Management of acute headache

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To skip straight to migraine management, click here

Background

- Headaches are a common symptom in childhood
- Most are benign in origin but can occasionally be a symptom of a more severe or life-threatening illness.
- NICE guideline 150 (headache) only covers children aged 12 years and older.

- Two major types of headaches can be distinguished:

  **Primary**
  - Tension-type headache
  - Migraine
  - Cluster Headache

  **Secondary** (to underlying etiology)
  - Infection
  - Intracranial pathology
  - Benign Intracranial Hypertension
  - Post-traumatic
  - Medication overuse headache

Use “red flag signs” to evaluate the cases which require urgent investigations:

- Sudden onset and severe
- Abnormal neurology (focal or cerebellar signs, papilloedema, visual field etc)
- Impaired level of consciousness
- Headache wakening the child
- Vomiting, particularly early morning
- Hypertension
- Change in behaviour, personality, educational performance
- Progressive chronic course
- Age < 3 years
- Consistent location of recurrent headaches
- Presence of VP shunt
- Worse if recumbent, coughing or straining
- Worsening headache with fever
- A substantial change in the headache characteristics
Management flow-chart

Acute headache

History of chronic or recurrent headaches?

Yes

Typical pattern, no new findings and no red flag symptoms and signs

No

Red flag symptoms and signs

Discuss with CED Senior

Signs or symptoms suggestive of acutely raised ICP

- Papilloedema
- Ataxia
- Focal neurological signs
- Vomiting and / or drowsiness

No signs or symptoms suggestive of acutely raised ICP

Evolving malignancy

- Migraine
- Cluster headache
- Severe tension / functional headache

Consider:
- Ophthalmology review at eye hospital
- Urgent MRI < 2 weeks
- Urgent Paediatric OP follow up

Malignancy

Intracranial haemorrhage

- BIH
- *Focal migraine

Admit
Urgent CT scan or MRI if available same day – d/w Radiology

Pain treated and fears allayed?

Yes

Safety-net
GP follow up

*Focular migraine can mimic a more serious condition as it can be accompanied by a variety of focal neurological symptoms.
Assessment

History – must be thorough

- Headache – type, severity, quality, onset, timing, history of recurrence (see image below), response to treatment
- PMH (malignancy, infection, trauma)
- Family history (migraine, malignancy)
- Accompanying symptoms
  - Fever and / or intercurrent illness
  - Unexplained vomiting (especially on waking)
  - Changes in behaviour, changes in school performance
  - Changes in balance, gait, increased clumsiness, loss of skills
  - Nausea, photophobia, aura-like symptoms
  - Visual problems (blurred vision, diplopia, squinting)

Headache patterns:

- **a** acute recurrent (migraine, cluster headache)
- **b** chronic non-progressive (tension, anxiety, depression, somatisation)
- **c** chronic progressive (tumour, benign cranial hypertension, brain abscess, hydrocephalus)
- **d** acute on chronic non-progressive tension headache with co-existent migraine

Examination – include a neurological exam focusing on **focal neurological deficits**.

- Check BP and document and plot weight, height, head circumference.
- Fundoscopy, either in CED or as an urgent ophthalmology referral
- General examination including ENT; head and neck palpation and inspection (hematoma, lymphatic nodes); inspection of teeth and temporomandibular joint function.
- Neurological examination including cranial nerves, visual fields, muscular tone, sensation, reflexes, coordination, gait, balance, motor skills, mental state
Diagnose tension-type headache, migraine and cluster headache according to the headache features in the table:

<table>
<thead>
<tr>
<th>Headache Feature</th>
<th>Tension-type Headache</th>
<th>Migraine with or without aura</th>
<th>Cluster Headache</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain location</td>
<td>Bilateral</td>
<td>Unilateral or bilateral</td>
<td>Unilateral</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>− Around or above the eye</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>− along the side of the head or face</td>
</tr>
<tr>
<td>Pain quality</td>
<td>Pressing / tightening</td>
<td>Throbbing or banging</td>
<td>Variable</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>− can be sharp, boring, throbbing or tightening</td>
</tr>
<tr>
<td>Pain intensity</td>
<td>Mild or moderate</td>
<td>Moderate or severe</td>
<td>Severe or very severe</td>
</tr>
<tr>
<td>Effect on activities</td>
<td>Not aggravated by</td>
<td>Aggravated by, or causes</td>
<td>Restlessness or agitation</td>
</tr>
<tr>
<td></td>
<td>routine ADL</td>
<td>avoidance of routine ADL</td>
<td></td>
</tr>
<tr>
<td>Other symptoms</td>
<td>None</td>
<td>Unusual sensitivity to light</td>
<td>On the same side as the headache:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and / or sound</td>
<td>− red and / or watery eye</td>
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<tr>
<td></td>
<td></td>
<td>Nausea and / or vomiting</td>
<td>− nasal congestion and / or runny nose</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>− swollen eyelid</td>
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<td></td>
<td></td>
<td></td>
<td>− forehead and facial sweating</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>− constricting pupil and / or drooping eyelid</td>
</tr>
<tr>
<td>Aura</td>
<td></td>
<td>Symptoms can occur with or</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>without headache</td>
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<tr>
<td></td>
<td></td>
<td>− are fully reversible</td>
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<tr>
<td></td>
<td></td>
<td>− develop over at least 5</td>
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<tr>
<td></td>
<td></td>
<td>minutes</td>
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<td></td>
<td></td>
<td>− last 5 – 60 minutes</td>
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<td></td>
<td></td>
<td>Visual symptoms: flickering</td>
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<td></td>
<td></td>
<td>lights, spots or lines and / or</td>
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<td></td>
<td></td>
<td>partial loss of vision;</td>
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<td></td>
<td>Sensory symptoms: numbness and /</td>
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<td></td>
<td></td>
<td>or pins and needles; and / or</td>
<td></td>
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<td></td>
<td></td>
<td>speech disturbance.</td>
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<td>NB motor symptoms or double</td>
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<td></td>
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<td>vision or unilateral</td>
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<td></td>
<td>visual symptoms or ataxia or</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>decreased LOC are NOT typical</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>for migraine aura</td>
<td></td>
</tr>
<tr>
<td>Duration of headache</td>
<td>30 mins – continuous</td>
<td>1 – 72 hours</td>
<td>15 – 180 mins</td>
</tr>
<tr>
<td>Frequency of headache</td>
<td>&lt; 15 days / month</td>
<td>&lt; 15 days / month (episodic)</td>
<td>1 every other day to 8 / day, with remission &gt; 1 month (episodic)</td>
</tr>
<tr>
<td></td>
<td>(episodic)</td>
<td>≥ 15 days / month for &gt; 3</td>
<td>1 every other day to 8 / day, with a continuous remission &lt; 1 month in a 12 month period (chronic)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>months (chronic)</td>
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</tbody>
</table>
Medication overuse headache

Consider in children whose headache developed or worsened while they were taking the following drugs for ≥ 3 months:
- triptans, opioids, ergots or combination analgesic meds on ≥ 10 days / month or;
- paracetamol or an NSAID, either alone or in combination, on ≥ 15 days / month

Investigations:

The most important question is: **who needs urgent imaging?**

**Consider if:**
- Any red flag signs present (especially abnormal neuro exam) and / or
- there is a suspicious element in the history.

Discuss with senior doctor if in doubt.

**Remember normal neuro exam does not exclude intracranial pathology!**

CT scan is available 24 hours a day but will not see a posterior fossa tumour. Its best use is to look for intracranial haemorrhage or hydrocephalus.

MRI is not available out of hours at BSUH and for young children requires a general anaesthetic, but will be more suitable to diagnose malignancy.

**Always discuss the appropriate imaging with the on-call Paediatric Radiology Consultant.**

Do not refer children diagnosed with tension-type headache, migraine, cluster headache or medication overuse headache for neuroimaging solely for reassurance.

Management

Consider admitting any child with one or more red flag signs or those whose diagnosis requires hospitalisation

**Management of tension-type headaches:**
- Consider paracetamol and / or ibuprofen as required. **Do not give opioids**
- Provide reassurance and “lifestyle advice”: regular sleep, hydration, regular sports, avoid caffeine / alcohol
- Consider a course of up to 10 sessions of acupuncture over 5 – 8 weeks for prophylactic treatment of chronic tension-type headache.
- Warn patient about the risk of medication overuse headache.
Prophylaxis of migraines

Treatment options available include:
- Propranolol
- Topiramate
- Pizotifen

See the Children’s BNF for doses and regime.

Review the need for continuing prophylaxis 6 months after the start of treatment.

Management of cluster headaches

Acute treatment options include:
- Oxygen – 100% via non-rebreathing mask and a reservoir bag at 12-15 L/mins and / or
- Sub-cutaneous or nasal sumatriptan (under specialist supervision – contact Paediatric Neurology department at Evelina Children’s Hospital)

Do not use opioids in the acute treatment of migraine.

NB triptans and prochlorperazine are not licensed in children for migraine. This is a common issue in Paediatric prescribing. The prescriber must use the children’s BNF for guidance and take full responsibility for the decision. The patient (or parent / carer) should provide informed consent, which should be documented.

Management of migraines

Acute treatment options for children include:
- Early use of paracetamol or ibuprofen (10 mg/kg) in young children.
- Oral or nasal sumatriptan and a NSAID or paracetamol for older children.
- Consider an anti-emetic in addition to other treatments even if no nausea and vomiting (ondansetron).

- If oral / nasal drugs are ineffective or not tolerated
  - Offer a non-oral dose of prochlorperazine or metoclopramide (if using I.V co-administrated with fluids as can cause hypotension). Be aware that prochlorperazine can cause an acute oculogyric crisis in children – use with caution.
  - Consider adding a non-oral NSAID or triptan if these have not been tried.
Management of medication overuse headache

- Withdraw all overused medication.
- Stop abruptly for at least 1 month; do not withdraw gradually.
- Advice regarding likelihood that headaches will get worse before they get better.
- Review 4 – 8 weeks after withdrawal of medication

Follow-up of children with headaches:

Children discharged with out-patient imaging need follow up in an acute Paediatric clinic AFTER their imaging has been done.

If the frequency exceeds 2 / week and / or normal daytime activities including school attendance are heavily affected, consider a Paediatric out-patient appointment.

Most primary headaches can be referred back to the GP.

- Keeping a headache diary may help to identify and avoid possible trigger factors.
  - Frequency, duration and severity
  - Associated symptoms
  - All medication taken to relieve headache
  - Possible triggers (including menstruation)

- Alternative treatment methods include acupuncture, physiotherapy, yoga, Jacobson’s progressive muscle relaxation technique, biofeedback etc. may be helpful

- If there is a functional element to headaches, consider concurrent referral to CAMHS for pain coping management