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National Maternity Network

Management of Headache in Pregnancy

Guidance developed by

Scottish Government 'Best Start' Obstetric Neurology Working Group

Scottish Perinatal Network MATERNITY

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Contents

DISCLAIMER

The recommendations in this guidance represent the view of the Scottish Government Best Start Obstetric Neurology Working Group, arrived at after careful consideration of the evidence available. When exercising their clinical judgement, healthcare professionals are expected to take this guidance fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to follow the guidance recommendations and it remains the

responsibility of the healthcare professional to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Management of Headache in Pregnancy
Clinical Guidance for Professionals

Purpose and Scope

This guidance is relevant to all medical and midwifery staff involved in the care of women who are pregnant or considering pregnancy. The purpose is to create guidance that can be consistently applied across all maternity units in Scotland. The scope of this guidance covers the recognition and management of headache in women who are pregnant.

Identification and assessment of evidence

This guidance was developed by a multidisciplinary group including obstetricians, neurologists, and midwives. The aim was to produce a pragmatic document based on currently available evidence, guidelines and experience. This is not a systematic review.

Pre-pregnancy Counselling

General Considerations

- Up to three quarters of women with pre-existing **migraine** report marked improvement in frequency and intensity of migraine attacks in pregnancy.
- Where possible, non-drug therapies for migraine should be used prior to conception and drugs withdrawn.
    - See advice on Avoiding Migraine Triggers from The Migraine Trust
    - See advice on Exercise from The Migraine Trust
- When medication is required, there are acceptable acute/preventative strategies (See Table 1).
- Cluster headache is rare in pregnancy. Some women with chronic cluster headache report a fall in the number of attacks but severity remains unchanged.
- Women taking prescription medication for uncommon/rare headache syndromes (e.g. the trigeminal autonomic cephalalgias) should receive specialist pre-conceptual advice.
- Women with Idiopathic Intracranial Hypertension require regular monitoring of vision during pregnancy. While pregnancy may cause an exacerbation of intracranial pressure, headache is not a reliable guide.

Drugs and Pre-Pregnancy Guidelines

Pre-conception Counselling		
Medications should be stopped prior to conception where possible. Where a woman makes an informed decision to continue with medication, use the lowest possible dose.		
		Pregnancy
Non-drug strategies	✅	Risk factor management: Avoid Triggers Avoid Medication Overuse Avoid Excessive Caffeine Early Treatment of Nausea
Sumatriptan	✅	Avoid Medication Overuse (limit use to 2 days/week)
Paracetamol	✅	Avoid Medication Overuse
Ibuprofen	✅	Avoid in third trimester
Amitriptyline	☑	Widely used. No reports of limb deformities at low doses
Propranolol	☑	Risk of neonatal bradycardia and hypoglycaemia in 3rd trimester.
Topiramate	❌	Risk of foetal malformation. Reduce by 25mg/week. Stop at least one week prior to conception. If unexpected pregnancy, reduce and stop as soon as possible.
Candesartan	❌	Risk of harm. Reduce by 4mg/week. Stop at least one week prior to conception.
Acetazolamide (for IIH)	❌	Risk of Teratogenicity. Stop prior to conception.
Magnesium Supplements	✅	Low dose oral supplementation
Indometacin	☑	Not recommended in third trimester: use lowest dose possible under direction of specialist if no alternatives available.
✅ Safe to use ☑ Caution ❌ Ideally avoid, some cases may merit discussion with expert. Sodium valproate for headache is contraindicated in women of childbearing potential.		
Resources		BUMPS – Best Use of Medicines in Pregnancy NIH Drugs and Lactation Database (LactMed)

New Headache in Pregnancy

General Considerations

- Primary Headache Disorders (e.g. Migraine, Tension Type Headache) are the most common headache disorders in pregnancy
- Migraine commonly affects women of childbearing age
- Migraine without aura tends to improve as pregnancy progresses but migraine with aura can persist
- Women may develop aura for the first time in pregnancy. The aura may change and become more persistent
- Migraine may change to migrainous aura without headache

Women may present with headache for the first time during pregnancy. They should undergo assessment in primary care initially. Women with pre-existing headache syndromes whose symptoms have significantly changed should be assessed as 'new' headache.

Most headache presenting during pregnancy is benign (primary) headache, however the frequency of secondary headache is higher compared to non-pregnant women.

Assessment of Women Presenting with Headache in Pregnancy

Considerations

- Onset: speed, severity, site
- Associated features
    - Neurological symptoms including likely migraine aura
    - Cranial autonomic symptoms (conjunctival injection, ptosis/Horner's, tearing, nasal stuffiness
- Behaviour during attack (lie down seeking dark/quiet vs agitated)
- Red and green flags (see Table 2)
- Current medication and past medical history
- Recurrent headache associated with nausea and photophobia is 98% predictive of migraine
- Examination to include blood pressure and basic observations, neurological examination including fundoscopy, urinalysis

Red Flag & Green Flag Chart

Red Flags to raise concern and trigger secondary care involvement	Green Flags consistent with benign syndrome
⚠ Change in headache character or pattern	✓ Previous History of Migraine Headache
⚠ Characteristics of intracranial hypertension (worse on lying flat, major worsening on coughing/straining)	✓ Fully reversible episodes of headache lasting 4-72 hours with headache freedom between attacks Aura: • Fully Reversible • Lasts 5-60 minutes
⚠ New Persistent Headache (>72 hours)	✓ Typical Symptoms include visual disturbance (flickering lines, spots, partial loss of vision), sensory symptoms (numbness, pins and needles), speech disturbance.
⚠ Associated elevated BP	
⚠ Unusually severe/thunderclap headache (time to maximal severity minutes)	
⚠ Abnormal Neurological Examination	
⚠ Headaches associated with systemic disorders (esp. Hx thrombophilia /clotting)	
⚠ Headaches brought on with physical activity	
⚠ Cognitive change/behavioural disturbance	
⚠ Significant recent history of hyper-emesis (dehydration)	

Headache Syndrome Definitions

Migraine without Aura

4-72 hours duration, with at least 2 of the following:

- Unilateral Location
- Pulsing Quality
- Moderate to Severe Pain
- Aggravation by or causing avoidance of routine physical activity

During the headache:

- Phonophobia and photophobia
- Nausea and/or vomiting

What to do:

1. Consider acute treatment options (see migraine section)
2. If frequent headache, offer lifestyle advice and consider preventative option (see migraine section)

Arrange review

Migraine With Aura

As for Migraine without aura but with positive neurological symptoms before/during headache. Aura rarely lasts more than 60 mins.
Usually visual but can involve speech/motor/sensory function.
Full recovery between attacks.

What to do:

1. Consider acute treatment options (see migraine section)
2. If frequent headache, offer lifestyle advice and consider preventative option (see migraine section)

Arrange review

Tension Type Headache

Featureless, bilateral, mild headache.
Not significantly worse with activity.
Common.

What to do: This can safely be managed as mild migraine, consider treatment with simple analgesia (see migraine section)

Medication Overuse Headache

Suspect when analgesic use (including triptans) is greater than 2-3 days per week.
Usual acute migraine therapy is ineffective.
Usually affects patients with underlying migraine headache.

May present as chronic unremitting headache.

What to do:

1. Explain concept of MOH to patient
2. Discuss non-pharmacological options for migraine treatment
3. Recommend avoid taking acute treatments on >2 days per week
4. Advise risk of rebound headache (symptoms may temporarily worsen on withdrawal of medication)
5. Consider preventative therapy (e.g. amitriptyline)

Offer follow up

Cluster Headache

Rare in Pregnancy.
Strictly unilateral headache "locked" to one side, usually peri-orbital.
15-180 minutes duration, typically 30-60 mins.
Very severe pain with associated agitation Ipsilateral cranial autonomic features (conjunctival injection, rhinorrhoea, ptosis, tearing, ear fullness).

What to do:

1. New cluster headache should be referred to neurology

Consider acute treatment with triptans/oxygen.

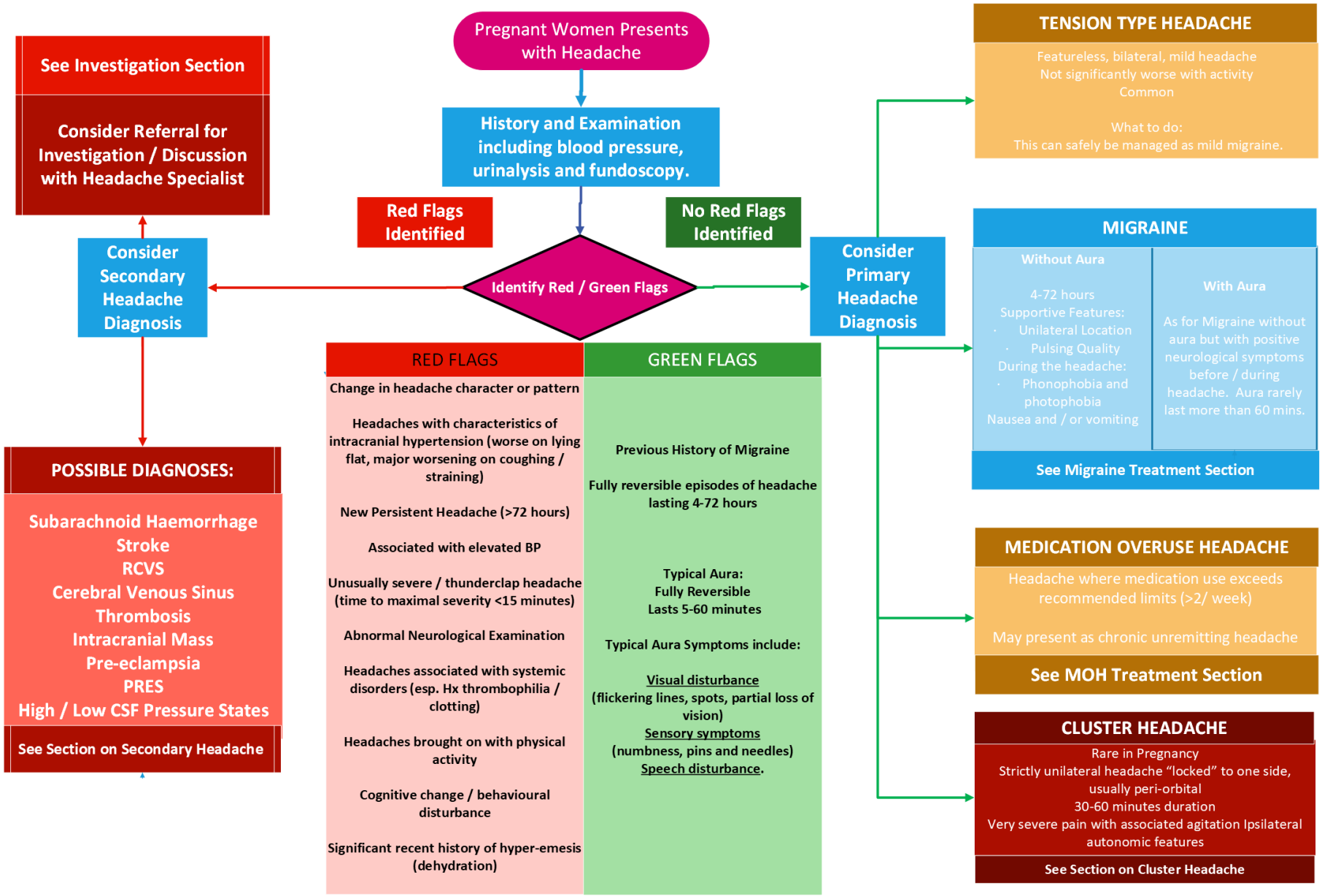
Other Trigeminal Autonomic Cephalalgias (Paroxysmal Hemicrania, SUNCT, SUNA)

Rare in pregnancy.
Strictly unilateral headache "locked" to one side, usually peri-orbital.

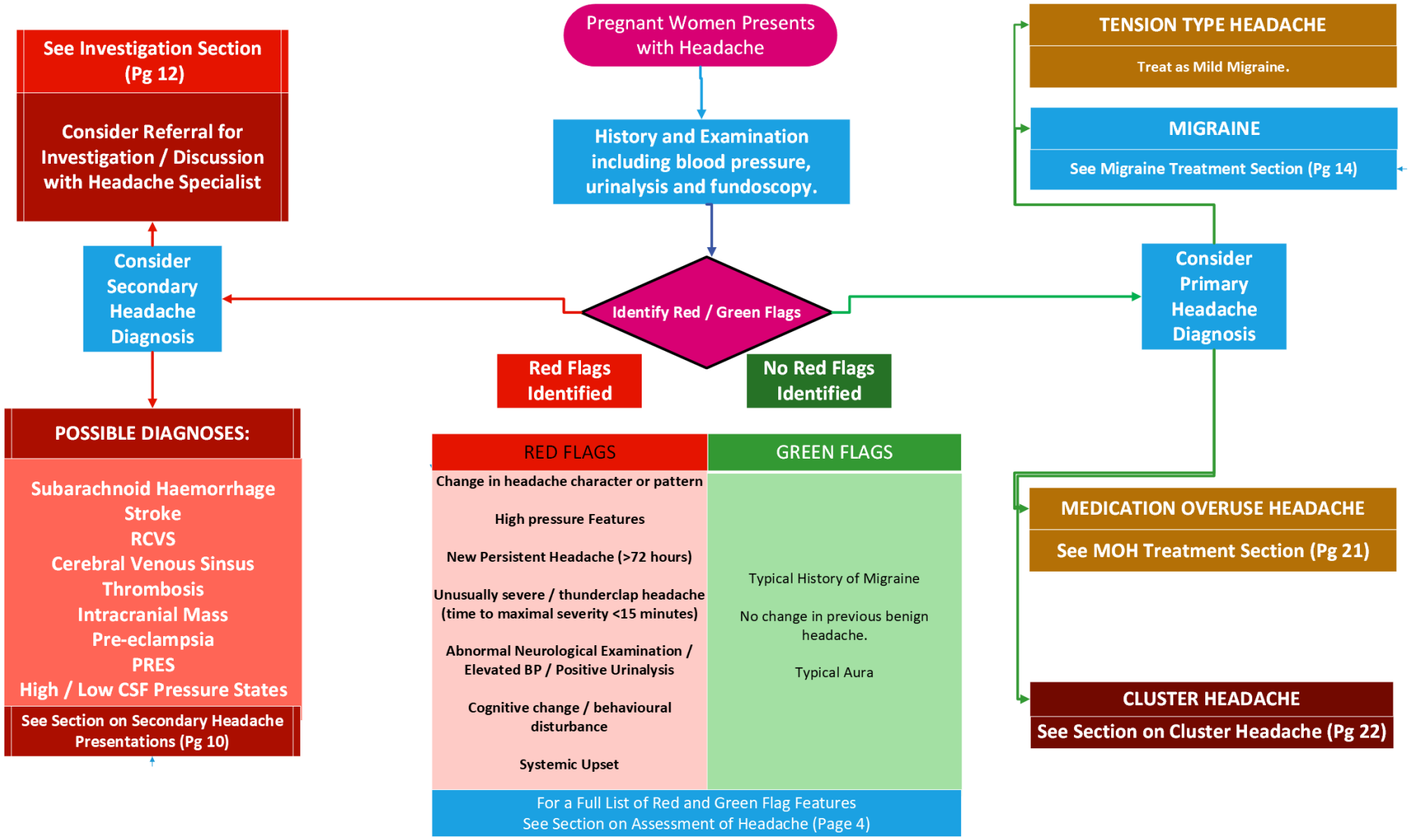
What to do:

1. Neurology referral

Flowchart of Assessment (V1)



Flowchart of Assessment (V2)



Acute Presentations of Headache

Women who present with red flag features should be referred for further assessment and investigation. Although primary headache disorders are most common in pregnancy, more sinister secondary headache requires exclusion.

Red Flag Features of Headache

Red Flag Features of Headache
Change in headache character or pattern
Headaches with characteristics of intracranial hypertension (worse on lying flat, major worsening on coughing/straining)
New Persistent Headache (>72 hours)
Associated with elevated BP
Unusually severe / thunderclap headache (maximal severity within minutes)
Abnormal Neurological Examination
Headaches associated with systemic disorders (esp. Hx thrombophilia /clotting)
Headaches brought on with physical activity
Cognitive change/behavioural disturbance
Significant recent history of hyper-emesis (dehydration)

- **Thunderclap onset** (maximum severity within minutes of onset) should be assessed for possible intracranial bleeding or venous thrombosis which usually requires CT imaging. Lumbar puncture may be required, depending on history and timing of CT.

- **Headache which is unusually severe or unremitting** despite treatment may require imaging to exclude causes such as venous thrombosis. Migraine is a common cause of severe persistent headache but secondary headache should be excluded.

- **"Headache +"** presentations have a range of causes which require exclusion.

CLINICAL FEATURES	DIAGNOSES TO CONSIDER (Glossary of abbreviations below)
Thunderclap Onset (Reaching maximum severity within minutes of onset)	SAH Ischaemic Stroke CVST Pre-eclampsia/Eclampsia RCVS PRES Arterial Dissection Pituitary Apoplexy
Chronic, Progressive, Refractory Headache	Migraine (Primary Headache) CVST Tumour
Headache + visual change or obscurations**	Migraine Aura (Primary Headache) Stroke Pre-eclampsia IIH
Headache + with focal neurological signs or symptoms	Stroke CVST PRES Pre-eclampsia Arterial Dissection
Headache + Hypertension	Pre-eclampsia/Eclampsia PRES RCVS
Headache + Pressure Symptoms (Worsening with valsalva) + Papilloedema	CVST IIH Tumour
Orthostatic headache (i.e. relieved by lying flat)	Intracranial Hypotension / Post Dural Puncture Headache
Notes: **** Visual Obscurations** are unilateral or bilateral short lasting (less than a minute usually) disturbances of vision associated with Valsalva manoeuvres or change in posture.	
CVST: Cerebral Venous Sinus Thrombosis **SAH:** Subarachnoid Haemorrhage **RCVS:** Reversible Cerebral Vasoconstriction Syndrome **PRES:** Posterior Reversible Encephalopathy Syndrome **IIH:** Idiopathic Intracranial Hypertension.	
See appendix for more details on above diagnoses	

- Where **migraine** is suspected, treatment with simple analgesia (e.g. paracetamol or ibuprofen - see section on Acute Treatment of Migraine) or sumatriptan can be considered (intranasal/subcutaneous sumatriptan if no response to oral).

- If pre-eclampsia/eclampsia suspected, urgent referral to Maternity Services.
- Other causes of secondary headache should be referred to neurology.

Safety of Investigations for Headache in Pregnancy

Safety of Investigations for Headache in Pregnancy		
CT Brain (with or without contrast)	☑	The risk of neonatal thyroid dysfunction with iodinated contrast not proven in vivo. Suitable abdominal protection advised.
Non-Contrast MRI	☑	Safe.
Lumbar Puncture	☑	Safe where brain imaging allows.
Note: Women in the puerperium should be investigated as for the non-pregnant population.		

- For women in the third trimester, it is imperative to exclude pre-eclampsia as a cause for new unremitting headache. If red flags are identified in the history or examination, women should be referred urgently to obstetrics for further assessment.

Acute treatment of Migraine in pregnancy and lactation

Acute Treatments for Migraine During Pregnancy					
		Pregnancy		Lactation	
Painkillers	Paracetamol	✓	Safe	✓	Safe
	Aspirin	✗	Avoid Treatment doses.	✗	Avoid in breast feeding.
	Ibuprofen	✓	Avoid from 28 weeks	✓	Safe in Lactation
	Codeine	✓	Safe: not recommended first line	✗	Potential adverse events in the infant.
Anti-Emetic	Metoclopramide Prochlorperazine	✓	Used widely	✓	Used widely
Triptans	Sumatriptan	✓	Safe	✓	Safe
	Other Triptans	✗	Insufficient safety data	✗	Insufficient safety data
For all acute treatments, use should be limited to no more than 2 days per week to prevent development of Medication Overuse Headache.					
Resources	BUMPS – Best Use of Medicines in Pregnancy NIH Drugs and Lactation Database (LactMed)				

- Paracetamol is commonly used in all stages of pregnancy and considered safe for occasional use. Regular paracetamol (regular use for several weeks or longer) use has been weakly associated with neurodevelopmental abnormalities and will contribute to medication overuse headache. Paracetamol is excreted in low quantities in breast milk but considered safe.

- Aspirin at doses above 150mg should be avoided both in pregnancy and lactation due to the risk to the infant. Up to 150mg per day is safe.

- Ibuprofen is safe in the first and second trimester but associated with premature closure of the ductus arteriosus in later stages of pregnancy. There is also evidence of adverse effects on labour. Ibuprofen is excreted into breast milk but has not been associated with a high risk of complications and is considered safe.

- Codeine is safe in pregnancy but should not be used first line due to adverse effects on the mother. Due to the risk of dependency/opioid effects in the infant, codeine use is not recommended in lactation. Chronic use can lead to medication overuse headache. Small quantities of codeine are safe in lactation however regular use may cause harm to the newborn.

- Anti-emetic medications are safe in pregnancy.

- A meta-analysis of triptans at all stages of pregnancy failed to show a link between triptan use and major congenital malformation or prematurity. Sumatriptan may be considered in any stage of pregnancy where treatment with paracetamol or ibuprofen fails or is contra-indicated.

Preventative Therapies for Migraine in Pregnancy and Lactation

Lifestyle Modification

Offer lifestyle advice for migraine prevention before initiating drug therapy. This should include information on avoiding migraine triggers and using lifestyle factors such as exercise and routine to help reduce frequency of migraine attacks.

Advice on Avoiding Triggers - Migraine attack triggers - The Migraine Trust
Advice on Exercise - Exercise - The Migraine Trust

Drug Therapies

Offer a discussion regarding the risks and benefits of treatments to the mother before starting therapy. While most migraine preventative therapies can be reduced or stopped, some women may wish to carry on with treatment owing to the severity and/or frequency of their attacks. Risks and benefits of the therapies should be discussed, and the patient allowed to come to an informed decision where no absolute contraindication exists. Valproate is strictly contraindicated in pregnancy.

Preventative Therapies for Migraine During Pregnancy

Most migraine improves during after the first trimester and therefore preventative therapies should be avoided where possible. Use lowest effective dose and withdraw in the last weeks of pregnancy
Lifestyle factors should be addressed prior to starting medication.

	Max. Dose	Pregnancy			Lactation
Amitriptyline	50mg/day	☑	Widely used	☒	Avoid in Premature/New-born
Propranolol	20mg BD	☑	Risk of foetal bradycardia and hypoglycaemia in 3rd trimester.	☑	Probably Safe
Topiramate	AVOID	☒	Risk of foetal malformation	☒	Limited data, potential toxicity
Candesartan	AVOID	☒	Risk of harm	☒	Insufficient data

Non- standard therapies that may be considered in pregnancy.					
Low Dose Aspirin	75-150mg / day	☑	Safe	☑	Use with caution: chance of excretion
GON Blocks (methylprednisolone)		☑	Avoid steroids in first trimester: otherwise considered safe. Can be used as lidocaine alone.	☑	Limited data; considered safe
Magnesium Supplements	200mg/day	☑	No evidence of harm at low doses	☑	Considered safe at low doses.
Resources		BUMPS – Best Use of Medicines in Pregnancy NIH Drugs and Lactation Database (LactMed)			

- Medication overuse, excessive caffeine intake, psychiatric co-morbidity, pain, sleep disturbance and nausea should be adequately addressed prior to starting preventative therapies. Relaxation strategies and regular exercise should be explored.

- Amitriptyline is widely used in pregnancy and is considered safe although there has been occasional reports of amitriptyline and congenital malformations, this is not reproduced in the bulk of available evidence.

- Propranolol is used in pregnancy. Propranolol may cause intrauterine growth restriction (IUGR). Use in the third trimester has been associated with foetal bradycardia and neonatal +hypoglycaemia. Small amounts are excreted into breast milk but no adverse effects have been reported.

- Exposure to topiramate has an increased risk of oral cleft development (OR 6.2, 95% CI 3.13 to 12.51). It should not be used by women who are breast feeding as it can be present in breast milk.

- Candesartan may cause complications in pregnancy (teratogenicity, oligohydramnios, IUGR) and should be avoided. No reports describing the use of candesartan in breastfeeding have been found but excretion into human breast milk is expected. There is insufficient data to conclude safety in breast feeding.

- The use of methylprednisolone for Greater Occipital Nerve (GON) blocks is usually considered safe however available data are limited. Steroid use early in pregnancy may cause developmental abnormalities but the risk with local administration is less clear. The risk versus benefit of treatment should be assessed and discussed with each patient prior to administration. Magnesium supplementation would appear compatible with breastfeeding, although if taken during pregnancy it might delay the onset of lactation. No special precautions are advised.

- Sodium Valproate is contra-indicated in women of childbearing age due the increased risk of foetal malformation and poorer cognitive outcomes of children exposed to valproate in utero. Sources of further advice on the prescription of sodium valproate in women who have the potential to become pregnant is available from the MHRA and SIGN 155.

- The following website provides guidance for healthcare professionals and patients on prescribing and dispensing valproate: www.gov.uk/government/publications/toolkit-on-the-risks-of-valproate-medicines-in-female-patients

Onward Referral for Assessment in Women with Suspected Migraine

- Women with pre-existing migraine who present with typical symptoms in pregnancy can safely be managed in primary care.

- New headaches which meet diagnostic criteria for migraine and with no red flag features can be safely managed in primary care.

- A change in aura is unlikely to represent a change in pathology.

- Women who develop atypical aura which lasts greater than 24 hours should be referred for assessment in secondary care.

- If patients present with neurological deficit/focal symptoms other than aura, other diagnosis such as stroke should be considered and excluded appropriately.

- Women who present with new red flag features or have an abnormal examination should be referred to secondary care for assessment.

- Where there are doubts about fundoscopy, urgent assessment by an optician is advised.

- Obstetric causes of headache (pre-eclampsia, eclampsia) should be excluded with a blood pressure recording and dipstick urinalysis. Refer urgently to obstetrics if indicated.

Medication Overuse Headache

Medication Overuse Headache (MOH) occurs in patients with a pre-existing primary headache disorder who overuse any form of analgesia. This is particularly common in patients with migraine who take acute treatments on more than 2-3 days per week.

MOH usually is a chronic headache phenotype, with a headache appearing on more than 15 days per month associated with frequent use of analgesics (including aspirin, paracetamol, opioids, NSAIDs, triptans).

Treatment is aimed at weaning analgesia. While improvement is often seen over a number of weeks following withdrawal, patients should be warned that headaches may worsen initially.

The Trigeminal Autonomic Cephalalgias and Trigeminal Neuralgia

Cluster Headache

Cluster headache is a rare primary headache disorder which affects men more than women and is uncommon in pregnancy. When it does occur, specialist input is recommended. Risks and benefits of the therapies should be discussed, and the patient allowed to come to an informed decision where no absolute contraindication exists.

Episodic Cluster Headache: This accounts for the majority of cluster headache. Periods of attacks (clusters) last days to months. Clusters are separated by pain free periods lasting months to years. The mainstay of treatment is acute (aimed at aborting the headache) and transitional (aimed at terminating the bout).

Chronic Cluster Headache: Persistent attacks for more than a year with no or limited remission (remission period less than 3 months).

Cluster Headache - Acute Treatments (Terminate Headache)

Pregnancy	Breastfeeding	
☑	☑	**Sumatriptan (Nasal Spray/Subcutaneous Injection)** Can be used up to 2/day in without risk of Medication Overuse Headache.
☑	☑	**Oxygen therapy** High flow oxygen therapy through a non rebreathe mask (needs hospital initiation). Domiciliary Oxygen therapy is contraindicated smokers / households in which people smoke.

Cluster Headache – Transitional Treatments (Terminate the cluster)

Pregnancy	Breastfeeding	
☑	☑	**Prednisolone** Risk of cleft palate in first trimester. Usually used as a steroid taper. 60mg for 7 days followed by a reducing course (reduce by 10mg per day.
☑	☑	**GON Blocks** (Depomedrone and Lidocaine/Lidocaine alone) Avoid corticosteroid use in the first trimester. Useful to break cycle of cluster headaches.
☑	☑	**Weak Opioids** Can be considered where other options are ineffective.

Cluster Headache - Preventative Therapies

Pregnancy	Breast Feeding	
☑	☑	**Verapamil – CONSULT SPECIALIST** Where preventative therapies are needed (continued only on specialist advice), Verapamil in the lowest effective dose remains first choice.
☒	☒	**Lithium** Known Teratogenicity
☒	☒	**Topiramate** Known Teratogenicity

Verapamil use in pregnancy appears to be low risk with no evidence of foetal harm. Verapamil is excreted into breast milk and therefore may theoretically have effects in the infant but was rated as compatible by the American Academy of Paediatrics.

Consider screening for Obstructive Sleep Apnoea. An association has been noted between cluster headache and sleep apnoea. It is advisable to screen patients for sleep apnoea by performing an Epworth Sleepiness Scale or other assessment tool.

Other Trigeminal Autonomic Cephalalgias

Even more rare than cluster, includes Paroxysmal Hemicrania (PH), Hemicrania Continua (HC), Short-lasting Unilateral Neuralgiform Headache with Conjunctival Injection and Tearing/Cranial Autonomic Symptoms (SUNCT/SUNA).

PH – Attacks are so short that acute treatment has no benefit. The mainstay of treatment in the non-pregnant population is indometacin. Greater occipital nerve blocks may be of use in prevention and treatment.

HC – Like side-locked chronic migraine. The mainstay of treatment in the non-pregnant population is indometacin. Greater occipital nerve blocks may be of use in prevention and treatment. Melatonin may be considered but there is limited safety data in pregnancy to support routine use. Topiramate should be avoided.

SUNCT/SUNA – mainstay of treatment is lamotrigine.

Risks and benefits of the therapies should be discussed, and the patient allowed to come to an informed decision where no absolute contraindication exists.

Pregnancy	Breastfeeding	
☑	☑	**Indometacin** Used for PH / HC. Not recommended in third trimester. Prior to third trimester, use lowest dose possible under direction of specialist if no alternatives available. Detectable in breast milk but no harm reported.
☑	☑	**GON Blocks** **(Depomedrone and Lidocaine / Lidocaine Alone)** On Specialist Advice – see under Cluster Headache. Avoid corticosteroid containing preparations in the first trimester.
☑	☑	**Weak Opioids** Can be considered where other options are ineffective.
☒	☑	**Melatonin – CONSULT SPECIALIST** Limited data in pregnancy / breastfeeding. Animal studies suggest moderate risk in pregnancy.
☑	☑	**Verapamil – CONSULT SPECIALIST** Where preventative therapies are needed (continued only on specialist advice), Verapamil in the lowest effective dose remains first choice.
☒	☒	**Topiramate** Known Teratogenicity
☑	☑	**Lamotrigine** Considered Safe at doses below 325mg /day. Dose may need to be increased during pregnancy but should then be reduced to pre-pregnancy levels 2-3 weeks after delivery.

Trigeminal Neuralgia

Trigeminal Neuralgia is rare in pregnant women; specialist assessment should be sought. Lamotrigine is a safe treatment in pregnancy but has a slow titration.

Risks and benefits of the therapies should be discussed and the patient allowed to come to an informed decision where no absolute contraindication exists.

Pregnancy	Breast Feeding	
☒	☒	**Carbamazepine** Known teratogenicity in pregnancy. Compatible with breastfeeding at low doses. Prescription by specialist advice only.
☒	☒	**Oxcarbazepine** Known teratogenicity in pregnancy. Limited data for breastfeeding. Prescription by specialist advice only.
☑	☑	**Lamotrigine** Considered Safe at doses below 325mg /day. Dose may need to be increased during pregnancy but should then be reduced to pre-pregnancy levels 2-3 weeks after delivery.

Idiopathic Intracranial Hypertension (IIH)

Pregnancy	Breast Feeding	
☒	☒	**Acetazolamide** Not recommended in pregnancy by manufacturer. Perinatal exposure in rodents has shown teratogenic effects.
☒	☒	**Topiramate** Known Teratogenicity

Drug treatment for IIH has a limited evidence base. Medications which are routinely used for their pressure lowering effects have been shown to be harmful in animal studies and routine use is not recommended.

Pregnant women with IIH should be managed by specialists. No specific mode of delivery is suggested based on a previous diagnosis of IIH.

APPENDIX

Secondary Headaches:

Subarachnoid Haemorrhage (SAH)

Subarachnoid haemorrhage usually presents as an acute severe headache of thunderclap onset (time from onset to maximum severity less than 15 minutes) and may be aneurysmal or non-aneurysmal. Investigation usually involves non-contrast CT head. High quality CT scan performed within 6 hours of headache onset has high sensitivity for detection of SAH. Cortical SAH should prompt venous imaging to exclude cerebral venous sinus thrombosis. Where SAH is confirmed, the presence cerebral aneurysm should be investigated and excluded.

Stroke

Stroke may also present with sudden onset headache, more commonly involving the posterior circulation. The presence of focal neurological deficit should prompt investigation for a structural cause of headache. Where stroke is identified, early involvement of stroke or neurology teams is required.

Cerebral Venous Sinus Thrombosis (CVST)

Due to the increased risk of blood clotting, pregnant women are at increased risk of CVST. This may present with headache: this can be of thunderclap onset but may also present with a progressive headache refractory to treatment. Patients may have signs of raised pressure (papilloedema, strong Valsalva features) or present with focal deficits or seizures. Additional risk factors in pregnancy include dehydration caused by hyperemesis. Suspicion of CVST should prompt investigation with CT or MR venography. Prompt referral to neurology is recommended where CVST is suspected/identified.

Pre-eclampsia/Eclampsia

Pre-eclampsia / Eclampsia occurs in the latter stages of pregnancy and is associated with hypertension and proteinuria. Women who present with headache should have their blood pressure measured and urinalysis performed. A raised systolic blood pressure (sustained >160 mmHg) or proteinuria should prompt assessment by obstetricians.

Reversible Cerebral Vasoconstriction Syndrome (RCVS)

Reversible Cerebral Vasoconstriction Syndrome (RCVS) may cause recurrent thunderclap headache. It is more common in women and 10% of cases present post-partum. It may be triggered by drugs (including cough suppressant medication and vasoactive drugs) however other physiological and hormonal triggers exist. Symptomatic treatment may be initiated with nimodipine (seek specialist advice). Patients may require monitoring in a level 2/3 environment: management will require MDT input from neurology, obstetrics and critical care.

Posterior Reversible Encephalopathy Syndrome (PRES)

Posterior Reversible Encephalopathy Syndrome (PRES) is thought to result from the failure of the posterior cerebral circulation to autoregulate. In pregnancy, PRES may result as a complication of pre-eclampsia but may arise from other metabolic triggers or systemic upset. The syndrome is characterised by headache, change in mental state, visual symptoms and seizures. Treatment is supportive: blood pressure should be lowered to normal target and normal homeostasis preserved. Precipitating medicines, where present, should be avoided. Specialist neurology input, with appropriate critical care support, is recommended.

Arterial Dissection

Arterial Dissection (extra or intracranial) should be suspected in patients presenting with new onset thunderclap headache and focal neurological deficits. Risk factors include manual manipulation of the neck or connective tissue disease. Dissection of the carotid arteries may present with anterior circulation stroke, Horner's syndrome or amaurosis fugax. Vertebral artery dissection commonly presents with neck pain and symptoms localising to the posterior cerebral circulation (imbalance, diplopia, hearing change, cranial nerve palsies). Where suspected, angiography should be performed. Management is usually directed by neurologists / stroke physicians.

Pituitary Apoplexy

Pituitary Apoplexy is caused by haemorrhage into the pituitary gland and is more common in patients with underlying abnormal pituitary anatomy (such as an adenoma). This is a rare but life threatening condition that usually presents with a thunderclap headache, associated with visual changes such as a field defect and/or change in mental state. Diagnosis should prompt replacement of corticosteroids and assessment of fluid and electrolyte balance. Early involvement of endocrine specialists is recommended.

Idiopathic Intracranial Hypertension (IIH)

Idiopathic Intracranial Hypertension is more common in young women and may complicate pregnancy either through a *de novo* presentation (usually in the first half of pregnancy) or deterioration / re-emergence of previous IIH. While the pathophysiology of IIH is poorly understood, maternal obesity increases the risk of IIH. Recurrence of IIH usually manifests around the point of maximal weight gain (week 20). IIH may present with migraine headache which becomes chronic. Associated symptoms include pulsatile tinnitus, visual obscuration, and prominent Valsalva effects. Prompt assessment of visual fundi and visual fields is required. Where raised intracranial pressure is suspected and mass lesions / CVST excluded, lumbar puncture should be performed to measure the CSF opening pressure. Opening pressure >30cm CSF is considered abnormal. The main risk of IIH is visual loss: visual outcomes in IIH are not influenced by pregnancy. MDT management between obstetrics, neurology and ophthalmology / neuro-ophthalmology is recommended.

Intracranial Mass Lesions

Intracranial tumours are rare in women of childbearing age and headache is an uncommon presenting symptom of tumours which are more likely to cause focal neurological deficits or seizures. Some tumours are hormone responsive and may grow in pregnancy e.g. meningiomas. These may exert a mass effect and subsequently present with headache.

Multi-disciplinary management between neurology, oncology, neurosurgery and obstetrics is recommended.

Low CSF Pressure

Low Pressure headache may occur after spinal anaesthesia. These are characterised by reproducible postural headache which is worse on sitting / standing and relieved on lying flat. Patients may also present after being upright for an extended period of time i.e. the 'second half of day headache' which is relieved lying flat. Treatment is conservative (bedrest and hydration) but epidural blood patches may be required. Thromboprophylaxis should be considered for any women undertaking bed rest. Spontaneous intracranial hypotension is rare but presents with a similar syndrome in patients who have not undergone dural puncture.

Membership of the Scottish Government's Best Start Obstetric Neurology Group

Name	Profession	Health Board/ Organisation
Richard Davenport	Consultant Neurologist	NHS Lothian
James McDonald	Consultant Neurologist	NHS Fife
Alastair Campbell	Consultant Obstetrician	NHS Lothian
Callum Duncan	Consultant Neurologist	NHS Grampian
Chris Derry	Consultant Neurologist	NHS Lothian
Corinne Love	Consultant Obstetrician	NHS Lothian / SG
Rosamunde Burns	Consultant Anaesthetist	NHS Lothian
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Eleanor Arthur	Epilepsy Clinical Nurse Specialist	NHS Greater Glasgow & Clyde
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