of 0.04; 95% confidence interval of 0.005-0.27, cramped synchronised GMs have a LR+ of 45; 95% confidence interval:6.4-321 and the absence of fidgety movements have LR of > 51. [5]

Potential Infants for GM Assessment

- Grade 3 or 4 IVH.
- Significant post haemorrhagic hydrocephalus.
- Cystic PVL.
- Significantly abnormal MRI (mod-severe WMA or mod-severe cerebellar abnormality).
- Significant neurological concern from Neonatal Team (e.g. meningitis with abnormal MRI).
- HIE stage 2 or 3.
- Other neonatal encephalopathy.

How are General Movements Assessed

Parental consent forms are required to be completed before each video. Provide the parent information sheet on General Movement Assessment.

The assessment is by a video recording of an infant spontaneously moving. The video is recorded and reviewed by 2 staff members who have attended and passed the basic or advanced training course through the General Movement Trust.

1. Writhing age GMs are assessed typically with an inpatient video ideally > 36 weeks.
    - Feedback to treating team within 1-2 weeks by GM assessors.
2. Fidgety age GMs
    - Outpatient video at 3 months corrected age is completed or submitted by the parents via MYFT if a referral to other services has not been made.
    - Communication of assessment to Neonatal Consultant before 4 month corrected age clinic appointment.

What does an Abnormal Assessment at 3 Months Mean?

- Absent fidgety movements at 12-16 weeks has a sensitivity 95-100% and specificity ~85% for cerebral palsy (in high risk populations). [4,5]
- Abnormal fidgety movements are rare and not as clearly predictive of motor development although concerning.

Outcome of Abnormal Assessment at 3 Months Corrected Age (Absent Fidgety Movement)

- Consultant neonatologist outpatient review at 4 months corrected age (as normal).
- Individual physiotherapy assessment at 3-4 months (may repeat video).
- Referral for further services including early intervention (discuss with KEMH/PCH physiotherapist regarding best local options).

Documentation and Storage of Videos

The outcome of the assessment will be documented on the inpatient notes on MR Form (850.00) and storage protected.

References and related external legislation, policies, and guidelines

1. Prechtl HF, Einspieler C, Cioni G, Bos AF, Ferrari F, Sontheimer D. An early marker for neurological deficits after perinatal brain lesions. Lancet. 1997; 349:1361-3.
2. Spittle AJ, Doyle LW, Boyd RN. A systematic review of the clinimetric properties of neuromotor assessments for preterm infants during the first year of life. Developmental medicine and child neurology. 2008; 50:254-66.
3. Cioni G, Ferrari F, Einspieler C, Paolicelli PB, Barbani MT, Prechtl HF. Comparison between observation of spontaneous movements and neurologic examination in preterm infants. The Journal of pediatrics. 1997; 130:704-11.
4. Spittle AJ, Boyd RN, Inder TE, Doyle LW. Predicting motor development in very preterm infants at 12 months' corrected age: the role of qualitative magnetic resonance imaging and general movements assessments. Pediatrics. 2009; 123:512-7.
5. Noble Y and Boyd R Neonatal assessments for the preterm infant up to 4 months corrected age: a systematic review Develop Med and Child Neurol 2012 54:129-139
6. Catherine Morgan,Domenico M.Romero, and Andrea Guzetta. The pooled Diagnostic Accuracy or neuroimaging, and neurological Examination for Diagnosing Cerebral Palsy in High Risk Infants: A case control Study. J Clin Med.2019 Nov;(11):1879

Useful resources (including related forms)

General Movement Assessment (Parent Information Sheet)

This document can be made available in alternative formats on request.

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