

# South Australian Perinatal Practice Guideline

# Post Dural Puncture Headache

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## Note:

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

## Explanation of the aboriginal artwork:

The Aboriginal artwork used symbolises the connection to country and the circle shape shows the strong relationships amongst families and the Aboriginal culture. The horse shoe shape design shown in front of the generic statement symbolises a woman and those enclosing a smaller horse shoe shape depicts a pregnant woman. The smaller horse shoe shape in this instance represents the unborn child. The artwork shown before the specific statements within the document symbolises a footprint and demonstrates the need to move forward together in unison.



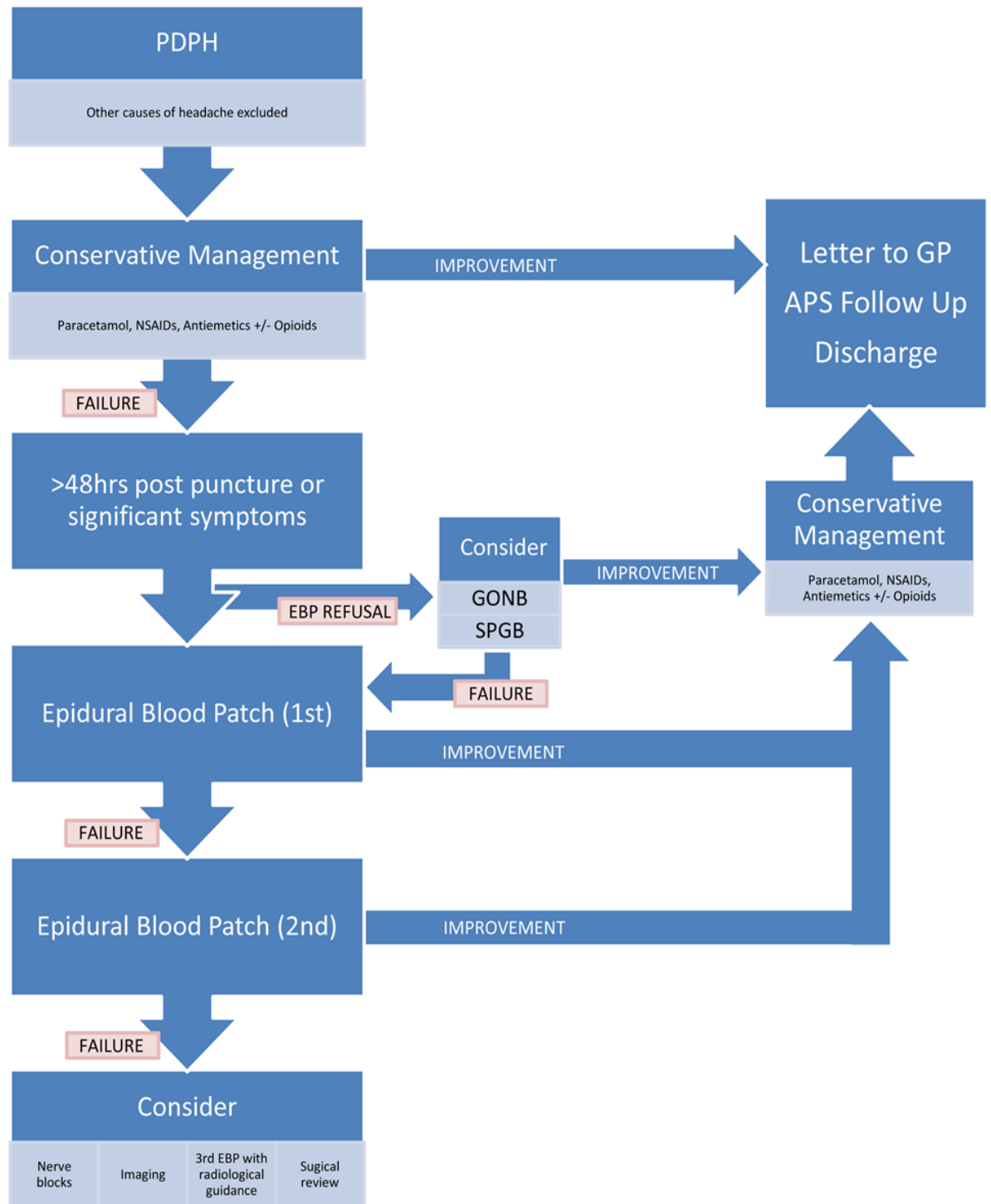
**Australian Aboriginal Culture is the oldest living culture in the world yet Aboriginal people continue to experience the poorest health outcomes when compared to non-Aboriginal Australians. In South Australia, Aboriginal women are 2-5 times more likely to die in childbirth and their babies are 2-3 times more likely to be of low birth weight. The accumulative effects of stress, low socio economic status, exposure to violence, historical trauma, culturally unsafe and discriminatory health services and health systems are all major contributors to the disparities in Aboriginal maternal and birthing outcomes. Despite these unacceptable statistics the birth of an Aboriginal baby is a celebration of life and an important cultural event bringing family together in celebration, obligation and responsibility. The diversity between Aboriginal cultures, language and practices differ greatly and so it is imperative that perinatal services prepare to respectfully manage Aboriginal protocol and provide a culturally positive health care experience for Aboriginal people to ensure the best maternal, neonatal and child health outcomes.**

## Purpose and Scope of Perinatal Practice Guideline (PPG)

To assist with the detection and management of post dural puncture headache after a neuraxial technique.



Flowchart: Management of Post Dural Puncture Headache



# Post Dural Puncture Headache

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## Summary of Practice Recommendations

Post dural puncture headache will usually resolve within two weeks, however the impact of symptoms often prompts intervention prior.

Not all women will require hospital admission, with analgesia and anti-emetics the mainstay of management.

Women with evidence of neurological compromise require hospital admission and regular neurological observations may be warranted.

Hospital admission is required for invasive intervention such as an epidural blood patch (EBP).

EBP performed >24 - 48 hours after dural puncture is most successful, however the procedure should not be withheld before this time if women are significantly symptomatic.

If headache persists despite treatment, or if does not appear to be postural in nature then other diagnoses must be excluded.



# Post Dural Puncture Headache

## Abbreviations

5HT	Serotonin
APS	Acute Pain Service
CSF	Cerebrospinal Fluid
CT	Computed Tomography
DDAVP	Desmopressin
EBP	Epidural Blood Patch
GON	Greater Occipital Nerve
GONB	Greater Occipital Nerve Block
GP	General Practitioner
MRA	Magnetic Resonance Angiogram
MRI	Magnetic Resonance Imaging
NSAID	Non-Steroidal Anti-Inflammatory Drug
PDPH	Post Dural Puncture Headache
SPGB	Sphenopalatine Ganglion Block
VTE	Venous Thromboembolism

## Background

Post dural puncture headache (PDPH) presents following intentional or unintentional puncture of dura while performing neuraxial anaesthesia and is a common cause of significant morbidity in the obstetric population.<sup>1,2,3</sup> It can have significant impacts on new mothers' ability to care for their newborns and often treatment is required to improve/alleviate symptoms.<sup>1</sup>

## Incidence

Incidence of PDPH has been quoted as being as less than 2% with dural puncture by non-cutting smaller gauge spinal needles, and high as 50% - 70% with accidental dural puncture with Tuohy needles. The incidence and severity is less compared with 18g compared to 16g Tuohy needles.<sup>1,2,4,5,6</sup> A PDPH can occur when no accidental dural puncture is noted during epidural insertion. With larger cutting needles or epidural needles causing PDPH the headaches are moderate to severe, and up to 15% are still present at one week.<sup>1</sup>

## Symptoms

PDPH is classically described as a fronto-occipital headache that is postural in nature. Patients often describe a headache that is worse when standing and improved when lying flat.<sup>2</sup> With PDPH, the headache may be associated with neck pain, nausea, vomiting, tinnitus or photophobia; in severe persistent cases, there may be evidence of cranial nerve palsy or subdural haematoma.<sup>1</sup> In the majority of cases, the headache will resolve within two weeks, however the impact of symptoms often prompts intervention prior to self-resolution of the headache.<sup>1,7</sup>

## Pathophysiology

The cause of PDPH is thought to be due to a twofold effect. It is proposed that cerebrospinal fluid (CSF) leakage into the epidural space causes reduction in intracranial pressure, resulting in downward traction of meninges. Additionally there is compensatory cerebro-vascular venodilation, contributing to headache.<sup>1,7,8</sup>



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## Diagnosis

Diagnosis is usually made in consultation with an Anaesthetist and is based on history, with specific diagnostic criteria set by the *Headache Classification Subcommittee of the International Headache Society (outlined below)*:<sup>1,9</sup>

- Headache that worsens within 15 minutes of sitting and standing, and improves within 15 minutes after lying flat with at least one of the following:
  - Neck stiffness
  - Tinnitus
  - Hypacusia
  - Photophobia
  - Nausea
- Dural puncture has been performed
- Headache develops within 5 days after dural puncture
- Headache resolves either:
  - Spontaneously within 2 weeks
  - Within 48 hours of effective treatment of the CSF leak, i.e. with EBP
- Headache not accounted for better by another ICHD-3 diagnosis.

## Differential diagnosis

If headache persists despite treatment, or if does not appear to be postural in nature then other diagnoses must be excluded. Including:<sup>1,10,11</sup>

- Tension headache
- Pre-eclampsia headache
- Sinusitis
- Migraine headache (history of migraine)
- Meningitis
- Intracranial haemorrhage
- Intracranial mass lesion
- Cerebral vein thrombosis
- Cerebral infarction
- Postpartum angiopathy
- Post-natal depression headache
- Non-specific postnatal headache

## Management

Not all women will require hospital admission, but for those who do, routine ward monitoring may be appropriate assuming the correct diagnosis of PDPH has been made. For those with evidence of neurological compromise, regular neurological observations may be warranted and will be advised by medical staff. If invasive intervention is required (i.e. epidural blood patch), then hospital admission will be required. Management options are [outlined below](#):

Written information to facilitate discussion should be provided. An example is the pamphlet, 'Headache after an epidural or spinal injection? What you need to know', which can be accessed via the website [www.labourpains.com](http://www.labourpains.com).

### Conservative

#### Analgesia

Simple analgesics such as paracetamol and non-steroidal anti-inflammatories (NSAIDs), in conjunction with anti-emetics, are the mainstay of PDPH management and have evidence to support their routine use in PDPH<sup>1,2,11</sup>



# Post Dural Puncture Headache

## Fluids

Oral fluids can be encouraged, but overhydration has not been shown to be of benefit. If patients are euvolemic, CSF production is anticipated to be sufficient and increased fluid intake would not be expected to increase its production<sup>1,2,11</sup>

## Bed rest

There is no evidence to suggest that this reduces the incidence of PDPH but it is appropriate to encourage patients to adopt whatever comfortable position, including lying flat, as a reduction in analgesic requirements decreases the likelihood of pursuing invasive treatment. It should be kept in mind that post-partum patients are in a hypercoagulable state, so prolonged bed rest may increase risk of venous thromboembolism. Adequate VTE prophylaxis should be prescribed if indicated.

## Pharmacological

### Caffeine

Although previously thought to be of some benefit, recent evidence suggests that caffeine intake does not provide a clinically significant improvement and may in fact cause more problems, such as maternal insomnia or neonatal irritability<sup>1,2</sup>

### Adrenocorticotrophic hormone

Adrenocorticotrophic hormone may increase CSF production but there is not sufficient evidence to support its inclusion in routine PDPH management<sup>1,11</sup>

### Other drugs:

Both pregabalin and gabapentin have been shown to have a clinical benefit, with pregabalin being the more effective of the two.<sup>1</sup> 5HT agonists (e.g. sumatriptan), DDAVP, theophylline, and hydrocortisone have also been used in the treatment of PDPH, but again there is limited evidence to support their routine use in PDPH treatment.<sup>1,11</sup>

## Invasive

### Epidural Blood Patch (EBP)

Epidural blood patch is considered gold standard in terms of symptom resolution with initial blood patching having partial or complete symptom relief in up to 80% of women, with repeat blood patching demonstrating similar success rates.<sup>1,9</sup>

An epidural blood patch (EBP) is usually performed by two experienced anaesthetists (or an anaesthetist and a competent assistant) in a controlled environment with routine procedural monitoring. It is a procedure by which autologous blood is collected from the woman under aseptic conditions and then injected into the epidural space. This acts to alleviate symptoms of PDPH by:

1. Immediate & sustained tamponade with a rise in CSF pressure leading to adenosine receptor inhibition, cerebral vasoconstriction and a reduction of elevated cerebral blood flow
2. Limiting ongoing CSF leak from the dural puncture site by coagulation, often resulting in some subjective immediate relief.<sup>9</sup>

Following the procedure, the woman should remain supine for 2 hours.<sup>6</sup> Routine ward observations are appropriate and women can be discharged once they are mobilising and have been reviewed by an anaesthetist.

Although greatest success has been demonstrated in those who had an EBP performed >24 - 48 hours after the dural puncture, the procedure should not be withheld before this time if patients are significantly symptomatic.<sup>9</sup> If repeat EBP are required, fluoroscopic/CT guided procedures/imaging can be considered.<sup>1</sup>



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## Nerve blocks

### Greater occipital nerve blocks

The method of bilaterally blocking the greater occipital nerve (GON) with local anaesthetic has been utilized for the treatment of many different kinds of headache, and its benefit has also been seen in the treatment of PDPH<sup>1</sup>. Greater occipital nerve blocks (GONB) have been demonstrated to provide symptomatic relief in patients with PDPH refractory to conservative measures,<sup>12</sup> making it a viable alternative technique that can be utilized in patients that decline an epidural blood patch.<sup>13,14</sup> GONB is conducted by an experienced anaesthetist using ultrasound or a landmark based technique.<sup>3</sup> Local anaesthetic is injected into the area immediately surrounding the GON with usually rapid subjective clinical improvement reported by patients<sup>3,13</sup>

### Sphenopalatine ganglion block

Sphenopalatine ganglion blocks (SPGB) represent another regional technique that is occasionally utilised to treat patients with PDPH that is not responsive to conservative treatment. SPGB is conducted by insertion of cotton tipped applicators into the posterior nasopharynx and local anaesthetic is introduced down the hollow shaft of the applicators causing neural blockade of the sphenopalatine ganglion.<sup>14,15</sup> Sphenopalatine ganglion blocks are considered less invasive than EBP and have demonstrated a greater efficacy in resolution of symptoms at one hour, and no difference at 24 hrs/ 48hrs/ 1 week.<sup>14</sup>

## Surgical intervention

On rare occasions surgical intervention maybe required for a dural repair if significant headache persists and is refractory to non-surgical treatments.<sup>1</sup> Evidence of a significant CSF leak on imaging may also be an indication for surgical intervention.



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