FOR SHORT ANSWERS
See p 993
FOR LONG ANSWERS
Go to the Education channel on bmj.com

PICTURE QUIZ A 35 year old smoker with shortness of breath

A previously well 35 year old man who currently smoked cigarettes (40 pack years) was referred because of a history of dyspnoea on exertion that had gradually got worse during the two months before presentation and a cough that was initially productive but then dry. He regularly smoked crack cocaine and took cocaine intranasally.

At presentation he had hypoxaemia (partial pressure of oxygen 57 mm Hg), with a respiratory rate of 20 breaths/min. Physical examination showed only bilateral fine inspiratory crackles at the middle and lower zones of the chest. Initial blood tests were unremarkable. He had no signs of collagen tissue disorder, his autoantibody profile was negative, and HIV screening was negative. Chest radiography showed a bilateral reticular pattern at the middle and lower zones and bilateral infiltrates in the lower zones of the lung. Pulmonary function testing showed a restrictive pattern (total lung capacity 49%, forced expiratory volume in one second 48%, forced vital capacity 47%, diffusing capacity of the lung for carbon monoxide 36%).

A 12 lead resting electrocardiogram showed sinus rhythm and an echocardiogram showed no abnormalities and no indirect evidence of pulmonary hypertension. Baseline saturation was 96% with a heart rate of 100 beats/min. During the six minute walking distance test he desaturated to 83% after three minutes and having completed 110 m. He underwent high resolution computed tomography of the chest: upper lung zones showed no abnormalities and no indirect evidence of pulmonary hypertension. The pain settled with conservative management, but the surgeons noticed when they admitted her that she appeared to have splenomegaly.

You examine the patient and confirm that she has an enlarged spleen. On further questioning she tells you that her father had his spleen removed.

ENDGAMES
We welcome contributions that would help doctors with postgraduate examinations
See bmj.com/endgames for details

STATISTICAL QUESTION The Normal distribution

Researchers used a cohort study to investigate whether twins and singletons differed in academic performance during adolescence. A total of 7796 singletons (a 5% random sample) and 3411 twin individuals born in Denmark from 1986 to 1988 were followed from birth. Cohort members completed a general academic test in the ninth grade of school at the age of 15 or 16. The test covered major domains of academic achievement and was scored between zero and 13. The test scores were normally distributed, with almost identical means and standard deviations (SD) for singletons (n=6575) and twins (n=2866) (mean 8.02 (SD 1.05) vs mean 8.02 (SD 1.05)).

Which of the following statements, if any, are true?

a) The histograms in the figure display the empirical distributions of ninth grade test scores
b) The Normal distribution is a theoretical distribution
c) The Normal distribution is uniquely described by its mean and standard deviation
d) The mean and median test scores are equal for a Normally distributed variable

Submitted by Philip Sedgwick
Cite this as: BMJ 2010;341:c6085

ON EXAMINATION QUIZ A patient with splenomegaly

This week’s question is on a patient with splenomegaly and is taken from the onExamination revision questions for the MRCP part 1 exam.

A 32 year old woman presented to the emergency department with right upper quadrant pain related to cholecystitis. The pain settled with conservative management, but the surgeons noticed when they admitted her that she appeared to have splenomegaly.

You examine the patient and confirm that she has an enlarged spleen. On further questioning she tells you that her father had his spleen removed.

Investigations show:
Haemoglobin concentration 10.9 g/dl (normal range 11.5-16.5), with spherocytes and reticulocytes seen on film
Mean corpuscular volume 102 fl (80-96)
White blood cell count 7.9×10⁹/l (4-11)
Platelet count 180×10⁹/l (150-400)
Serum sodium concentration 141 mmol/l (135-146)
Serum potassium concentration 4.4 mmol/l (3.5-5)
Creatinine concentration 90 μmol/l (79-118)

Which of the following tests is the most appropriate next investigation?
A) Autoimmune profile
B) Bone marrow biopsy
C) Coombs test
D) Osmotic fragility test
E) Ultrasound scan of the abdomen

Cite this as: BMJ 2010;341:c6086