SESLHD GUIDELINE COVER SHEET

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KEY TERMS	Headache Thunderclap Headache Assessment and Management of Headaches in ED
SUMMARY	This document provides guidance to Medical Officers within SESLHD Emergency Departments to assess and appropriately escalate / manage adults with headaches that present to the Emergency Department.

THIS DOCUMENT IS A GUIDE FOR BEST PRACTICE

Feedback about this document can be sent to SESLHD-ExecutiveServices@health.nsw.gov.au

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Assessment and Management of Headaches in Adults within SESLHD Emergency Departments

Section 1 – Background and Assessment

Headache is a common presenting complaint to Emergency Departments. While most patients with headache do not have dangerous pathology, the consequences of misdiagnosis can be severe.

The key questions involved in assessment for headache in the ED are:

- Does your patient meet criteria for a primary (self-limiting) headache syndrome? If so, urgent further investigations are unlikely to be needed.
- Are 'red flags' present (see table below) which could indicate a higher risk diagnosis?

Whilst radiation and other risks of investigations should always be considered, such risks should be carefully balanced with those of missed dangerous pathology

Examination in headache should routinely include:

- Vital signs including temperature.
- A pain scale to assess both baseline pain and response to treatment.
- Screening neurological exam, looking for (at minimum):
  - Level of orientation/ alertness
  - Pupil abnormalities
  - Visual field assessment by confrontation
  - Diplopia
  - Facial or limb power asymmetry,
  - Limb reflexes
  - Plantar responses
  - Cerebellar testing (gait, standing balance, finger-nose coordination).
  - Neck stiffness
  - Fundoscopy, especially if imaging is to be deferred. Direct fundoscopy is recognised as a challenge for many staff and some patients, and enhanced technology such as Panoptic ® is recommended.

Escalation to a consultant is mandatory when a moderate to severe headache remains undifferentiated and/or unresolved after initial assessment and treatment.

- When a consultant is not available on-site, the on-call consultant (ED or inpatient specialty) should be contacted.
- Suspected red flags should be discussed with the most senior available doctor in ED and appropriately addressed.
- Repeat presentation with headache should be considered a 'red flag'.
- Emergency Medicine has primary responsibility for initiating investigations and disposition of low risk headaches.
- Consultation process is as follows:
- Neurology for undifferentiated or unresolved headache despite initial investigation.
- Neurosurgery for likely or confirmed neurosurgical diagnosis.
- Other teams as appropriate.

Section 2 - Definitions

Term	Definition
CNS	Central Nervous System
CRP	C-reactive protein
CSF	Cerebrospinal fluid
CTA	Computerised tomography angiogram (aortic arch to Circle of Willis)
CTB	Computerised tomography of brain, non-contrast unless otherwise specified
CTV	Computerised tomography venogram
Diplopia	Commonly known as double vision
ED	Emergency Department
ESR	Erythrocyte sedimentation rate
Fundoscopy	Method of examining the retina through a specialised instrument.
ICH	Intracranial haemorrhage
LOC	Level of consciousness
LP	Lumbar puncture
MRI	Magnetic resonance imaging
MRV	Magnetic resonance venogram
PCR	Polymerase Chain Reaction
RCVS	Reversible Cerebral Vasoconstriction Syndrome
SAH	Subarachnoid haemorrhage

Section 3 - Responsibilities

Medical Officers are responsible for:

- Completing a comprehensive assessment of the patient presenting with headaches
- Completion of imaging requests
- Escalate and refer patients appropriately to specialists (i.e. Neurology, Neurosurgery)
- Documentation of the episode of care.

Nursing (RN/EN) staff are responsible for:

- Completion of comprehensive assessment of the patient presenting with headaches, and subsequent referral to emergency department medical officer
- Documentation of episode of care.

Section 4 – Primary Headache Syndromes

The core primary headache syndromes are:

- Migraine (without aura). Rarely this is refractory to treatment (status migrainosus) and will require admission.
- Tension headache

They generally do not require any investigation but do require a pattern of previous similar headaches (for example at least 5 similar headaches in migraine), and an absence of 'red flags' for safe diagnosis.

There are some higher risk primary headaches, including:

- Migraine with aura (neurological deficit, usually transient visual/ sensory, may mimic stroke)
- Cluster headache (venous thrombosis or carotid dissection may mimic)
- Trigeminal neuralgia

These should be discussed with a neurologist (especially if newly diagnosed) unless well controlled, as other diagnoses may mimic and/ or management may be complex.

A common source of error is accepting a previous diagnosis without considering whether it is supported by history and findings.

Section 5 – Secondary Syndromes and Red Flags

The concept of 'secondary' headache is that an underlying pathological process (neurological or otherwise) is causing it.

- Some secondary headaches will be related to mild or self-limiting causes, such as viral illness, medication overuse or dehydration. Such headaches will generally respond to supportive care
- The table below should supplement, not replace, clinical judgement, in the assessment of red flags. Diagnoses and recommended investigations are indicative, not exhaustive and are subject to valid variation for particular patients.

Clinical Indicators/ **Red Flags**	**Secondary Diagnoses**	**Guide to Initial Investigations**
Nature of Headache **'Thunderclap'** headache: severe pain maximal within 1-2 minutes	**Subarachnoid haemorrhage** (**SAH), vascular dissection** or **intracerebral haemorrhage (ICH)** If no bleed, dissection or aneurysm, most common diagnosis is Reversible Cerebral Vasoconstriction Syndrome **(RCVS)**[6]	**CTB, consider CTA***[1] *Indications for vascular imaging are complex [1,6], and include: diagnosed SAH, traumatic or unavailable LP, multiple or recurrent episodes, presence of any additional red flags (e.g. persistence, neurological deficit, visual symptoms, acute hypertension, pregnancy/ hypercoagulable, head or neck trauma), clinical concern and informed patient request. MRI/ MR angiography may be an option. Consider risk of false-positive or incidental findings. [1,6] Consider **LP (xanthochromia)** at 12 hours if CT normal but concern for missed SAH [1]**.** Consider consultation and follow-up (e.g. to evaluate possible RCVS) in all cases.
Persistent or progressive: pain, or failure to respond to treatment	As well as other causes, consider **Cerebral venous thrombosis**: may have thrombotic risk or facial infection	High index of suspicion required. **CTB** only 30% sensitive for thrombosis. **CTV** or **MRV**[1]
Pressure/ postural: headache: strain/ cough/ supine/ standing	High intracranial pressure**: Idiopathic intracranial hypertension (IIH)**, Chiari malformation, hypertensive encephalopathy Low pressure: post LP, spontaneous	Fundoscopy required if suspicion of raised ICP **CTB** (may be normal) and **CTV** to exclude venous thrombosis Consult re LP/further imaging Low pressure: Variable
Associated features Associated	**Space-occupying lesion:**	**CTB**, consider contrast

neurological deficit, confusion/ personality change/ seizure	may have subtle neurological deficit **Stroke** **Pituitary apoplexy:** visual symptoms common, CT often normal	**Stroke**: use local imaging protocol and Clinical Business Rule Consult re further imaging/ investigations e.g. **MRI**
Associated **neck pain**, especially if any deficit	Carotid, vertebral or aortic **dissection** (may be history of mild neck strain eg coughing, look for subtle posterior circulation deficits)	**CTA**
Fever, neck stiffness	**Meningitis:** Consider risk of partially treated e.g. recent antibiotics Not all are infective	**LP** especially if risk of bacterial, unless contraindications. **Blood culture, PCR** blood and **CSF** for N. meningitidis[4] Treat within 60 minutes of arrival to hospital if high suspicion of bacterial infection. See ETG flowchart[4] **CTB** prior to **LP** only if papilloedema, seizure, reduced LOC, focal deficit/known focal CNS disease, immunocompromised[4]
	Encephalitis, cerebral abscess, other **CNS infection**, vasculitis. Presume if confusion and/or focal deficit.	**CTB** consider contrast: LP if CTB normal unless contraindications. Admit for **MRI**.
Patient Risk Factors Immune compromise/ Intoxication/ advanced age/ pregnancy/ post-partum/ history of malignancy/ thrombotic or haemorrhagic risk/ concerning family hx	Higher overall risk of dangerous secondary headache and/or occult trauma	Pregnancy: consult re **CTB** with shielding vs **MRI**
	Giant Cell Arteritis: age over 50, tender temporal pulses	**ESR/CRP**
	Acute Glaucoma: consider especially in elderly, myopia.	Intraocular pressure >20mmHg

Section 6 – Treatment of Headache

Medications below are indicative only, and should not replace use of more comprehensive resources for dosage or administration. Some suggested treatments below are specific to a particular type of headache. Treatment of secondary headache should address the likely underlying cause.

Many patients with migraine (and some other headaches) will have increased sensitivity to light and loud noise: care for in a darker, quieter area of the ED if otherwise stable.

Simple analgesia (any headache): Paracetamol 1g orally 4 to 6 hourly if necessary. Maximum 4g/24h[2]

NSAIDs or aspirin may be considered if previously effective for similar headache and not contra-indicated, but beware the possibility that headache could be due to intracranial bleeding.

Dopamine antagonists (especially effective in migraine): all may cause dystonia, akathisia, drowsiness.[2,3,5]

First line	prochlorperazine 12.5mg or metoclopramide 10mg IM/slow IV 8 hourly [2,3]
Second line (only if first-line treatment unsuccessful)	chlorpromazine 12.5mg, can repeat x 1 [2.3] droperidol 0.625-1.25mg, can repeat x 1 [2,3] IV infusion over at least 30 minutes with 100-1000ml crystalloid Beware excessive sedation, postural hypotension, prolonged QT[2,3]

Serotonin agonists: (migraine only) Consider if benefit found in previous attacks or dopamine antagonists contraindicated. Most effective early in episode. Contraindications include hypertension or recent ergotamine use. If no effect after first dose do not repeat[2]

Sumatriptan	50-100mg orally, or 6mg subcutaneous injection. May repeat once if incomplete response after two hours[2]
Naratriptan	2.5-5mg orally. May repeat once if incomplete response after four hours[2]

Intravenous fluid: recommended if vomiting or if using chlorpromazine/droperidol

Alternative anti-emetics: (any headache)[3]

Ondansetron	4-8mg wafer sublingually up to twice daily[3]
Promethazine	12.5mg to 25mg IM/slow IV 4 to 6 hourly (maximum 100 mg in 24 hours)[3]

Corticosteroids: Limited evidence for benefit of dexamethasone 12mg to 20mg IV in refractory migraine[3]

Opiates: To be avoided[2]. Poorly effective in primary headache. Occasionally considered in inpatient setting, but risks include hypoventilation and masked deterioration

Other treatments are considered for specific headache diagnoses, generally in consultation:

- Cluster headache: oxygen high flow mask (as soon as possible)
- RCVS: Calcium Channel blockers (usually nimodipine)[1]
- Trigeminal neuralgia: consider carbamazepine and/or gabapentin.

Section 7 – Safe Discharge Criteria for Headaches

Overall principles for safe discharge of patients from ED should be followed, in particular:

- The patient must be stable from clinical and functional perspective, headache substantially improved, and any risks have been identified and managed.
- Adequate communication (both verbal and written) and understanding of diagnosis, relevant alternative diagnoses, guidance for ongoing care and follow-up.
- Provision has been made for safe care of the patient at home and, if necessary, safe return to the ED. Ideally this should involve an identified support person in case he or she loses the ability to access help independently.

When any of these are in doubt, especially after hours, the use of extended observation (in ED Short Stay or to the appropriate inpatient unit) should be considered as per NSW Ministry of Health Policy Directive PD2014_025 Departure of Emergency Department Patients.

Section 8 – Resources

Suggested resources for further information:

1. Emergency Care Institute of NSW - headache resources page
2. International Headache Society
3. ETG Neurology
4. NSW Ministry of Health Policy Directive PD2012_069 - Health Care Records - Documentation and Management
5. NSW Ministry of Health Policy Directive PD2013_059 - Recognition and Management of Patients who are Clinically Deteriorating

Section 9 – Documentation, References and Revision & Approval History

Documentation

eMR (FirstNet)

Progress Notes

References

1. Edlow, J., 2018. Managing Patients With Nontraumatic, Severe, Rapid-Onset Headache *Annals Emerg Med*
2. Australian electronic Therapeutic Guidelines eTG Neurology: Migraine accessed 7/3/2018
3. Australian electronic Therapeutic Guidelines eTG Gastroenterology accessed 7/3/2018
4. Australian electronic Therapeutic Guidelines eTG Neurology: Meningitis accessed 15/10/2019
5. American Headache Society 2016 Management of Adults with Acute Migraine in the Emergency Department: Evidence Assessment of Parenteral Pharmacotherapy
6. Australian College for Emergency Medicine: Guidelines for Diagnostic Imaging

Revision and Approval History

Date	Revision no:	Author and approval
August 2017	Draft	Application to Develop
February 2018	Draft	Draft for Comment
August 2018	Draft	Further updates
September 2018	Draft	To SESLHD Clinical and Quality Council for endorsement
September 2018	0	Approved by SESLHD Clinical and Quality Council for publishing.
October 2019	1	Minor review with no significant changes made. Updated guidance on meningitis with updated link to ETG. Approved by Executive Sponsor. Formatted by Executive Services prior to publishing.
November 2020	2	Risk rating reduced from Extreme Risk to High Risk. Review Date amended to October 2021 to align with a High Risk rating. Approved by Executive Sponsor.