# clinical challenge

Questions for this month's clinical challenge are based on articles in this issue. The clinical challenge is endorsed by the RACGP Quality Improvement and Continuing Professional Development (QI&CPD) program and has been allocated 4 Category 2 points (Activity ID: 4138). Answers to this clinical challenge are available immediately following successful completion online at http://gplearning.racgp.org.au. Clinical challenge quizzes may be completed at any time throughout the 2014–16 triennium; therefore, the previous months answers are not published.

## 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
### Jack Brewer

Jack is 72 years of age. He has had several episodes of dizziness in the past month. The episodes come on suddenly and are associated with a hot sensation and diaphoresis. They occur during activity and at rest and tend to last around 15–30 seconds. On two occasions the dizzy spells preceded a loss of consciousness lasting 1–2 minutes (with no head strike), followed by complete recovery.

### Question 1

**The hot sensation and diaphoresis Jack experiences during these episodes most probably indicate:**

A. Vestibular failure
B. Sympathetic activation
C. Anxiety
D. Vagal stimulation
E. Thermoregulatory dysfunction.

After further history taking and examination, you suspect Jack may be experiencing cardiac syncope.

### Question 2

**Which of the following is TRUE regarding cardiac syncope?**

A. It may be provoked by coughing.
B. It is associated with Lewy body disease.
C. It is commonly caused by anti-hypertensive agents.
D. It may result from pericardial disease.
E. All of the above are correct.

### Question 3

**All of the following investigations would be appropriate to order for Jack today, EXCEPT:**

A. Full blood evaluation
B. CT brain scan
C. Electrolytes
D. Chest X-ray
E. Thyroid function tests.

You perform an ECG on Jack.

### Question 4

**Which of the following findings is a 'red flag'?**

A. Prolonged PR interval and bundle branch block.
B. Heart rate of 50 beats per minute.
C. Three consecutive beats of ventricular tachycardia.
D. Corrected QT interval of 455 ms.
E. Short PR interval and gamma waves.

### Case 2
### Leo Majchezak

Leo is 64 years of age and has hypertension and hyperlipidaemia. He presents with a 2-month history of shortness of breath and chest tightness on moderate exertion. He has no symptoms at rest. Physical examination is unremarkable. An ECG shows non-specific ST changes; a chest X-ray and cardiac enzymes are normal.

### Question 5

**Which of the following would be the most appropriate next test?**

A. Transthoracic echocardiography.
B. Myocardial perfusion study.
C. CT pulmonary angiogram.
D. High-resolution CT of the chest.
E. Ventilation-perfusion scan.

A colleague suggests stress echocardiography could also be helpful to investigate Leo's symptoms.

### Question 6

**Why might stress echocardiography be a good test for Leo?**

A. It is widely available.
B. It provides details about ventricular wall motion that are not well demonstrated with other cardiac imaging modalities.
C. It delivers a similar radiation dose as other imaging modalities.
D. It can easily be performed by most radiologists.
E. It provides superior risk stratification, compared with other functional cardiac imaging modalities.

Leo has a stress echocardiogram that is equivocal. You consider CT coronary angiography (CTCA) as an option for further investigation.

### Question 7

**Which one of the following is NOT an advantage of CTCA?**

A. It has a high negative predictive value.
B. It will provide reliable results even if Leo has heavy coronary artery calcification.
C. It has a lower complication rate, compared with invasive coronary angiography.
D. It does not require hospital admission.
E. It enables assessment of other cardiac and thoracic structures.

### Question 8

**Which of the following should you explain to Leo about CTCA?**

A. It delivers a higher radiation dose than invasive coronary angiography.
B. He would need to spend approximately 15 minutes in the scanner.
C. It involves an intravenous injection of contrast delivered via the femoral vein.

D. A specialist must order the CTCA for him in order to attract a Medicare rebate.
E. It generally requires pre-medication with atropine.

## Case 3
## Kelly Ho

Kelly is 30 years of age and has type 1 diabetes. Recently, she was diagnosed with atrial fibrillation (AF) and is on verapamil for rate control. She is also on warfarin but it has been difficult to achieve a stable INR and Kelly finds it inconvenient to attend regularly for INR testing as she works full-time as a biochemist. She has heard that there are new drugs available that are alternatives to warfarin. She would like to discuss these new drugs with you.

### Question 9

**Which of the following statements is TRUE regarding the new orally active anticoagulants (NOACs) compared with warfarin?**

A. NOACs are inferior to warfarin in preventing systemic embolism resulting from AF.
B. NOACs are associated with a higher frequency of intracranial haemorrhage, compared with warfarin.
C. NOACs are non-inferior to warfarin in terms of overall major bleeding risk.
D. NOACs are a better choice than warfarin for patients with severe renal impairment
E. Warfarin is a better choice than NOACs for patients with unstable INRs.

Kelly is interested in how the NOACs work.

### Question 10

**Which of the following statements is TRUE regarding the pharmacology of NOACs?**

A. NOACs have no significant food–drug interactions.
B. Some NOACs act by inhibiting factor VII.
C. Some NOACs act by inhibiting vitamin K epoxide reductase.
D. NOACs have more drug–drug interactions than warfarin.
E. All NOACs require a loading dose.

Kelly would like to know which NOAC would be most suitable for her.

### Question 11

**Which of the following is TRUE about the NOACs currently available in Australia?**

A. Apixaban is taken once daily.
B. Ximelagatran is less frequently associated with liver toxicity than other NOACs.
C. Rivaroxiban is safe to use in pregnancy.
D. Apixaban has a higher incidence of gastrointestinal bleeding than other NOACs.
E. Verapamil may increase the circulating concentration of dabigatran.

Kelly would like to change from warfarin to a NOAC, but wants to know what would happen if she developed major bleeding.

### Question 12

**Which of the following statements is TRUE?**

A. Standard coagulation assays can provide drug quantification in the context of major bleeding for patients on NOACs.
B. Apixaban can be removed from the circulation by dialysis.
C. Management of bleeding for patients on NOACs often requires expert haematological advice.
D. Vitamin K is a useful antidote for dabigatran.
E. Specific reversal agents for NOACs are available at most tertiary centres.