SESLHD GUIDELINE COVER SHEET

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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.

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Assessment and Management of Headaches in Adults within SESLHD Emergency Departments

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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 have 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 assessment including 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, and reflexes if deficits present.
  - 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 ® or retinal camera are recommended.

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

- When a consultant is not available on-site, initial escalation will be to the most senior available doctor in ED to consider contacting an on-call consultant or overnight Short Stay observation.
- Repeat presentation with headache should be considered a 'red flag'.
- Emergency Medicine has primary responsibility for initiating investigations and disposition of low risk headaches.
- Subsequent consultation is as follows:
- Neurology for undifferentiated or unresolved headache despite initial investigation.
- Neurosurgery for 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:

- Triage, nursing assessment and supportive care, use of Nurse Initiated medication protocols as appropriate, and escalation of concerning symptoms to the medical officer.
- Documentation of episode of care.

Section 4 – Primary Headache Syndromes

The core primary headache syndromes are:

- Migraine. Rarely this is refractory to treatment (status migrainosus) and will require admission. If new, or different, consider alternative causes for headache.
- Tension headache.
- Trigeminal neuralgia.
- Cluster headache (caution if new diagnosis as venous thrombosis or carotid dissection may mimic)

Criteria for diagnosis are found at International Classification of Headache Disorders (ICHD-3).

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.

A common source of error is accepting a previous diagnosis without considering whether it remains 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**	**Initial investigations considered**
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.** Highly specific if clearly reported negative for SAH within 6 hours of isolated headache onset[1]. **Indications for CTA***[1,6]: Diagnosed SAH, traumatic or unavailable LP, recurrent thunderclap, clinical concern (e.g. persistent headache, neurological deficit, visual symptoms, acute hypertension, pregnancy/ hypercoagulability, head or neck trauma), and informed patient request. MRI/ MR angiography may be an option. Consider risk of false-positive or incidental findings. [1,6] **LP (xanthochromia)** at 12 hours if CT normal but ongoing concern for SAH [1] (e.g. delayed imaging).
Persistent or progressive: pain, or failure to respond to treatment	As well as other causes, consider **Cerebral venous thrombosis** especially if thrombotic risk or facial infection	**CTB**. Consider **CTV** or **MRV**[1] if particular concern for thrombosis or suggestive abnormalities on CT.
Pressure/ postural: High pressure: strain/ cough/ supine Low pressure: standing	High intracranial pressure**: Idiopathic intracranial hypertension (IIH)**, Chiari malformation, hypertensive encephalopathy. Low pressure: post LP, spontaneous CSF leak	**Fundoscopy.** Suspected IIH: **CTB** (may be normal) and **CTV** to exclude venous thrombosis before consideration of LP.

Associated features Associated **neurological deficit, confusion/ personality change/ seizure**	**Space-occupying lesion:** deficit may be subtle **Stroke** **Pituitary apoplexy:** visual symptoms common, CT often normal	**CTB**, consider contrast **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 e.g. 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] for antibiotic/ corticosteroid guidance. **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.

Nonopioid analgesic[2,3]:	
Paracetamol (soluble)	**1 g orally** 4 to 6 hourly. Maximum 4 g in 24 hours.
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[¥] **unless contraindicated:** all may cause dystonia, akathisia, drowsiness.[2,3,5]		
First line	**prochlorperazine** [¥] **5 – 10 mg orally**; OR **12.5 mg IM**; OR **12.5 mg IV over 2 to 5 minutes**. If nausea persists, give up to 2 more doses (maximum daily dose 30 mg)	
	metoclopramide [¥] **10 mg orally**; OR **10 mg IM**; OR **10 mg IV over at least 3 minutes**. If nausea persists, give up to 2 more doses (maximum daily dose 30 mg)[2,3]	
Second line (only if first-line treatment unsuccessful)	**chlorpromazine**[¥] **12.5 mg in sodium chloride 0.9% 100 mL IV over 30 minutes**. If needed, repeat infusion twice, 30 minutes after preceding infusion ends (total chlorpromazine dose 37.5 mg). [2,3]	*Beware excessive sedation, dystonia, postural hypotension, prolonged QT*[2,3]
	droperidol[¥] **1.25 mg in sodium chloride 0.9% 250 mL IV over 20 minutes**. If needed, repeat infusion once, 30 minutes after preceding infusion ends (total droperidol dose 2.5 mg) [3,5]	*Acute dystonic reaction may require treatment with:* ***benzatropine*** *1 to 2 mg IV, as a single dose.*
To avoid hypotension, pre-treat with a fluid bolus (e.g. **sodium chloride 0.9% 500 mL**). Monitor blood pressure and fluid status every 30 minutes during treatment with chlorpromazine / droperidol, and repeat the fluid bolus if needed.		

Intravenous fluid also recommended if vomiting.

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 – 100 mg orally**, or **6 mg subcut injection**. May repeat once if incomplete response after 2 hours[2]

Alternative anti-emetics: consider especially if dopamine antagonists contraindicated	
Ondansetron	**4 – 8 mg orally**; OR **4 - 8mg IV over at least 30 seconds** and preferably over 3 to 5 minutes[2,3] If nausea persists, give up to 2 more doses (maximum daily dose 16 mg)
Promethazine	**25 mg orally**; OR **12.5 – 25 mg IM**; OR **12.5 – 25 mg in WFI 10 mL IV over 3 to 5 minutes**. If needed, repeat every 4 to 6 hours[3]. Maximum 100 mg in 24 hours

Corticosteroids: Limited evidence for benefit of dexamethasone 12 - 20 mg 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 Classification of Headache Disorders (ICHD-3)
3. NSW Ministry of Health Policy Directive PD2012_069 - Health Care Records - Documentation and Management
4. NSW Ministry of Health Policy Directive PD2020_018 - Recognition and Management of Patients who are 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 6/10/2022
3. Australian electronic Therapeutic Guidelines eTG Gastroenterology accessed 6/10/2022
4. Australian electronic Therapeutic Guidelines eTG Neurology: Meningitis accessed 6/10/2022
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: Diagnostic Imaging guidelines: accessed 6/10/2022

Revision and Approval History

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August 2017	Draft	Application to Develop
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August 2018	Draft	Further updates
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September 2018	0	Approved by SESLHD Clinical and Quality Council for publishing.
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March 2022	3	Consultation/ minor revision David Murphy (POWH), Stephen Asha (STG)
November 2022	3.1	Approved by SESLHD Quality Use of Medicines Committee. Approved by Executive Sponsor.