Royal Cornwall Hospitals
NHS Trust

[redacted]

Flowchart for the management of neurological deficit following peripheral/regional nerve block

Does the patient have any of these features beyond the expected duration of the block?
(e.g. >48 hours after a single shot peripheral nerve block?)

- Motor Deficit / Paraesthesia (tingling or numbness) / Unexplained excessive pain / Or any other abnormal neurology

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Suspect nerve injury

- Review Anaesthetic and Surgical notes including documented pre-block neurology.
- Detailed history and clinical examination including function of all nerves, skin changes, swelling, pulses.
- Clinical review and early involvement of surgical team and anaesthesia.
- Consider loosening bandages, removing Plaster of Paris, gentle repositioning.

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URGENT: Motor deficit and/or painful deficit and/or progressive symptoms:

- Immediately inform Anaesthetic 4th on Call (bleep 3513) or CEPOD Consultant / Duty floor anaesthetist in SMH.
- Inform responsible Surgical team and seek senior surgical review.
  - Consider surgical causes, particularly if distribution inconsistent with block:
    - Nerve transection.
    - Excessive traction.
    - Review duration of tourniquet time.
    - Suture/screws/clips on nerve.
    - Compartment syndrome.
    - Restrictive casts.
- Consider urgent ultrasound/MRI imaging.
- Urgent surgical exploration and/or decompression may be required.
- Consider urgent neurosurgical/peripheral nerve specialist consultation.

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Discuss with Neurologist on-call via switchboard, followed by neurology referral via MAXIMS.

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Refer to pain service, if necessary, via MAXIMS.

NON-URGENT: Mild/resolving symptoms or sensory deficit:

- Reassure (95% resolve in 4-6 weeks, 99% by a year).
- Review in 4 weeks' time.
- Physiotherapy and protect limb e.g. sling.

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If persistent symptoms at 4 weeks:

- Neurology referral via MAXIMS
  - For inpatients: via 'neurology inpatient service'.
  - For outpatients: via 'neurology outpatient service, con to con'.
- Consider MRI, EMG and Nerve conduction studies (can be requested via MAXIMS after discussion with neurologist).
- Consider referral for peripheral nerve surgery.
- Consider early involvement of chronic pain service.

Updated March 2024, Gay & French. Written Nov 2020, Yamanaka & Elliott.
References: Watson JC, Huntoon MA. Neurologic evaluation and management of perioperative nerve injury. Reg Anesth Pain Med 2015;40:491–501
RA-UK: Management of nerve injury following regional anaesthesia 2021. PowerPoint Presentation (ra-uk.org)

1. Aim/Purpose of this Guideline

1.1. The aim and purpose of this guideline is to provide Practical management of neurological deficit following peripheral / regional nerve block.

1.2. This version supersedes any previous versions of this document.

2. The Guidance

2.1. This guidance is based on the joint Regional Anaesthesia UK (RA-UK) and the British Orthopaedic Association (BOA) guidance - 'Peripheral nerve block follow up and initial management of postoperative unexpected/persistent neurological dysfunction'.

2.2. Document, date and sign all consultations in notes and document in Datix if appropriate.

2.3. Early discussion with the Orthopaedic/Hand surgery team is essential.

2.4. Optimal timing of neurophysiological test depends on the indication. Early investigation (3 days after injury) may give information regarding the completeness of a lesion (and hence prognosis). More information may be obtained 4 weeks after the lesion when the electrophysiological changes have had an opportunity to evolve. Discuss these tests with neurology, prior to request to ensure appropriate requests are approved.

2.5. EMG/Nerve conduction studies can help localize the lesion. EMG is undertaken to identify the muscle units affected. Small electrodes are placed in certain muscle groups and the pattern observed at rest and on contraction is analysed. Nerve conduction studies utilise a nerve stimulator similar to the device we use to assess neuromuscular blockade. A characteristic waveform is generated following stimulation of a nerve, which may help a neurologist identify a conduction block.

3. Monitoring compliance and effectiveness

Information Category	**Detail of process and methodology for monitoring compliance**
Element to be monitored	Adherence to RCHT guidelines
Lead	Department of anaesthesia regional group
Tool	Regular review of the regional anaesthesia service is undertaken at interest meetings along with review of complicated cases.
Frequency	See above
Reporting arrangements	The committee reviewing the cases will be the anaesthesia service. Cases will be discussed at audit meetings and the details will be recorded in the minutes.

Information Category	Detail of process and methodology for monitoring compliance
Acting on recommendations and Lead(s)	See above
Change in practice and lessons to be shared	Required changes to practice will be identified and actioned within a month. A lead member of the team will be identified to take each change forward where appropriate. Lessons will be shared with all the relevant stakeholders

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the Equality Diversity And Inclusion Policy or the Equality and Diversity website.

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Neurological Deficit Following Peripheral or Regional Nerve Block Clinical Guideline V3.0
This document replaces (exact title of previous version):	Practical Management of Neurological Deficit Following Peripheral or Regional Nerve Block V2.0
Date Issued/Approved:	August 2024
Date Valid From:	August 2024
Date Valid To:	August 2027
Directorate / Department responsible (author/owner):	Dr Lucy French, Consultant Anaesthetist. Dr Bethan Gay, Anaesthesia trainee.
Contact details:	01872 253132
Brief summary of contents:	Practical management of neurological deficit following peripheral / regional nerve block.
Suggested Keywords:	Anaesthesia, Local anaesthesia, Nerve block, Nervous system, Peripheral nervous system.
Target Audience:	**RCHT:** Yes **CFT:** No **CIOS ICB:** No
Executive Director responsible for Policy:	Chief Medical Officer
Approval route for consultation and ratification:	Anaesthetic Governance and Business Group
Manager confirming approval processes:	Doug Riley
Name of Governance Lead confirming consultation and ratification:	James Masters, Governance Lead
Links to key external standards:	None required
Related Documents:	References: Watson JC, Huntoon MA. Neurologic evaluation and management of perioperative nerve injury. Reg Anesth Pain Med 2015;40:491–501 Peripheral nerve block follow up and initial

Information Category	Detailed Information
	management of postoperative unexpected/persistent neurological dysfunction (RA-UK and British Orthopaedic association). https://www.boa.ac.uk/asset/D6F72623%2D162F%2D404F%2D8F7BAE2B04D0A533/
Training Need Identified?	No
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet and Intranet
Document Library Folder/Sub Folder:	Clinical / Anaesthetics

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
07/08/2017	V1.0	Initial issue	Dr David Elliott, Consultant Anaesthetist
25/11/2020	V2.0	Full Update to ensure this is on the correct Trust template and include details in all sections	Dr David Elliott, Consultant Anaesthetist
29/04/2023	V3.0	Full update including new RA-UK and BOA guidelines	Dr Lucy French

All or part of this document can be released under the Freedom of Information Act 2000.

All Policies, Strategies and Operating Procedures, including Business Plans, are to be kept for the lifetime of the organisation plus 6 years.

This document is only valid on the day of printing.

Controlled Document.

This document has been created following the Royal Cornwall Hospitals NHS Trust The Policy on Policies (Development and Management of Knowledge Procedural and Web Documents Policy). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people.

For guidance please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity, and Inclusion Team rcht.inclusion@nhs.net

Information Category	Detailed Information
Name of the strategy / policy / proposal / service function to be assessed:	Neurological Deficit Following Peripheral or Regional Nerve Block Clinical Guideline V3.0
Directorate and service area:	Anaesthetics
Is this a new or existing Policy?	Existing
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Dr David Elliott, Consultant Anaesthetist
Contact details:	01872 253132

Information Category	Detailed Information
1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	To provide Practical management of neurological deficit following peripheral / regional nerve block.
2. Policy Objectives	To provide Practical management of neurological deficit following peripheral / regional nerve block.
3. Policy Intended Outcomes	Safe and effective management of persistent neurological deficit following regional anaesthesia
4. How will you measure each outcome?	Monitoring through audit and case discussion at governance meetings.
5. Who is intended to benefit from the policy?	Patients receiving regional anaesthesia

Information Category	Detailed Information
6a. Who did you consult with? (Please select Yes or No for each category)	• Workforce: Yes • Patients/ visitors: No • Local groups/ system partners: No • External organisations: No • Other: No
6b. Please list the individuals/groups who have been consulted about this policy.	**Please record specific names of individuals/ groups:** Clinical Lead for Anaesthetics.
6c. What was the outcome of the consultation?	Acceptance of guideline.
6d. Have you used any of the following to assist your assessment?	**National or local statistics, audits, activity reports, process maps, complaints, staff, or patient surveys:** No

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	No	
Sex (male or female)	No	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	No	
Race	No	
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	No	
Religion or belief	No	
Marriage and civil partnership	No	

Protected Characteristic	(Yes or No)	Rationale
Pregnancy and maternity	No	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	No	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Dr David Elliott, Consultant Anaesthetist.

If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here:
Section 2. Full Equality Analysis