Self-assessment/CPD answers

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

Answers

Micronutrient deficiencies, vitamin pills and nutritional supplements

Question 1

Correct answer: Ferritin is a marker of iron stores in the body – it is also an acute phase protein which responds to inflammation. Here, inflammation makes the ferritin result inconclusive. Anaemia of chronic disease is usually presenting with normal MCV. The raised MCV indicates megaloblastic anaemia, which could be due to folate or B_{12} deficiency. As metformin can cause malabsorption of vitamin B_{12}, long-term use could lead to vitamin B_{12} deficiency in some patients.

Malnutrition and undernutrition

Question 1

Correct answer: B. The Malnutrition Universal Screening Tool (MUST) is a simple and reliable composite screening tool consisting of body mass index, percentage weight loss and acute disease effect score. The total score has been shown to be a better predictor of outcome than the individual components used in isolation (and hence why options A, C and D are incorrect answers). At-risk patients require a more detailed assessment and management plan. Patients with a medium or high risk need re-screening at monthly or weekly intervals, respectively. Serum albumin concentration is a negative acute phase protein and not a marker of nutritional status. Hypoalbuminaemia usually occurs in response to an inflammatory/infective insult, chronic liver disease or nephrotic syndrome.

Question 2

Correct answer: E. Wernicke's encephalopathy is the presence of neurological symptoms caused by a deficiency of thiamine, in this case resulting from the provision of nasogastric feeding without thiamine replacement. It presents with neurocognitive manifestations, classically the triad of ophthalmoplegia, ataxia and confusion. Thiamine deficiency is common in severely malnourished individuals; it is difficult to test for and therefore clinicians should have a high index of suspicion and a low threshold to instigate Thiamine treatment before commencing nutrition support. Answers A to D are all possible diagnoses in this case, but Wernicke's encephalopathy is the most likely unifying diagnosis; it is often missed as a potentially devastating complication of nutrition support where thiamine is not separately administered with nutrition support. It can be prevented by the provision of thiamine before starting feeding, most commonly administered as intravenous Pabrinex®.

Question 3

Correct answer: D. Cancers of the upper gastrointestinal tract often result in profound weight loss as a result of obstructive or partially obstructive symptoms and an advanced stage of cancer. The patient described in this question is overtly malnourished and is vomiting with solid food, therefore monitoring a normal diet for 72 hours (option A) is an inappropriate treatment option. Although many patients struggle with solid food, most can manage liquids and therefore oral nutritional supplements. These provide a useful treatment while further assessment, staging and treatment are undertaken. If tolerated, this prevents the need for artificial feeding (B, C, E) and associated risks of these treatments. NICE guidelines recommend that nutrition support should be delivered by the simplest, safest route possible. Therefore for most patients liquid oral nutritional supplements will fulfill this need. In the case illustrated in this question, first line treatment should be with oral nutritional supplements (and hence why option D is the correct answer), however if the degree of duodenal obstruction led to vomiting with fluids, then short term parenteral nutrition as a bridge to duodenal stenting, should be considered.

Artificial nutrition and nutrition support and refeeding syndrome

Question 1

Correct answer: D. Percutaneous endoscopic gastrostomy (PEG) would allow this patient the freedom to continue working, probably using bolus feeding at predetermined times. The only potential concern regarding PEG in this situation is the risk of seeding cancer cells from the oropharynx into the stomach and PEG tract. The actual number of cases where this has happened is in the realms of case reports only. However, a radiologically inserted gastrostomy tube would be a reasonable alternative. Oral feeding (A) is impractical and inappropriate in view of the odynophagia and planned surgery/radiotherapy. He is likely to require nutritional support for >6 weeks, but wants to continue to be independent and mobile and be able to work. In view of this, nasogastric (B) and nasojejunal (C) tubes are inappropriate. He has a functioning gut which should be used (E)

Question 2

Correct answer: A. It is too early after the stroke to be able to determine whether the patient needs long-term nutritional

support, i.e. that he will not recover his swallow. Option A explores further the methods of administering feed and is the next management strategy. A fibre feed could also be considered. Failing that, option E would be appropriate. Percutaneous endoscopic gastrostomy (C) would not influence the situation as this is still administering feed into the stomach, and it is unlikely that jejunal feeding (B) will help. Until options A and E have been tried, total parenteral nutrition (D) is not appropriate.

The ethics of artificial nutrition

Question 1

Correct answer: C. At this stage the diagnosis is uncertain but the patient is at high risk of developing complications of malnutrition. His choice to self-discharge is related to negative past experiences. Exploring the patients concerns and explaining that there are many potential options for treatment open to him, whatever the diagnosis, may alter his decision to self-discharge. It is inappropriate to ask his family to intervene. A time limited trial of parenteral nutrition would be the easiest way of ensuring optimal nutrition. Other alternatives would be the passage of a naso-jejunal tube to bypass the obstruction, but requires endoscopic intervention. Surgical options may be appropriate in the future and would depend on the results of the histology.

Question 2

Correct answer: D. There is good evidence that early feeding after a CVA can improve outcome. Enteral feeding should always be used in preference to parenteral nutrition where the gut is functioning. The use of mittens will help prevent tube displacement. At this stage, the prognosis of the patient is guarded. PEG placement should be considered if prolonged enteral feeding is required in the community before discharge.

Question 3

Correct answer: C. A displaced PEG tube must be replaced urgently or the tract can close off, often within hours of the PEG falling out. It should be replaced immediately and the position checked. At this stage, further information can be obtained regarding the admission from the nursing home. If the PEG has been recently placed (within the last 30 days) an urgent surgical opinion should be obtained before attempting re-insertion as the tract may not be fully formed and there is a risk of peritonitis.

Pathophysiology and aetiology and medical consequences of obesity

Question 1

Correct answer: A. Obstructive sleep apnoea (OSA) is frequently undiagnosed in obese patients and should be considered when screening for co-morbidities. Patients give a history of witnessed apnoea attacks when sleeping, excessive daytime somnolence, early morning headaches and nocturia. Increasing neck circumference (certainly >43 cm) is associated with increased risk of the condition. None of the other answers would usually be expected to be determined from the history. None of the other options relate to any specific undiagnosed obesity related co-morbidity and hence the other answers are incorrect.

Question 2

Correct answer: B. Thyroid function tests should always be done when assessing a patient's obesity. Although it may be unlikely to fully explain the degree of this patient's obesity, hypothyroidism is an important contributing factor that needs to be ruled out. If he had a significant history of alcohol ingestion then A and D would be appropriate.

Question 3

Correct answer: D. Ghrelin is the only hormone currently identified that stimulates appetite. Peptide YY, glucagon-like peptide-1 and oxyntomodulin are all anoretic peptide hormones, thereby suppressing appetite when their levels are elevated.

Childhood obesity

Question 1

Correct answer: C. Body mass index gender-specific percentile charts are used in children as they are still growing and the amount of body fat changes as they get older. Measurements should be plotted to allow assessment over time. Weight and height measurements alone do not indicate level of adiposity and therefore health risk. Both skin-fold thickness and bioelectrical impedance are not validated in this age group. Bioelectrical impedance is a research measure that is not widely available in clinical assessment.

Question 2

Correct answer: A. Protective factors include a longer duration of breastfeeding, avoidance of rapid growth in infancy, and healthy lifestyle behaviours (including diet and physical activity). Risk factors include early (<4 months of age) introduction of solids, excessive (≥500 ml/day) milk consumption, high (>15% energy) protein intake, less healthy dietary patterns (characterized by high intakes of foods high in fat, sugar and salt, and low intakes of fruit and vegetables), low (<3 hours of moderate activity per day) physical activity levels and high sedentary behaviours (>3 hours of screen time daily).

Question 3

Correct answer: C. Body mass index (BMI) centile is the most reliable indicator of obesity in children, although all the answers could be considered positive outcomes for an individual. The aim of intervention at this age is slow weight gain (A) rather than achievement of weight loss. Therefore, less rapid weight gain is a sign that an intervention is having an impact. Even if a child has gained weight and their BMI has increased,

a lower BMI centile will indicate a reduction in obesity. If the BMI has dropped, this suggests that obesity may be resolving; however, BMI can decrease while weight is still increasing (D). Excess fat is stored on the body. Therefore the fit of clothes (B) is a useful indicator that is easily recognized and acceptable to families. An improvement in cardiovascular fitness (E) can occur without a reduction in BMI.

Infant and child nutrition

Question 1

Correct answer: A. Iron deficiency anaemia is likely in children with a high intake of cow's milk. There are several mechanisms; cow's milk contains little iron, it may promote intestinal blood loss and the calcium and casein in milk reduce iron absorption from the gut.

It is recommended that children over 1 should not have more than 500 ml of cow's milk each day.

Question 2

Correct answer: C. Start with food first advice, in line with the National Institute for Health and Care Excellence faltering growth guidelines and monitored.

If fortifying foods does not work then oral nutritional supplements should be started. See Further reading for the full NICE guidelines on faltering growth.

Question 3

Correct answer: D. Honey should not be introduced to a child's diet until they have turned 1 year. Honey may contain bacteria which could lead to infant botulism. Children of this age lack protective bacteria which prevent germination of clostridial spores.

Public health nutrition in the UK

Question 1

Correct answer: B. The Reference Nutrient Intake is the amount of a nutrient that covers 97.5% of the population needs, while the Estimated Average Requirement is the amount that covers 50% of the population needs, the Low Reference Nutrient Intake the one that covers 2.5% of the population needs, the SI is the amount judged to meet the needs of almost everyone, without having undesirable effects, and the Dietary Reference Value is an umbrella term for all the above.

Question 2

Correct answer: A. The current population average intake of free sugars is 11% of total energy with the recommended intake being $\leq$5% (discrepancy of 6%), while the discrepancy for excess saturated fat is 2.5%; the intake of trans fats is within the recommendations and the intakes for total carbohydrate and total fat are slightly lower than recommended.

Question 3

Correct answer: A. Everyone in winter should take a vitamin D supplement, as milk formula is fortified and both adolescents and individuals with fair skin are not a specifically high risk populations for deficiency.