

# Self-assessment/CPD answers

Below, you can find the answers to the self-assessment questions published in this chapter.

## Answers

### Colorectal cancer: prevention and early diagnosis

#### Question 1

**Correct answer: D.** The British guidelines for endoscopic surveillance following adenoma removal recommend two consecutive negative colonoscopies at 3-year intervals before a patient can be discharged from further follow-up. (Recommendation grade B, British Society of Gastroenterology (BSG) guidelines, Cairns et al., *Gut* 2010)

#### Question 2

**Correct answer: A.** The National Institute for Health and Care Excellence (NICE) recommends offering testing for Lynch syndrome with immunohistochemistry for mismatch repair proteins or microsatellite instability testing to all patients with a diagnosis of colorectal cancer. About 35% of patients with colorectal cancer have a genetic predisposition.

#### Question 3

**Correct answer: B.** Large bowel endoscopy has the most significant impact of the above listed measures. The bowel scope programme, a flexible sigmoidoscopy offered to all 55-year-old men and women, is now being rolled out across the UK and has a long-lasting survival benefit (Atkin et al., *Lancet* 2017)

### Colorectal cancer: features and investigation

#### Question 1

**Correct answer: C.** This patient meets the NICE guidelines for urgent referral to exclude a diagnosis of colorectal cancer (CRC): being aged >50 years with unexplained rectal bleeding. A faecal immunochemical test (B) should not be performed as the patient has symptoms of macroscopic bleeding. The bleeding pattern might fit a diagnosis of haemorrhoids (A, D), but more sinister pathology needs to be excluded in the first instance. Carcinoembryonic antigen (CEA) (E) has no established role in the trying to secure an initial diagnosis of CRC. If taken and the CEA was normal this should not necessarily reassure the tester as there is a significant false-negative rate, often associated with poorly differentiated cancers.

#### Question 2

**Correct answer: C.** Iron deficiency anaemia is a frequent feature of right-sided colon cancer as blood from these cancers is often not visible in the stool so they may remain asymptomatic while this chronic blood loss is occurring. Checking iron levels (A) will confirm the cause of the

microcytic anaemia, but will not identify a cause for this. Faecal immunochemical test (B) is designed to screen an asymptomatic population and even if this were negative the patient would still require referral for further investigation. Most lesions causing iron deficiency anaemia would arise proximal to the splenic flexure so a sigmoidoscopy (D) would not be a suitable test and abdominal CT (E), whilst being a valuable investigation for iron deficiency anaemia, is not as accurate as colonoscopy to diagnose or exclude CRC as the cause of the anaemia

#### Question 3

**Correct answer: B.** Endoscopic ultrasound has a role to play in the staging of rectal cancer, mainly in the assessment of early cancers to see if they may be suitable for local rather than radical resection. It is especially helpful if MR scanning is contraindicated as in this case. A CT scan of chest, abdomen and pelvis (C) and full blood count (E) should be performed in all patients before discussion in a multidisciplinary cancer meeting. CT positron emission tomography (PET) scanning is only required if standard staging investigations are unable to fully characterize lesions to confirm or refute distant metastases.

### Colorectal cancer: management

#### Question 1

**Correct answer: A.** Tissue diagnosis early in the management pathway is essential as the differential diagnosis includes squamous cell or basaloid cancers of the anal canal given the low level of the tumour. Lymphoma, melanoma and metastatic spread from lung cancer are also rare differential diagnoses that must be excluded. In a 50-year-old Lynch syndrome must be considered as detecting a mutation carrier directly influences clinical management of the primary lesion and also has implications for all family members. Immunohistochemistry (IHC) is used widely as a 'first pass' but the diagnosis should follow NICE guidance for molecular pathology assessment of early onset adenocarcinoma.

**(B) is incorrect.** The optimal first step is biopsy either in the clinic or at the time of flexible endoscopy or at EUA. The critical issue is histological diagnosis thereafter optimal cross-sectional imaging for staging purposes is CT of the chest, abdomen and pelvis with contrast as movement artefact is minimal with modern high-density array CT scanners. Movement artefact and scanner time mean that the place of MRI is limited to the pelvis where it provides higher quality images for T-staging and mesorectal lymph nodes than CT scanning. Wherever possible colonoscopy should be

performed as second benign adenomas and even malignant tumours are sufficiently frequent as to threaten optimal management. This is especially if there is an underlying genetic cause for this early onset cancer. CT/PET (C) is mainly reserved for staging of potential extra hepatic/ extrapulmonary distant disease as a second-line imaging modality. Staging information, histology and clinical assessment are *ALL* required prior to discussion (D). Multidisciplinary team (MDT) discussion informed by all imaging, histology and molecular pathology information are required prior to considering optimal treatment strategy (E).

### Question 2

**Correct answer:** A. The operating surgeon, pathologist, imaging and clinical oncologist should all input into the holistic care of an elderly patient with significant co-morbidity and in whom the risk is low for loco-regional relapse and/or distant spread. The unexpected finding of a malignancy does not mandate resectional surgery or radiotherapy but should be discussed on a case-by-case basis. She is unlikely to be fit for anterior resection (B). Re-excision (C) is unnecessary with a clear excision margin. Repeat scanning (D) is not indicated and anyway will be confused by postoperative changes. Surveillance is best clinically, endoscopically and by scanning, not CEA (E).

### Question 3

**Correct answer:** E. Management options should be discussed with the patient to explain the risk of recurrence balanced against the risk of surgery and the low likelihood that resection would actually provide benefit in preventing recurrence or even distant relapse. On an individual patient basis, prediction is very imprecise and this uncertainty should be shared with the patient. Should a non-operative approach be preferred, it is important that arrangements for follow-up and re-inspection of the site should be put in place. (A) There is no indication to remove the whole colon in absence of identified genetic syndrome and even then may not be required. (B) Options need to be discussed with the patient as she may wish intense surveillance. There are limited data on which to base risk of lymphatic involvement as most study data have involved post hoc analysis of resected specimens. Hence, the uncertainty of any benefit from resection balanced against the well-documented risk of complications from surgical resection, such as anastomotic leak, should be discussed with the patient in an open and honest fashion. Colonoscopic surveillance (C) is recommended but not within 1 month of endoscopic resection. 6 months later is recommended. Thereafter depending on findings 6 months later and thereafter BSG adenoma follow-up guidance should be followed. (D) Blood should not be taken without careful discussion and consent for sampling and testing. The risk of a genetic polyposis syndrome should be discussed with the patient and a *recommendation* that a referral is made to a genetics centre where family history, pedigree tracing and consenting can be offered. The polyposis syndromes that should be considered as most likely are

attenuated familial adenomatous polyposis (AFAP) and MUTY-associated polyposis (MAP) in the absence of a family history. The former is an autosomal dominant genetic disorder but the lack of affected relatives might be due to low penetrance (age and relatively few polyps might suggest this), family break-up and adoption, new mutations. MAP is a recessive disorder and so siblings have a 25% risk of inheritance of both defective genes. Other genetic adenomatous polyposis disorders include polymerase proofreading-associated polyposis (PPAP) and (rarely with so many polyps) Lynch syndrome. Options and rationale for testing should be discussed with the patient outwith the pressures of decisions around clinical management of the polyposis itself.

## Anal and perianal disorders

### Question 1

**Correct answer:** E. This is the most likely diagnosis. Intersphincteric abscesses do not have any perianal signs but cause severe pain. Anal fissure (A) is normally more painful after defecation, associated with fresh rectal bleeding, and not associated with systemic symptoms. Third-degree haemorrhoids (B) are prolapsed haemorrhoids requiring digital reduction and cause pain if remain prolapsed and therefore evident on perianal examination. Ischioanal abscess (C) presents with a tender, erythematous perianal swelling on examination. Fistula in ano (D) normally result from a previous perianal abscess and an external fistula opening is seen on examination

### Question 2

**Correct answer:** Lateral sphincterotomy is successful in over 90%. It is generally reserved for men who are refractory to conservative management. Glyceryl trinitrate (GTN) (A) is the standard initial treatment for chronic anal fissures in conjunction with stool softeners and analgesia, success rate is in the order of 65%. Laxatives and analgesia (B) is the standard initial treatment for acute anal fissures. Diltiazem (C) is reserved for patients who are intolerant to GTN ointment due to headaches or dizziness. Botulinum toxin (E) is used in high pressure anal fissures who do not respond to GTN or diltiazem, especially useful in women in whom lateral sphincterotomy carries a greater risk of incontinence.

### Question 3

**Correct answer:** B. Colonic transit studies (B) are the most appropriate investigation as this woman has typical symptoms of slow transit constipation. Anorectal manometry (A) is useful in incontinence to determine the resting pressure and the squeeze increment. It can be used in constipation to assess for a coordinated relaxation of the anal sphincters on attempted straining. There is no change in bowel habit, rectal bleeding or family history of colorectal disease to indicate colonoscopy (C), however mechanical causes such as colorectal cancer should always be in the differential diagnosis of patients with bowel symptoms. Biofeedback (D) is a therapy

rather than an investigation and is used to gain conscious control over an action that is normally performed unconsciously. This is applied in constipation to maximize propulsive defecatory force and minimize anal canal contraction during defecation (paradoxical puborectal contraction, anismus or dysynergic defecation). A defecating proctogram (E) is useful in the diagnosis of obstructive defecation which can be due to intussusception, rectocele or dysynergic defecation. The symptoms differ from slow transit constipation. In slow transit constipation there is reduced urge to defecate whereas in obstructive defecation there is a feeling of incomplete defecation requiring multiple attempts to defecate.

### Diverticular disease

#### Question 1

**Correct answer: D.** A CT scan with contrast allows the diagnosis of acute diverticulitis or its complications along with other pathology an alternative would be a non-contrast scan in those (B/D) with renal failure. An MRI (B) or ultrasound (E) provides some information and can be used in patients in whom CT is contraindicated. Flexible sigmoidoscopy (C) in the acute setting risks colonic perforation. A full blood count (A) is useful in assessment as a marker for anaemia or sepsis but will not lead to a diagnosis of acute diverticulitis.

#### Question 2

**Correct answer: C.** This woman is clinically well with a localized perforation. A trial of conservative management can be pursued as long as the patient is aware that any deterioration might lead to the need for surgery, which could include any of the surgical options above (A, B, D). Discharging this patient would not be an option given the clinical findings (E).

#### Question 3

**Correct answer: E.** In a patient with a diverticular abscess, percutaneous drainage in the first instance if the abscess is amenable to this can prevent the need for emergency resectional surgery. Therefore this should be the first approach if the patient condition allows and local expertise in percutaneous drainage is available. Surgery could be considered if the abscess is large, situated in the pelvis. The choice of surgical approach depends on surgical expertise along with the patient's condition and prior co-morbidity and options include resection with or without anastomosis (B/D). Abscesses less than 2 cm can be treated by antibiotics alone (C). Laparoscopic lavage is generally reserved for patients with purulent peritonitis rather than for the drainage of abscesses (A).

### Chronic pancreatitis and exocrine pancreatic insufficiency

#### Question 1

**Correct answer: B.** From the patient history and initial clinical work-up there is a high suspicion of chronic pancreatitis, but this needs confirmation from cross-sectional imaging that will also rule out relevant differential diagnosis such as

pancreatic cancer. Additionally, the presence of exocrine pancreatic insufficiency needs to be evaluated as the patient has had a significant weight loss.

#### Question 2

**Correct answers: A.** Complications to chronic pancreatitis, including malignant transformation to pancreatic cancer or the development of a pseudocyst, need to be evaluated prior to intensification of analgesic treatment.

#### Question 3

**Correct answer: D.** The patient has well-documented exocrine pancreatic insufficiency with F-*elastase* <10 micrograms/g (>200), therefore no further assessment of pancreatic function is needed. As the patient has developed exocrine pancreatic insufficiency it is important to undertake dual-energy X-ray absorptiometry to rule out osteoporosis.

### Pancreatic cancer

#### Question 1

**Correct answer: D.** The patient has biochemical confirmation of obstructive jaundice, and radiological evidence of a 'double duct sign' with a mass in the head of his pancreas, which is synonymous with an underlying pancreatic cancer. There is no evidence of locally advanced disease or distant metastases, so immediate surgery, if feasible, is the most appropriate option for diagnosis and treatment. As the disease is operable, confirming the presence of a mass with MRI (A) or endoscopic ultrasonography (B) will not alter management, nor will obtaining a tissue diagnosis. If the biopsy result were positive, the patient would be offered surgery; if it were negative, it might be a false-negative result, so he would still be offered surgery. If the bilirubin concentration were >200 micromol/litre or there was evidence of acute cholangitis, it would be reasonable to perform endoscopic retrograde cholangiopancreatography and insertion of a biliary stent (C) to avoid operative complications. A plastic or covered metal stent, however, should be placed rather than a bare metal one, to avoid difficulty removing it at the time of operation. A raised CA 19-9 concentration in the presence of obstructive jaundice is essentially meaningless and not diagnostic of pancreatic cancer (E). Concentrations often fall to within normal limits once the jaundice has been relieved.

#### Question 2

**Correct answer: B.** The presence of a hypervascular, well-defined pancreatic lesion is radiologically characteristic of a pancreatic neuro-endocrine tumour (pNET). It is important to confirm this with a tissue diagnosis before deciding the next step in management. If histology/cytology confirms a pNET, its grade could then be determined using the number of mitoses or Ki67 proliferation index to predict its future behaviour. The patient would also require an octreotide scan, or <sup>68</sup>Ga-DOTA-TATE PET-CT, to exclude occult metastases not identifiable on routine imaging, and gut

hormone concentrations to determine whether this was a functioning or non-functioning pNET. If there were evidence of metastases, surgery would not be the first option. An MRI scan (A) could identify further pancreatic and liver lesions and help with surgical planning, but is less sensitive than a gallium scan. Endoscopic retrograde cholangiopancreatography (C) is unnecessary and always runs the risk of an iatrogenic injury, pancreatitis and introduction of an infection to the biliary tree (C). If this were a localized, high-grade tumour, even though it is <2 cm in size, surgery (D) would be indicated, but only after the above investigations. As the tumour is <2 cm in size, surveillance (E) would be an option if the tumour were localized and low grade, but again only after the above investigations.

### Question 3

**Correct answer: E.** This patient has a locally advanced, inoperable tumour in the head of his pancreas, causing biliary and gastric outlet obstruction. As he was previously fit and well, it is appropriate to aim for palliative chemotherapy (A) as a treatment option. In order for him to be given this, he needs a definitive diagnosis and relief of his biliary and gastric outlet obstruction. Stenting, in comparison to bypass surgery (B), has fewer immediate complications and a shorter treatment time, enabling him to be given chemotherapy earlier. Positron emission tomography (C) is unnecessary at this stage, while percutaneous biopsy (D) is reserved for patients in whom an endoscopic ultrasound biopsy is not possible or has previously failed.

## Advances in diagnostic and therapeutic endoscopy

### Question 1

**Correct answer: C.** The British Society of Gastroenterology guidelines recommend that endoscopic resection should be the therapy of choice in visible lesions within Barrett's oesophagus. This is also the most accurate staging system for early Barrett's neoplasia. If this was flat Barrett's with no visible lesions, then answers (A) or (B) would be appropriate. (D) is correct in the case of low-grade dysplasia or indefinite. For dysplasia. All patients with high-grade dysplasia need an MDT discussion and therapeutic intervention as per guidelines. (E) is of course an incorrect answer.

### Question 2

**Correct answer: D.** Oesophageal per-oral endoscopic myotomy (E-POEM) is a minimally invasive endoscopic procedure for achalasia that can mimic the results of a surgical Heller's myotomy. Z-POEM (B) is an endoscopic treatment for Zenker's diverticulum. Duodenal mucosal resurfacing (E) involves thermal ablation of the duodenum as part of an ongoing trial for management of poorly controlled type 2 diabetes. Endoscopic sleeve gastropasty (C) is a weight loss procedure which involves full-thickness suturing reducing

gastric volume by 70%. Cryoablation (A) has no role in the management of achalasia

### Question 3

**Correct answer: C.** Cholangioscopy is used for treating difficult bile stones and assessing indeterminate biliary strictures. Electrohydraulic or laser lithotripsy probes fragment the stones. (A) Standard ERCP has already been tried and had failed. ERCP is the first-line procedure in the UK for management of biliary strictures and stones. (B) and (E) are incorrect as therapeutic intervention is now required in view of confirmed ductal stones. (D) is incorrect. NICE guidance suggests that patients with bile duct stones should have an ERCP before a laparoscopic cholecystectomy.

## Diabetes and the gastrointestinal tract

### Question 1

**Correct answer: C.** This patient has upper gastrointestinal red flag signs in terms of her nausea, vomiting and weight loss. Therefore, an upper gastrointestinal endoscopy is mandatory. Should this investigation prove to be normal, a CT scan should be undertaken to exclude underlying malignancy as the cause of the symptoms. In the context of the history if the CT is normal then one would consider a gastric emptying study.

### Question 2

**Correct answer: D.** In a patient with long-standing diabetes with nausea and recurrent vomiting, in whom gastric outlet obstruction has been excluded (as in this case with a normal upper gastrointestinal endoscopy), gastroparesis is the likely diagnosis. This is best investigated with a nuclear medicine gastric emptying study. The diagnosis is not functional dyspepsia (A) or gastro-oesophageal reflux disease (E) as pain and reflux are not symptoms respectively. Cannabinoid-induced hyperemesis (B) is also unlikely as this is characterized by intermittent symptoms.

### Question 3

**Correct answer: C.** Irritable bowel syndrome (A) with diarrhoea is unlikely without abdominal pain. Similarly, inflammatory bowel disease (B) and infectious gastroenteritis (E) are effectively excluded by the normal colonoscopy and stool microscopy, respectively. Insulin (D) treatment does not cause diarrhoea so the likely diagnosis is diarrhoea as a consequence of metformin therapy. This adverse effect can often be ameliorated by using slow-release metformin or considering an alternative.

## Scleroderma and other connective tissue disorders

### Question 1

**Correct answer: D.** The most likely diagnosis is opiate-induced gastrointestinal dysfunction. The normal blood and CT results rule out organic causes for the abdominal pain. Treatment involves decreasing the opiates and involving the

pain team. More opiates (A, C) will further increase her constipation and vomiting and is unlikely to treat her pain. Prucalopride (B) can help with vomiting and constipation but does not treat pain in the short or long term, and the vomiting will make tablet-swallowing difficult. Oral medications will be hard to take with the vomiting, and the prokinetic metoclopramide (E) is unlikely to help with opiate-induced vomiting.

### Question 2

**Correct answer: C.** Barrett's oesophagus and oesophageal strictures are recognized complications of long-standing gastro-oesophageal reflux disease. These are best diagnosed using gastroscopy, during which biopsies from the Barrett's segment can be taken to look for dysplasia. A barium swallow (A) would demonstrate a stricture but not Barrett's oesophagus. CT of the abdomen (B) would investigate for weight loss but would not demonstrate Barrett's oesophagus. A 24-hour study (D) would quantify the reflux disease but would not assess for Barrett's oesophagus or a stricture. Manometry (E) assesses for motility abnormalities, which could cause the dysphagia but would not demonstrate Barrett's oesophagus or a stricture.

### Question 3

**Correct answer: A.** She has lost 20% of her body weight and is underweight (BMI 16 kg/m<sup>2</sup>). Her score on the Malnutrition Universal Screening Tool is therefore at least 4, suggesting she has a very high risk of malnutrition. She will need supplemental nutrition, including Pabrinex. She is vomiting so will not tolerate the Fortisip drinks (B). There is dilated bowel suggestive of pseudo-obstruction, and the deranged electrolyte concentrations are suggestive of malabsorption; therefore enteral feeding (C, D) is not sufficient. Because of the vomiting and severe gastroparesis, feeding via a percutaneous endoscopic gastrostomy tube (D) will not be effective and the feed will be vomited up. Replacement of electrolytes (E) is needed but does not address the malnutrition.

## Gastroenterology in the elderly

### Question 1

**Correct answer: B.** A background history of atrial fibrillation with a combination of sudden onset of abdominal pain associated with rectal bleeding and a raised white cell count and C-reactive protein concentration is highly suggestive of bowel ischaemia. (A) Rectal bleeding is highly unlikely in acute appendicitis. (C) Colorectal malignancy usually presents with nonspecific bowel symptoms unless it is complicated with bowel obstruction or perforation. (D) This is a possibility but the presence of ischaemic heart disease atrial fibrillation favours B. (E) Inflammatory bowel disease usually presents as chronic or sub-acute change in bowel habits with rectal bleeding.

### Question 2

**Correct answer: C.** In view of the past history, the likely diagnosis is mesenteric ischaemia. A CT mesenteric angiogram will help to confirm the diagnosis. The other investigations are non-specific and of limited value. (A) Abdominal X-ray has very limited value except in suspected bowel obstruction or perforation. (B) Colonoscopy is invasive and not a first-line investigation in this case. (D) Can be a useful test but it unlikely to provide a definitive diagnosis in this case. (E) Labelled white cell scanning is helpful in suspected infective or inflammatory conditions, but is not an appropriate investigation in this case.

### Question 3

**Correct answer: C.** Colorectal cancer is the most likely diagnosis if there is a recent change in bowel habit associated with iron deficiency anaemia. In neoplastic conditions, ferritin can be normal or raised, and C-reactive protein can also be mildly increased as in this patient. (A) This a rare diagnosis and not associated with anaemia of iron deficiency parameters. (B) This is a possibility but it is rather unusual to manifest for the first time in this age group. (D) This is not associated with iron deficiency anemia. (E) This is also not associated with iron deficiency anaemia.