Royal Hospital for Women (RHW)
NEONATAL BUSINESS RULE
COVER SHEET

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SUMMARY	To provide instruction on applying the Olympic Brainz Monitor to a neonate for brainz monitoring
Key Words	BRAINZ monitoring, aEEG, amplitude, neonate, HIE, cooling, Olympic BRAINZ monitor

Royal Hospital for Women (RHW)
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Health
South Eastern Sydney
Local Health District

Olympic Brainz Monitor (aEEG) RHW CLIN061

Contents

1 BACKGROUND 2

2 RESPONSIBILITIES 2

2.1 Staff (medical, midwifery, Nursing, Allied health) 2

3 PROCEDURE 2

3.1 Equipment 2

3.2 Clinical Practice 3

3.3 Documentation 8

3.4 Abbreviations 8

3.5 CBR Implementation Plan 8

3.6 Related Policies/procedures 8

- RHW NCC Medical CBR- Cooling – Therapeutic Hypothermia for Hypoxic-Ischaemic Encephalopathy (HIE) in Infants > 35 weeks gestation 8

3.7 References 8

4 ABORIGINAL HEALTH IMPACT STATEMENT DOCUMENTATION 8

5 CULTURAL SUPPORT 8

6 NATIONAL STANDARDS 9

7 REVISION AND APPROVAL HISTORY 9

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Within this document we will use the term woman, this is not to exclude those who give birth and do not identify as female. It is crucial to use the preferred language and terminology as described and guided by each individual person when providing care.

1 BACKGROUND

An amplitude-integrated electroencephalogram (aEEG) is a simplified method for real-time continuous monitoring of brain activity that is increasingly used in the neonatal intensive care unit. It is used in the process of cooling infants with encephalopathy and for early identification of seizure activities.

Eligibility criteria:

- Any infant receiving whole body hypothermia (cooling)
- Any infant with suspiscion of seizure activity evidenced by abnormal movements or severe apnoea's
- Any infant with suspected encephalopathy such as markedly abnormal tone or responsiveness
- A muscle relaxed infant who is at risk of Hypoxic Ischaemic Encephalopathy (HIE) or neurologic abnormality
- Any infant with a probable significant hypoxic/ ischaemic event around birth

2 RESPONSIBILITIES

2.1 Staff (medical, midwifery, Nursing, Allied health)

2.1.1 Medical Staff - Identify neonates that require BRAINZ monitoring, interpret BRAINZ monitoring findings.

2.1.2 Nursing Staff - Apply aEEG sensors, continually monitor and respond to changes while the patient is on BRAINZ monitoring.

3 PROCEDURE

3.1 Equipment

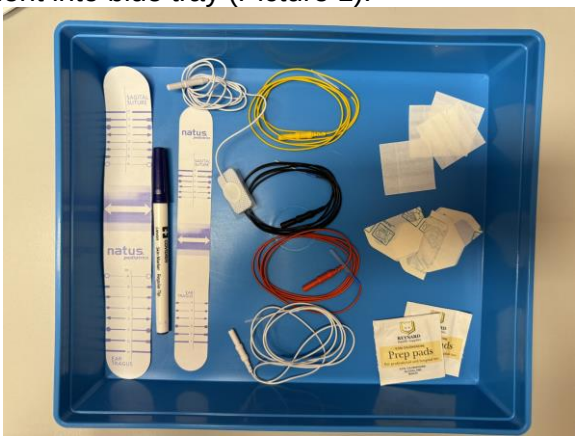
- Olympic Brainz Monitor - Natus
- 4 x disposable subdermal needle electrodes
- 1 x hydrogel electrode sensor
- 0.5% chlorhexidine wipes
- Olympic Brainz Monitoring position strips (premature or term)
- Disposable marker pen

- 2 x tegaderm films
- Steri-strips
- Scissors
- Blue Tray
- Wrap hat
- Sucrose

3.2 Clinical Practice

3.2.1 Preparing the equipment and infant

1. Plug in and turn on monitor. The on/off switch is located at the back on some of the monitors or at the front on others. Ensure the Data Acquisition Unit (DAU) is close to patient's bedside (Picture 6 & 7).
2. Perform hand hygiene.
3. Clean a work surface with appropriate cleaning wipe and allow to dry.
4. Perform hand hygiene.
5. Open equipment into blue tray (Picture 1).



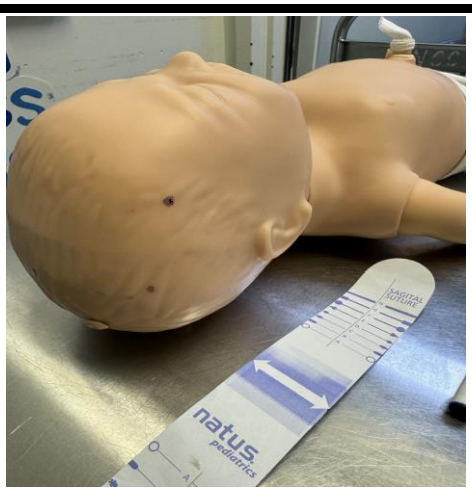
Picture 1

6. Cut steri-strips to desired length and cut tegaderm film in half. (Picture 1)
7. Perform hand hygiene.
8. Ensure the infant is supine with head in midline positioning and comfortable. Use EBM/ sucrose and other non-pharmacological pain relief methods as appropriate.
9. Apply the hydrogel electrode sensor to the shoulder, ensuring site is clean and dry before application.

3.2.2 Measuring electrode position

1. When land-marking the insertion points, ensure the strip is parallel to the infant's face and covering the ears to ensure the electrode insertions points are away from the infant's temples and face (Picture 2).
2. Using the positioning tool, align aid so that the letter (A-H) is the same at the ear tragus as it is at the sagittal suture (Picture 2).
3. Mark the electrode position by placing a mark either side of the arrow on the infant's head (Picture 3).
4. Repeat on the other side.

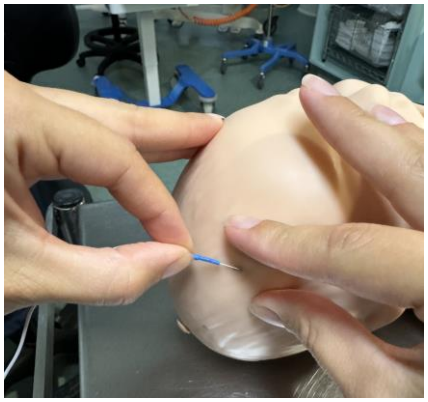
Picture 2

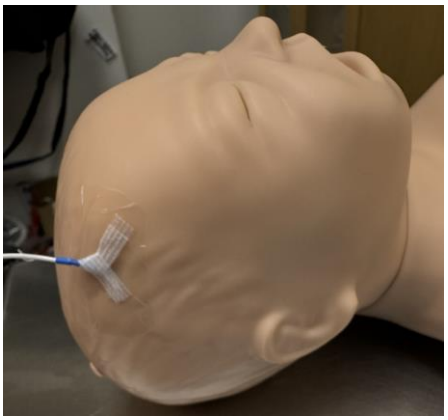


Picture 3

3.2.3 Inserting and securing the electrodes

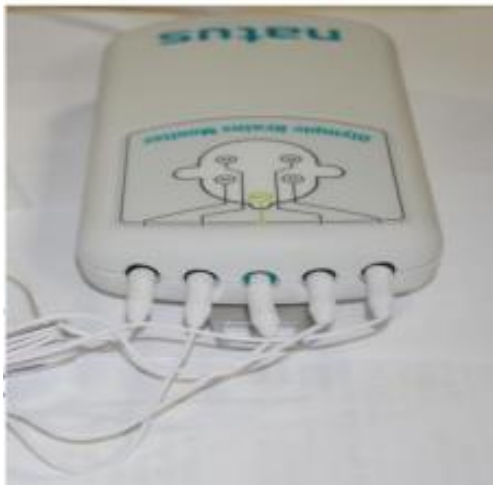
1. Perform hand hygiene.
2. Clean the insertion site using the 0.5% chlorhexidine wipes. Use the wipes to part the hair away from the site.
3. Remove the cap from the needle.
4. Holding the skin taut with one hand, insert the needle at a 15-degree angle with the needle facing down towards the infant's ear (Picture 4). Ensure the entire needle is inserted into the skin.
5. Secure the needle using the cross over method with two steri-strips and cover with a tegaderm piece (Picture 5).


Picture 4


Picture 5

6. Repeat with all four sites.
7. Connecting to the DAU, ensure that the electrode leads are plugged into the correct ports, correlating with the anatomical position (Picture 6 and 7).
   - C3: left anterior
   - P3: left posterior
   - C4: right anterior
   - P4: right posterior
   - Hydrogel sensor (reference)

Picture 6

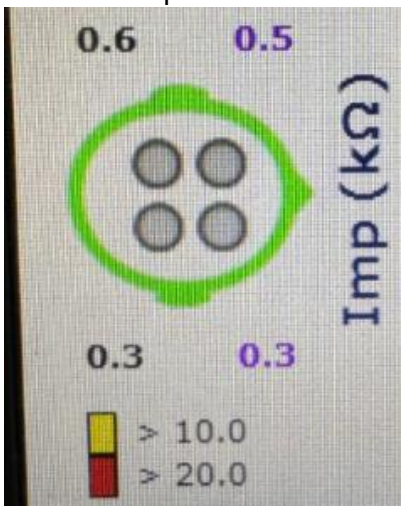


Picture 7

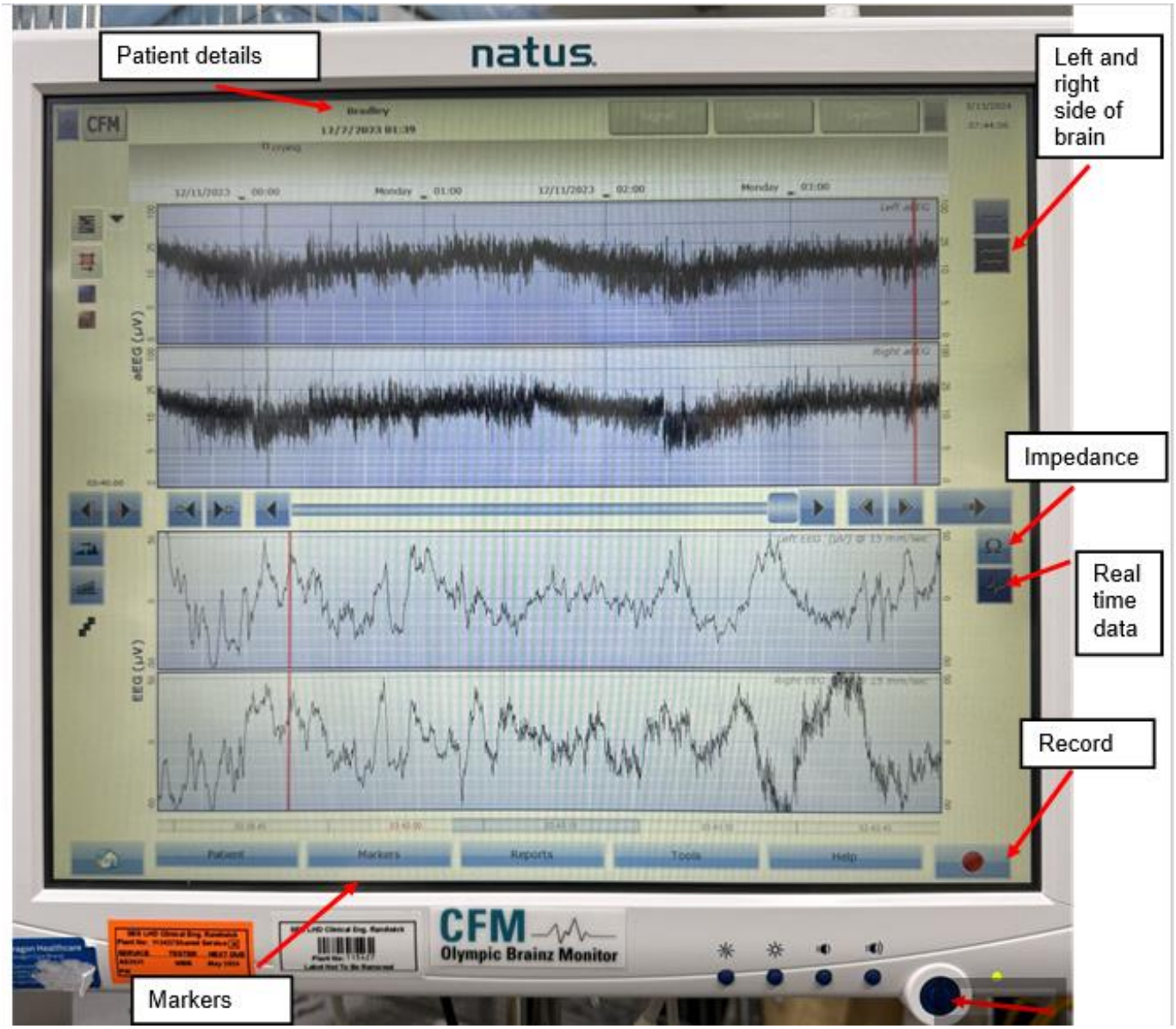
8. Position the DAU outside of the bed, ensuring leads are not touching any cords to prevent motion artefacts.
9. Prior to using the head wrap, ensure needles are in position not requiring further adjustment.

3.2.4 Commencing monitoring

1. Press the record button located in the bottom left corner of the screen and input the patients' details (Picture 9).
2. Select 5 lead, bilateral + cross channel and then press start recording.
3. Check the impedance, ensuring all electrodes are green (Picture 8). Amber or red colour indicates connectivity issue with one of the needles. Check all and replace or reposition as required.
4. Leave the infant in a comfortable position and document procedure on eRIC.



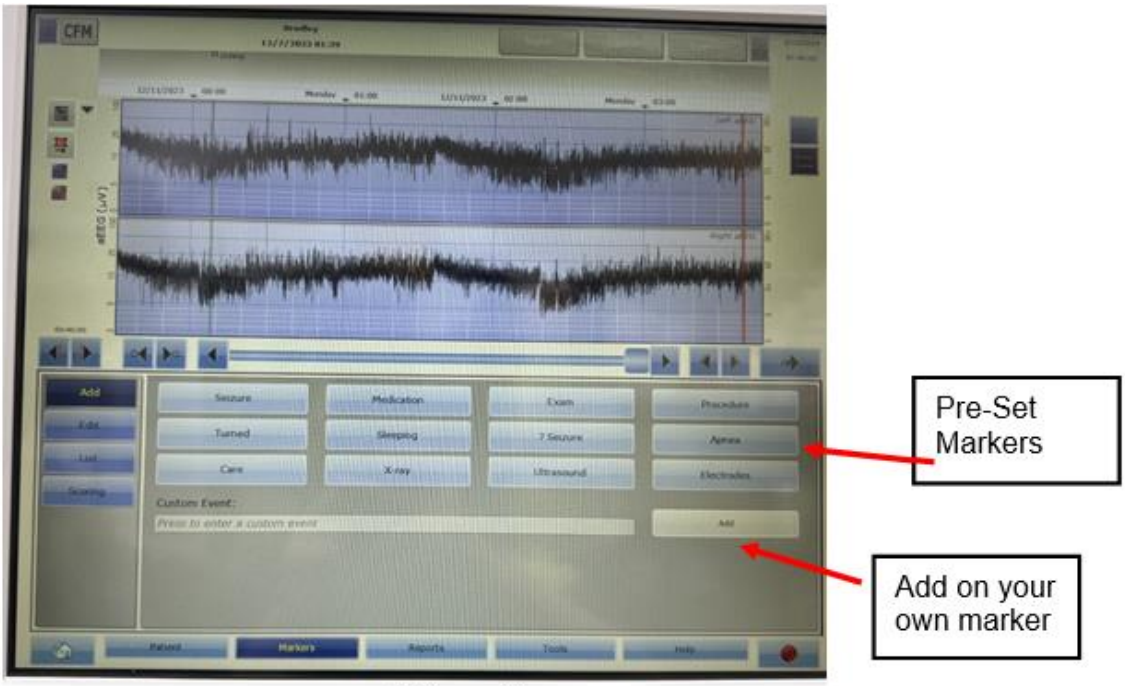
Picture 8


Patient details
natus
Left and right side of brain
Impedance
Real time data
Record
Markers
CFM
Olympic Brainz Monitor

Picture 9

3.2.5 Using the monitor

1. Mark events on the monitor during recording, such as a possible seizure, administration of anti-convulsant, cares/activities by pressing 'MARKERS' and select a pre-set marker or add your own event and press add (Picture 10).
2. The seizure recognition software has an audible alert to assist with timely documentation and observation of the infant for clinical seizures.



Picture 10

3. Ensure the electrode signals remains green (low impedance) and troubleshoot if showing amber or red. Do not stop recording when reapplying electrodes, however, do mark as an event.
4. To stop monitoring when no longer required, press 'RECORD' button to stop recording. Press 'PATIENT' and then press 'CLOSE' and then 'CLOSE SESSION'. Press the ON/OFF button located in the top left corner.

3.2.6 Removing electrodes

1. Perform hand hygiene and apply gloves.
2. Ensure the electrodes are unplugged from the DAU.
3. Carefully remove the tegaderm from the infant's head, using medical removal wipes.
4. Carefully remove the needle from the scalp and place into the yellow sharp bin.
5. Repeat for all electrodes.
6. Perform hand hygiene and document procedure.

3.3 Documentation

- eRIC

3.4 Abbreviations

aEEG	Amplitude-integrated Electroencephalogram	HIE	Hypoxic Ischaemic Encephalopathy
DAU	Data Acquisition Unit	EBM	Expressed Breast Milk

3.5 CBR Implementation Plan

The CBR will be distributed to all medical, nursing and midwifery staff via @health email. The CBR will be discussed at ward meetings, education and patient quality and safety meetings. Education will occur through in-services, open forum and local ward implementation strategies to address changes to practice. The staff are asked to respond to an email or sign an audit sheet in their clinical area to acknowledge they have read and understood the CBR. The CBR will be uploaded to the CBR tab on the intranet and staff are informed how to access

3.6 Related Policies/procedures

- RHW NCC Medical CBR- Cooling – Therapeutic Hypothermia for Hypoxic-Ischaemic Encephalopathy (HIE) in Infants > 35 weeks gestation

3.7 References

1. Bruns N, Blumenthal S, Meyer I, Klose-Verschuur S, Felderhoff-Müser U, Müller H. Application of an Amplitude-integrated EEG Monitor (Cerebral Function Monitor) to Neonates. Journ Nat Lib Med. 2017;127,55985. doi: 10.3791/55985.
2. CFM Olympic Brainz Monitor Brochure [Internet]. 2023 [cited 2024 Mar 12]. Available from: CFM-Olympic-Brainz-Monitor-OBM-Brochure.pdf (bynder.com)

4 ABORIGINAL HEALTH IMPACT STATEMENT DOCUMENTATION

- Considerations for culturally safe and appropriate care provision have been made in the development of this Business Rule and will be accounted for in its implementation.
- When clinical risks are identified for an Aboriginal and/or Torres Strait Islander woman or family, they may require additional supports. This may include Aboriginal health professionals such as Aboriginal liaison officers, health workers or other culturally specific services

5 CULTURAL SUPPORT

- For a Culturally and Linguistically Diverse CALD woman, notify the nominated cross-cultural health worker during Monday to Friday business hours

- If the woman is from a non-English speaking background, call the interpreter service: NSW Ministry of Health Policy Directive PD2017_044-Interpreters Standard Procedures for Working with Health Care Interpreters.

6 NATIONAL STANDARDS

- Standard 1 Clinical Governance
- Standard 2 Partnering with Consumers
- Standard 3 Preventing and Controlling Infections
- Standard 5 Comprehensive Care
- Standard 6 Communicating for Safety
- Standard 8 Recognising and Responding to Acute Deterioration

7 REVISION AND APPROVAL HISTORY

Date	Revision No.	Author and Approval
12/3/2024 17.6.24	1	E.Deibe (CNS/ACNE), Endorsed by NCC CBR Committee Endorsed BRGC