THAMES VALLEY & WESSEX NEONATAL OPERATIONAL DELIVERY NETWORK

TV & Wessex Cerebral Function Monitor CFM practical guideline	
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Related documents	References: 1. Thames Valley & Wessex Guidelines for assessment and initiation of therapeutic hypothermia (cooling) treatment for babies presenting with moderate or severe hypoxic ischaemic encephalopathy 2. RCOG. Each Baby Counts progress report 2018. 3. Gale C, Statnikov Y, Jawad S, Uthaya SN, Modi N, Brain Injuries expert working g. Neonatal brain injuries in England: population-based incidence derived from routinely recorded clinical data held in the National Neonatal Research Database. Archives of disease in childhood Fetal and neonatal edition. 2018;103(4): F301-F6. 4. NHS. NHS Long term Plan 2019 [Available from: https://www.longtermplan.nhs.uk/. 5. Programme SPS. Scottish Patient Safety Programme Maternity and Children Quality Improvement Collaborative 2019 [Available from: https://ihub.scot/improvement-programmes/scottish-patient-safety-programme-spsp/maternity-and-children-quality- improvement-collaborative-mcqic/. 6. Skranes JH, Lohaugen G, Schumacher EM, Osredkar D, Server A, Cowan FM, et al. Amplitude-Integrated Electroencephalography Improves the Identification of Infants

	with Encephalopathy for Therapeutic Hypothermia and Predicts Neurodevelopmental Outcomes at 2 Years of Age. Journal of Pediatrics. 2017;187:34-42. 7. https://www.bapm.org/resources/237-therapeutic-hypothermia-for-neonatal-encephalopathy 8. Hart, A.R., Ponnusamy, A., Pilling, E. et al. (1 more author) (2017) Neonatal cerebral function monitoring – understanding the amplitude integrated EEG. Paediatrics and Child Health, 27 (4). pp. 187-195. ISSN 1751-7222 **9.** Niran al Naqeeb, A. David Edwards, Frances M. Cowan, Denis Azzopardi Assessment of Neonatal Encephalopathy by Amplitude-integrated Electroencephalography Pediatrics Jun 1999, 103 (6) 1263-1271 10. Hellström-Westas, L. et al. "Amplitude-integrated EEG Classification and Interpretation in Preterm and Term Infants." *Neoreviews* 7 (2006): 76-87 11. Kostałkowski, M. K.. "aEEG analog front end IC for a neonatal brain development monitoring." (2016). 12. Azzopardi D, 2008. Olympic CFM examples 08. [online] Available at: http://www.neoweb.org.uk/CFM/CFM_Examples.htm
Implications of race, equality & other diversity duties for this document	**This guideline must be implemented fairly and without prejudice whether on the grounds of race, gender, sexual orientation or religion.**

Contents

1.0 Definitions

aEEG	Amplitude integrated EEG (time-compressed EEG)
CFM	Cerebral Function Monitor
EEG	Electroencephalography
HIE	Hypoxic Ischaemic Encephalopathy
SWC	Sleep wake cycling
TH	Therapeutic hypothermia
NE	Neonatal Encephalopathy
Impedance	Measures the quality of electrode contact and should be as low as possible

2.0 Aim of Guideline

Cerebral Function Monitoring (CFM) provides a non-invasive, portable and continuous monitoring of the neurological status of infants with possible seizure activity or where there is the suspicion of neonatal encephalopathy.

This guideline covers the indications for use, how to set up the CFM and troubleshoot; and the basics of interpreting the CFM trace.

3.0 Scope of Guideline

The guideline applies to all neonates who are born in neonatal units and maternity units covered by Thames Valley & Wessex Neonatal ODN who have the equipment to undertake cerebral function activity monitoring. This includes the following hospitals:

Thames Valley		
TRUST	**Hospital**	**Designation**
Oxford University Hospitals NHS Foundation Trust	- John Radcliffe Hospital, Oxford	NICU
Buckinghamshire Healthcare NHS Trust	- Stoke Mandeville Hospital, Aylesbury	LNU
Frimley Health NHS Foundation Trust	- Wexham Park Hospital, Slough	LNU
Milton Keynes University Hospital NHS Foundation Trust	- Milton Keynes General Hospital	LNU
Royal Berkshire NHS Foundation Trust	- Reading	LNU

Wessex		
TRUST	**Hospital**	**Designation**
University Hospital Southampton NHS Foundation Trust	- Princess Anne Hospital	NICU
Portsmouth Hospitals NHS Trust	- Queen Alexandra Hospital	NICU
Dorset County Hospital NHS Foundation Trust	- Dorchester	SCU
Hampshire Hospitals Foundation Trust	- Basingstoke	LNU
Hampshire Hospitals Foundation Trust	- Winchester	LNU
Isle of Wight NHS Trust	- St Mary's Hospital	SCU
Poole Hospital NHS Foundation Trust	- Poole	LNU
Salisbury NHS Foundation Trust	- Salisbury	LNU
Western Sussex Hospitals NHS Foundation Trust	- St Richard's Hospital, Chichester	LNU

4.0 Guideline Framework

This guideline provides practical guidance on the use of CFM monitoring in babies considered for therapeutic hypothermia. This guideline should be used in conjunction with the '*Thames Valley and Wessex guidelines for assessment and initiation of therapeutic hypothermia (cooling) treatment for babies presenting with moderate or severe hypoxic ischaemic encephalopathy'* (1)*.*

It is designed to be used by the following staff group:

Paediatric/Neonatal doctors

Advanced Neonatal Nurse practitioners (ANNPs)

Neonatal nurses

5.0 Background information

Perinatal asphyxia severe enough to cause neonatal hypoxic-ischaemic encephalopathy (HIE) occurs in approximately 1/1000 – 3.5/1000 births in the UK (2), (3). Reduction in neonatal brain injury is a key national objective; and a number of strategies have been implemented to support this (4), (5).

Therapeutic hypothermia (TH) with intracorporeal temperature monitoring for moderate to severe neonatal encephalopathy (NE) is effective in improving outcomes and shows clear cost benefit.

TH should be instigated in infants who have evidence suggesting significant perinatal hypoxia – ischaemia and significant neonatal encephalopathy on clinical examination. Additional use of amplitude integrated electroencephalogram (aEEG) (measured using a Cerebral Function Monitor) is strongly encouraged, because confirmation of abnormality would confirm treatment eligibility.

The new BAPM framework on Therapeutic Hypothermia for Neonatal Encephalopathy published in December 2020 (7) suggests that therapeutic hypothermia treatment is instigated in babies who meet the criteria outlined in the TOBY study.

This involves meeting three criteria:

- At least one **'**A' criterion indicating significant perinatal hypoxia-ischaemia,
- Fulfil 'B' criterion representing the presence of significant neonatal encephalopathy, and
- At least one 'C' criterion showing seizures or abnormal background activity on amplitude integrated electroencephalography (aEEG). (6, 7)

A. Infants ≥ 36 completed weeks gestation admitted to the NICU with at least one of the following:

- Apgar score of ≤ 5 at 10 minutes after birth
- Continued need for resuscitation, including endotracheal or mask ventilation, at 10 minutes after birth (see notes below)
- Acidosis defined as any occurrence of:
  - pH ≤7.00
  - Base deficit ≥16mmol/l

  in any cord or baby gas sample within 60 minutes of birth

Infants that meet criterion **A** will be assessed for whether they meet the neurological abnormality entry criteria (**B**) by trained personnel:

B. Moderate to severe encephalopathy, consisting of altered state of consciousness (lethargy, stupor or coma) AND at least one of the following:
· hypotonia
· abnormal reflexes including occulomotor or pupillary abnormalities
· absent or weak suck
· clinical seizures

Infants that meet criteria A & B will be assessed by aEEG (read by trained personnel):
C. At least 30 minutes duration of amplitude integrated EEG recording that shows abnormal background aEEG activity or seizures. There must be one of the following:

- normal background with some seizure activity
- moderately abnormal activity
- suppressed activity

The term 'continued need for resuscitation including mask or endotracheal ventilation' does not include infants who are receiving PEEP or CPAP alone.

aEEG or cerebral function monitoring, (CFM), is a very helpful tool for obtaining evidence of cerebral depression and in the ongoing management of these infants, including prognostication and recognition of seizures (6). Using it as part of assessing eligibility may reduce the number of babies cooled unnecessarily. It may be clear after only 10 min of monitoring that the criterion C has been met. However, initiation of cooling in infants who are clearly neurologically abnormal should not be delayed awaiting aEEG data. Practitioners should be trained in the use and interpretation of aEEG which should be coordinated at network level. The aEEG should be used to monitor cerebral depression and seizure activity throughout the cooling process and until the end of rewarming.

6.1 Indications and timing for commencing Cerebral Function Monitoring

Cerebral Function Monitoring (CFM) should routinely be used for all infants of gestational age ≥ 36 weeks who have one or more of the following:

- Evidence of perinatal distress suggestive of possible hypoxic-ischaemic encephalopathy (HIE) and who required admission to NICU.
- Evidence of encephalopathy – meet one or more of criteria B.
- Seizures, definite or possible.

Use of CFM in other clinical situations or for more immature infants 34-35 weeks gestation in similar circumstances may also be appropriate (see network HIE guidance) but interpretation may be more difficult. Use of CFM in these cases should be discussed with the tertiary centre.

When should CFM monitoring be commenced:

- Stabilisation of the unwell infant with suspected HIE should be prioritised over the application of CFM (see TVW Guideline on Therapeutic Hypothermia: General care of the baby considered for therapeutic hypothermia (1).
- Apply the CFM as soon as possible following admission to the neonatal unit of any baby with suspected hypoxic encephalopathy. Aim to apply within the *first hour*.
- Early application may facilitate a reliable baseline.

6.2 Application/Setting up/monitoring of the cerebral function monitor

The CFM should be attached only by personnel who have been trained in its application to infants – this may be a member of the nursing or medical team.

- Adhesive/hydrogel or needle electrodes may be used. These should be placed in the parietal area according to the instructions specific to the cerebral function monitor (CFM) used. See specific instrument guide for details (Appendix 1, 2).

- The attendant nurses and medical staff should record on the monitor events that occur during the period of monitoring such as:

  - Handling or medical procedures
  - Seizures or abnormal movements observed
  - Administration of anti-convulsants or sedation

6.3 Interpretation of the CFM and troubleshooting

Basics of CFM Interpretation

The interpretation of the CFM trace should be clearly documented in the medical notes, commenting on the upper and lower margins, background activity and waveform. The TV&W HIE assessment form provides a

good structure for recording both the risk factors for HIE, the clinical examination and the CFM results and interpretation. Use of this form is strongly encouraged (see TVW Guideline on Therapeutic Hypothermia).

Please note that where dual-hemisphere channels are available, the overall CFM trace should be used for determining background activity (NOT the individual hemisphere traces).

There are **3 parameters** that can be measured by a Cerebral Function Monitor (CFM), all of which should be taken into consideration when interpreting and reporting. They are as follows:

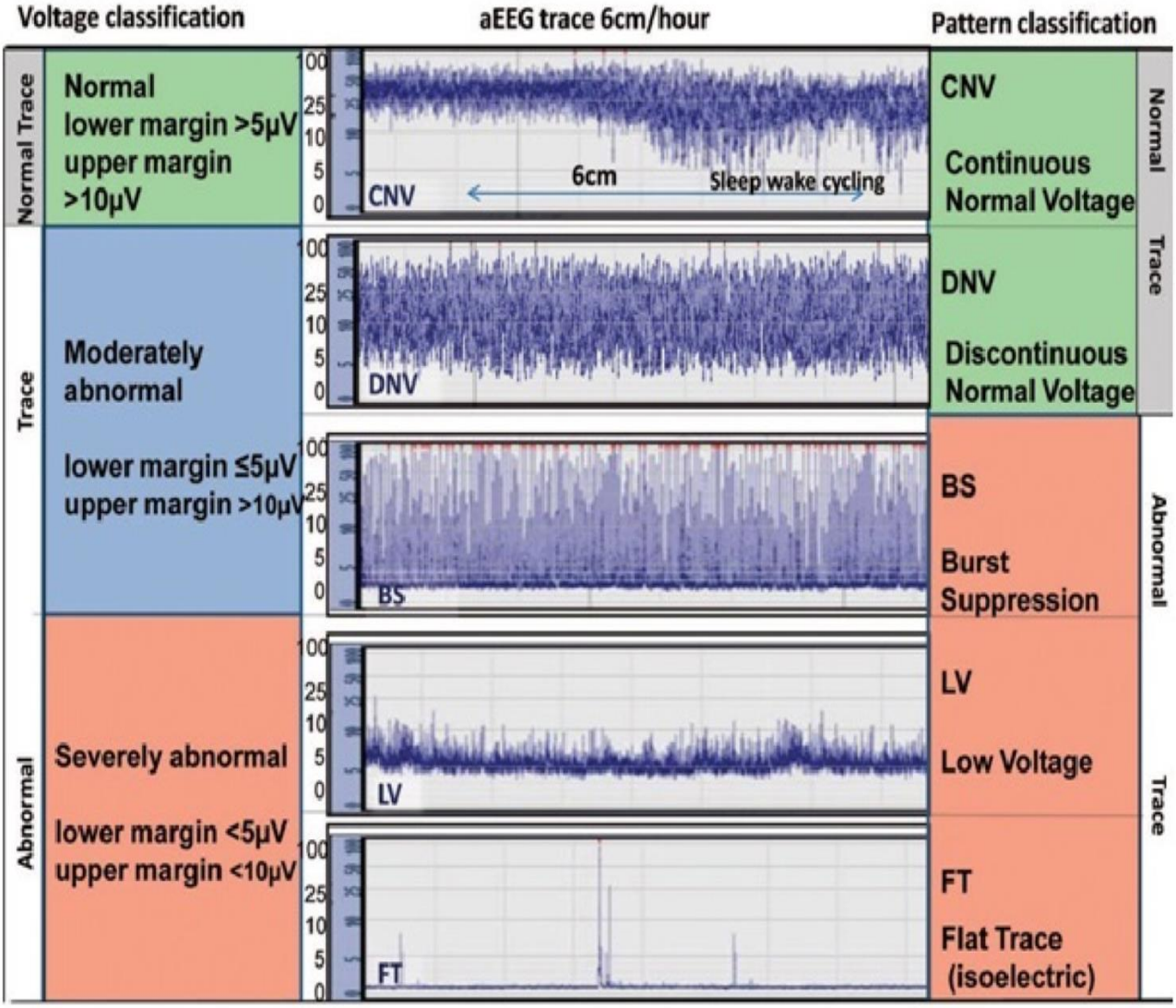
Impedance	• A measure of the electrical signal's conductivity • Measured in Ohms (Ω) • Tells you how good the contact is between electrodes and the scalp • Loss of contact can increase artefact in the aEEG • <5 Ω is very good • 5-10 Ω is acceptable • If > 10 Ω check the electrodes placement • When reporting the aEEG, document the impedance as part of this
Raw-EEG	• This is the raw electrical signal measured directly from the electrodes before it is rectified and compressed by the monitor into the aEEG trace • Inspect this when reporting to differentiate between seizures and artefact and to differentiate between the different background patterns
Amplitude-integrated EEG (aEEG)	• This is the rectified and compressed trace the monitor makes from the raw EEG. • The EEG is compressed to 1hr/6cm • It gives information on cerebral function, the characteristics should be documented

CLASSIFICATIONS OF aEEGs

There are two approaches to interpreting the aEEG trace in CFM monitoring:

1. Using **voltage classification** to identify the severity of the aEEG background (9)
2. Using **pattern classification** to describe the aEEG background activity (10)

Please see the diagram below that describes both voltage and pattern classifications (11). Please see appendix 3 for CFM trace examples.



A simple semiquantitative classification is used in the Toby study (12):

1. **Normal**: The upper margin of the trace is above 10 microvolts and the lower margin is greater than 5 microvolts. In healthy, full term infants the trace alters in width according to the state of the infant. The trace is narrower when the infant is awake and widens during sleep. These changes in width of the trace with infant state are called sleep/wake cycling. In normal infants the width of the trace varies from approximately 10-40 microvolts.

2. **Moderately abnormal**: The upper margin of the trace is greater than 10 microvolts and the lower margin is less than 5 microvolts. This appearance can be seen in infants with moderately severe encephalopathy, or immediately after administration of drugs such as anticonvulsants and sedatives. This pattern may also be seen in preterm infants (below 36 weeks gestation).

3. **Severely abnormal:** The upper margin of the trace is less than 10 microvolts. The lower margin is usually less than 5 microvolts but on occasion the lower margin may be raised above 5 microvolts because of interference from ECG or other artefacts. A severely abnormal trace is characterised by a general suppression of amplitude so that the trace appears narrow and of low voltage. This pattern may be accompanied by brief bursts of higher voltage spikes, which appear as single spikes above the background activity. This appearance is sometimes called “burst suppression”. A severely abnormal trace is usually seen with severe encephalopathy and is often accompanied by seizure activity.

Further pattern descriptions also include:

- Mildly abnormal trace
- Sleep wake cycling
- Seizures
- Artefacts

Mildly abnormal trace:

The upper and lower margins are normal but there is lack of sleep wave cycling. This is commonly seen in infants with mild HIE who may be hyperalert and hypertonic. It is also commonly seen after administration of sedative medication. This trace is not an indication for cooling treatment.

Sleep wake cycling (SWC):

Normal finding characterized by smooth sinusoidal variations, mostly in the lower amplitude. Broader bandwidth represents discontinuous background activity during quiet sleep, and narrower bandwidth corresponds to the more continuous activity during wakefulness and active sleep. Loss of sleep wake cycling occurs in mild HIE and is also seen in response to some sedative and anticonvulsive medication.

Seizures:

Seizure activity in aEEG is seen as an abrupt rise in the lower and upper amplitude and narrowing of the bandwidth. The raw EEG may confirm seizures by the presence of repetitive rhythmical spike and wave discharges.

Artefacts:

The most likely cause of artifacts is poor placement of electrodes – (either positioning or contact) and these should always be checked first. It is important to identify any areas of artefact and discard these from any decision-making regarding plan of care or treatment. As with all reporting, inspecting the impedance and raw EEG will help in determining areas of artefact. Artefacts on aEEG together with the difficulty in interpreting raw EEG on CFM monitors, can be misdiagnosed as seizures. As described above, seizures will present with repetitive rhythmical spike and wave on the raw EEG. However, at times it can show slow rhythmical activity that could be due to respiratory artifact. See appendix 4 for some examples of artefact.

Troubleshooting

The trace can be affected by several factors, so it is important to think of these when interpreting an apparently abnormal trace. Consider the following if:

Background voltage appears elevated, possible causes:

- ECG artefact
- Handling
- Muscle activity
- High-frequency ventilation
- Gasp artefact

Background voltage appears depressed, possible causes:

- Severe scalp oedema or subdural/subgaleal haemorrhage
- Leads significantly too close together
- Leads over fontanelle, sutures
- Significant sedation (particularly following seizure medication)

6.4 Documentation:

The interpretation of the CFM trace should be clearly documented in the medical notes, commenting on the upper and lower margins, background activity and waveform. The TV&W HIE assessment form provides a good structure for recording both the risk factors for HIE, the clinical examination and the CFM results and interpretation. Use of this form is strongly encouraged (see TVW Guideline on Therapeutic Hypothermia). Advice from NICU to support local CFAM interpretation can be provided by the NICU / Transport team, all advice and interpretation of CFM traces should be documented. The use of tele/video medicine facilities can be utilised to support review of the CFAM and local decision making).

6.5 How long should aEEG monitoring be continued

Generally, continue monitoring until the patient has clinically stabilised with no risk of further cerebral insult.

- A minimum of 30 minutes of aEEG monitoring is required to establish whether the initial trace is abnormal. (When infants are clearly compromised and require transfer, do not wait for the aEEG trace before contacting the tertiary centre)
- If the initial trace is normal, monitoring should continue until 6 hours of age. The trace should be regularly monitored during this time period and the tertiary centre contacted if there are any concerns regarding interpretation or eligibility for cooling
- Where monitoring is used for possible seizures, continue until there has been no seizures for 12-24 hours

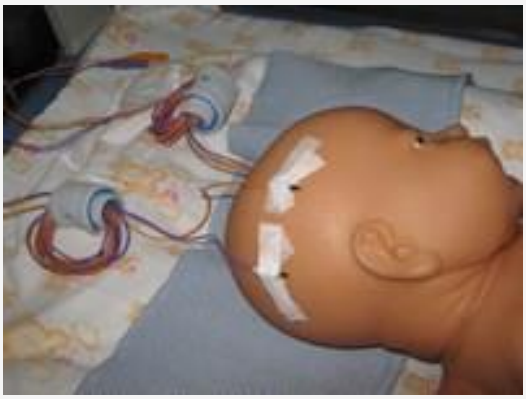
Version Control:

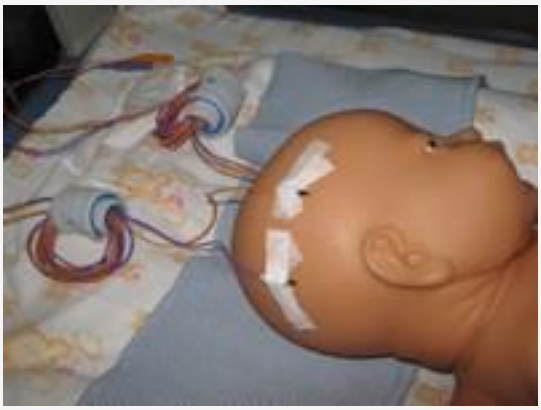
Version	Date	Details	Author(s)	Comments
1	16.12.2021	Ratified	LY, VP, EA	Ratified
2				
3				
Review Date:	**16.12.2024**			

Appendix 1:

Sub-dermal Needle Electrode Placement

1	• Position infant supine • Ensure head is clean • Place the wrap hat under the baby's head	
2	• Use the sensor positioning strip to identify location for the EEG electrodes. • Position the strip vertical and parallel to the baby's face. Align so the letter (A-H) at the sagittal suture is the same letter at the tragus	 
3	Use a marker pen, mark the two sensor sites at the ends of the arrows **Note: DO NOT** shave these insertion marks	
4	Using gauze and cleaning solution appropriate for gestation age clean the insertion sites. • This is important to help the tape to adhere. • It may help to create a vertical part in the hair.	

5	Site electrodes in the following manner: • Hold skin taut • Insert a needle electrode subdermally at insertion sites. • Leads are directed to the top of the head • Ensure all metal is under the dermal layer • Secure electrode with a thin strip of hypafix tape under and over the needle (cross over method). Then place one strip across the top. Ensure tape is positioned so as not to completely obscure all the black area of the plastic sheath; this is important so that you can visualise whether the needle is becoming dislodged. • If using electrode adhesive, apply a small quantity to the underside of the plastic sheath and gently hold against the scalp until fixed.	
6	Turn infants head over and repeat procedure.	
7	Site reference electrode • Select a site with no hair on or near the shoulder • Clean the area with water and gauze • Using cotton tips clean the area with a very small amount of NuPrep® • Using water and gauze clean of the NuPrep®	

	• Site electrode with lead directed towards the head	
8	Check electrode signal quality, once green apply wrap hat with adequate tension to support electrodes.	
9	To prevent needle dislodgement and minimise motion artefact: • Loop sensor wires into two bundles and place near head of bed. (One bundle for the right electrodes and one for the left)	
10	• Electrode sites must be checked with all cares for signs of infection and displacement. • Ensure all metal is under the dermal layer	
	Note: To prevent likelihood of needle stick injury always check impedance signal before removing wrap hat or touching head**.** If at any stage the impedance colour turns amber or red, the needle is likely to be dislodged. Remove wrap hat with care NB. Needles can remain insitu for duration of monitoring but if dislodged, replace with new one.	

Appendix 2:

Hydrogel Electrode Placement

1	• Position infant supine • Ensure head is clean • Place the wrap hat under the baby's head	
2	Use the sensor positioning strip to identify location for the EEG electrodes. • Position the strip vertical and parallel to the baby's face. Align so the letter (A-H) at the saggital suture is the same letter at the tragus	 
3	Use a marker pen, mark the two sensor sites at the ends of the arrows **Note:** **DO NOT** shave these placement marks	
4	• Using sterile water and gauze, part the hair vertically at the mark • Pat dry with gauze keeping hair parted	

5	Clean the parted line • Place a very small amount of preparation gel (NuPrep®) on a cotton tip. • Using an up and down action clean the parted line with NuPrep®. Hold the skin taut as you clean. • Using gauze and water clean off the NuPrep®; work outwards from the centre to maintain the parting. • Pat dry the area.	
6	Site electrodes in the following manner. • Apply the sensors directly over the cleaned spot, with the sensor wires directed to the top of the head. • Ensure electrodes do not touch each other. Electrodes should be 5-8mm apart and paralleled to each other. • Once applied, pat around edge of electrodes with a cotton wool swab	
7	Turn infants head over and repeat procedure.	 

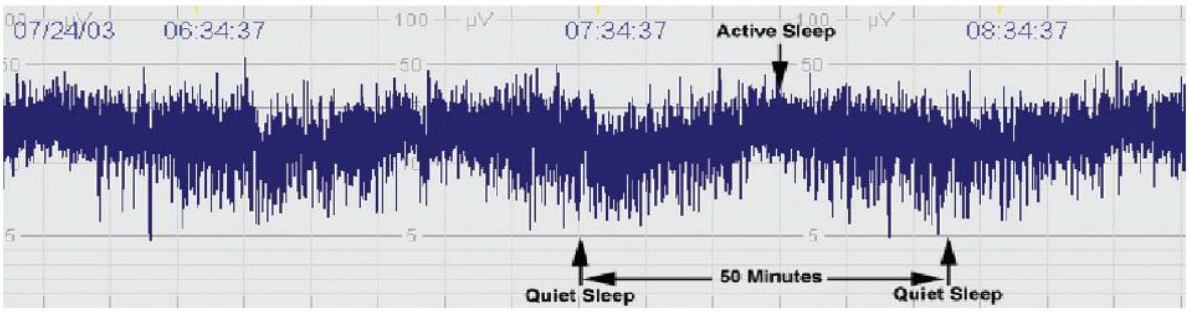
8	Site reference electrode • Select a site with no hair on or near the shoulder • Note the same cleaning process is required • Site electrode with lead directing towards the head	
9	Plug into the data acquisition unit (DAU) • Left anterior lead into C3 • Right anterior lead into C4 • Left posterior lead into P3 • Right posterior into P4	
10	Check electrode signal quality, once green apply wrap hat with adequate tension to support electrodes	
11	**Note:** If electrodes lift, reapply using a drop of sterile water. If not adequate, remove electrode, repeat cleaning process and replace. **Do Not** stop the machine. Continue monitoring, mark event.	

Appendix 3:

CFM trace examples

Normal trace:

- Upper margin of band of aEEG activity >10 µV
- Lower margin of band of aEEG >5 µV.
- Upper and lower margins follow in parallel
- EEG is continuous
- Sleep-wake cycling may be present

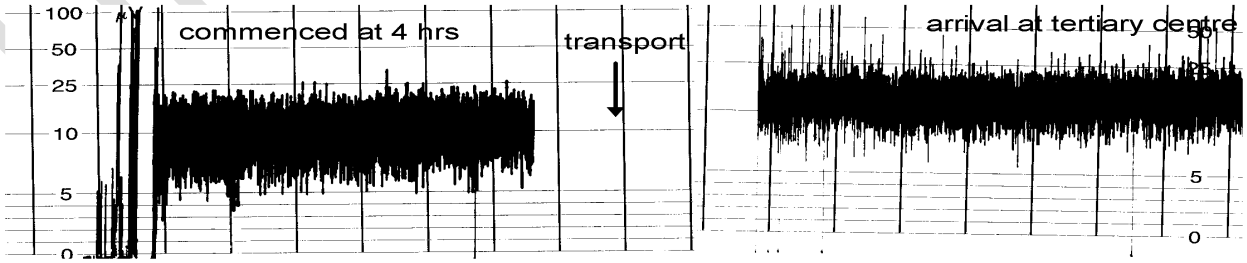


Upper margin >10 µV, lower margin is >5 µV throughout. The widening and narrowing of the trace implies periods of sleep and wakening i.e. sleep-wake cycling.

This is classified as a normal trace and in most cases is a good prognostic sign. Early return of sleep wake cycling (SWS) after an asphyxial insult is also a good prognostic sign.

Mildly abnormal trace:

- Upper margin: >10 µV
- Lower margin: >5 µV
- SWC: Absent

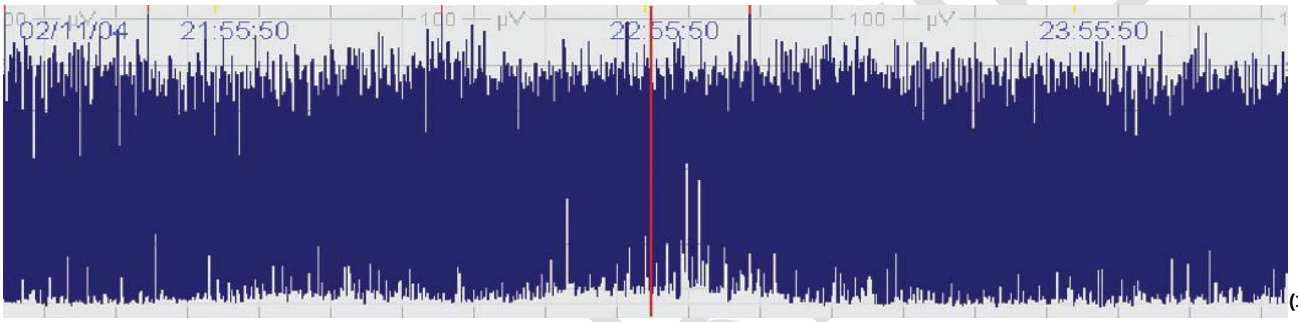


Upper margin > 10 µV, Lower margin >5 µV Loss of SWC seen

Normal upper and lower margins but lack of sleep wave cycling. This is commonly seen in infants with mild HIE who may be hyperalert and hypertonic. It is also commonly seen after administration of sedative medication. This trace is not an indication for cooling treatment.

Moderately abnormal trace:

- Upper margin of band of aEEG activity >10 µV
- Lower margin of band of aEEG <5 µV
- EEG may be discontinuous or show high amplitude bursts >25 µV (burst suppression)
- Abnormal voltage (min<5, max >10 µV), lacks the fluctuation of sleep-wake



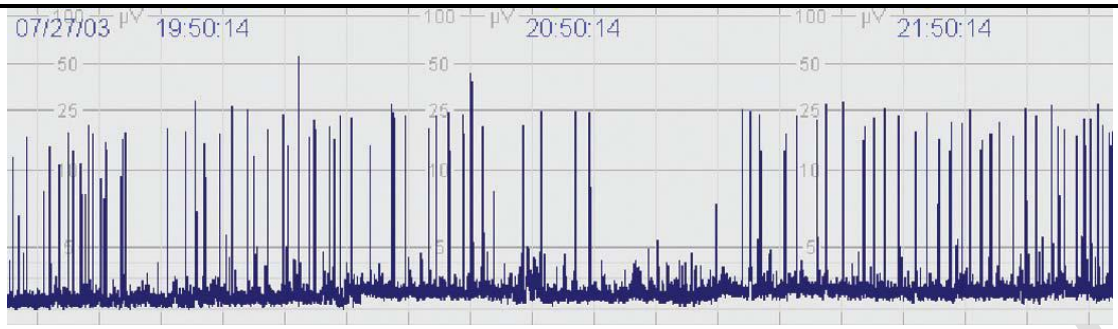
(1,7.)

Upper margin is >10 µV and lower margin is <5 µV throughout the trace. There is no sleep-wake cycling.

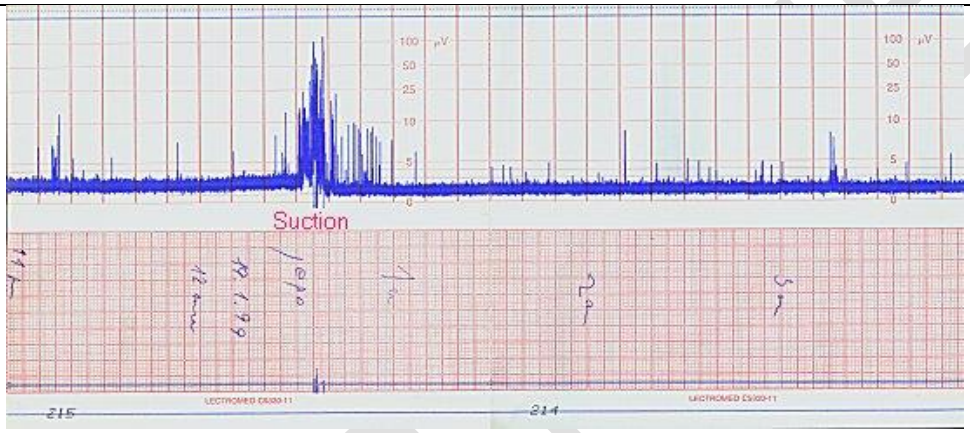
This appearance can be seen in infants with moderately severe encephalopathy, or immediately after administration of drugs such as anticonvulsants and sedatives. This pattern may also be seen in preterm infants (below 36 weeks gestation).

Severely abnormal trace:

- Upper margin of band of aEEG activity <10 µV
- Lower margin of band of aEEG activity often <5 µV
- EEG is severely intermittent or low voltage
- Bursts may be present, often with voltage <10 µV
- Note - any section of the aEEG activity where background activity is very low would classify as a severely abnormal trace (beware mistaking very frequent periodic bursts for moderate encephalopathy)



Severely Abnormal: Upper margin is <10mV & lower margin is <5 throughout the trace. Periodical bursts of electrical activity are seen. (1,7.)



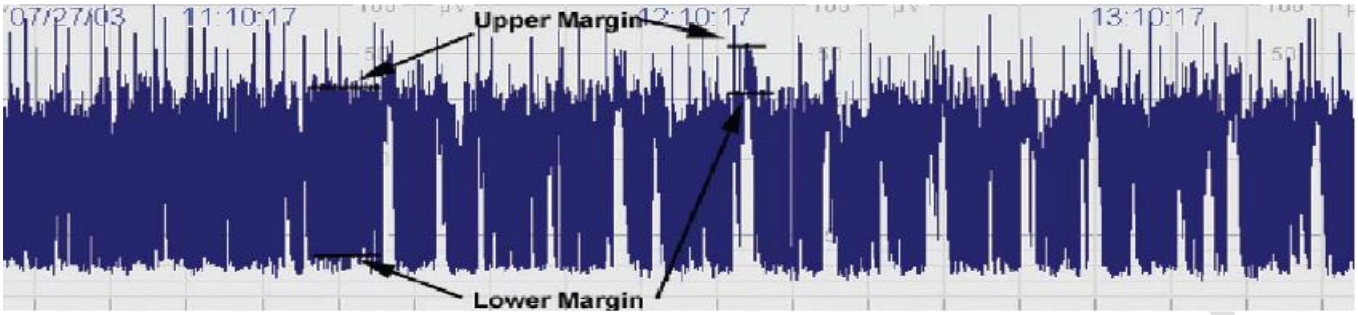
(6.)

Low voltage, almost isoelectric. Note the suction artefact.

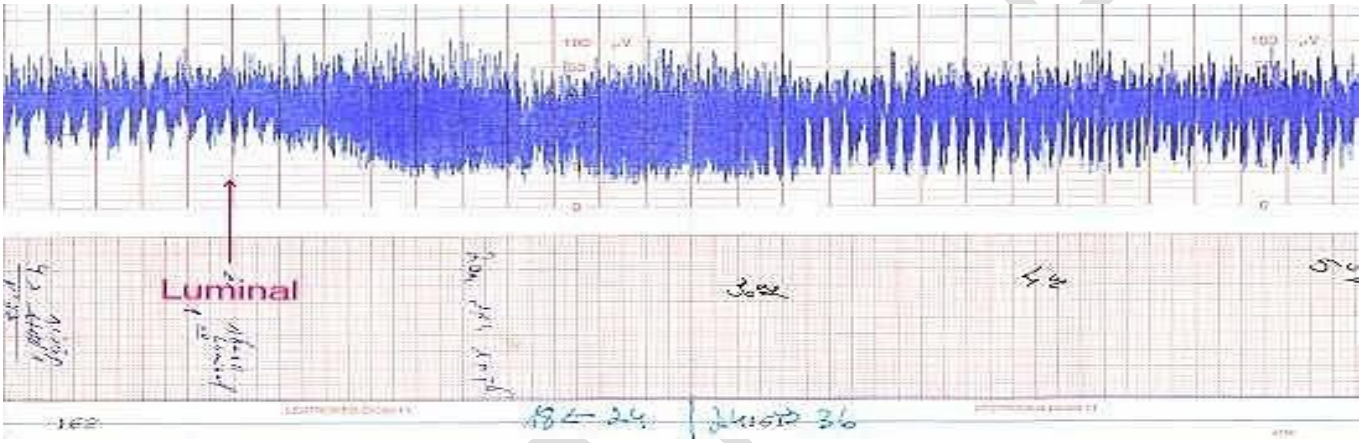
A severely abnormal trace is usually seen with severe encephalopathy and is often accompanied by seizure activity.

Seizures:

- Characterised by a sudden increase in voltage accompanied by narrowing of the band of aEEG activity, followed by a period of suppression. Note the sudden rise in the lower margin which may be often accompanied by a sudden rise in the upper margin.



Rising and narrowing of the aEEG activity with a distinct repetitive pattern: Seizure activity



This tracing is from a full-term infant. Note the saw tooth pattern of both the lower and upper part of the band alternating up and down. This is a typical pattern of continuous seizure activity.

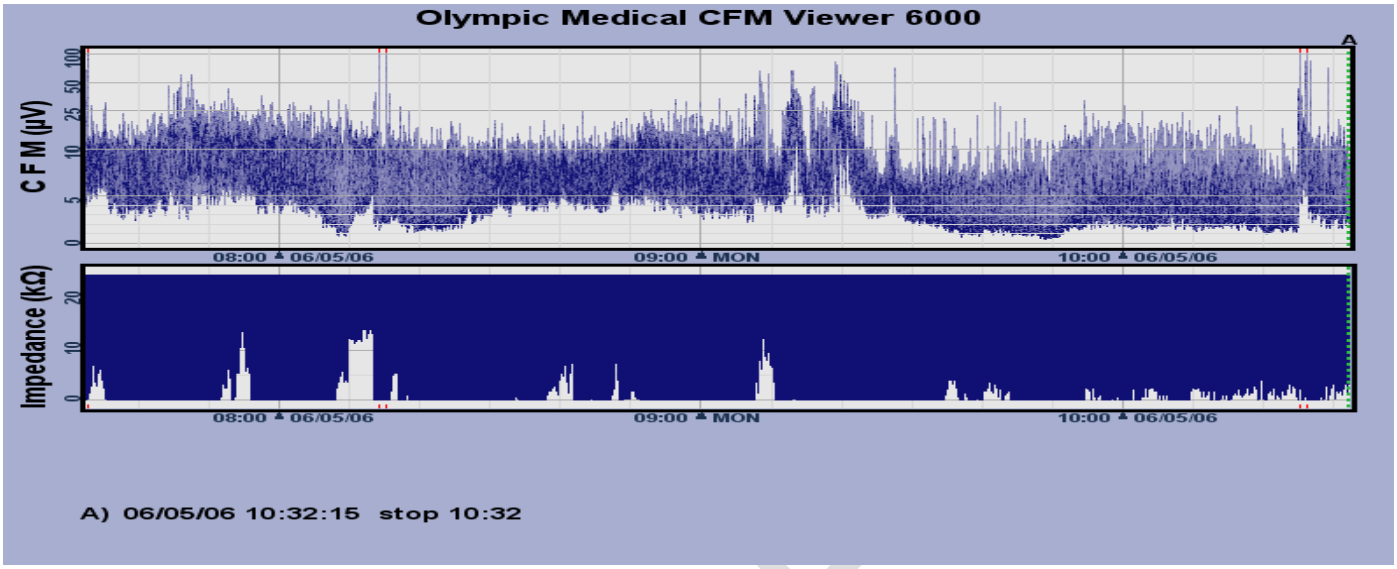
Note that focal seizures may not be seen on the aEEG or may only appear on the aEEG over one hemisphere.

Note that seizures of short duration – less than 2 minutes are unlikely to be seen in aEEG

Appendix 4:

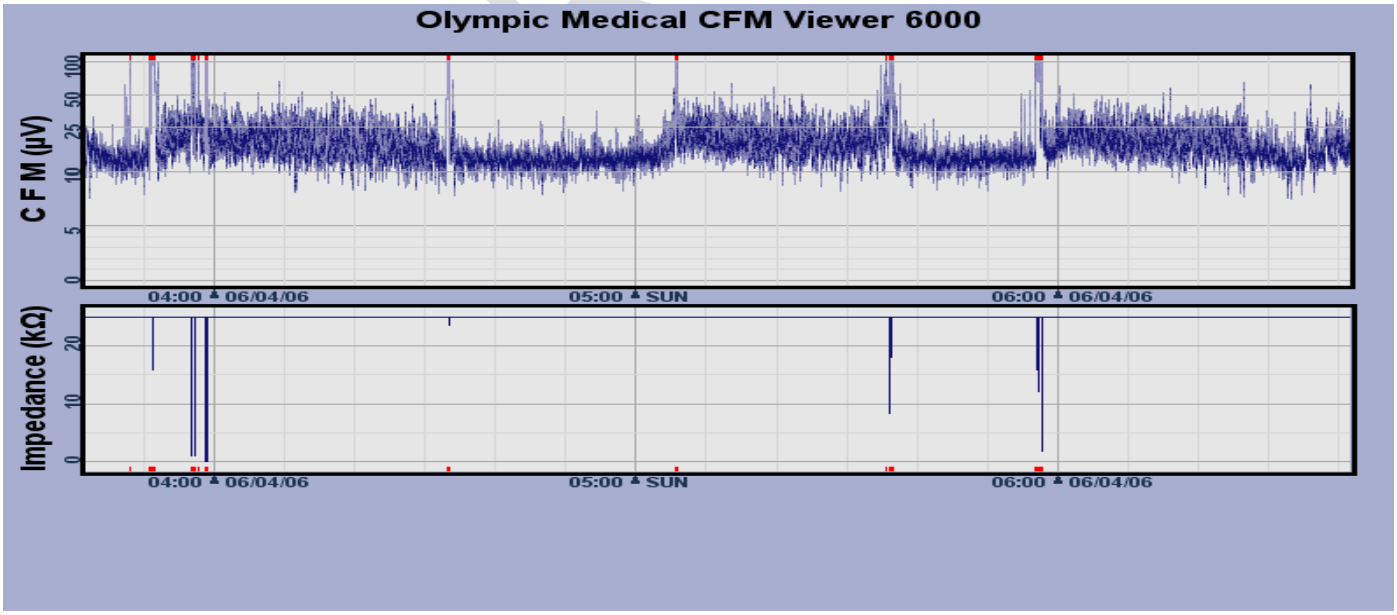
Examples of CFM artefact

Examples 1:



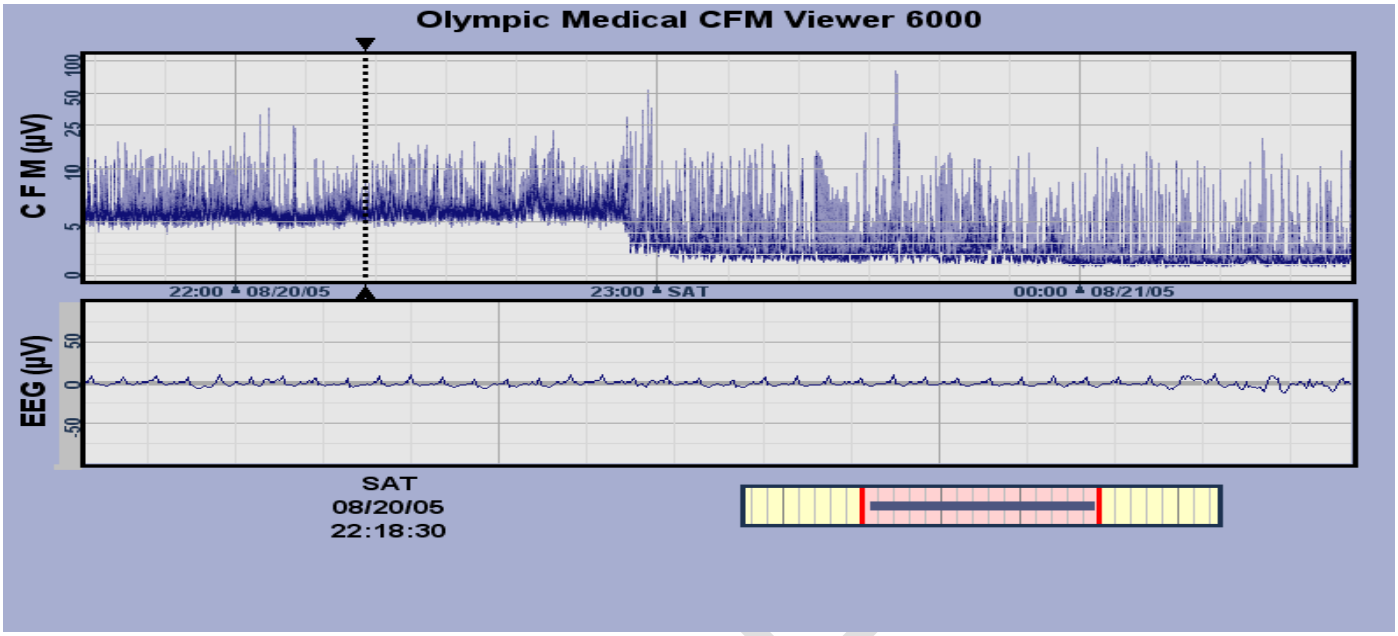
Gross artefact. Note abnormal impedance. CFM cannot be interpreted

Example 2:



Gross artefact- likely secondary to detached electrodes. Note abnormal high impedance

Example 3:



Probable pulse artefact which is abolished with the change in position of the head

Appendix 5:

Cerebral Function Monitor (CFM) parent information leaflet

Your doctor will have explained the use of Cerebral Function Monitoring (CFM) to you and this leaflet summarises the information.

What is a cerebral function monitor?

A Cerebral Function Monitor (CFM) is a special bedside monitor which records brain activity continuously.

Why does my baby need to have Cerebral Function Monitoring?

The doctors treating your baby consider that it may be helpful to monitor your baby's brain activity more closely as part of their observations. This may be for one of several reasons:

- They are concerned about a lack of oxygen around the time of birth
- They think that your baby may be having seizures (also known as fits or convulsions)
- They think that he/she is at risk of having a seizure

This close monitoring often helps medical staff to see if your baby is having any abnormal electrical brain activity, such as seizures. It also helps in determining whether your baby needs treatments such as cooling or medications, as well as demonstrating if your baby is responding to these treatments.

What does it involve?

Several thin wires (electrodes) will be placed onto the baby's scalp. These will be secured by using either a gel sticker or by placing a very fine needle just under the skin. They will then be kept in place using either a special tape, glue, or band. Once they are in place, they will then be connected to the CFM monitor.

The staff will ensure your baby remains comfortable whilst the electrodes are attached to the scalp. Once the electrodes are secured in place, they will record the electrical activity in the brain and will not be painful or uncomfortable for your baby.

How long will my baby need to be monitored?

Your baby will usually be monitored for a minimum of 6 hours but may continue to longer if the medical team caring for your baby think that it may help towards his/her treatment or diagnosis. If your baby needs any special treatments, such as cooling therapy, then the monitoring may continue for a few days and the doctor/nurse will tell you more about this treatment.

Are there any risks for my baby?

There are no known risks to your baby from this form of monitoring. It should be noted that it may not always be possible to get an accurate trace and the electrodes may need to be adjusted or replaced. Sometimes the trace can be affected by other cares and procedures that your baby is receiving i.e., handling, suctioning, medications etc; which may make it more difficult for the neonatal team to interpret the trace accurately at these times.

Further information

If you would like any further explanation, please speak to a member of staff on the neonatal unit.