# Benchmark No. 5

# Lumbar Puncture (3rd Edition)

## British Association of Neuroscience Nurses

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# (3rd edition)



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## History

The Neuroscience Nursing Benchmarking Group (NNBG) was established in the 1990`s as a result of increasing concerns over inconsistencies in practices as part of a subsidiary of BANN. The group aims to improve on the quality of care by comparing and sharing practice with each other, and set explicit standards for comparison of current practice against the ideal standard. The group is committed to searching for the best evidence related to specific areas of neuroscience practice. Membership of the group consists of representatives from neuroscience units within the UK and Ireland, together with educational colleagues from both the NHS/HSC and Higher Educational Institutes. The group is further subdivided into regions and this benchmark was developed by the Northeast group of the NNBG in 2007.

In 2016, the NNBG consolidated back into BANN and further information about NNBG can be found on the BANN website www.BANN.org.uk .

BANN would like to acknowledge the leadership and significant contribution made by the NNBG, and all its contributors, to neuroscience nursing over the years.

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# Key Points

- Lumbar Puncture (LP) is performed electively to aid diagnosis of:
  - Central Nervous system malignancies
  - Demyelinating diseases
  - Guillain Barre Syndrome.
  - Intracranial hypertension (IHH).
  - Normal pressure hydrocephalus.

- Lumbar Puncture is performed as an emergency to aid diagnosis of:
  - Bacterial, fungal, mycobacterial and viral CNS infections
  - Suspected Subarachnoid Haemorrhage in a patient with a negative CT scan.

- Lumbar Puncture (LP) is performed therapeutically:
  - To facilitate intrathecal administration of chemotherapy and antibiotics
  - To reduce blood load following SAH.
    - (National Collaborating Centre for Chronic Conditions, 2004)

- Elective Lumbar Punctures can be performed by nurses who have completed a local, training programme and have been assessed as being technically competent. To maintain competency, they can perform > 1 lumbar puncture/week.
- Benefits include:
  - Reduction in waiting times for completion of the procedure.
  - Reduction in the risk of traumatic tap entraining red blood cells into the CSF.

- An assistant from the health care team should assist with the procedure to provide additional support for the practitioner and the patient.

- A pre-procedure checklist must be completed which includes:
  - Consent to the procedure.
  - Requirement for radiological imaging - CT or MRI scan.
  - Awareness of possible contra-indications (suspected spinal abscess, raised intracranial pressure, papilledema, thrombocytopenia or anticoagulant therapy, high INR level).

- To reduce the risk of occupational exposure personal protective clothing must be worn including face mask and eye shields.

- Patients and their relatives/carers are informed of the rationale for the procedure and the possible risks and side effects.

- Written guidelines/policy are available for the management of patients undergoing a lumbar puncture.

- Information relating to the lumbar puncture must be clearly documented in the patient's records and a detailed care plan to meet the individual needs of the patient.

## FACTOR 1 – Documentation

| | STATEMENT OF BEST PRACTICE | EVIDENCE & REFERENCES | ACHIEVED | NOT ACHIEVED | VARIABLES |
|---|---|---|---|---|---|
| **1.0** | The nurse should ensure that the environment and appropriate equipment is readily available to safeguard the sterile procedure. | NMC, 2018 | | | |
| **1.2** | The nurse should promote patient comfort by adequately preparing the patient for the procedure (i.e., opportunity to void pre-procedure and offering loose fitting clothing or hospital gown). | GMC, 2020<br><br>Reeder *et al.,* 2021 | | | |
| **1.3** | Prior to the lumbar puncture consent is obtained and a check list is completed:<br><br>• CT/MRI (if applicable)<br>• Screening for clotting status (bridging protocol may be required).<br><br>• **Antiplatelet** therapy (e.g., Aspirin) - not normally interrupted due to high risk of ischemic complications.<br><br>• **Anti-coagulant therapy** (e.g., Low molecular weight heparin, Warfarin, Clopidogrel, Rivaroxaban, Opixaban Intravenous heparin – may electively be interrupted due to high risk of procedure associated haemorrhage. | Dodd *et al.,* 2018 | | | |

## FACTOR 2 – Protocol

| | STATEMENT OF BEST PRACTICE | EVIDENCE & REFERENCES | ACHIEVED | NOT ACHIEVED | VARIABLES |
|---|---|---|---|---|---|
| **2.0** | A baseline neurological assessment and vital signs are performed prior to the procedure. | | | | |
| **2.1** | A second person from the health care team is present during the procedure to act as chaperone, maintain patient dignity and provide support for the practitioner. | | | | |
| **2.2** | The patient is assisted into the correct position for the procedure to be performed. | Reeder *et al.,* 2021 | | | |
| **2.3** | During and immediately post procedure, the nurse assesses the patient for complications, which may include headache, nausea and vomiting, paraesthesia, leaking from the puncture site, severe radicular pain or numbness, focal motor or sensory neurological deficits. | Wright *et al.,* 2012<br><br>Johnson & Sexton, 2021 | | | |
| **2.4** | Post LP headache is caused by leakage of CSF from the dura and traction on spinal nerves (characteristic frontal or occipital headache within 24-48hrs of the procedure). Currently there is no evidence to suggest that bed rest is beneficial in preventing post lumbar puncture headache.<br>• An individualised approach applies to post-procedure mobilisation, dependent on the person's diagnosis.<br>• The nurse should liaise with the medical team with regard to mobilisation of the person. | Yiangou *et al.,* 2019<br><br>Lavery *et al.,* 2018 | | | |
| **2.5** | The person should be provided with appropriate levels of information and support to reduce post-lumbar puncture headache.<br>• Encourage increased fluid intake (Oral/IV fluids).<br>• Monitor fluid balance. | | | | |

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**FACTOR 3 – Education**

| | STATEMENT OF BEST PRACTICE | EVIDENCE & REFERENCES | ACHIEVED | NOT ACHIEVED | VARIABLES |
|---|---|---|---|---|---|
| **3.0** | A structured evidence-based education programme is available for the care of people undergoing lumbar puncture. It will include:<br>• An awareness of the person's disease process and the reason for the procedure.<br>• Contraindications to performing a lumbar puncture.<br>• Anatomy of the spinal column.<br>• Positioning of the person and identification of anatomical landmarks.<br>• An awareness of the equipment required for the procedure:<br>  ○ Needle choice (cutting versus a-traumatic) may influence the risk of a post-LP headache.<br>  ○ Use of non-luer lock design needles to reduce the risk of inadvertent connection errors.<br>  ○ Manometer sets.<br>• Common problems encountered when performing a lumbar puncture<br>• An awareness of the investigations used on CSF specimens.<br>• Measurement of normal opening pressure readings<br>• Documentation<br>• Infection control measures including safe sharps disposal. | Freedman, 2024<br>Markey *et al.,* 2016<br>NPSA, 2009<br>Lewis *et al.,* 2021 | | | |
| **3.1** | A formal assessment of competence and knowledge is made and recorded in a competency manual or staff assessment procedure. | Freedman, 2024<br>NMC, 2018 | | | |

## FACTOR 4 – Patient Information

| | STATEMENT OF BEST PRACTICE | EVIDENCE & REFERENCES | ACHIEVED | NOT ACHIEVED | VARIABLES |
|---|---|---|---|---|---|
| **4.0** | Patients/carers are informed of the rationale for the lumbar puncture and consent is obtained prior to the procedure. | Johnson & Sexton, 2021 | | | |
| **4.1** | Information given to patients and carers is documented in the patient's records. | NMC, 2018 | | | |
| **4.2** | Written information is available that explains the purpose of the lumbar puncture in the context of their diagnosis. | Freedman, 2024 | | | |
| **4.3** | Direct team/team handover is performed for patients undergoing or having had a lumbar puncture. | | | | |
| **4.4** | Documentation is updated post procedure. | NMC, 2018 | | | |

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