clinical challenge

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 multiple choice questions of the RACGP Fellowship exam. The quiz is endorsed by the RACGP Quality Improvement and Continuing Professional Development Program and has been allocated 4 Category 2 points per issue. Answers to this clinical challenge are available immediately following successful completion online at www.gplearning.com.au. Clinical challenge quizzes may be completed at any time throughout the 2011–13 triennium, therefore the previous months answers are not published.

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Single completion items

CPD

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
Towards a tobacco endgame

You have been asked by your local high school principal to give a talk to the students on how we can decrease smoking in the community:

Question 1

Which of the following is true of tobacco plain packaging:

A. Australia is the first country to experiment with plain packaging despite the lack of research evidence
B. recent studies show that plain packaging is less attractive to smokers and therefore likely to reduce cigarette use
C. plain packaging of cigarettes will mean that health messages will not be displayed
D. recent studies show plain packaging of cigarettes will be unacceptable among areas with high smoking prevalence
E. recent studies show plain packaging will be the most effective in areas with high smoking prevalence.

Question 2

Which of the following is true of the health implications for 'mild' cigarettes:

A. they have more additives to improve their taste compared to usual cigarettes
B. they are healthier as they have lower levels of tar and nicotine
C. they have similar harms to usual cigarettes as smokers inhale more smoke to achieve the desired nicotine levels
D. they are the preferred choice for young smokers because of their appearance
E. they are not addictive due to their lower nicotine levels.

Question 3

Which of the following is true regarding additives in modern cigarette manufacture:

A. additives, such as herbs or sugars, alter the flavor of cigarettes and make smoking less unpleasant
B. additives are used to prevent children taking up smoking
C. additives are harmless when smoked
D. nicotine is a rare additive to commonly manufactured cigarettes
E. tobacco companies do not conduct research into which additives are preferred by smokers.

Question 4

Which of the following groups contain the highest percentage of smokers:

A. Australian and British doctors
B. the broad Australian public
C. tobacco company CEOs
D. the broad New Zealand public
E. socioeconomically disadvantaged groups.

Case 2
Chris Ryan

Chris, 19 years of age and previously diagnosed with asthma in childhood, presents with a 3 month history of cough and shortness of breath. His symptoms are relieved by inhaled salbutamol. Chris started work in a plastics factory 4 months ago. He lives in shared accommodation with friends, one of whom keeps pet fish. He swims regularly and noticed that his symptoms eased during a recent holiday.

Question 5

What is the most likely cause of Chris' symptoms:

A. exacerbation of childhood asthma
B. exacerbation of asthma due to exercise
C. exacerbation of asthma due to occupational irritants
D. exacerbation of asthma due to exposure to increased pollens in spring
E. exacerbation of asthma due to household irritants.

Question 6

Which of the following items has the LEAST relevance in determining the cause of Chris' symptoms:

A. description of job processes in the workplace
B. previous history of successful Workcover claims
C. history of tobacco use
D. pets and hobbies
E. relationship of symptoms to holiday periods.

Question 7

Chris resigns from his workplace and undergoes a period of treatment and education for acute asthma. He returns 12 months later requesting your opinion on his desire to obtain a scuba diving licence. He has not had an exacerbation for 6 months and is not on any medication. He has an updated asthma action plan and is confident in his ability to recognise and manage exacerbations. What is the best advice in this scenario:

A. if spirometry is normal, Chris can undertake scuba diving
B. Chris cannot scuba dive as a diagnosis of asthma places him permanently at risk
C. if Chris is free of acute asthma, he can scuba dive with caution
D. if spirometry and bronchial provocation testing are normal, Chris can scuba dive with an acceptable level of risk
E. if spirometry and bronchial provocation testing are normal, Chris should use a

decompression chamber before scuba diving.

Question 8

Chris returns 2 months later with a booklet of peak flow recordings before and after 15 dives. He points out two occasions where he needed a short acting beta-agonist. Regarding the management of his symptoms:

A. he should cease diving immediately as the compressed gases are carcinogenic
B. he should undergo repeat spirometry immediately
C. he should undertake longer dives to be certain of the cause of his symptoms
D. he should have a chest X-ray to look for spontaneous pneumothorax
E. he should commence a preventer if he wishes to continue diving.

Case 3
Sheila Caddam

Sheila, 63 years of age and a lifelong nonsmoker, presents with a productive cough that has been present for 3 years. She has become more short of breath after a recent hospitalisation with pneumonia. Sheila reports that she had taken her husband's combination long-acting beta-agonist/corticosteroid inhaler for a few weeks without effect. She is afebrile and chest examination reveals mild crepitations in the right lung base. You order spirometry. The results are:

- FEV_1 = 1.43 L or 65% of predicted (normal = >80% of predicted)
- FVC = 2.5 L or 83% of predicted
- FEV_1/FVC = 1.43/2.5 or 0.57 (normal >0.7)
- minimal airway reversibility with salbutamol.

Question 9

What is the most reasonable next step in Sheila's management:

A. high resolution CT chest scan
B. order investigations – full blood count, immunoglobulin levels and sputum culture
C. 1 month trial of amoxicillin and inhaled fluticasone/salmeterol
D. referral for pulmonary rehabilitation
E. inform Sheila she suffers from bronchiectasis.

Question 10

Which of the following is true regarding the pathophysiology of bronchiectasis:

A. injury to the airways typically due to recurrent lung infections in cystic fibrosis
B. injury to the airways typically associated with chronic and recurrent inflammation
C. fixed airway dilatation seen in severe chronic obstructive pulmonary disease
D. injury to lung parenchyma resulting in retraction of structures supporting the airways
E. the pathophysiology of bronchiectasis is unknown in more than 80% of cases.

Question 11

You conclude that Sheila suffers from bronchiectasis. Before referral to a respiratory physician, which of the following investigations are always recommended:

A. test for milder forms of sarcoidosis
B. plain chest X-ray and repeat spirometry
C. sputum culture including mycobacterial culture
D. bronchoscopy for diagnosis of airway abnormality
E. HTLV serology.

Question 12

Sheila presents 2 weeks later with a sudden increase in cough and shortness of breath and a fever of 38.5^{0}C. Which of the following is the best management for this presentation:

A. commence a 10 day course of amoxicillin-clavulanate immediately
B. return in 3 days for antibiotic cover based on immediate sputum culture
C. commence a 7 day course of doxycycline immediately
D. avoid antibiotics as the aetiology is most likely viral
E. commence a 14 day course of doxycycline if sputum production increases.

Case 4
Sheila and Brian Caddam continued

Question 13

Sheila suffers from three further exacerbations over the next year. Several sputum cultures yield *Mycobacteria avium* complex (MAC). Which of the following recommendations is best supported by current evidence:

A. MAC on sputum culture is diagnostic of active disease and drives bronchiectasis progression
B. characteristic radiologic changes in the left upper and right middle lobes are associated with active MAC disease
C. MAC is only a coloniser of airways, present in people with or without pre-existing lung disease
D. the presence of MAC is closely associated with HIV/AIDS, and HIV serology is mandatory
E. patients with active MAC disease often benefit from resection of affected lobes in preference to prolonged eradication therapy.

Question 14

Which of the following is NOT considered part of the routine recommendation of care for a patient such a Sheila:

A. pulmonary rehabilitation and tailored exercise programs
B. pneumococcal and influenza vaccination
C. early treatment of acute exacerbations
D. inhaled recombinant deoxyribonuclease for sputum clearance
E. assessment for long term oxygen therapy if oxygen saturation is under 93% on room air.

Question 15

Brian, 68 years of age and suffering from obstructive sleep apnoea and chronic asthma, attends the next consultation with his wife, Sheila. Brian's most recent spirometry was in the normal range and he uses a CPAP machine nightly. He is a keen walker. They ask if they are safe to take short flights on commercial aircraft:

A. yes, Brian shows good exercise tolerance and travel should be uneventful
B. no, Brian suffers from two chronic respiratory conditions that preclude air travel
C. yes, however he must use his CPAP machine throughout the duration of the flight
D. no, there is no reliable way to predict hypoxemia or complications during air travel
E. yes, however supplemental oxygen should be available on board the aircraft.

Question 16

Sheila reports she has made a good recovery since her last consultation, now being able to walk 100 m to the postbox, but admits to feeling more fatigued than usual on some days. Is Sheila safe to take short flights on commercial aircraft:

A. no, Sheila suffers from a chronic respiratory conditions that precludes air travel
B. yes, however Sheila must use a CPAP machine throughout the flight
C. no, there is no reliable way to predict hypoxemia or complications during air travel
D. yes, Sheila shows good exercise tolerance and travel should be uneventful
E. yes, however, supplemental oxygen should be available on board the aircraft.