

A survey of post-dural puncture headache management practices within a South African academic department

Supplementary Table I: Indications for computed tomography of the brain and spinal cord ($n = 140$)

	n (%)
Part of routine initial work-up	3 (2%)
Symptoms not resolving after 1 day of conservative management	17 (12%)
Symptoms not resolving after 2 days of conservative management	30 (21%)
Failed first blood patch	59 (42%)
Failed repeat blood patch	38 (27%)
Tinnitus and/or vertigo	65 (46%)
Localised clinical signs/other neurological signs	133 (95%)
Decreased level of consciousness	124 (89%)
Symptoms of meningitis	97 (69%)

Appendix 1: REDCAP Questionnaire

Page 1

PDPH Survey

Dear Colleagues

My name is Kathryn Monteith and I am a registrar in the Department of Anaesthesiology at the University of the Witwatersrand. I would like to invite you to participate in my MMED research project.

My research seeks to describe how anaesthetists in the department manage postdural puncture headaches. Results of this research may assist with the establishment of departmental guidelines and protocols pertaining to the management of postdural puncture headaches.

The study has been approved by the Human Research Committee (Medical). Ethics approval number: M200603. If you have any concerns, please contact the chairperson of the committee, Professor Clement Penny, on 011 717 2301 or clement.penny@wits.ac.za. Alternatively, the secretary of the committee can be contacted on 011 717 2700 or via email at zanele.ndlovu@wits.ac.za rhulani.mukansi@wits.ac.za.

Participation in the study is voluntary and anonymous. There are no personal identifiers included within the questionnaire. Consent is implied by the completion and return of the questionnaire. All information will remain confidential and only my supervisors and myself will have access to the raw data. There is no penalty for not participating in the study.

No incentives will be provided for completing the questionnaires. The questionnaire should not take longer than 15 minutes to complete. If there are any questions prior to or during completion the survey, please feel free to ask.

Kind regards

Kathryn Monteith (Researcher), 072 *** ****

Thank you!

Section 1 : Demographics

- | | | |
|-------|----------------------------------|--|
| 1 | What is your age? | <input type="radio"/> 25-29
<input type="radio"/> 30-39
<input type="radio"/> 40-49
<input type="radio"/> 50-59
<input type="radio"/> ≥60 |
| <hr/> | | |
| 2 | What is your gender? | <input type="radio"/> Male
<input type="radio"/> Female |
| <hr/> | | |
| 3 | Years of anaesthetic experience? | <input type="radio"/> < 1 Year
<input type="radio"/> 1-2 Years
<input type="radio"/> 3-5 Years
<input type="radio"/> 6-9 Years
<input type="radio"/> ≥10 Years |

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- 4 What is your rank?
- ☐ Medical Officer
☐ Junior Registrar - 1st and 2nd year
☐ Senior Registrar - 3rd, 4th and subsequent years
☐ Consultant (This includes Career Medical Officers who have >10 Years' experience)

Section 2: Availability of Guidelines

- 5 Are you aware of any guidelines for the management of postdural puncture headache (PDPH)?
- ☐ Yes
☐ No
- 5a If Yes, which guidelines?
- _____
- 6 Does your department have official guidelines for the management of PDPH?
- ☐ Yes
☐ No
☐ I do not know
- 7 Do you think you would benefit from guidelines for the management of PDPH?
- ☐ Yes
☐ No
- 7a If no, why? (Please specify)
- _____
- 8 Is written information made available to the patients in your hospital with regards to the treatment options for PDPH?
- ☐ Yes
☐ No
☐ I do not know
- 9 Is there a reporting mechanism in the department for recording the number of patients treated for PDPH?
- ☐ Yes
☐ No
☐ I do not know

Section 3: Risk Factors

- | | Never | Rarely | Often | Always |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| 10 Do you follow up your patients who receive spinal anaesthesia the day after the procedure is performed? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 11 Do you follow up your patients who receive epidural anaesthesia the day after the procedure is performed? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
- 10a If you answered never/rarely to the follow-up of spinal anaesthesia, why?
- ☐ I do not have time
☐ Not concerned about PDPH
☐ Someone else will report PDPH to me
☐ Logistically not plausible
☐ Other
- 10b Please specify other
- _____

11a If you answered never/rarely to the follow-up of epidural anaesthesia, why?

- ☐ I do not have time
☐ Not concerned about PDPH
☐ Someone else will report PDPH to me
☐ Logistically not plausible
☐ Other

11b Please specify other

12 Have you ever performed an epidural where an accidental dural puncture occurred?

- ☐ Yes
☐ No
☐ I have never performed an epidural

13 What would be your immediate approach to managing an accidental dural puncture?

- ☐ Remove needle and try at another level
☐ Feed catheter intrathecally & use in intrathecal space
☐ Abandon procedure entirely
☐ Prophylactic saline intra-epidurally
☐ Prophylactic epidural blood patch
☐ Other (please specify)

13a Please specify other

14 Do either you, or an allocated anaesthetist, follow-up patients when accidental dural puncture has occurred during the performance of an epidural?

- ☐ Yes
☐ No
☐ I have never performed an epidural

Section 4: PDPH Management Approach & Conservative Management

15 Have you ever been involved in the management of a patient with PDPH?

- ☐ Yes
☐ No

16 At the hospital where you are employed, who usually informs you/the department about a patient with suspected PDPH? (multiple options may be selected)

- ☐ A member of the obstetric team
☐ Ward nursing staff
☐ I find out when I follow up the patient
☐ Another anaesthetist
☐ Other (please specify)

16a Please specify other

17 What actions do you include (in your management) on the FIRST day that you see a patient with suspected PDPH? (Multiple options may be selected)

- ☐ History & examination
☐ Monitor and review the patient's temperature
☐ Blood tests
☐ CT scan
☐ Conservative management (IV fluids, analgesia, bed rest)
☐ Sphenopalatine ganglion block
☐ Epidural blood patch
☐ Physician/Neurology consult
☐ Other (Please specify)

17a Please specify other

- 18 Which of the following blood tests would you perform during the initial work-up of PDPH patients? (multiple options may be selected)
- ☐ I do not request blood tests
☐ FBC
☐ U & E
☐ CRP
☐ Blood Cultures
☐ Other (Please specify)

18a Please specify other

In terms of conservative management, would you prescribe any of the following?

- | | Yes | No |
|----------------|-----------------------|-----------------------|
| 19 Oral fluids | <input type="radio"/> | <input type="radio"/> |
| 20 IV fluids | <input type="radio"/> | <input type="radio"/> |
| 21 Bed rest | <input type="radio"/> | <input type="radio"/> |

- 22 What medication would you prescribe for PDPH? (multiple options may be selected)
- ☐ Paracetamol
☐ NSAIDs
☐ Opioids
☐ Caffeine
☐ Gabapentinoids
☐ Other (please specify)

22a Please specify other

You are half-way through the questionnaire - Thanks!

- 23 For the average case, how long would you trial conservative management for?
- ☐ I don't - I immediately do an epidural blood patch/ block
☐ < 24 hours
☐ 24-48 hours
☐ 49 -72 hours
☐ >72 hours
☐ Other (please specify)

23a Please specify other

- 24 What would your next step be, if conservative management fails?
- ☐ Sphenopalatine Ganglion Block
☐ Epidural Blood Patch
☐ Greater Occipital Nerve Block
☐ Epidural patch with other substances
☐ Other (please specify)

24a Please specify other

Section 5: Epidural Blood Patch (EDBP)

- 25 How many epidural blood patches (EDBPs) have you done? ☐ 0
☐ 1
☐ 2 -5
☐ 6 -10
☐ 11-20
☐ 21-30
☐ >30
-
- 26 Which of the following complications relating to EDBP would you routinely counsel your patients on? (multiple options can be selected) ☐ Infection
☐ Repeat dural puncture
☐ Spinal haematoma ± paralysis
☐ Backache
☐ Nerve Damage
☐ Failure of EDBP
☐ Other (please specify)
-
- 26a Please specify other _____
-
- 27 Would you obtain written consent for the EDBP? ☐ Yes
☐ No
-
- 28 Where would you perform the EDBP? ☐ Operating theatre
☐ The ward
☐ Minor procedure room
☐ Other (please specify)
-
- 28a Please specify other _____
-
- 29 If you are a Registrar or an MO, would you be supervised when you perform an EDBP? ☐ Yes
☐ No
☐ Not Applicable
-
- 30 What monitors would you routinely apply when performing an EDBP? (Multiple options may be selected) ☐ ECG
☐ NIBP
☐ Pulse Oximetry
☐ Other (please specify)
-
- 30a Please specify other _____
-
- 31 What infection control measures would you apply when performing an EDBP? (multiple options can be selected) ☐ No personal protective equipment
☐ Mask
☐ Sterile gloves
☐ Nonsterile gloves
☐ Gown
☐ Other (please specify)
-
- 31a Please specify other _____
-

With respect to performing the EDBP:

- 32 Who would draw the sterile blood for the EDBP? ☐ Myself
☐ Fellow anaesthetist
☐ Surgeon
☐ Nurse
☐ Other (please specify) _____
- 32a Please specify other _____
- 33 Approximately how many millilitres of blood would you inject for the EDBP? _____
- 34 Have you ever performed a 2nd EDBP in the same patient? ☐ Yes
☐ No
☐ I have never performed an EDBP
- 35 Would you issue instructions about bed rest after an EDBP? ☐ Yes
☐ No
- 35a If yes, what instructions _____
- 36 Would you perform an epidural patch with a substance other than blood? ☐ Yes
☐ No
- 36a If yes, please specify the substance/drug and the volume (in ml) you would use. _____

Section 6: Other modalities of treatment

- 37 What would you use as an indication for CT brain and spinal cord imaging? (multiple options may be selected) ☐ Part of routine initial work-up
☐ Symptoms not resolving after a day of conservative management
☐ Symptoms not resolving after 2 days of conservative management
☐ Failed 1st patch
☐ Failed 2nd patch
☐ Tinnitus and/or vertigo
☐ Focal Signs/ Other neurological signs
☐ Decreased level of consciousness
☐ Symptoms of meningitis
☐ Other (please specify) _____
- 37a Please specify other _____
- 38 Have you ever performed a Sphenopalatine ganglion block for treatment of PDPH? ☐ Yes
☐ No
- 38a If yes, how many have you performed? ☐ 1
☐ 2-5
☐ 6 - 10
☐ 11-20
☐ 21 - 30
☐ >30

Section 7: Final Care for PDPH

- 39 Are your patients who develop PDPH followed up after discharge?
☐ Yes
☐ No
☐ I do not know
-
- 39a If Yes, where/how do they get followed up?
☐ Pain Clinic/ Anaesthetic Clinic
☐ Telephonically
☐ At the local clinic
☐ At gynaecology outpatients clinic
☐ Other (please specify)
-
- 39b Please specify other

-
- 40 Do you feel that you have sufficient knowledge and expertise to successfully manage a patient with a PDPH?
☐ Yes
☐ No

Appendix 2: Questions related to Correct Practice

The questions included in the “correct practice” component are included below. The options which are highlighted green were considered to reflect correct practice according to the OAA guidelines. Where multiple options could be selected, each was allocated one point. Options that are not specifically discussed, are incorrect or are not covered by the OAA guidelines have been removed from each question for the sake of brevity. Where there is a ‘grey zone’ relating to the selection of correct answers, a brief explanation follows the question. All text encased in quotations in this section is directly quoted from the OAA guidelines.

17. What actions do you include (in your management) on the **first** day that you see a patient with suspected PDPH?

	History & examination
	Conservative management (IV fluids, analgesia, bed rest)
	Epidural blood patch

In terms of conservative management:

19. Would you routinely prescribe any of the following?

Oral Fluids	Yes	
IV Fluids	Yes	No
Bed Rest	Yes	

Correct practice (CP): All 3 are correct practice, although IV fluids are only necessary to prevent dehydration if the patient cannot tolerate fluids orally. Therefore, yes or no would both be accepted as correct for the IV option.

22. What medication would you prescribe for PDPH? (Multiple options may be selected):

Tick	Drug
	Paracetamol
	NSAIDs
	Opioids
	Caffeine

CP: Opioids may be used but are advised not to be used for more than 72 hours according to the OAA.

23. For the average case, how long would you trial conservative management for? (Single best answer)

24-48 hours

CP: For the **average** case (not severe). OAA guidelines advise reviewing after 24 hours (unless severe); the OAA guidelines also advise to avoid doing an EDBP with less than 48 hours as there is an increased need for repeat patch.

24. What would your next step be, if conservative management fails?
(Single best answer)

Epidural Blood
Patch

26. Which of the following complications relating to EDBP would you routinely counsel your patients on? (multiple options can be selected)

<input checked="" type="checkbox"/>	Infection
<input checked="" type="checkbox"/>	Repeat dural puncture
<input type="checkbox"/>	Spinal haematoma ± paralysis
<input checked="" type="checkbox"/>	Backache
<input checked="" type="checkbox"/>	Nerve Damage
<input checked="" type="checkbox"/>	Failure of EDBP

27. Would you obtain written consent for the EDBP?

Yes

CP: "Written consent should be obtained"

28. Where would you perform the EDBP? (Single best answer)

Operating theatre

Minor procedure room

CP: Guidelines don't specify a site, but state that it requires monitoring and full aseptic technique, therefore either theatre or a minor procedure room would cover this and be accepted.

29. If you are a Registrar or an MO, would you be supervised when you perform an EDBP?

Yes

CP: "Senior anaesthetists must be involved in the management of PDPH"

"A consultant obstetric anaesthetist or experienced senior trainee should perform the epidural injection and a second clinician to take blood"

30. What monitors would you routinely apply when performing an EDBP? (Multiple options may be selected)

	ECG
	NIBP
	Pulse Oximetry

CP: "Cardiovascular monitoring and intravenous access may be considered to detect and treat bradycardia during the procedure"

31. What infection control measures would you apply when performing an EDBP? (multiple options can be selected)

	Mask
	Sterile gloves
	Gown

CP: "full aseptic technique should be employed for both the epidural component and venesection."

With respect to performing the EDBP:

32. Who would draw the sterile blood for the EDBP? (Single best answer)

Fellow anaesthetist	Surgeon	Nurse	Other (please specify):

CP: "Other clinician"

33. Approximately how many millilitres of blood would you inject for the EDBP?

10-20mls

CP: "Volumes of up to 20 mL are recommended if tolerated by the patient", "stop before 20 mL is injected if not tolerated by the patient"

35. Would you issue instructions about bed rest after an EDBP?

Yes

35a. If yes, what instructions:

Supine 1-2 hours

CP: Supine for 1-2 hours advised by OAA

36. Would you perform an epidural patch with a substance other than blood?

No

37. What would you use as an indication for CT brain and spinal cord imaging? (multiple options may be selected)

	Failed 2 nd patch
	Tinnitus and/or vertigo
	Focal Signs/ Other neurological signs
	Decreased level of consciousness

CP: "the diagnosis of obstetric post-dural puncture headache is strongly suspected, there is no evidence that imaging is needed before performing an epidural blood patch."

39. Are your patients who develop PDPH followed up after discharge?

Yes

Total = 37 Points