

Bed rest and posture for preventing post-dural puncture headache

NICE has developed the Cochrane Quality and Productivity topics to help the NHS identify practices that could be significantly reduced or stopped completely, releasing cash and/or resources without negatively affecting the quality of NHS care. Each topic has been derived from a Cochrane systematic review that has concluded that the evidence shows that the practice is harmful or ineffective and should not be used, or that there is insufficient evidence to support widespread use of the practice.

Unless otherwise stated, the information is taken with permission from the Cochrane systematic review.

NICE summary of Cochrane review conclusions

Post-dural puncture headaches are a recognised complication of any procedure where the dura is punctured. The dural puncture may be intentional, with the use of a spinal needle, or unintentional, as a complication of epidural injections or catheterisations. It is thought that cerebrospinal fluid (CSF) leakage through the puncture hole is a key determinant of whether a headache develops, so it was thought that bed rest would reduce fluid leakage by reducing the hydrostatic pressure at the puncture site or fluid supplementation would increase CSF production to compensate for any leak. There are no clear benefits associated with either bed rest or fluid supplementation. It is not current practice for patients to be kept in hospital strictly for bed rest and so this review would not result in the freeing up of beds but there may be cash savings from the reduced use of intravenous fluids.

The 'Implications for practice' section of the Cochrane review stated:

'There is no evidence to support longer bed rest or fluid supplementation for preventing headache following lumbar puncture. The adoption of this practice against the evidence implies unnecessary hospital costs, patient discomfort (e.g. among women who give birth via a caesarean section), or even complications such as venous stasis in people with risk factors. Thus, rest after lumbar puncture to prevent post-dural puncture headache (PDPH) should not be routinely recommended. Instead, people should be allowed to move freely in accordance with their ability and medical recommendations. There are no clear benefits or adverse side effects associated with additional oral fluid supplementation. People should be free to decide whether or not to increase fluid intake after lumbar puncture, unless there are medical reasons that recommend one or the other'.

Details of Cochrane review

Cochrane review title

Posture and fluids for preventing post-dural puncture headache (Review)

Citation

[Arevalo-Rodriguez I, Ciapponi A, Munoz L, Roqué i Figuls M, Bonfill Cosp X. Posture and fluids for preventing post-dural puncture headache. *Cochrane Database of Systematic Reviews* 2013, Issue 7. Art. No.: CD009199. DOI:10.1002/14651858.CD009199.pub2](#)

When the review content was assessed as up to date

Cochrane Quality and Productivity topics

10 July 2013

Quality and productivity category

Neurological conditions

Relevant codes	OPCS A52.1	ICD10 G970, G971	HRG PA04A, PA04B
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Programme budget:

Neurological

Evidence

Relevance to the NHS

Some doctors advise their patients to remain in bed after a lumbar puncture and to increase fluid intake to prevent the occurrence of a complication called post-dural puncture headache (PDPH). Several theories have identified the leakage of cerebrospinal fluid (CSF) through the hole in the dura as a cause of this side effect. PDPH limits a person's mobility and daily activities while presenting additional efforts for both the patient and the health institution

CSF leakage is thought to be fundamental in the development of PDPH. Therefore, postures such as prone position after a lumbar puncture may reduce hydrostatic pressure. This may in turn reduce pressure in the subarachnoid space and allow a seal to form over the dura, thus enabling CSF leakage repair. As such, it is theorised that this posture may be effective in preventing PDPH. Additional fluid intake may work by replacing lost corporal fluid and increasing CSF production (Ahmed 2006), thus preventing a hydrostatic pull on pain-sensitive structures and vasodilation (Janssens 2003).

The objective of the Cochrane review was to assess whether prolonged bed rest combined with different body and head positions, as well as the administration of supplementary fluids after lumbar puncture, prevent the onset of PDPH in people undergoing lumbar puncture for diagnostic or therapeutic purposes.

The review included randomized controlled trials (RCTs) of males and females of any age, where dural puncture or lumbar puncture was conducted.

These studies assessed one of the following interventions:

- a period of bed rest after lumbar puncture alone or in combination with a head-down/up tilt strategy, with or without a specific body position, or a combination of several postural strategies with immobilisation, versus early mobilisation
- head-down/up tilt versus no head-down/up tilt in participants prescribed with a period of bed rest
- prone versus supine posture in participants assigned to immobilisation
- administration of supplementary fluids (oral or intravenous) after lumbar puncture versus no/less administration
- any combination of the above

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23 trials (2477 participants) were identified. There was no beneficial effect associated with bed rest compared with immediate mobilisation on the incidence of PDPH [risk for bed rest 26.4%; risk for mobilisation 20.5%; relative risk (RR) 1.30; 95% confidence interval (CI) 1.09 to 1.55], severe PDPH (risk for bed rest 10.6%; risk for mobilisation 10.7%; RR 1.00; 95% CI 0.75 to 1.32), and presence of any headache after lumbar puncture (risk for bed rest 33.6%; risk for mobilisation 28.6%; RR 1.18; 95% CI 1.05 to 1.32). Analyses restricted to the most methodologically rigorous trials gave similar results. There was insufficient evidence to reach a firm conclusion on whether fluid supplementation affects the incidence of PDPH.

Overall, the review found that bed rest does not prevent the onset of headaches after lumbar puncture or dural puncture, regardless of the duration of rest, or the body or head positions assumed by the patient. The evidence on supplementary fluid intake is inconclusive. Bed rest and postural interventions should not be routinely recommended to patients for the prevention of headaches after lumbar puncture.

Relevant NICE guidance and products

No relevant NICE guidance and products at the time of publication (Sept 2014)

Other accredited guidance and products

No other accredited guidance was available at the time of publication (Sept 2014)

Potential productivity savings

Estimate of current NHS use

- In 2011/12 there were approximately 324,950 spinal anaesthetics done in NHS hospitals, a further 41,875 combined spinal epidurals, and 293,050 epidurals for anaesthesia, there were 77,252 diagnostic spinal punctures.
- There were approximately 27,000 finished consultant episodes for therapeutic epidural injections (26,000) and diagnostic reaction from lumbar puncture (1000) in the NHS in 2012/13.
- It is not known how many of these subsequently had PDPH.
- The onset of a headache after lumbar puncture is usually within 6 hours after dural puncture, it could also be delayed by up to 12 days. Therefore it is unlikely the patient would spend additional time in hospital just for bed rest.
- There is no data available as to how many people had additional time in hospital just for bed rest or received fluid supplementation (intravenously or oral). However this is unlikely to be a problem since an emergency admission that required a lumbar puncture is unlikely to be discharged within 6 hours. The therapeutic epidural injections are day cases, and would not be kept for 6 hours.

Level of productivity savings anticipated

- It is unlikely that patients will extend duration of stay in hospital just for bed rest. Therefore no cash saving is expected as a result of this recommendation.
- There may be cash savings from reduced/avoided intake of fluid supplements. Also there is potential productivity saving (nurse time) in cases where fluid supplements administered

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via intravenous route are discontinued.

Type of saving

- No cash saving to commissioners but may be cash and productivity saving to NHS Trusts.
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Any costs needed to achieve the savings

- There are no costs required to implement change.
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Other information

- Potential savings are likely to benefit NHS provider trust budgets
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Potential impact on quality of NHS care

Impact on clinical quality

Not anticipated to affect clinical quality in terms of outcomes

Impact on patient safety

Not anticipated to have any impact on patient safety

Impact on patient and carer experience

Some improvement to the patients experience as they will not be required to undertake unnecessary bed rest or take extra fluids

Likely ease of implementation

Time taken to implement

Can be achieved within 0-3 months

Healthcare sectors affected

Secondary care

Stakeholder support

Likely to achieve good buy-in from key influencers

References

Ahmed SV, Jayawarna C, Jude E (2006). Post lumbar puncture headache: diagnosis and management. *Postgraduate Medical Journal*; 82(973):713–6

Janssens E, Aerssens P, Alliet P et al (2003). Postdural puncture headaches in children. A literature review. *European Journal of Pediatrics*; 162(3):117–21

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[The Health and Social Care Information Centre, Hospital Episode Statistics for England. Inpatient statistics, 2012-13.](#)

[National Audit of Major Complications of Central Neuraxial Block in the United Kingdom. Report and Findings January 2009](#)