

CMEARTICLE

The adult patient with headache

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Ms Lim, a 46-year-old music teacher, visited your clinic complaining about a headache that had affected her ability to teach. She told you that she has had a long history of migraine since her 30s. Typically, she had pulsatile, unilateral severe headaches which were associated with photophobia, phonophobia, nausea and vomiting. She used to have these headaches once every one to two months, but they had occurred on most days over the last three to four months, with each episode lasting about half a day. Self-medicating with diclofenac and Panadol almost daily for the past three months had mostly relieved the symptoms. Her neurological examination was normal and a fundoscopic examination did not reveal any papilloedema. The systemic review was unremarkable. She asked you for stronger analgesic medication, as her headaches were becoming unbearable.

WHAT IS HEADACHE?

Headache is the symptom of pain anywhere in the region of the head or neck.

HOW RELEVANT IS THIS TO MY PRACTICE?

Headache is a common presentation in primary care. It affects patients' work, relationships and social activities, and exacts a significant social and financial cost.⁽¹⁻⁶⁾ While headaches make up 5% of the global disease burden in terms of disability,⁽⁷⁾ the Singapore lifetime prevalence of headache has been reported to be 82.7%, and that of migraine 9.3%.⁽⁸⁾ In addition, it appears that medication overuse headache is under-recognised and preventive medication for migraine is underprescribed locally.⁽⁹⁾ In this article, we present a practical approach to the management of headache for adults in primary care, with a focus on the management of tension-type headache (TTH), migraine and headache from medication overuse.

WHAT CAN I DO IN MY PRACTICE?**Exclude secondary causes**

The physician should first exclude secondary headache in the patient who presents with a headache. A coexisting pathology causing the headache accounts for approximately 10% of all causes of headache.⁽¹⁰⁾ A careful history and focused neurologic examination (Fig. 1) is usually adequate to exclude secondary headache. The SNOOP4 mnemonic (Table I) may be used to elicit red flags that are mostly secondary causes of headache. These would necessitate referral to either the emergency department or a specialist, depending on the sense of urgency and index of suspicion.

Exclude local causes

Local causes of headache should be considered, including toothache, sinus, eye, ear or neck disorders; attention should be paid to the neuralgias, such as trigeminal neuralgia in the patient with hemifacial pain. If these are present, the patient should be treated and/or referred accordingly.

Categorise the primary headache disorder

Having ensured the absence of red flags and local causes, consider a primary headache disorder as the likely diagnosis. The type of primary headache can be categorised based on phenotype. This may be determined by attack frequency, duration, concomitant symptoms and whether cranial autonomic symptoms are present (Table II). The third edition of the International Classification of Headache Disorders (ICHD-3) can be a helpful reference (Table III).⁽¹¹⁾

Broadly speaking, the frequency of headache attacks may be described as episodic (< 5 days/month), chronic (≥ 15 days/month) or daily. In addition, the different types of headaches vary in duration. TTH may last from 30 minutes to seven days, a migraine headache usually lasts 4–72 hours, and a cluster headache typically lasts 15–180 minutes.

The character of the headache aids in further differentiation. TTH is usually bilateral, has a pressing quality, is not typically aggravated by physical activity, and is mild to moderate in intensity. It predominantly affects females. On the other hand, migraine is typically unilateral, pulsatile or throbbing. It is sensitive to movement, may be associated with photophobia, nausea and vomiting, and is of moderate to severe intensity. Up to one-third of migraines may be associated with a visual or sensory aura. Most patients have a positive family history. Cluster headache, also known as 'suicide headache',

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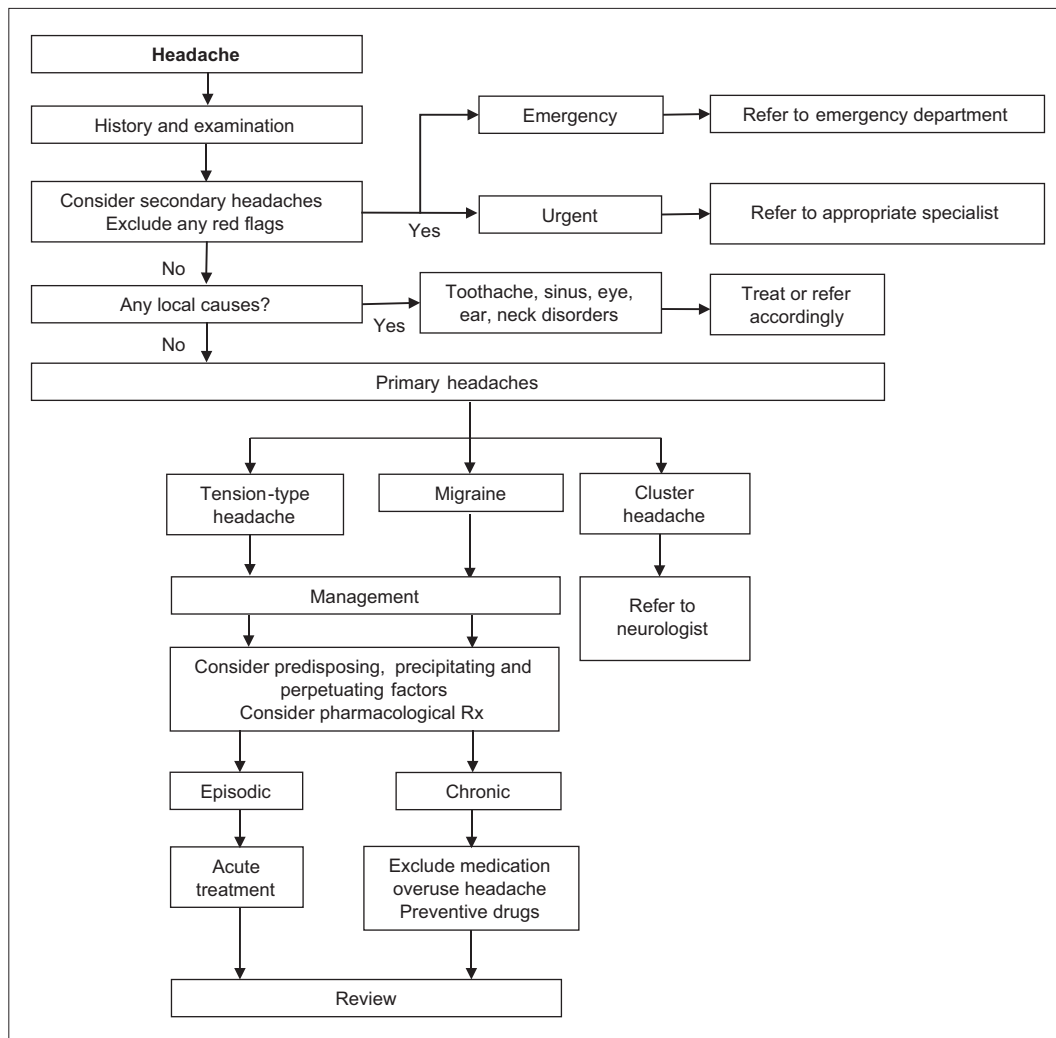


Fig. 1 Flowchart shows the stepwise diagnosis and management of headaches.

Table I. The SNOOP4 mnemonic for excluding red flags (secondary causes of headache).

Clinical feature(s)	Need to exclude
S Systemic symptoms: fever, chills, myalgia, weight loss	Metastasis, infection
N Neurological symptoms or deficits	Stroke, mass lesion, encephalitis
O Older age at onset (> 50 years)	Temporal arteritis, glaucoma, mass lesion
O Onset, thunderclap headache onset	Bleed
P Papilloedema	Raised intracranial pressure
P Positional	Intracranial hypotension
P Precipitated by Valsalva manoeuvre or exertion	Raised intracranial pressure
P Progressive headache or substantial pattern change	Any secondary cause

is strictly unilateral and usually occurs around the eye. It is associated with prominent cranial autonomic symptoms such as hyperlacrimation, conjunctival injection, rhinorrhoea, nasal congestion, ptosis and changes in pupillary size. Circadian

rhythmicity is the hallmark of a cluster headache: typically, periods of relatively short-lived (clusters of 15–180 minutes) but intensely painful attacks occur between periods of remission. Males are predominantly affected.

ID Migraine is a three-item (disabling headache, photophobia and/or vomiting) tool that may be used to screen for migraine. The presence of two out of three items positively predicts migraine by 93% (Box 1).⁽¹²⁾ Similarly, the presence of four out of five criteria in the POUND mnemonic (Box 2) gives a likelihood ratio of 24 for possible migraine.⁽¹³⁾ Both POUND and ID Migraine are user-friendly screening tools that encompass the major criteria in the ICHD-3 diagnostic criteria for migraine (Table III).

Management of primary headache

The majority of patients with primary headache may be safely managed in the outpatient setting. In managing primary headache, look for predisposing, precipitating and/or perpetuating factors in the patient’s history. Inadequate hydration, irregular meals, irregular sleep, excessive alcohol, excessive caffeine and/or lack of exercise may all act as predisposing factors. Precipitating and perpetuating factors include stress, adjustment reactions, anxiety and depressive episodes.⁽¹⁴⁾ Specific factors such as

Table II. Primary headache disorders.

Headache features	Tension-type headache	Migraine	Cluster headache
Pain location	Bilateral	Unilateral or bilateral	Unilateral (around the eye or along the face)
Pain quality	Pressing/tightening	Pulsating/throbbing	Variable
Pain intensity	Mild to moderate	Moderate to severe	Severe to very severe
Effect on activities	Not aggravated by routine activities of daily living	Aggravated by or causes avoidance of routine activities of daily living	Restlessness or agitation
Other symptoms	None	Nausea or vomiting, unusual sensitivity to light or sight, aura (visual, sensory, speech disturbance)	Cranial autonomic symptoms in same side as headache (red, watery or swollen eye, nasal congestion/runny nose, sweating)
Duration	30 minutes to 7 days	4–72 hours	15–180 minutes

Table III. ICHD-3 diagnostic criteria for tension-type headaches, migraines and cluster headaches.

No.	Tension-type headache	Migraine	Cluster headache
A	Episodic: ≥ 10 episodes occurring on < 1 day/month on average Chronic: ≥ 15 days/month for > 3 months on average	≥ 5 attacks fulfilling criteria B–D	≥ 5 attacks fulfilling criteria B–D
B	Lasting from 30 minutes to 7 days	Headache attacks lasting 4–72 hours (untreated or fully treated)	Severe or very severe unilateral orbital, supraorbital and/or temporal pain lasting 15–180 minutes (when untreated)
C	≥ 2 of the following characteristics: 1. Bilateral location 2. Pressing or tightening (non-pulsating) quality 3. Mild or moderate intensity 4. Not aggravated by routine physical activity such as walking or climbing stairs	≥ 2 of the following characteristics: 1. Unilateral location (one-third can be bilateral) 2. Pulsating quality 3. Moderate or severe pain intensity 4. Aggravated by or causes avoidance of routine physical activity	Either or both of the following: 1. ≥ 1 of the following symptoms or signs, ipsilateral to the headache: • conjunctival injection and/or lacrimation • nasal congestion and/or rhinorrhoea • eyelid oedema • forehead and facial sweating • miosis and/or ptosis 2. Sense of restlessness or agitation
D	Both of the following: 1. No nausea or vomiting 2. No more than one of photophobia or phonophobia	≥ 1 of the following during headaches: 1. Nausea and/or vomiting 2. Photophobia and phonophobia	Occurs with a frequency of between one every other day and 8 per day
E	Not attributed to another disorder	Not attributed to another disorder	Not better accounted for by another ICHD-3 diagnosis

ICHD-3: International Classification of Headache Disorders, 3rd edition

Box 1. ID Migraine (1 point for each symptom).

- Disabling headache
- Photophobia
- Vomiting

Two out of three symptoms being present has a positive predictive value of 93%.

Box 2. POUND mnemonic (1 point for each symptom).

- P** Pulsating
O Duration of 4–72 hours
U Unilateral
N Nausea
D Disabling

Likelihood ratio for definite or possible migraine:

- 4 points: 24
- 3 points: 3.5
- < 2 points: 0.41

sensory stimuli, menses, medications (e.g. oral contraceptives, vasodilators), and foods (e.g. wine, cheese, salty food) may precipitate and trigger migraine. Prior rapport and familiarity with a patient's pattern of health and illness, borne of a long-term doctor-patient relationship, may allow the primary care physician to readily recognise any underlying psychosocial issues that may present as a change in this pattern.⁽¹⁵⁾ The headache diary is useful for the patient with chronic severe headache. Trigger avoidance, reassurance and patient education are important for successful management. All modifiable factors should be addressed, and medications prescribed as required. Patients who fail to respond to treatment need a review to revisit the diagnosis and/or to address any medication non-adherence or overuse.

Treatment of tension-type headache

For episodic TTH, simple analgesics such as paracetamol and nonsteroidal anti-inflammatory drugs (NSAIDs) generally suffice

(Table IV). The use of opioids such as codeine should be carefully considered in view of possible adverse effects such as dependency and medication overuse headache.

Because headache is a common somatoform symptom,^(16,17) consider the possibility of underlying mental health issues in the patient who presents with headache,^(18,19) especially if the headaches are severe and chronic. When indicated, preventive treatment with tricyclic antidepressants^(20,21) or beta-blockers⁽²²⁾ may be considered (Table IV). Start preventers at a low dose and

escalate until adequate control is achieved. Patients should be counselled that preventive medications need time to take effect, and that treatment need not be lifelong.

Treatment of migraine

Simple analgesics may suffice as first-line treatment for acute migraine. Antiemetics may be considered if there is concomitant nausea and vomiting. Second-line treatments include triptans (serotonin 5-hydroxytryptamine type 1B/1D

Table IV. Medication references.

Acute treatment					
Medication	Usual dose/ formulation	Maximum daily dose	Avoid/use with caution	May be preferred	Adverse effects
Acetaminophen	1,000 mg	1,000 mg TDS/QDS, max 4,000 mg	Liver dysfunction	Mild to moderate TTH, migraine, considered safe in pregnancy	–
NSAIDs					
<ul style="list-style-type: none"> • Avoid in third trimester of pregnancy • Consider gastroprotection 					
Ibuprofen	400 mg	400–600 mg, up to QDS	Asthma or peptic ulcer, hypersensitivity to salicylic acid or renal disease	Mild to moderate TTH, migraine	GI disturbances, haemorrhage, hypersensitivity reactions, drowsiness
Naproxen sodium	550 mg	550 mg BD			
Diclofenac sodium	50 mg	50 mg BD–TDS			
Mefenamic acid	250 mg	500 mg initially, then 250 mg up to QDS		Menstrual migraine	
Preventive treatment					
Triptans					
<ul style="list-style-type: none"> • Safety in pregnancy has not been established, although there is evidence that sumatriptan is relatively safe • Should not be combined with ergotamines or other triptans 					
Sumatriptan	50 mg and 100 mg daily	200 mg daily	Cerebrovascular or cardiovascular disease or hypertension	Moderate to severe migraine when simple analgesics have failed	Chest discomfort, nausea, distal paraesthesias, drowsiness or fatigue, flushing or sensation of warmth on face, neck or jaw
Antidepressants					
Amitriptyline	10 mg ON	10–100 mg ON	Heart block, significant cardiovascular disease, urinary retention, uncontrolled glaucoma (particularly angle closure type), prostate disease, mania	Insomnia, depression, anxiety, neuropathic pain, first-line preventive therapy for TTH and migraine	Weight gain, drowsiness, confusion, anticholinergic effects (dry mouth, constipation), lower seizure threshold, sexual dysfunction, cardiovascular effects
Beta-blockers					
Propranolol	20 mg BD	40–120 mg BD	Asthma, heart failure, peripheral vascular disease, depression	First-line preventive therapy for migraines	Asthma, heart failure, peripheral vascular disease, depression

(Contd...)

Table IV. (Contd...)

Acute treatment					
Medication	Usual dose/ formulation	Maximum daily dose	Avoid/use with caution	May be preferred	Adverse effects
Antiepileptics					
Topiramate	25 mg daily, to increase by 25 mg each week	50 mg to 200 mg daily (divided BD)	Kidney stones, kidney failure, angle closure glaucoma Use with caution in depression, avoid in pregnancy, use caution if combined with valproic acid (risk of encephalopathy)	Epilepsy, obesity, mania, anxiety, essential tremor, alcohol dependence, second-line preventive therapy for migraines	GI (nausea, anorexia), renal calculi, paraesthesias, acute glaucoma, central nervous system-related (dizziness, tremor, sedation, cognitive impairment, depression), weight loss, metabolic acidosis

BD: twice daily; GI: gastrointestinal; NSAIDs: nonsteroidal anti-inflammatory drugs; ON: every night; QDS: four times a day; TDS: three times a day; TTH: tension-type headache

receptor agonists) and ergotamine derivatives (Table IV).⁽²³⁾ The combination of triptans and NSAIDs may be superior to either drug alone.⁽²⁴⁾ If symptoms are recurrent, search for underlying precipitating factors and/or psychiatric conditions. Preventive therapy is indicated if the migraine attacks are: (a) recurrent (> 3 days/month) and cause considerable disability despite optimal acute drug treatment; (b) recurrent with prolonged aura and/or hemiplegic migraine; (c) frequent and require medication usage at levels that risk bringing on medication overuse headache; and (d) recurrent and where acute treatment is contraindicated.

Preventive treatment options include beta-blockers, antidepressants and antiepileptics.⁽²⁵⁾ A 50% reduction of the episodic frequency of headache over 6–8 weeks is considered a reasonable treatment target. The long-term aims of preventive treatment are to reduce reliance on acute pharmacological treatment and to minimise the risk of chronic headache setting in. The decision to commence preventive therapy is highly individualised and should be based on the duration and severity of symptoms experienced by the patient, rather than solely on whether the disorder is episodic or chronic. When jointly agreed upon by both doctor and patient, preventive treatment should be initiated at a low dose and increased every 2–3 weeks until effective or dose-limiting side effects occur. Gradual withdrawal may be considered after 6–12 months of successful preventive therapy.

Treatment of medication overuse headache

Medication overuse headache is defined as a headache that arises from regular medication overuse of three months or more for a pre-existing headache (Box 3). NSAID and paracetamol usage of ≥ 15 days per month, and triptan and/or opioid usage ≥ 10 days per month is considered overuse.

Box 3. ICHD-3 diagnostic criteria for medication overuse headache.

- A. Headache occurring ≥ 15 days/month in a patient with a pre-existing headache disorder
- B. Regular overuse (> 3 mth) of one or more drugs that can be taken for acute and/or symptomatic treatment of headache
- C. Not attributed to another disorder

Most patients with medication overuse headache have an underlying migraine or TTH that is masked by the presence of medication overuse. When suspected, avoid the use of preventive medication: they are generally ineffective and perpetuate medicine overprescription. Medication overuse headache requires deprescription of the overused medications, which for some patients may be achieved only with inpatient care. Evidence shows that for the majority of patients with medication overuse headache, responsiveness to preventive treatment improves after discontinuation of the overused medication.⁽²⁶⁾ Successful treatment requires careful management of expectations, close follow-up and is dependent on a trusting doctor-patient therapeutic relationship.

WHEN SHOULD I REFER TO A NEUROLOGIST?

A secondary headache generally requires referral to the emergency department or urgent referral to appropriate specialists (Table I). While patients with cluster headaches and daily headaches should be referred to a neurologist, most primary headaches such as TTH and migraine may be managed at primary care. Referral to a neurologist for primary headaches should be considered when there is: (a) diagnostic uncertainty; (b) lack of response to two preventive strategies in succession; (c) frequent attendances to manage headache; (d) significant unresolved disability due to

headache; and (e) prolonged aura, especially an aura that persists after resolution of headache or that involves motor weakness.

TAKE HOME MESSAGES

1. Headache is common in primary care. Holistic and accurate diagnosis increases quality of life, lowers socioeconomic costs and minimises overprescription.
2. Differentiating secondary from primary headache is key in clinical evaluation. This requires a thorough history and physical examination, including a comprehensive neurological examination.

Ms Lim showed symptoms of medication overuse headache with episodic migraine. Due to the change in her headache, you strongly suggested a referral to neuroimaging to exclude any secondary causes. She adamantly refused, as she was not keen to visit the hospital. You explained the possible diagnosis of medication overuse headache and how it could be managed. You discovered that because of her irregular working hours, she has been snacking more often, sleeping more irregularly and having less frequent meals. She has not exercised for more than six months. You discussed how she could start having more regular sleep and mealtimes, and suggested an exercise regime of at least three times a week. In addition, she agreed to stop taking her analgesics. On subsequent review, the frequency of her headaches had drastically reduced, returning to its previous patterns. You worked with Ms Lim to formulate a treatment strategy for her migraine.

ABSTRACT Headaches are common in primary care. For safe assessment and management of the patient with headache, a focused history and physical examination are important to identify secondary headache, and find out whether an immediate referral to the emergency department or a non-emergent referral to the neurologist is warranted. The majority of patients with primary headache may be safely managed in the outpatient setting. Key steps include proper categorisation of the primary headache, attention to lifestyle and psychosocial factors, prescription of analgesics for acute pain relief, and the use of preventive medication when indicated. The patient with a cluster headache, a headache of uncertain diagnosis and/or poor response to preventive strategies or a migraine with persistent aura, or a headache with associated motor weakness, should be referred to a neurologist. Secondary headache and the diagnosis of medication overuse headache should be considered in a patient on long-term analgesics with unremitting headache.

Keywords: cluster headache, headache, migraine disorder, primary care, tension-type headache

3. Life-threatening secondary headaches should be immediately referred to the emergency department. Secondary headaches and cluster headaches should be referred to the respective specialists.
4. Chronic headaches may be treated and have good outcomes in primary care with the careful use of both preventive and acute pain treatment.
5. Medication overuse headache is underdiagnosed. Successful withdrawal of the overprescribed medication depends on the trust inherent in a collaborative and ongoing therapeutic doctor-patient relationship.

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SINGAPORE MEDICAL COUNCIL CATEGORY 3B CME PROGRAMME

(Code SMJ 201808A)

	True	False
1. Medication overuse headache is largely unrecognised in Singapore.	<input type="checkbox"/>	<input type="checkbox"/>
2. Preventive medication is often prescribed for chronic headaches in Singapore.	<input type="checkbox"/>	<input type="checkbox"/>
3. Secondary headaches are rare and account for 1% of all headaches.	<input type="checkbox"/>	<input type="checkbox"/>
4. A new-onset headache is a cause for concern in a 56-year-old woman, as it may indicate serious secondary causes.	<input type="checkbox"/>	<input type="checkbox"/>
5. The three items in ID Migraine include nausea, disabling headache and phonophobia.	<input type="checkbox"/>	<input type="checkbox"/>
6. Most migraines have an associated aura.	<input type="checkbox"/>	<input type="checkbox"/>
7. A migraine cannot be bilateral.	<input type="checkbox"/>	<input type="checkbox"/>
8. Headaches can be due to psychosocial factors.	<input type="checkbox"/>	<input type="checkbox"/>
9. Panadeine (paracetamol and codeine) is recommended for headaches.	<input type="checkbox"/>	<input type="checkbox"/>
10. If a patient does not respond to paracetamol and nonsteroidal anti-inflammatory drugs, tramadol should be prescribed.	<input type="checkbox"/>	<input type="checkbox"/>
11. Once started on preventive therapy, a patient has to be on lifelong medication.	<input type="checkbox"/>	<input type="checkbox"/>
12. Preventive therapy takes 1.5–2 months to take effect.	<input type="checkbox"/>	<input type="checkbox"/>
13. Patients with medication overuse headache often have an underlying migraine or tension-type headache.	<input type="checkbox"/>	<input type="checkbox"/>
14. Treatment of medication overuse headache involves withdrawal of the offending medications.	<input type="checkbox"/>	<input type="checkbox"/>
15. Excessive caffeine can precipitate headache.	<input type="checkbox"/>	<input type="checkbox"/>
16. Fundoscopy to look for papilloedema is not important in the examination of patient presenting with headache.	<input type="checkbox"/>	<input type="checkbox"/>
17. Patients with cluster headaches should be referred to a neurologist.	<input type="checkbox"/>	<input type="checkbox"/>
18. Patients with migraines are often unable to carry out activities of daily living during attacks.	<input type="checkbox"/>	<input type="checkbox"/>
19. Headache is not a common presentation of somatoform symptoms.	<input type="checkbox"/>	<input type="checkbox"/>
20. Headache can be managed well in primary care.	<input type="checkbox"/>	<input type="checkbox"/>

Doctor's particulars:

Name in full: _____ MCR no.: _____
 Specialty: _____ Email: _____

SUBMISSION INSTRUCTIONS:

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RESULTS:

(1) Answers will be published online in the SMJ October 2018 issue. (2) The MCR numbers of successful candidates will be posted online at the SMJ website by 12 October 2018. (3) Passing mark is 60%. No mark will be deducted for incorrect answers. (4) The SMJ editorial office will submit the list of successful candidates to the Singapore Medical Council. (5) One CME point is awarded for successful candidates. (6) SMC credits CME points according to the month of publication of the CME article (i.e. points awarded for a quiz published in the December 2017 issue will be credited for the month of December 2017, even if the deadline is in January 2018).

Deadline for submission (August 2018 SMJ 3B CME programme): 12 noon, 5 October 2018.