EBGH Examination in Gastroenterology Sample Questions

Question: 1

A 50-year-old man presented with haematemesis and melaena. He had a history of excess alcohol intake for many years.

On examination, he was jaundiced with bilateral parotid enlargement, spider naevi and Dupuytren’s contractures. His pulse was 100 beats per minute and his blood pressure was 95/60 mmHg. He had ascites and peripheral oedema.

While awaiting endoscopy, what is the most appropriate management?

insert a Sengstaken–Blakemore tube
intravenous pantoprazole
intravenous terlipressin
nasogastric tube and aspiration
oral sucralfate

1: C

There should be a high index of suspicion of a variceal bleed in this man who is shocked and has stigmata of chronic liver disease. In addition to resuscitation, intravenous terlipressin is the most appropriate treatment to reduce portal pressure whilst awaiting endoscopy.
Question: 2

A 67-year-old man with dysphagia was found at endoscopy to have lower oesophageal carcinoma.

For staging of local invasion in oesophageal cancer, which investigation is most sensitive?

- contrast-enhanced CT scan of oesophagus
- laparoscopy
- MR scan of chest
- PET scan
- radial endoscopic ultrasound scan

2: E

Endoscopic ultrasound is the most sensitive modality for local staging of oesophageal carcinoma. CT and CT-PET are modalities for assessing the presence of distant metastases.
Question: 3

A 46-year-old man presented with a 2-month history of fatigue and dysphagia. He also reported night sweats and weight loss. He did not smoke and drank only occasional alcohol.

On examination, he appeared thin and had several enlarged lymph nodes in both axilla. Abdominal examination was normal.

Investigations:

- chest X-ray normal
- upper gastrointestinal endoscopy see image

What is the most appropriate next investigation?

- bone marrow aspirate
- CT scan of abdomen
- HIV serology
- lymph node biopsy
- tuberculin test
3: C

The image shows oesophageal candidiasis, which should always alert the physician to the possibility of underlying immunodeficiency (in the absence of inhaled corticosteroids). Additional pointers in this patient are systemic symptoms and axillary lymphadenopathy.
Question: 4

A 55-year-old man with Crohn’s disease underwent an ileocaecal resection. The surgical procedure was technically straightforward. Three months later, he was reviewed in the clinic. His appetite remained good and the abdominal pain had settled, but he was troubled by diarrhoea with a daytime stool frequency of six per day. He also experienced faecal urgency 20–40 minutes after eating. The stool was watery but there was no blood or pus.

Investigations:

- haemoglobin: 125 g/L (130–180)
- white cell count: $5.6 \times 10^9/L$ (4.0–11.0)
- platelet count: $256 \times 10^9/L$ (150–400)
- erythrocyte sedimentation rate: 12 mm/1st h (<20)
- serum vitamin $B_{12}$: 340 ng/L (160–760)
- red cell folate: 420 µg/L (160–640)
- serum C-reactive protein: 8 mg/L (<10)

What is the most likely cause for the diarrhoea?

- bacterial overgrowth
- bile salt malabsorption
- enterocolic fistula
- lactase deficiency
- recurrent Crohn’s disease

4: B

Resection of the distal ileum (depending on extent) prevents reabsorption of bile salts, which then enter the colon and induce diarrhoea. Although a recrudescence of Crohn’s disease is a possibility, it is less likely given the normal inflammatory markers. Similarly, the normal $B_{12}$ and folate make bacterial overgrowth less likely.
A 44-year-old man presented with a 10-year history of ulcerative colitis. He was taking azathioprine 1.5 mg/kg and mesalazine 2.4 g daily. He reported that his bowels opened one to two times per day, with no rectal bleeding.

Investigations:

- haemoglobin: 106 g/L (130–180)
- MCV: 75 fL (80–96)
- platelet count: $164 \times 10^9$/L (150–400)
- serum total bilirubin: 43 µmol/L (1–22)
- serum alanine aminotransferase: 76 U/L (5–35)
- serum alkaline phosphatase: 328 U/L (45–105)
- serum gamma glutamyl transferase: 397 U/L (<50)
- rigid sigmoidoscopy: quiescent colitis

What is the most appropriate next investigation?

- colonoscopy
- faecal calprotectin
- MRCP
- ultrasound scan of liver
- upper gastrointestinal endoscopy

5: A

The presentation with asymptomatic iron deficiency anaemia in a patient with long-standing and quiescent ulcerative colitis raises the possibility of colonic malignancy for which colonoscopy is the most appropriate next investigation. The abnormal liver function tests could be due to metastatic disease or primary sclerosing cholangitis.
Question: 6

A 68-year-old man was found to have positive faecal occult blood tests (FOBT) in a national bowel cancer screening programme. He was offered colonoscopy, but before making his decision he wanted to know what the chances were of actually having a colonic carcinoma.

What is the likelihood of colonic carcinoma in a patient of this age with a positive FOBT?

2%
8%
16%
24%
48%

6: B

The prevalence of colorectal carcinoma is 8–10% following a positive faecal occult blood screen in the bowel cancer screening programme.
A 56-year-old man with established cirrhosis secondary to genetic haemochromatosis was found to have a 3-cm focal lesion in the right lobe of his liver at a surveillance ultrasound scan of his abdomen. When reviewed in the outpatient clinic he was well with no new symptoms.

Investigations:

- international normalised ratio: 1.3 (<1.4)
- serum albumin: 32 g/L (37–49)
- serum total bilirubin: 37 μmol/L (1–22)
- serum alanine aminotransferase: 23 U/L (5–35)
- serum alkaline phosphatase: 125 U/L (45–105)
- serum α-fetoprotein: 8 kU/L (<10)

What is the most appropriate next step in management?

- further surveillance screening in 6 months
- referral for consideration of resection of hepatic lesion
- repeat ultrasound scan of liver in 6 weeks
- triple-phase CT scan of liver
- ultrasound scan-guided biopsy of lesion

7: D

Cirrhosis complicating genetic haemochromatosis is a particularly high-risk situation for the development of hepatocellular carcinoma. AFP may be negative in approximately 20% of hepatomas. A triple-phase CT scan of the liver would be helpful in further defining the nature of the mass lesion. Biopsy may give the diagnosis but due to potential seeding may prevent curative resection. Hepatic resection is premature until a clearer diagnosis is reached.
Question: 8

A 29-year-old woman who was 32 weeks pregnant presented to the emergency department with a 2-week history of malaise, nausea and vomiting.

On examination, there were no stigmata of chronic liver disease, her pulse was 100 beats per minute and her blood pressure was 160/94 mmHg. She had right upper quadrant tenderness and peripheral oedema.

Investigations:

- **haemoglobin**: 110 g/L (115–165)
- **platelet count**: $68 \times 10^9/L$ (150–400)
- **international normalised ratio**: 1.7 (<1.4)
- **blood film**: schistocytes, spherocytes
- **serum total bilirubin**: 74 μmol/L (1–22)
- **serum alanine aminotransferase**: 176 U/L (5–35)
- **serum aspartate aminotransferase**: 260 U/L (1–31)
- **serum alkaline phosphatase**: 230 U/L (45–105)
- **serum lactate dehydrogenase**: 720 U/L (10–250)

What is the most likely diagnosis?

- acute fatty liver of pregnancy
- Budd–Chiari syndrome
- HELLP syndrome
- hepatitis E
- intrahepatic cholestasis of pregnancy

8: C

This woman has developed HELLP syndrome (haemolysis, as evidenced by the schistocytes, spherocytes and raised LDH, elevated liver enzymes, and low platelets). This condition is often associated with pre-eclampsia.
Question: 9

A 68-year-old woman was referred for investigation of iron deficiency anaemia. She was taking warfarin for atrial fibrillation.

On examination, she had atrial fibrillation with a ventricular rate of 76 beats per minute. No other abnormality was detected.

Investigations:

- international normalised ratio: 2.1 (<1.4)
- coeliac serology: positive
- echocardiography: normal left ventricular systolic function; no valvular abnormality

Upper gastrointestinal endoscopy to obtain duodenal biopsies was planned.

What is the most appropriate plan for anticoagulation before this endoscopy?

- no alteration of therapy
- stop warfarin
- substitute aspirin for warfarin
- substitute clopidogrel for warfarin
- substitute low-molecular-weight heparin for warfarin

9: A

Warfarin does not need to be stopped for simple diagnostic biopsies.
Question 10

Vitamin B\textsubscript{12} (cobalamin) is an essential co-factor and co-enzyme in many biochemical reactions, including synthesis of DNA, methionine and succinyl Co-A. Vitamin B\textsubscript{12} deficiency causes anaemia, neurological disease, dementia and osteoporosis.

What is the most important physiological factor in ensuring adequate cobalamin uptake?

A  bile acid secretion  
B  duodenal absorption  
C  high gastric pH  
D  pancreatic protease secretion  
E  transcobalamin-1 binding

10. D

Cobalamin is released from foods by the action of pepsin and acid in the stomach. Salivary R protein then binds to free cobalamin to protect it from acid degradation. In the duodenum, pancreatic enzymes hydrolyze the R protein, releasing cobalamin which then binds to the high affinity protein called intrinsic factor which is secreted along with acid from the gastric parietal cell. This complex is subsequently taken up by cells in the distal ileum. Lack of pancreatic proteolytic enzymes would result in a defective release of cobalamin from the R protein for intrinsic factor binding, and subsequent absorption.
Question 11

A 23-year-old woman was referred to the gastroenterology clinic with mild iron deficiency anaemia. There were no gastrointestinal symptoms and no history of menorrhagia. She was a vegan and her diet contained large quantities of wholewheat, soy and bran, as well as one or two cups of herbal tea per day.

Examination was normal.

What dietary component is most likely to be contributing to her anaemia?

A  ascorbic acid
B  phytic acid
C  polyphenols
D  sulfates
E  tannins

11.  B

Phytates bind to iron (and also calcium, zinc, magnesium and niacin) and prevent absorption. Phytates are found in relatively high concentrations in many ‘high fibre’ foods eg. whole grain cereals, nuts, bran, and seeds
Question 12

A 60-year-old man with a 35-year history of well-controlled ulcerative colitis was seen for review. His maintenance treatment was sulfasalazine.

On what does the mechanism of action of sulfasalazine depend?

cleavage of 5-ASA dimers by colonic bacteria  
cleavage of an azo bond by colonic bacteria  
pH-dependent release in the ileocaecal region  
slow release in the small and large intestine through an ethylcellulose coating  
timed release following alkalinisation in the duodenum

12. B

Sulfasalazine is a dimer of sulfapyridine linked to 5-ASA by an azo bond. This bond is split by colonic bacteria to release 5-ASA
A 61-year-old man with biopsy-proven alcoholic cirrhosis was admitted with increasing breathlessness, abdominal distension and ankle oedema. He had noticed that he was passing very little urine.

On examination, his temperature was 38.0°C and his blood pressure was 96/45 mmHg. He had signs of chronic liver disease, mild peripheral oedema and moderate ascites.

Investigations:

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>haemoglobin</td>
<td>106 g/L (130–180)</td>
</tr>
<tr>
<td>MCV</td>
<td>108 fL (80–96)</td>
</tr>
<tr>
<td>white cell count</td>
<td>$14.9 \times 10^9$/L (4.0–11.0)</td>
</tr>
<tr>
<td>platelet count</td>
<td>$67 \times 10^9$/L (150–400)</td>
</tr>
<tr>
<td>serum sodium</td>
<td>121 mmol/L (137–144)</td>
</tr>
<tr>
<td>serum potassium</td>
<td>4.5 mmol/L (3.5–4.9)</td>
</tr>
<tr>
<td>serum creatinine</td>
<td>387 µmol/L (60–110)</td>
</tr>
<tr>
<td>serum albumin</td>
<td>24 g/L (37–49)</td>
</tr>
</tbody>
</table>

Following appropriate fluid resuscitation, terlipressin and albumin should be given until what end point?

- discharge
- normalisation of portal pressure
- normalisation of serum creatinine
- normalisation of serum sodium
- normalisation of urine output

13. C

Terlipressin is used in the management of bleeding oesophageal / gastric varices, and in the treatment of hepatorenal syndrome.
Question 14

A 28-year-old woman attended a maternity clinic when 37 weeks pregnant with her first child. She complained of upper abdominal pain, nausea and vomiting.

On examination, she was drowsy. Her pulse was 105 beats per minute, and her blood pressure was 180/125 mmHg. Urinalysis showed protein 3+.

Investigations:

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoglobin</td>
<td>113 g/L (115–165)</td>
</tr>
<tr>
<td>Platelet count</td>
<td>$164 \times 10^9$/L (150–400)</td>
</tr>
<tr>
<td>International normalised ratio</td>
<td>1.1 (&lt;1.4)</td>
</tr>
<tr>
<td>Serum total protein</td>
<td>65 g/L (61–76)</td>
</tr>
<tr>
<td>Serum albumin</td>
<td>32 g/L (37–49)</td>
</tr>
<tr>
<td>Serum total bilirubin</td>
<td>25 µmol/L (1–22)</td>
</tr>
<tr>
<td>Serum alanine aminotransferase</td>
<td>61 U/L (5–35)</td>
</tr>
<tr>
<td>Serum aspartate aminotransferase</td>
<td>63 U/L (1–31)</td>
</tr>
<tr>
<td>Serum alkaline phosphatase</td>
<td>183 U/L (45–105)</td>
</tr>
</tbody>
</table>

What is the most appropriate treatment?

- caesarean section
- intravenous hydrocortisone
- oral colestyramine
- oral prednisolone
- oral ursodeoxycholic acid

14. A

This patient has severe pre-eclampsia (hypertension and proteinuria) and needs delivery of the baby. Liver disease is a common association, usually in the form of the HELLP syndrome, acute fatty liver of pregnancy, subcapsular hepatic haematoma or hepatic rupture.
Question 15

A 43-year-old woman presented with profuse watery non-bloody diarrhoea. She had a 5-year history of type 2 diabetes mellitus, now requiring insulin. She had no abdominal pain but did feel bloated. She had a past history of reflux oesophagitis and osteoarthritis for which she was taking lansoprazole and ibuprofen.

Examination was normal.

Investigations:

- haemoglobin: 109 g/L (115–165)
- MCV: 99 fl (80–96)
- white cell count: $4.5 \times 10^9$/L (4.0–11.0)
- platelet count: $169 \times 10^9$/L (150–400)
- serum ferritin: 120 µg/L (15–300)
- serum vitamin B₁₂: 145 ng/L (160–760)
- serum folate: 20.0 µg/L (2.0–11.0)

What is the most likely diagnosis?

A. bacterial overgrowth
B. bile salt malabsorption
C. giardiasis
D. irritable bowel syndrome
E. microscopic colitis

15. A

There is a mild macrocytic anaemia with a low vitamin B₁₂ and a very high folate. This is a characteristic picture seen with small bowel bacterial overgrowth. Additionally she has compatible symptoms and is predisposed to this condition by her history of diabetes.
Question 16

A 64-year-old woman presented with a 3-year history of intermittent diarrhoea. She was otherwise well and had not lost weight. She had a past medical history of osteoarthritis, which had been treated with naproxen. Treatment with loperamide had not improved her bowel symptoms.

On examination, she looked well. She had a body mass index of 34 kg/m² (18–25).

Investigations:

- colonoscopy normal
- histology from colonic biopsies a mononuclear infiltrate with a few neutrophils and eosinophils in the lamina propria

Stopping naproxen did not improve her symptoms.

What is the most appropriate next step in management?

A budesonide
B colestyramine
C octreotide
D prednisolone
E sulfasalazine

16. A

The histological description in the context of a normal colonoscopy is consistent with microscopic colitis (lymphocytic colitis). This condition has an association with NSAID usage. Oral budesonide is the best treatment option.
Question 17

A 43-year-old man with acromegaly was referred for colonoscopy. Pan-colonoscopy with terminal ileal intubation was achieved. A solitary, sessile, 5-mm polyp was found in the transverse colon. This was removed completely. Histology revealed a tubular adenoma with low-grade dysplasia.

Investigations:

- haemoglobin: 144 g/L (130–180)
- platelet count: \(254 \times 10^9/L\) (150–400)
- serum insulin-like growth factor 1: 30.3 nmol/L (5.6–23.3)

After how long should he undergo further colonoscopy?

A  1 year  
B  2 years  
C  3 years  
D  5 years  
E  10 years

17.  C

Patients with acromegaly have an increased risk of colon cancer. The BSG guideline from 2010 indicates that those with an adenoma at first screening visit (offered from the age of 40) or with raised ILGF levels should have 3-yearly colonoscopy. Those without a polyp at initial screening colonoscopy, or with hyperplastic polyps, or with normal ILGF levels should be screened at 5-10 yearly intervals.
Question 18

The portal vein is formed by the confluence of which veins?

A hepatic and superior mesenteric  
B inferior and superior mesenteric  
C splenic and hepatic  
D splenic and renal  
E splenic and superior mesenteric

18. E

Knowledge of anatomy required. This knowledge is clinically useful when managing portal hypertension.
Question 19

A 61-year-old man with Barrett's oesophagus was found to have high-grade dysplasia in four out of eight biopsies taken from the Barrett's segment. He had residual mild left-sided weakness from a cerebrovascular accident 2 years previously. A further upper gastrointestinal endoscopy was arranged and similar histological features were reported.

Investigations:

CT scan of thorax and abdomen normal

What is the most appropriate management?

A high-dose proton pump inhibitor  
B intensified endoscopic surveillance  
C laser ablation of Barrett's segment  
D photodynamic therapy  
E radio-ablation of Barrett's segment

19. E

High grade dysplasia in Barrett's on two separate endoscopy examinations is best treated by radiofrequency ablation. None of the remaining options is as reliable in achieving a cure.

JMH: I have removed 'or oesophagectomy if fit for surgery' as 1st line treatment for anyone with HGD is now radiofrequency ablation
Question 20

A 32-year-old man attended for follow-up 2 months after presenting with a bleeding duodenal ulcer. As part of his treatment, he had been given a course of Helicobacter pylori eradication therapy, and had continued taking the proton pump inhibitor until 4 weeks before his appointment.

Which is the most appropriate test to confirm eradication of Helicobacter pylori infection?

A gastric antral biopsy for culture
B gastric antral biopsy for histology
C gastric antral biopsy for rapid urease test
D Helicobacter pylori antibody in serum
E stool Helicobacter pylori antigen

20. E

The urea breath test or faecal antigen test are the best non-invasive tests for confirming successful eradication treatment for Helicobacter pylori. Serology may take many months or never turn negative and repeat endoscopy is unnecessarily invasive.
Question 21

A 24-year-old woman presented with a 3-month history of lethargy, fatigue and weight loss. She had abdominal bloating and passed loose stools.

On examination, there were no abnormal findings.

Investigations:

- haemoglobin: 85 g/L (115–165)
- platelet count: 164 × 10^9/L (150–400)
- MCV: 70 fl (80–96)
- white cell count: 11.0 × 10^9/L (4.0–11.0)
- serum ferritin: 9 µg/L (15–300)
- serum vitamin B₁₂: 180 ng/L (160–760)
- red cell folate: 86 µg/L (160–640)
- serum albumin: 35 g/L (37–49)
- serum IgG: 7.2 g/L (6.0–13.0)
- serum IgA: 0.1 g/L (0.8–3.0)
- serum IgM: 0.3 g/L (0.4–2.5)
- anti-tissue transglutaminase antibodies: 2 U/mL (<15)

What is the most appropriate next step in management?

A  CT scan of abdomen
B  distal duodenal biopsy
C  faecal elastase estimation
D  lactulose–hydrogen breath test
E  small bowel barium studies

21. B

The symptoms together with a combined iron and folate deficiency anaemia would make coeliac disease highly likely. Patients with coeliac disease and IgA deficiency will have false negative serology as the antibody is of the IgA class.
Question 22

A 53-year-old man had been admitted with moderately severe pancreatitis 1 week previously. Despite regular analgesia and antiemetics, he remained nauseated and uncomfortable, with no appetite and poor oral intake.

What is the most appropriate management of his nutrition?

A encourage oral intake  
B nasogastric tube feeding  
C oral elemental diet  
D peripheral intravenous nutrition  
E total parenteral nutrition

22. B

Enteral nutrition support is important here and recent data suggest nasogastric feeding is as effective as nasojejunal feeding and associated with fewer problems in this situation. Sufficient oral intake is unlikely given his nausea and intravenous nutrition is inappropriate.
Question 23

A 23-year-old secretary presented with a 12-month history of intermittent epigastric and right upper quadrant pain occurring up to six times per month and lasting for 30 to 45 minutes. The most recent episode of pain had occurred 24 hours previously. She had been obliged to leave work on several occasions and, during one episode, had presented to the emergency department. The symptoms were unrelated to diet, eating or bowel movement. Antacids had been unhelpful and she took codeine at home for the pain. She was otherwise well with no other history.

Examination was normal.

Investigations:

- serum total bilirubin 22 µmol/L (1–22)
- serum alanine aminotransferase 48 U/L (5–35)
- serum aspartate aminotransferase 52 U/L (1–31)
- serum alkaline phosphatase 200 U/L (45–105)
- serum gamma glutamyl transferase 80 U/L (4–35)
- ultrasound scan of abdomen normal

What is the most appropriate next investigation?

CT scan of abdomen
ERCP
HIDA scan
MRCP
repeat ultrasound scan when in pain

23. D

The clinical history is of biliary colic. Given her abnormal LFTs a common bile duct stone needs to be considered and this should be done non-invasively with MR imaging.
Question 24

A 64-year-old man was referred from the cardiac clinic. He had presented with increasing angina and a drug-eluting cardiac stent had been inserted. He had type 2 diabetes mellitus. His investigations had also revealed anaemia and he had been treated with ferrous sulfate. He was also taking metformin, clopidogrel, metoprolol and nicorandil.

Investigations:

- haemoglobin 108 g/L (130–180)
- serum ferritin 15 µg/L (15–300)
- serum C-reactive protein 6 mg/L (<10)
- colonoscopy several terminal ileal and perianal ulcers
- histology non-specific inflammation

Which drug is most likely to be responsible for his colonic ulcers?

A  clopidogrel  
B  iron  
C  metformin  
D  metoprolol  
E  nicorandil

24. E

Nicorandil is well documented to cause colorectal ulceration.
Question 25

An 18-year-old man presented with a 5-day history of moderate abdominal pain, bloating, diarrhoea associated with mucus, and blood spotting on the toilet paper.

On examination, the abdomen was soft but he was mildly tender in both iliac fossae.

Flexible sigmoidoscopy showed mucosal erythema and congestion. Histological examination of rectal biopsies showed crypt abscesses, mucin depletion and normal crypt architecture with neutrophilic infiltration.

What is the most likely diagnosis?

A collagenous colitis
B Crohn’s colitis
C infectious colitis
D microscopic colitis
E ulcerative colitis

25. C

The short history and normal crypt architecture would favour an infective aetiology.
Question 26

A 35-year-old man with corticosteroid-resistant Crohn’s disease was treated with azathioprine. After 3 weeks he became severely leucopenic. Subsequent tests revealed an extremely low concentration of thiopurine methyltransferase (TPMT).

In approximately what proportion of the population does homozygous TPMT deficiency occur?

A 1 in 10  
B 1 in 50  
C 1 in 100  
D 1 in 300  
E 1 in 1000

26. D

0.3% of the population have very low / insignificant levels of TPMT.
Question 27

A 76-year-old woman was admitted with haematemesis and melaena. She was taking ibuprofen for osteoarthritis, but had no history of dyspepsia. There was a history of hypertension, severe chronic obstructive pulmonary disease and stroke.

On examination, she was comfortable, but rather pale and sweaty. Her pulse was 104 beats per minute and her blood pressure was 108/75 mmHg. Abdominal examination was normal.

Investigations:

- haemoglobin: 85 g/L (115–165)
- serum urea: 15.4 mmol/L (2.5–7.0)
- serum creatinine: 106 µmol/L (60–110)

What is her pre-endoscopy Rockall risk score for severity of upper gastrointestinal haemorrhage?

A  3
B  4
C  5
D  6
E  7

27.  B

The patient scores 1 for her age; 1 for tachycardia; and 2 for 'any major co-morbidity' (ie severe chronic obstructive pulmonary disease).
Question 28

A 35-year-old man was admitted with haematemesis. He had a 4-year history of chronic pancreatitis caused by excess alcohol. His stated alcohol intake over the previous 12 months was zero.

Investigations:

upper gastrointestinal endoscopy normal oesophagus; abnormality in gastric fundus (see image)

What is the most likely explanation of this presentation?

A hepatic cirrhosis  
B hepatic vein thrombosis  
C pancreatic pseudocyst  
D portal vein thrombosis  
E splenic vein thrombosis

28. E
Panreatitis is a risk factor for splenic vein thrombosis due to the proximity of the vessel to the pancreas. Splenic vein thrombosis is typically associated with isolated gastric varices.
Question 29

A 37-year-old man was referred from the haematology/oncology unit before starting treatment for non-Hodgkin’s lymphoma. He was originally from Hong Kong.

Investigations:

- serum albumin: 31 g/L (37–49)
- serum total bilirubin: 19 µmol/L (1–22)
- serum alanine aminotransferase: 41 U/L (5–35)
- serum alkaline phosphatase: 155 U/L (45–105)
- HBsAg: positive
- HBeAg: negative
- HBV viral load: $2.2 \times 10^4$ IU/mL (lower detection limit 250)
- liver biopsy modified Ishak score: necro-inflammatory score 1/18; fibrosis score 2/6

What is the most appropriate treatment of his hepatitis B during chemotherapy?

A. adefovir  
B. interferon alfa  
C. no treatment indicated  
D. prednisolone  
E. tenofovir

29. E

Treatment for non-Hodgkin’s lymphoma will provoke viral replication. Tenofovir will prevent an increase in viral load whilst minimising the risk of mutation.
Question 30

A 50-year-old man with type 2 diabetes mellitus and hypertension was referred because of abnormal liver function tests, loss of libido and tiredness. His medication included metformin and lisinopril. His alcohol consumption was 20 units per week.

On examination, he had sparse hair distribution. His liver was enlarged and palpable, and he had testicular atrophy.

Investigations:

- haemoglobin: 160 g/L (130–180)
- platelet count: $120 \times 10^9$/L (150–400)
- prothrombin time: 13.0 s (11.5–15.5)
- serum ferritin: 5230 µg/L (15–300)
- serum albumin: 32 g/L (37–49)
- serum globulin: 30 g/L (24–27)
- serum total bilirubin: 20 µmol/L (1–22)
- serum alanine aminotransferase: 60 U/L (5–35)
- serum aspartate aminotransferase: 105 U/L (1–31)
- serum alkaline phosphatase: 115 U/L (45–105)
- serum α-fetoprotein: 2 kU/L (<10)

ultrasound scan of abdomen: liver coarse and enlarged, but no bile duct dilatation

What investigation would give the most useful information regarding his prognosis?

A  CT scan of abdomen
B  echocardiography
C  liver biopsy
D  serum albumin
E  serum ferritin

30.  C

The most useful information would come from a liver biopsy, which may or may not demonstrate cirrhosis. Cirrhosis is associated with increased morbidity and mortality due to the complications of end-stage liver disease, not least the significantly increased risk of the development of hepatocellular carcinoma in cirrhosis associated with haemochromatosis.
A 76-year-old woman with a history of stroke had a percutaneous endoscopic gastrostomy (PEG) tube inserted. Four hours later, she complained of pain at the site of tube insertion.

On examination, her temperature was normal and her abdomen was soft and non-tender, but slightly distended. The wound was clean, dry and not hot to touch, but the surrounding skin felt as though it had air bubbles in it.

Erect X-rays of abdomen and chest showed free gas under both domes of the diaphragm and within the anterior abdominal wall.

What is the most likely diagnosis?

A benign pneumoperitoneum  
B colonic perforation  
C enterocutaneous fistula  
D gastrocolic fistula  
E necrotising fasciitis

31. A

Air is introduced into the peritoneum during the uncomplicated placement of a PEG feeding tube. Colonic perforation would produce signs of peritonism. Fistulas do not form after such a short time period. Similarly necrotising fasciitis would not develop so quickly, and there are no supportive signs of this condition in this case.
Question 32

A 45-year-old man with a 15-year history of extensive ulcerative colitis underwent a surveillance colonoscopy. He had been well since his most recent colonoscopy 5 years previously. He had a normal bowel habit and was taking oral mesalazine only. His brother, who was 48, did not have inflammatory bowel disease, but had recently had a colorectal cancer resected.

The colonoscopy demonstrated quiescent changes, which were confirmed by the biopsies.

After what interval should a further colonoscopy be performed?

A 1 year  
B 2 years  
C 3 years  
D 5 years  
E 10 years

32. A

Macroscopically and histologically quiescent disease should be surveyed at 5-yearly intervals. The family history in a first-degree relative means this patient should have annual surveillance (BSG guidelines 2010).
Question 33

A 28-year-old man was referred by the Ear Nose and Throat Surgeons after recurrent food bolus obstruction. He had a history of hay fever, mild asthma and bipolar disorder. He was taking venlafaxine, omeprazole and inhaled salbutamol.

On examination, there were no abnormal findings.

Investigations:

- barium swallow
- multiple rings and mucosal irregularities (see image)
oesophageal biopsy severe oesophagitis with predominance of eosinophils

What is the most appropriate treatment?

A chlorphenamine  
B fluticasone  
C salmeterol  
D sodium cromoglicate  
E sucralfate  

33. B

The history, radiological imaging and histology support a diagnosis of eosinophilic oesophagitis. Fluticasone administered via an inhaler and then swallowed usually relieves symptoms.
Question 34

A 64-year-old man presented with jaundice and was found to have a carcinoma of the head of pancreas. He had undergone an aortic valve replacement and was taking warfarin. An ERCP and placement of a biliary stent was planned in 2 days’ time.

Investigations:

- international normalised ratio 3.0 (<1.4)

What is the most appropriate management of his anticoagulation?

A. continue warfarin
B. give intravenous vitamin K 2 mg
C. stop warfarin
D. stop warfarin and start intravenous unfractionated heparin
E. stop warfarin and start low-molecular-weight heparin

34. A

Biliary or pancreatic stenting is regarded as a low risk procedure, and the warfarin can be continued as long as the INR is within the therapeutic range (BSG guidelines 2008).
A 56-year-old woman with a 3-year history of ulcerative colitis presented with an increasing number of relapses that had responded well to oral prednisolone. Her past medical history included hypertension, and recurrent urinary tract infections. She was taking ramipril 5 mg daily and mesalazine 1.6 g daily in divided doses. A decision was made to treat her with azathioprine therapy as a corticosteroid-sparing agent.

Investigations:

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoglobin</td>
<td>114 g/L</td>
<td>115–165 g/L</td>
</tr>
<tr>
<td>White cell count</td>
<td>8.3 x 10⁹/L</td>
<td>4.0–11.0 x 10⁹/L</td>
</tr>
<tr>
<td>Neutrophil count</td>
<td>3.1 x 10⁹/L</td>
<td>1.5–7.0 x 10⁹/L</td>
</tr>
<tr>
<td>Platelet count</td>
<td>456 x 10⁹/L</td>
<td>150–400 x 10⁹/L</td>
</tr>
<tr>
<td>Serum creatinine</td>
<td>135 µmol/L</td>
<td>60–110 µmol/L</td>
</tr>
<tr>
<td>Serum albumin</td>
<td>32 g/L</td>
<td>37–49 g/L</td>
</tr>
<tr>
<td>Serum C-reactive protein</td>
<td>16 mg/L</td>
<td>&lt;10 mg/L</td>
</tr>
</tbody>
</table>

What is the most useful test for monitoring toxicity in patients taking azathioprine?

A. Erythrocyte 6-thioguanine nucleotide concentration
B. Erythrocyte thiopurine methyltransferase activity
C. Microalbuminuria
D. Serum alanine aminotransferase concentration
E. White cell count

35. E

Bone marrow suppression occurs in up to 5% of patients receiving azathioprine and necessitates careful full blood count monitoring. Thiopurine methyltransferase (TPMT) levels are often taken before starting azathioprine to identify the 0.3% who have negligible levels and should not be given the drug, or those with low/intermediate levels in whom much smaller doses should be given if the drug is used. Most patients who develop leucopenia, however, have normal TPMT levels. 6-thioguanine nucleotides are metabolites of 6-mercaptopurine. Liver function tests should also be measured regularly as there is a small incidence of hepatotoxicity.
Question 36

A 49-year-old man presented with abdominal pain.

On examination, there was hepatosplenomegaly.

Investigations:

- serum iron: 48 µmol/L (12–30)
- serum ferritin: 2055 µg/L (15–300)
- transferrin saturation: 82% (20–50)

What abnormality is most likely to be detected in his HFE gene?

A  C282Y and H63D heterozygosity
B  C282Y heterozygosity
C  C282Y homozygosity
D  H63D heterozygosity
E  H63D homozygosity

36.  C

C282Y homozygosity is the most common gene mutation associated with genetic haemochromatosis.
Question 37.

A 67-year-old man presented with melaena whilst taking warfarin for atrial fibrillation. He was transfused and later underwent an upper gastrointestinal endoscopy and ileocolonoscopy, which were unremarkable. The melaena settled and so his warfarin was restarted and he was allowed home.

He re-presented 21 days later with further melaena and again required transfusion. His OGD and colonoscopy were repeated but no cause for his melaena was discovered.

What is the most appropriate next investigation?

☑️  E  small bowel capsule endoscopy

It is likely that the source of bleeding in this patient is from the small bowel. Capsule endoscopy is the best modality to locate the possible bleeding source in this case before potential targeted treatment via either push enteroscopy or double balloon enteroscopy.
Question 38.

A 77-year-old man presented with a 6-hour history of profuse fresh rectal bleeding. There had been no pain or preceding gastrointestinal symptoms. He had chronic obstructive pulmonary disease and ischaemic heart disease.

On examination, he was pale, with a pulse of 110 beats per minute and a blood pressure of 95/70 mmHg. Rectal examination revealed fresh blood but no masses palpable.

Investigations:

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>haemoglobin</td>
<td>96 g/L (130–180)</td>
</tr>
<tr>
<td>platelet count</td>
<td>464 x10^9/L (150–400)</td>
</tr>
<tr>
<td>serum sodium</td>
<td>143 mmol/L (137–144)</td>
</tr>
<tr>
<td>serum potassium</td>
<td>4.4 mmol/L (3.5–4.9)</td>
</tr>
<tr>
<td>serum urea</td>
<td>11.1 mmol/L (2.5–7.0)</td>
</tr>
<tr>
<td>serum creatinine</td>
<td>142 µmol/L (60–110)</td>
</tr>
</tbody>
</table>

He was partially resuscitated with intravenous fluids and blood, but continued to pass significant quantities of blood and remained haemodynamically unstable.

Upper gastrointestinal endoscopy was normal and limited flexible sigmoidoscopy was unrewarding, with poor views obtained.

What is the most appropriate next step in management?

- [ ] A barium enema
- [x] B interventional radiology
- [ ] C MR angiography
- [ ] D red cell scintigraphy scan
- [ ] E therapeutic colonoscopy

CT angiography (with potential interventional mesenteric artery embolisation) is indicated in patients with an unclear source of gastrointestinal bleeding who are cardiovascularly unstable due to continued significant blood loss.
Question 39

A 58-year-old man was admitted with a 2-week history of abdominal pain. The pain was widespread and associated with progressive abdominal distension. He had cirrhosis and a history of excess alcohol intake.

On examination, he appeared pale and cachectic. There was no palpable lymphadenopathy. The abdomen was tender, and shifting dullness was elicited. The liver was palpable 3 cm below the right costal margin.

Investigations:

- **haemoglobin**: 103 g/L (130–180)
- **platelet count**: 64 *10^9/L (150–400)
- **serum sodium**: 131 mmol/L (137–144)
- **serum potassium**: 4.2 mmol/L (3.5–4.9)
- **serum creatinine**: 89 µmol/L (60–110)
- **serum albumin**: 32 g/L (37–49)
- **serum total bilirubin**: 51 µmol/L (1–22)
- **serum alanine aminotransferase**: 72 U/L (5–35)
- **serum alkaline phosphatase**: 187 U/L (45–105)
- **ascitic albumin**: 23 g/L
- **ascitic neutrophil count**: 268 cells/mm^3
- **ascitic lymphocyte count**: 34 cells/mm^3

What is the most likely diagnosis?

- [ ] A Budd–Chiari syndrome
- [ ] B decompensated alcohol-related liver disease
- [ ] C hepatocellular carcinoma
- [x] D spontaneous bacterial peritonitis
- [ ] E tuberculosis

Abdominal pain in association with ascites should alert the clinician to a diagnosis of spontaneous bacterial peritonitis (SBP). SBP is confirmed with an ascitic neutrophil count of >250 cells/mm^3.
Question 40

A 35-year-old man with Crohn’s disease presented complaining of recurrent oral ulceration.

What is the most appropriate initial treatment?

☐ A chlorhexidine mouthwash
☐ B prednisolone
☐ C thalidomide
☒ D topical hydrocortisone
☐ E topical tacrolimus

Crohn’s oral aphthous ulceration is best treated in the first instance with topical steroid (eg hydrocortisone lozenges).
A 54-year-old man presented to the emergency department with dysphagia and stridor, and was found to have a large proximal oesophageal cancer. Because of external compression of the trachea by the oesophageal tumour, his stridor was treated initially with an endotracheal stent and then a T-tube tracheostomy.

A CT scan of chest showed a 7-cm mass from the suprasternal notch to the aortic arch arising from the oesophagus. Radical chemoradiotherapy was planned. Although he was able to swallow small amounts of semi-liquid food, nutritional support was required.

What means of nutritional support is most appropriate during chemoradiotherapy?

- [ ] A additional oral supplements
- [ ] B nasogastric tube
- [ ] C parenteral nutrition via a central vein
- [ ] D percutaneous endoscopic gastrostomy
- [x] E radiologically inserted gastrostomy

His dysphagia is likely to worsen on starting chemoradiotherapy and so he will need enteral feeding for several weeks. A radiologically inserted gastrostomy is preferred to a PEG as the latter can potentially result in ‘seeding’ of carcinoma cells in the stomach.
Question 42

A 32-year-old woman was treated for vitamin $B_{12}$ deficiency. She was lost to follow-up. She was referred for reassessment 3 years later. She reported having no dietary restrictions and taking no medication. There was no weight loss. Her mother had been treated with thyroxine for years.

Examination was normal.

Investigations:

- haemoglobin: 132 g/L (115–165)
- serum iron: 19 µmol/L (12–30)
- serum iron-binding capacity: 55 µmol/L (45–75)
- serum ferritin: 215 µg/L (15–300)
- serum transferrin: 6.0 g/L (2.0–4.0)
- serum vitamin $B_{12}$: 87 ng/L (160–760)
- red cell folate: 369 µg/L (160–640)

- anti-tissue transglutaminase antibodies:
  - IgA: 11 U/mL (<15)
- intrinsic factor antibodies: positive

What further investigation should be recommended?

- [ ] A) MR enteroclysis
- [x] B) none
- [ ] C) Schilling test
- [ ] D) small bowel follow-through
- [ ] E) upper gastrointestinal endoscopy

The positive intrinsic factor result indicates that it is highly likely that the patient’s low vitamin B12 status is due to pernicious anaemia. Most laboratories have ceased performing the Schilling test (used historically to diagnose pernicious anaemia) since the treatment of low B12 is intramuscular replacement whatever the underlying cause, and there is no additional treatment for pernicious anaemia.
Question 43

A 38-year-old woman was referred for investigation of loose stools and anaemia.

Investigations:

- haemoglobin 96 g/L (115–165)
- serum ferritin 4 µg/L (15–300)
- anti-tissue transglutaminase antibodies:
  - IgA 88 U/mL (<15)
  - anti-endomysial antibodies positive
- duodenal biopsy normal

What is the most appropriate next investigation?

- A 24-h urinary 5-hydroxyindoleacetic acid
- B colonoscopy
- C jejunal biopsy
- D lactose tolerance test
- E stool culture

This patient has iron deficiency anaemia in association with positive coeliac serology, and therefore a diagnosis of coeliac disease is highly likely. Histological confirmation is desirable before a lifelong gluten-free diet is imposed. Coeliac disease may have a patchy distribution and therefore in this case sampling from the jejunum is indicated.
A 43-year-old man presented with swelling of both ankles and a history of several weeks' intermittent dyspepsia. He stated that he was eating well and had noticed no alteration in bowel habit.

Physical examination was normal apart from the finding of oedema.

Investigations:

- haemoglobin: 130 g/L (130–180)
- white cell count: 7.6 \( \times 10^9 \) L (4.0–11.0)
- serum creatinine: 78 µmol/L (60–110)
- serum albumin: 26 g/L (37–49)
- upper gastrointestinal endoscopy: giant mucosal folds in fundus and body of stomach; otherwise normal

What investigation is most likely to determine the cause of his hypoalbuminaemia?

- A 24-h urinary protein
- B faecal \( \alpha \)-antitrypsin
- C faecal elastase
- D plasma gastrin
- E tissue transglutaminase

The endoscopic findings suggest a diagnosis of Menetrier’s disease (giant hypertrophic gastropathy) which is the commonest gastric lesion causing severe protein loss. \( \alpha \)-antitrypsin is similar in size to albumin and is a useful marker of intestinal protein loss. It is resistant to proteolysis and not actively secreted nor absorbed, with low levels normally present in stools. Protein-losing enteropathies result in elevated levels in stool.
Question 45

A 55-year-old man presented with upper abdominal pain and jaundice. He had had little appetite for a few days and lost 5 kg in weight. He also complained of increased frequency of bowel movements, which had contained a little fresh blood. He consumed 25 units of alcohol per week.

On examination, he was jaundiced. Abdominal examination showed slight enlargement of the liver, two fingers below the costal margin, and the gallbladder was palpable. Urinalysis showed blood 2+, protein 1+.

Investigations:

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>haemoglobin</td>
<td>137 g/L (130–180)</td>
</tr>
<tr>
<td>serum total protein</td>
<td>75 g/L (61–76)</td>
</tr>
<tr>
<td>serum albumin</td>
<td>30 g/L (37–49)</td>
</tr>
<tr>
<td>serum total bilirubin</td>
<td>80 µmol/L (1–22)</td>
</tr>
<tr>
<td>serum alkaline phosphatase</td>
<td>920 U/L (45–105)</td>
</tr>
<tr>
<td>chest X-ray</td>
<td>infiltration in right upper lobe</td>
</tr>
<tr>
<td>ultrasound scan of abdomen</td>
<td>swollen pancreas with prominence of pancreatic head; dilated intrahepatic bile ducts</td>
</tr>
</tbody>
</table>

What is the most appropriate treatment?

☐ A antituberculous therapy
☐ B endoscopic biliary stent placement
☐ C pancreatic enzyme supplements
☒ D prednisolone
☐ E ursodeoxycholic acid

Diffusely swollen pancreas with pulmonary infiltrates are described in autoimmune pancreatitis. The low albumin and high normal total protein suggests an increase in immunoglobulin levels (IgG4 is elevated in autoimmune pancreatitis)
Question 46

A 16-year-old boy with cystic fibrosis presented with an episode of severe, cramping abdominal pain. He had experienced similar less severe episodes previously. He felt bloated. There was no other significant medical history. His only regular medication was pancreatic enzyme supplements. His father had been found to have colorectal carcinoma at the age of 42.

On examination, he was uncomfortable but not distressed. He was apyrexial, his pulse was 84 beats per minute and his blood pressure was 105/60 mmHg. Abdominal examination showed a vague mass and mild tenderness in the right iliac fossa.

Investigations:

- haemoglobin: 155 g/L (130–180)
- white cell count: 8.4 $\times 10^9/L$ (4.0–11.0)
- platelet count: 233 $\times 10^9/L$ (150–400)

What is the most likely diagnosis?

- □ A appendix abscess
- □ B colorectal carcinoma
- □ C Crohn’s disease
- ☑ D distal intestinal obstruction syndrome
- □ E slow-transit constipation

Distal intestinal obstruction syndrome is the adult equivalent of infant meconium ileus. It is thought in part to be due to inspissated intestinal secretions.
Question 47

A 34-year-old woman presented with a 12-month history of intolerable watery diarrhoea. She had no significant past medical history and was taking no medication. She was a non-smoker and consumed 10 units of alcohol per week. Her mother had coeliac disease.

Physical examination was unremarkable.

Investigations:

- serum sodium: 139 mmol/L (137–144)
- serum potassium: 2.1 mmol/L (3.5–4.9)
- serum creatinine: 62 µmol/L (60–110)
- serum corrected calcium: 2.77 mmol/L (2.20–2.60)
- colonoscopy: normal

She was admitted to the planned investigations unit for measurement of stool weight for 3 days with a fourth day fasting.

Stool weight investigations:

<table>
<thead>
<tr>
<th>Day</th>
<th>Stool Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>1500 (&lt;200)</td>
</tr>
<tr>
<td>Day 2</td>
<td>1800</td>
</tr>
<tr>
<td>Day 3</td>
<td>1450</td>
</tr>
<tr>
<td>Day 4 (fasting)</td>
<td>1300</td>
</tr>
</tbody>
</table>

What is the most likely diagnosis?

☐ A alactasia
☐ B coeliac disease
☐ C laxative abuse
☐ D microscopic colitis
☒ E vasoactive intestinal peptide-secreting tumour

The stool weights are abnormally high. There is no reduction in the stool weight on day 4 (fasting) which is characteristic of a secretory diarrhoea. VIPoma causes a secretory diarrhoea.
Question 48

A 23-year-old man was admitted with severe, colicky, left-sided abdominal pain of sudden onset, which required treatment with morphine. He had been discharged 5 days previously after 1 week’s treatment for a relapse of left-sided ulcerative colitis. On admission, he was taking prednisolone 40 mg daily, azathioprine 150 mg daily and mesalazine 1200 mg four times daily.

On examination, he was restless, in obvious pain, with guarding over the left iliac fossa. He was apyrexial, his pulse was 82 beats per minute and his blood pressure was normal. Urinalysis showed non-visible haematuria.

Investigations:

- haemoglobin: 146 g/L (130–180)
- white cell count: 13.8 \( \times 10^9/L \) (4.0–11.0)
- platelet count: 164 \( \times 10^9/L \) (150–400)
- serum sodium: 143 mmol/L (137–144)
- serum potassium: 4.4 mmol/L (3.5–4.9)
- serum creatinine: 123 \( \mu \)mol/L (60–110)

- erect and supine X-rays of abdomen: normal

What is the most appropriate next investigation?

- A  CT scan of abdomen
- B  flexible sigmoidoscopy
- C  labelled white cell scan
- D  laparoscopy
- E  ultrasound scan of abdomen

Severe abdominal pain with non-visible haematuria suggests a renal tract stone. The other differential diagnosis of severe pain and guarding over the left iliac fossa would be perforation or abscess formation. A CT scan of the abdomen is the most appropriate initial investigation in this case to determine the diagnosis.
Question 49

A 63-year-old woman reported severe thirst and jejunostomy losses of 1.5 L per day. Three months previously, she had undergone an intestinal resection for radiation enteritis and had been left with a jejunostomy. The operative note recorded that approximately 170 cm of jejunum had been preserved. The colon distal to the hepatic flexure had been brought out as a mucous fistula.

Investigations:

- haemoglobin: 109 g/L (115–165)
- white cell count: 7.2 × 10^9/L (4.0–11.0)
- platelet count: 163 × 10^9/L (150–400)
- serum sodium: 135 mmol/L (137–144)
- serum potassium: 3.2 mmol/L (3.5–4.9)
- serum creatinine: 148 µmol/L (60–110)
- serum corrected calcium: 2.15 mmol/L (2.20–2.60)
- serum magnesium: 0.63 mmol/L (0.75–1.05)

What is the best oral option for managing her thirst?

- [ ] A calcium supplements
- [x] B glucose–sodium chloride solution
- [ ] C magnesium supplements
- [ ] D sodium supplements
- [ ] E unrestricted fluids

Isotonic oral fluid is indicated in short bowel syndrome.