



Questions for this month's clinical challenge are based on articles in this issue. The style and scope of questions is in keeping with the MCQ of the College Fellowship exam. The quiz is endorsed by the RACGP Quality Assurance and Continuing Professional Development Program and has been allocated 4 CPD points per issue. Answers to this clinical challenge will be published next month, and are available immediately following successful completion online at [www.racgp.org.au/clinicalchallenge](http://www.racgp.org.au/clinicalchallenge). Check clinical challenge online for this month's completion date. **Kath O'Connor**

## SINGLE COMPLETION ITEMS

**DIRECTIONS** Each of the questions or incomplete statements below is followed by five suggested answers or completions. Select the most appropriate statement as your answer.

**Case 1 – Eleni Pappas**

Eleni Pappas, 70 years of age, presents to your outer suburban general practice with a 30 minute history of sudden onset right arm weakness and dysphasia, which came on while she was working in the garden. On examination she is fully conscious and has 3/5 weakness in the right arm with increased reflexes. She can follow commands but has difficulty speaking. Her BP is 195/100.

**Question 1**

You call an ambulance and institute the following acute therapy:

- A. GTN patch to lower BP
- B. IV heparin
- C. aspirin 160–300 mg
- D. IV alteplase
- E. supportive care only.

**Question 2**

The ambulance arrives and the MICA paramedic asks you whether you want Eleni taken to the local hospital where there is a general medical unit or to a city hospital where there is a stroke unit. Which of the following is true:

- A. there is no evidence that stroke units improve outcome in patients with stroke
- B. there is compelling evidence that stroke units improve outcome in patients with stroke
- C. outcome in patients with stroke is the same whether they are admitted to a general medical unit or a stroke unit
- D. there is evidence that stroke units improve outcome in patients with stroke but only if they have cerebral swelling requiring hemi-craniotomy
- E. there is evidence that stroke units improve outcome in patients with stroke but only if it is 3 hours since the stroke.

**Question 3**

Eleni is admitted to the stroke unit of a tertiary hospital. A CT scan shows subtle changes of acute stroke and excludes intracerebral

haemorrhage (ICH). It is 2.5 hours since the onset of her symptoms. Which medical treatments do you expect the hospital staff will give her:

- A. aspirin and intravenous alteplase
- B. aspirin and intravenous heparin
- C. aspirin and supportive care
- D. aspirin and BP lowering medication
- E. supportive care only.

**Question 4**

Based on Eleni's clinical features (R arm weakness and dysphasia) what is the likely cause of her stroke:

- A. total anterior circulation infarct (TACI) on the left
- B. partial anterior circulation infarct (PACI) on the right
- C. PACI on the left
- D. lacunar infarct (LACI)
- E. posterior circulation infarct (POCI) on the left.

**Case 2 – Eleni Pappas continued**

Eleni Pappas has been discharged from hospital into a neurological rehabilitation facility. You receive the discharge paperwork from the hospital. On carotid duplex, Eleni had a carotid arterial stenosis on the left of 60% and on the right of 50%. She had a normal ECG and echocardiogram. In hospital, her BP normalised to 130/80 on day two. Lipid studies reveal an elevated LDL, normal HDL and normal blood sugar.

**Question 5**

Which of the following is true:

- A. carotid endarterectomy is indicated 2 weeks after Eleni's stroke
- B. carotid endarterectomy is likely to have been performed while Eleni was in hospital
- C. carotid endarterectomy is indicated if Eleni has had a TIA in the past
- D. carotid endarterectomy is indicated only in total anterior circulation infarcts
- E. carotid endarterectomy is not indicated.

**Question 6**

The hospital has assessed Eleni's modifiable risk factors for recurrent stroke. Which of the following is true regarding BP medication:

- A. BP medication is not indicated as Eleni's BP is normal
- B. an ACE inhibitor +/- a diuretic is indicated
- C. BP lowering should not be commenced until 3 months poststroke
- D. greater adherence is likely if Eleni was started on secondary prevention in hospital
- E. BP treatment does not help prevent recurrent stroke.

**Question 7**

Regarding antiplatelet medication, which of the following is indicated in Eleni's case?

- A. aspirin +/- extended release dipyridimole
- B. clopidogrel
- C. dipyridimole and clopidogrel
- D. aspirin and clopidogrel
- E. antiplatelet therapy is not required.

**Question 8**

Regarding cholesterol medication, a statin is indicated because (choose the BEST answer):

- A. Eleni has high cholesterol
- B. they increase the risk of ICH
- C. they decrease risk of recurrent stroke regardless of cholesterol level
- D. Eleni has suffered a partial anterior circulation infarct which has a high risk of recurrence
- E. a statin is not indicated.

**Case 3 – Michael Graham**

Michael Graham, 55 years of age, is an ex-smoker with a history of hypertension and hypercholesterolaemia. He has just been discharged into home from a neurological rehabilitation facility. Two months ago he suffered a right middle cerebral artery stroke leaving him with a dense left hemiparesis, sensory loss on the left, left sided neglect and dysarthria. He requires 24 hour medical care and

his wife Sally has organised a roster of nursing staff. Armed with the hospital and rehabilitation facility discharge summaries you visit him at home.

### Question 9

**Michael's wife appears to be holding back tears. She wants to know whether Michael's condition is likely to improve. You counsel her and explain that:**

- A. after 2 months no further improvement can be expected
- B. Michael's condition will steadily improve over the next 2 years
- C. significant improvement can occur in the first 6 months poststroke and sometimes even after this
- D. she should consider ceasing Michael's secondary prevention medications due to his degree of disability
- E. Michael should be encouraged to rest as much as possible as this facilitates recovery.

### Question 10

**At a subsequent visit Sally explains that Michael has been very down over the preceding 2 weeks. Before this time he had enjoyed watching television and listening to talking books. Now he prefers to sit and stare into space. At times he gets distressed and cries for hours. Which of the following is true regarding treatment of depression in stroke survivors:**

- A. low mood after stroke is a normal reaction to a catastrophic life event and does not require treatment
- B. there is no evidence for the efficacy of psychological and pharmacological treatment of depression in stroke survivors, so treating patients merely gives them false hope
- C. although evidence is lacking, pharmacological and psychological approaches are justified for the treatment of depression in stroke survivors
- D. there is evidence that psychological approaches are successful in treating depression in stroke survivors but pharmacological approaches are not
- E. there is evidence that pharmacological approaches are successful in treating depression in stroke survivors but psychological approaches are not.

### Question 11

**Michael is experiencing difficulties with severe spasticity. The following can help with this problem EXCEPT:**

- A. dynamic splinting
- B. reducing BP
- C. stretching
- D. vibration
- E. botulinum toxin.

### Question 12

**At your next visit you find that Michael has recently started to have problems with faecal and urinary incontinence. Which of the following is true:**

- A. incontinence is expected in stroke patients and there is no available treatment
- B. PEG feeding will solve this problem
- C. Michael has probably had another stroke, this time affecting the pelvic nerves
- D. Michael now needs institutional care
- E. a rectal examination is mandatory.

### Case 4 – Skye Andrews

Skye Andrews, aged 18 months, is brought in by her parents who have noticed she is not using her left arm. From the antenatal record you note that Skye was born by a normal vaginal delivery after an uncomplicated pregnancy. Apgar scores were normal at 1 and 5 minutes. Skye had chicken pox at 12 months of age but has otherwise been a healthy baby. On examination you note that Skye has a strong left hand preference and fisting of the right hand.

### Question 13

**What is the significance of recent chicken pox infection in Skye's history:**

- A. there is no significance of recent chicken pox infection to Skye's presenting symptoms
- B. chicken pox may be complicated by encephalitis, which mimics stroke
- C. Skye requires chicken pox vaccination today
- D. Skye's chicken pox vaccination should be deferred until the current problem is diagnosed
- E. chicken pox may be complicated by transient damage to cerebral blood vessels leading to stroke.

### Question 14

**Skye is admitted to a local children's hospital. You receive a discharge summary a few weeks later. A MRI showed cytotoxic oedema due to an acute left middle cerebral infarct. A MRA shows a segmental stenosis of the proximal segment of the middle cerebral artery. ECG, echocardiography and bloods (including thrombophilic screen) are negative. Skye's hospital course was uneventful and she has been enrolled in domiciliary rehabilitation. What medication would you expect her to be on at discharge:**

- A. low molecular weight heparin
- B. warfarin
- C. phenobarbitone
- D. aspirin
- E. antihypertensive medication.

### Question 15

**Skye's mother comes to see you. Her father in law had a stroke last year and she remembers hearing that the brain is a 'plastic' organ and can recover some of the lost function. She wants to know whether this is also true for children. You explain that:**

- A. children's brains recover better than adults
- B. stroke in children may interfere with normal development
- C. long term neurological deficits occur in only a small percentage of children
- D. hand function is usually preserved in children with spasticity and dystonic hemiplegia
- E. after a year of rehabilitation Skye should have no disability at all.

### Question 16

**Skye's mother says that her father in law was on a 'barrage' of preventive medication after stroke including BP and cholesterol medication. She asks why Skye is only on one medication. You explain that:**

- A. there is good evidence that the interventions used for adults are not useful in children
- B. she should be on a statin and a BP tablet and you will remedy this ASAP
- C. there are no randomised secondary prevention trials in children. Aspirin recommendations have been extrapolated from adults
- D. trials show that the only useful preventive measure is early detection of recurrence
- E. trials show that the only useful preventive measure is early rehabilitation.

## ANSWERS TO OCTOBER CLINICAL CHALLENGE

## Case 1 – Xiu Xiu and Li Leen

**1. Answer E**

Information from three generations on both sides of the family should be documented for both Xiu Xiu and Li Leen. Information may include age, age at diagnosis of affected family members(s), age and cause of death, birth defects, family relationships including same sex and step relationships and adoption, stillbirths, miscarriages, termination of pregnancies and children born of parents who are relatives. Family history is an evolving issue so should be added to as new details arise.

**2. Answer C**

The  $\alpha$ -thalassaemia genotype is most commonly found in people of South East Asian origin.

**3. Answer B**

Carrier testing includes FBE, ferritin and Hb electrophoresis. If the person being tested has a low to borderline MCV or MCH in the setting of a normal ferritin (possible carrier) or an abnormal Hb electrophoresis (proven carrier) then DNA testing is indicated.

**4. Answer B**

A low to borderline MCV or MCH in the setting of a normal ferritin mean that both Xiu Xiu and Li Leen are possible carriers. They require DNA testing and referral to specialist service.

## Case 2 – Mark Donaldson

**5. Answer D**

Rapid and ultra rapid metabolisers tend to need higher doses of antidepressant. Testing for SNP in the cP450 enzymes may inform initial antidepressant drug dosing in the future.

**6. Answer C**

Brain metabolism differs between individuals. Research reveals polymorphisms in BBB transport and serotonin and noradrenaline regulation. These may be used in the future to target antidepressant dosing.

**7. Answer B**

Liver enzyme genotypes polymorphisms including cytochrome p450 CYP2C9 and endo-

plasmic reticulum enzyme vitamin K reductase complex 1 (VKRC1) modify dose requirements to obtain therapeutic anticoagulation.

**8. Answer A**

The therapeutic utility of pharmacogenomics is unclear. It is likely that patients will still need INR testing because nongenomic factors (BMI, dietary vitamin K, comorbid disease and drug interactions) also influence warfarin dosing.

## Case 3 – Anke Liebgen

**9. Answer C**

Anke is at population risk for neural tube defects and therefore folate 400  $\mu$ g/day is recommended.

**10. Answer E**

An FBE can be considered a genetic screening test as reduced MCV/MCH in an FBE can suggest thalassaemia carrier status and indicate the need for DNA testing.

**11. Answer A**

Second trimester screening involves a blood test for levels of  $\alpha$ -fetoprotein, unconjugated oestradiol, free BHCG and inhibin A. It gives a risk value for neural tube defects in addition to trisomy 18 and 21. Nuchal translucency (NT) alone will pick up 70% or less of babies with trisomy 18 and 21. Combined testing with NT and blood level of pregnancy associated plasma protein (PAPP-A) and human chorionic gonadotropin (free BHCG) will pick up 85–90%. Screening may still be useful if Anke would not consider termination of the pregnancy; some women value the information to prepare for the birth of an affected child.

**12. Answer D**

Amniocentesis is slightly more accurate (100%) than chorionic villus sampling CVS (>99%). CVS is performed earlier than amniocentesis but has a higher risk of miscarriage.

## Case 4 – Sophie Liebgen

**13. Answer C**

The newborn screening test includes tests for cystic fibrosis, inborn errors of metabolism and primary congenital hypothyroidism.

**14. Answer C**

The newborn screening test meets the criteria for screening for a disorder because all diseases tested may be treated before they are symptomatic with significant reduction in morbidity. Diseases should be an important health problem which can be because they are severe and/or common.

**15. Answer A**

The GP and parents are notified if follow up testing is required either because of an abnormal result or a problem with the initial sample.

**16. Answer B**

Familial hypercholesterolaemia (FH) is an autosomal dominant condition and treatment significantly reduces morbidity and mortality. Sophie should be tested for an FH causing gene mutation.