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SUMMARY	This document is a comprehensive guideline containing information referring to the diagnosis and management of a woman who has neurological deficit postpartum.
Key Words	Postpartum, neurological, deficit, neurological injury, neuraxial block.

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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

The aim of this CBR is Diagnosis and management of a woman with a suspected postpartum neurological deficit, addressing the postpartum woman who:

- describes new numbness, weakness or significant back pain
- presents with difficulty mobilizing due to leg numbness or weakness
- has a pre-existing neurological injury which appears to have worsened
- may or may not have had a neuraxial block for analgesia or anaesthesia in the peripartum period

Definitions:

Key term	Definition
Neurological deficit	A loss or impairment of normal function in the nervous system
Neuraxial block	A regional anaesthetic technique in which medication is injected in or near the spinal canal to provide pain relief for labour or anaesthesia for surgery (eg. Caesarean). Block types may include spinal anaesthetic, epidural or combined spinal epidural.
Neuropathy	Damage or dysfunction of one or more nerves
Arachnoiditis	Inflammation of the arachnoid membrane around the spinal nerves

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2 RESPONSIBILITIES

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

Role	Responsibilities
Registered Midwives (RM)/ Registered Nurses (RN)	- Undertake postnatal and post-neuraxial observations in accordance with Neuraxial Opioid Observation chart and local policy and promptly recognise and escalate any signs of neurological compromise in the postpartum period. - Document appropriately
Anaesthetists	- Attend escalation or referral from RN/RM - Assess and diagnose neurological deficit - Appropriate escalation to anaesthetic consultant - Order imaging where clinically appropriate - Liaise with Neurology - Referral to Obstetric Medicine - Ongoing follow up.
Acute Pain Service	Acute Pain Service follow up.
Obstetric Medicine Medical Officers	- Accept referral from Anaesthetics - Liaise with neurology - Follow up in Obstetric medicine clinic if indicated
All Medical Officers	- Appropriate assessment and referral of the postpartum woman. - Follow up and liaising with obstetric medicine team, Anaesthetist and Neurology Team

3 PROCEDURE

3.1 Clinical Practice points

Initial Assessment and Management – If the woman is showing signs of spinal cord compression/central pathology such as new and/or rapid onset lower limb numbness, weakness or sudden incontinence this could be a neurological emergency – initiate a Rapid Response (in accordance with the Clinical Emergency Response System (CERS) escalation pathway) and notify the Anaesthetic Consultant in Charge immediately via switch.

The initial assessment may be done by midwifery/nursing staff, obstetric/anaesthetic senior or junior medical staff

- Assess the woman via;
 - comprehensive history of the symptoms being experienced, including;
 - preexisting neurology or back pain
 - onset of symptoms
 - medication history
 - length of labour
 - mode of delivery

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- Full neurological examination including an examination of the neuraxial insertion site if applicable.
- Consider any red flags for central pathology including:
 - acute onset back pain
 - radicular leg pain/lower leg numbness and weakness
 - decreased reflexes
 - loss of sacral sensation
 - headache
 - neck stiffness
 - urinary and/or anal sphincter dysfunction
 - unable to straight leg raise at >4h post epidural/spinal anaesthetic dose
- 2. Notify treating obstetric team
- 3. Notify anaesthetic registrar if woman has had a neuraxial block and is experiencing symptoms of neurological deficit. Check anaesthetic technique from anaesthetic documentation.

Refer to neurological deficit management flowchart if deficit is identified (see Appendix 1)

Referral – by medical team

- Notify obstetric consultant/anaesthetic consultant as appropriate.
- Notify obstetric medical registrar if suspected peripheral nerve injury
- Consider need for neurosurgical review/urgent MRI

Ongoing assessment

- Reassess the woman whilst an inpatient
- Ensure ongoing medical management by obstetric medical and/or neurology teams if suspected peripheral nerve injury
- Document suspected neurological deficit, assessment and interventions and planned follow up in the discharge summary.

3.2 Documentation

- Clear documentation of symptoms and specific neurological deficits and any progression or improvement on examination is vital.
- Medical record

3.3 Education Notes

Background

- Although infrequent, the most common cause of postpartum neurological

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complications is due to compressive neuropathy because of prolonged labour, poor patient positioning⁸, including prolonged positioning in stirrups or mode of delivery.

- Serious neurological complications secondary to neuraxial anaesthesia are exceptionally rare, however prompt recognition and management is vital to reduce the risk of serious long-term morbidity.
- Sensorimotor function should return following a neuraxial block at approximately 4 hours after last dose irrespective of method (2-3h post spinal and 3-5h post epidural)⁵
- Urinary and faecal incontinence may occur after vaginal birth and are very rarely due to a complication of neuraxial analgesia.

Causes of postpartum neurological deficit

- Maternal and fetal variables (see Appendix 5)
 - Compressive neuropathy: this is the most common postpartum neurological deficit due to poor maternal positioning, fetal head, or instrumental delivery. Commonly a unilateral sensory and motor deficit is noted, although rarely it can be bilateral.
 - Ischaemic neuropathy
- Anaesthetic variables (refer to Appendix 6)

Prognosis

- Neuropraxia – superficial nerve injury. Spontaneous recovery expected in weeks to a few months⁸
- Axonotmesis – axon disruption. Recovery expected over several months but sometimes can take up to 3 years
- Neurotmesis – complete nerve transection. Surgical intervention may be required.

Prevention

- Identification of any preexisting neurological deficits
- Compressive neuropathies:
 - change lower extremity position frequently during the second stage of labour
 - avoid prolonged thigh flexion, extreme thigh abduction or external rotation
 - Use protective pads while positioning with stirrups⁸
 - avoid motor block during epidurals by using lower concentrations of local anaesthetic where possible (0.1% Ropivacaine).
- Ischaemic neuropathies - avoid hypotension.
- Neuraxial complications- consideration of patient risk factors, specific medication choices and procedural techniques are important.

3.4 Related Policies/procedures

- Epidural Analgesia clinical business rule RHW CLIN053 [Epidural Analgesia](#)
- Neuraxial (intrathecal or epidural) opioid - single dose morphine only clinical business rule [Neuraxial \(intrathecal or epidural\) opioid - single dose morphine only](#)

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- Postnatal Observations clinical business rule [RHW CLIN072 Postnatal Observations.pdf](#)
- Clinical Emergency Response System (CERS) – Management of the Deteriorating patient RHWCLIN004
[ClinicalEmergencyResponseSystemCERSManagementoftheDeterioratingPatient.pdf](#)

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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 5 – Comprehensive Care

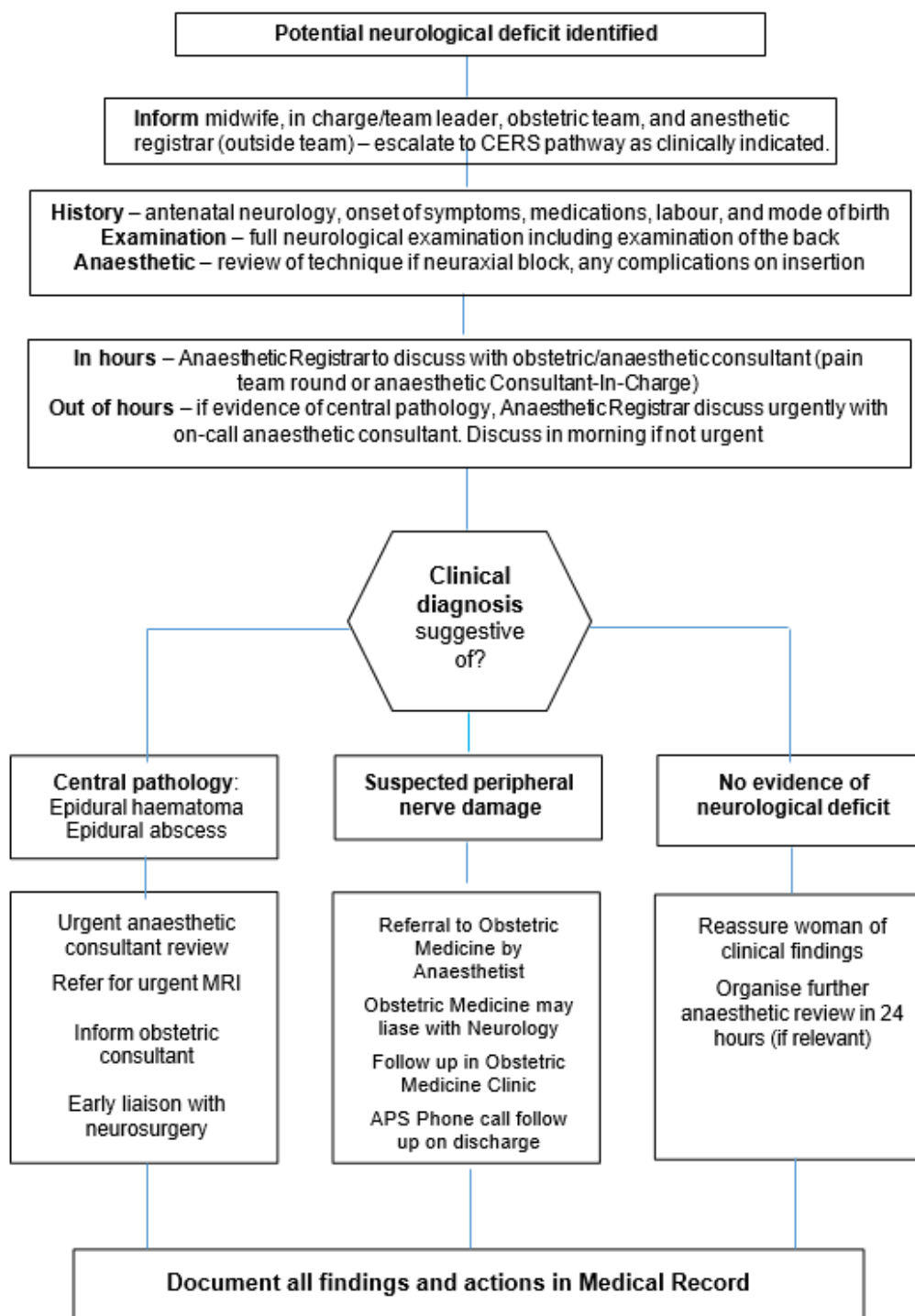
7 REVISION AND APPROVAL HISTORY

Date	Revision No.	Author and Approval
15/10/2020		Quality and Patient Safety Committee
Oct 2020		Endorsed Maternity Services LOPs Group
Feb 2026	1	Reviewed and updated, Kate Fixter, Rhiannon Moody and Preetha Pradeep – Acute Pain Services
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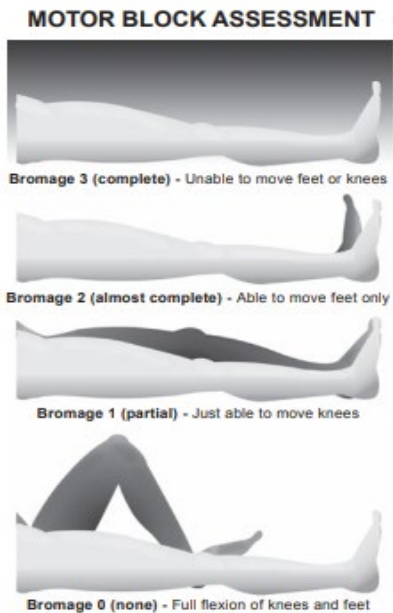
Appendix 1 – Neurological deficit management



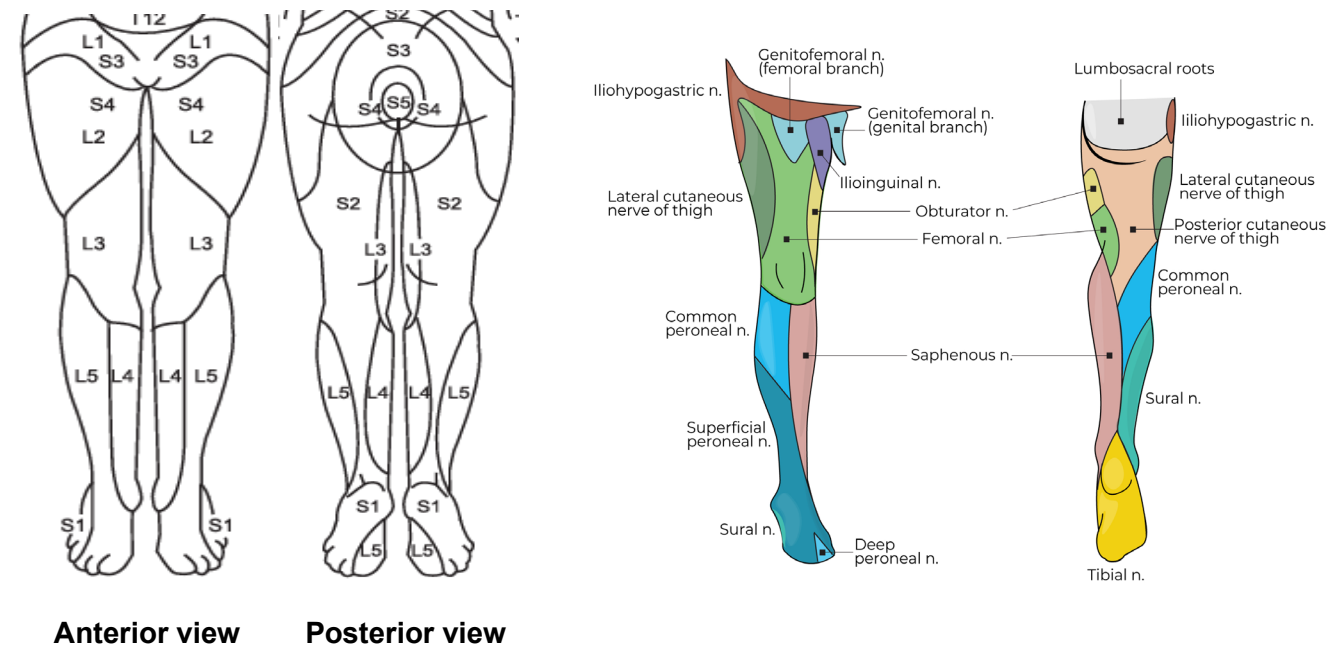
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Appendix 2 Bromage Assessment tool⁹



Appendix 3 – Dermatomes of lower limb and peripheral nerve distribution⁹



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Appendix 4 - Compressive nerve injuries¹⁰

Nerve (nerve roots)	Site of compression	Symptoms	Signs	Additional features
LCNT (L2-L3)	Under the inguinal ligament or against the ASIS	Neuropathic pain or paresthesia over the lateral aspect of the thigh (meralgia paresthetica). Can be worse on standing or walking	Abnormal sensation over the lateral aspect of the thigh	Associated with prolonged hip flexion (lithotomy position)
Femoral (L2-L4)	Under the inguinal ligament or against the ASIS	Abnormal sensation in the femoral distribution. Difficulty in climbing stairs	Sensory loss in the femoral distribution. Weakness in knee extension. Decreased patellar reflex	Associated with prolonged hip flexion. Bilateral in around 25% of cases
Obturator (L2-L4)	Thought to be at the lateral wall of the lesser pelvis	Groin pain and difficulty in ambulation	Sensory loss of the inner thigh. Weakness in hip adduction and internal rotation	Bilateral in around 25% of cases. Commonly associated with femoral nerve damage
Lumbosacral plexus (L4-L5, S1-S5)	Posterior pelvic brim against the sacral ala	Abnormal sensation in the lumbosacral distribution. Tripping due to foot drop	Sensory loss of the lateral aspect of the leg and dorsum of the foot. Weakness of dorsiflexion and eversion	Almost always unilateral
Common peroneal (L4-L5, S1-S2)	Head of the fibula	Tripping due to foot drop	Sensory loss in common peroneal distribution. Weakness of dorsiflexion and eversion	Associated with inappropriate positioning of the patient in lithotomy stirrups

Appendix 5 - Maternal and foetal causes of postpartum neuropathies¹⁰

Type of neuropathy	Incidence	Cause
Compressive Neuropathy	(1 in 100)	■ Fetal head compressing lumbosacral trunk ■ Positioning ■ Instrumental delivery
Ischaemic neuropathy	1 in 500,000	■ Prolonged hypotension ■ Obstruction of Internal Iliac arteries by fetal head in prolonged labour

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Appendix 6 - Anaesthetic causes of postpartum neuropathies^{4,10}

Mechanism of injury	Incidence	Cause
Penetrative injuries		
Trauma	1 in 3900 ^[3]	Direct trauma by spinal/epidural needle
Compressive injuries		
Vertebral canal hematoma	1 in 168,000 ^[5]	Commonly due to damage to the epidural venous plexus in the presence of coagulopathy. Hematoma causes neural compression and ischemia
Epidural abscess	1 in 145,000 ^[5]	Causative organism commonly <i>Staphylococcus aureus</i> . Risk factors include compromised immunity, concomitant sepsis, poor aseptic technique and prolonged catheter insertion. Abscess causes neural compression and ischemia
Chemical/toxin related injuries		
Meningitis	1 in 150,000 (nonobstetric population) ^[12]	Causative organism commonly <i>Streptococcus viridans</i> . ^[13] Risk factors are concomitant sepsis, poor aseptic technique and contamination of equipment
Arachnoiditis	Unknown	Chlorhexidine, contrast media, epidural steroids and blood, have been implicated ^[14]