

Work Smart

Question 1 of 100

Oral therapy with which of the following may cause galactorrhoea?

(Please select 1 option)

<input type="checkbox"/>	Bromocriptine	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	Cabergoline	
<input type="checkbox"/>	Cimetidine	
<input type="checkbox"/>	Domperidone	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Spironolactone	

Domperidone is a dopamine antagonist producing large rises in prolactin concentrations.

Spironolactone has no effect on prolactin and cimetidine produces hyperprolactinaemia only when given intravenously (IV).

Both bromocriptine and cabergoline are dopamine agonists and reduce prolactin.

Answer Statistics

Work Smart

Question 1 of 73

A 39-year-old male presents with gynaecomastia.

Which of the following is the most likely cause of his gynaecomastia?

(Please select 1 option)

<input type="checkbox"/>	Congenital adrenal hyperplasia (CAH)	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	Hypopituitarism	
<input type="checkbox"/>	Hypothyroidism	
<input type="checkbox"/>	Prolactinoma	
<input type="checkbox"/>	Seminoma	<input type="checkbox"/> This is the correct answer

Gynaecomastia is due to a perturbation in the testosterone to oestradiol ratio.

Neither hyperprolactinaemia nor hypopituitarism disturb this ratio and are rarely associated with gynaecomastia.

Unlike hyperthyroidism, hypothyroidism is not a cause. CAH is not a cause.

However, gynaecomastia may be a presenting symptom of a seminoma and may arise due to human chorionic gonadotropin (HCG) secretion.

Work Smart

Question 2 of 100

Useful therapy for improving fertility in polycystic ovarian syndrome (PCOS) includes which of the following?

(Please select 1 option)

<input type="checkbox"/>	Cyproterone acetate <input checked="" type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	Ethinylestradiol
<input type="checkbox"/>	Glibenclamide
<input checked="" type="checkbox"/>	Metformin <input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Spirolactone

Metformin has been shown to increase the rate of conception in PCOS through improved insulin sensitivity (although studies have not been powered to show a significant impact on pregnancy outcome).

Ethinylestradiol and cyproterone acetate combine to form Dianette the oral contraceptive. Cyproterone acetate is also used as an anti-androgen for hormonal treatment of prostatic carcinoma.

Spirolactone is used for hirsutism but is teratogenic.

Glibenclamide is not used in PCOs.

Work Smart

Question 2 of 73

Osteomalacia may be expected in which of the following?

(Please select 1 option)

<input type="checkbox"/>	Auto-immune adrenalitis
<input checked="" type="checkbox"/>	Mercury poisoning This is the correct answer
<input type="checkbox"/>	Pernicious anaemia
<input type="checkbox"/>	Pseudo-hypoparathyroidism
<input type="checkbox"/>	Sarcoidosis Incorrect answer selected

Osteomalacia may occur with vitamin D deficiency.

Mercury poisoning or any heavy metal poisoning causes an acquired Fanconi syndrome with proximal (type 2) renal tubular acidosis.

Answer Statistics

1		6%
2		15%

Work Smart

Question 3 of 73

Which of the following antibodies are typically found in auto-immune adrenalitis (Addison's disease)?

(Please select 1 option)

<input type="checkbox"/>	Anti-nuclear antibody
<input type="checkbox"/>	Anti-peroxidase antibody
<input type="checkbox"/>	Anti-rho antibody
<input type="checkbox"/>	Anti-tryptophan hydroxylase antibody
<input checked="" type="checkbox"/>	Anti-21 hydroxylase antibody Correct

21 hydroxylase is the enzyme involved in the cholesterol steroid pathway and has been found to be present in approximately 80% of cases.

Answer Statistics



Work Smart

Question 3 of 100

Adult growth hormone deficiency (GHD) is confirmed by which of the following?

(Please select 1 option)

<input type="checkbox"/>	A low IGF binding protein-3 (IGFBP3) concentration
<input type="checkbox"/>	A low IGF-1 concentration
<input checked="" type="checkbox"/>	A peak growth hormone (GH) concentration of 6 mU/L (2 µg/L) with insulin-induced hypoglycaemia This is the correct answer
<input type="checkbox"/>	An undetectable random growth hormone concentration. Incorrect answer selected
<input type="checkbox"/>	Suppression of GH below 2 mU/l (1.3 µg/L) with an oral glucose tolerance test

The diagnosis of adult GHD depends on a peak GH response of less than 9 mU/L to insulin-induced hypoglycaemia.

Answer Statistics

1	<div style="width: 18%; background-color: #ccc; height: 10px;"></div>	18%
2	<div style="width: 14%; background-color: #ccc; height: 10px;"></div>	14%
3	<div style="width: 14%; background-color: #008000; height: 10px;"></div>	14%

Work Smart

Question 4 of 73

Which of the following doses of prednisolone is equivalent in its glucocorticoid potency to 20 mg of hydrocortisone?

(Please select 1 option)

<input type="checkbox"/>	2 mg
<input checked="" type="checkbox"/>	5 mg This is the correct answer
<input type="checkbox"/>	10 mg
<input type="checkbox"/>	15 mg Incorrect answer selected
<input type="checkbox"/>	20 mg

It is important to know the relative potencies of the glucocorticoids.

Dexamethasone for instance is roughly 30 times more potent than hydrocortisone.

Answer Statistics



Work Smart

Question 4 of 100

A 16-year-old male presents with lethargy. He takes no medication and has generally been otherwise well. Examination reveals that he is obese with a BMI of 36.4 kg/m² and a blood pressure of 120/72 mmHg.

There are no abnormalities of the cardiovascular, respiratory or abdominal systems.

Investigations reveal:

Sodium	141 mmol/L	(137-144)
Potassium	2.8 mmol/L	(3.5-4.9)
Urea	5.6 mmol/L	(2.5-7.5)
Creatinine	76 µmol/L	(60-110)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/> Apparent mineralocorticoid excess	<input checked="" type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> Bartter's syndrome	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/> Conn's syndrome	
<input type="checkbox"/> Cushing's syndrome	
<input type="checkbox"/> Hypokalaemic periodic paralysis	

Bartter's syndrome is an autosomal recessive renal disorder, caused by a number of different mutations. Presentation is often in childhood with gastrointestinal upset, failure to thrive and polyuria, but it can present in adolescence also.

The classic abnormalities seen on bloods are hypokalaemic alkalosis and elevated renin and aldosterone levels. The blood pressure is usually normal, and oedema is not a classic sign. Hyponatraemia and hypochloraemia may also be present. Urinary sodium, potassium and chloride are raised.

Treatment is aimed at preventing potassium wasting, for example with spironolactone and electrolyte supplements. Indomethacin is also effective, by inhibiting excess prostaglandin synthesis.

Apparent mineralocorticoid excess is a rare form of pseudohyperaldosteronism which is associated with early onset severe hypertension, which is not present in this case.

In Cushing's disease/syndrome the patient is often hypertensive rather than normotensive as described here. Proximal muscle wasting is often marked and is often commented on in the stem in combination with a description of the truncal obesity. This level of hypokalaemia is also unusual in Cushing's.

Conn's syndrome presents with hypertension in addition to hypokalaemia and alkalosis.

Hypokalaemic periodic paralysis is a rare channelopathy characterised by intermittent weakness and paralysis with corresponding falls in the potassium levels in the blood. The presentation described here does not fit with this diagnosis.

Answer Statistics

1		10%
2		42%
3		11%
4		18%
5		18%

Times answered: 8034

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 5 of 100

A 52-year-old female presents with tiredness.

There are no specific abnormalities noted on examination, but investigations reveal:

T4	21.1 pmol/L	(10-22)
T3	5.2 pmol/L	(5-10)
TSH	0.05 mU/L	(0.4-5)

Thyroid autoantibody titres are all undetectable.

Which diagnosis do these results suggest?

(Please select 1 option)

<input type="checkbox"/> De Quervain's thyroiditis
<input type="checkbox"/> Graves' disease
<input type="checkbox"/> Hashimoto's thyroiditis
<input type="checkbox"/> Sick euthyroid syndrome <input checked="" type="checkbox"/> Incorrect answer selected
<input checked="" type="checkbox"/> Solitary toxic nodule <input type="checkbox"/> This is the correct answer

This patient has subclinical hyperthyroidism and, in the absence of thyroid auto-antibodies, the most probable explanation of these thyroid function abnormalities is a solitary toxic nodule.

Work Smart

Exam Themes May 2007

Question 6 of 100

A 35-year-old female is found to have a solitary mass on the chest x ray.

Biopsy confirms this to be a carcinoid tumour of the lung.

Which of the following are likely to be associated with this lesion?

(Please select 1 option)

<input type="checkbox"/>	Carcinoid syndrome
<input checked="" type="checkbox"/>	Cushing's syndrome This is the correct answer
<input type="checkbox"/>	Hyponatraemia Incorrect answer selected
<input type="checkbox"/>	Pellagra
<input type="checkbox"/>	Pulmonary hypertension

Classical carcinoid syndrome occurs in less than 10% of patients with carcinoid tumours, but occurs most commonly in those with tumours of the small intestine, appendix, and proximal small bowel. Those in the lung rarely cause carcinoid, but have been associated with ACTH secretion and subsequent Cushing's syndrome.

Other associated conditions where foregut carcinoid tumours are found in the pancreas are associated with Zollinger-Ellison syndrome and VIPoma.

A bronchial carcinoid tumour has rarely been reported in association with acromegaly (ectopic growth hormone-releasing hormone [GHRH]).

They may also be found in association with multiple endocrine neoplasia (MEN) type 1 where

pancreatic neuroendocrine tumours predominate.

Answer Statistics

1		34%
2		13%
3		24%
4		21%
5		8%

Times answered: 8245

Test Analysis

CorrectIncorrectPartially
Correct

Score: 0%

Total Answered: 6

Feedback

Work Smart

Question 7 of 100

Which of the following is a cause of hypoadrenalism?

(Please select 1 option)

<input checked="" type="checkbox"/>	Hughes' syndrome (anti-phospholipid antibody)	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	McArdle's syndrome	
<input type="checkbox"/>	MEN type 2a	
<input type="checkbox"/>	Pendred's syndrome	
<input type="checkbox"/>	Von Hippel-Lindau	<input type="checkbox"/> Incorrect answer selected

The anti-phospholipid syndrome is one of the commoner causes of Hypoadrenalism and may precipitate adrenal infarction and haemorrhage through adrenal vein thrombosis.

Answer Statistics



Work Smart

Question 8 of 100

Growth hormone deficiency (GHD) is noted in which of the following?

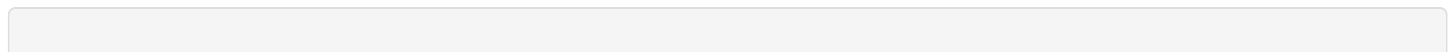
(Please select 1 option)

<input type="checkbox"/>	Chronic renal failure (CRF)	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	Constitutional short stature	
<input type="checkbox"/>	Laron's syndrome	
<input checked="" type="checkbox"/>	Sheehan's syndrome	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Turner's syndrome	

Sheehan's syndrome is post-delivery infarction of the pituitary and growth hormone deficiency is typical.

Although GH therapy is used in CRF, Turner's syndrome and short stature subjects are not GH deficient.

Laron's syndrome is due to a GH receptor defect with impaired IGF-1 production. It is an autosomal recessive condition, characterised by short stature and reduced incidence of cancer and diabetes.



Work Smart

Question 9 of 100

Regarding leptin, which of the following is correct?

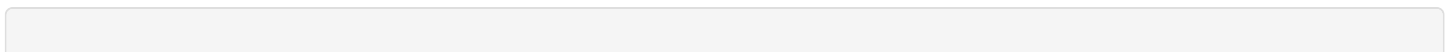
(Please select 1 option)

<input type="checkbox"/>	Acts upon the adipocyte
<input type="checkbox"/>	Is synthesised in the hypothalamus
<input type="checkbox"/>	Plasma concentrations correlate directly with lean body mass
<input checked="" type="checkbox"/>	Produces satiety This is the correct answer
<input type="checkbox"/>	Reduces basal metabolic rate Incorrect answer selected

Leptin is synthesised within the adipocyte and plasma concentrations are directly related to adipocyte (fat) mass.

It acts on receptors within the arcuate nucleus within the hypothalamus to produce satiety. As such, when patients reach a certain peripheral fat mass, leptin acts as a lipostat to reduce food intake.

However, leptin resistance is seen, hence patients can continue to accumulate weight and addition of leptin does not curb food intake.



Work Smart

Question 9 of 100

Regarding leptin, which of the following is correct?

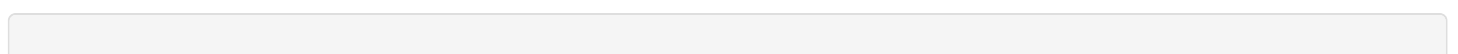
(Please select 1 option)

<input type="checkbox"/>	Acts upon the adipocyte
<input type="checkbox"/>	Is synthesised in the hypothalamus
<input type="checkbox"/>	Plasma concentrations correlate directly with lean body mass
<input checked="" type="checkbox"/>	Produces satiety This is the correct answer
<input type="checkbox"/>	Reduces basal metabolic rate Incorrect answer selected

Leptin is synthesised within the adipocyte and plasma concentrations are directly related to adipocyte (fat) mass.

It acts on receptors within the arcuate nucleus within the hypothalamus to produce satiety. As such, when patients reach a certain peripheral fat mass, leptin acts as a lipostat to reduce food intake.

However, leptin resistance is seen, hence patients can continue to accumulate weight and addition of leptin does not curb food intake.



Work Smart

Question 5 of 73

In randomised clinical studies, which of the following statements is true of post-menopausal hormone replacement therapy (HRT):

(Please select 1 option)

<input type="checkbox"/>	Causes regression of coronary plaques
<input type="checkbox"/>	Increases plasma LDL concentrations
<input checked="" type="checkbox"/>	Increases plasma triglycerides This is the correct answer
<input type="checkbox"/>	Reduces cardiovascular mortality
<input type="checkbox"/>	Reduces the incidence of stroke Incorrect answer selected

In randomised clinical trials (RCTs), HRT has not been shown to reduce cardiovascular (CV) mortality or the incidence of stroke¹, nor does it cause regression of coronary plaques².

In fact, HRT has been shown to have an increased CV morbidity in the WHI study.

It does not produce a raised low density lipoprotein (LDL), but may increase high density lipoprotein (HDL) concentrations.

Similarly it frequently produces a rise in triglyceride concentrations.

Reference:

1. Hulley S, Grady D, Bush T, et al. [Randomized trial of estrogen plus progestin for secondary prevention of coronary heart disease in postmenopausal women. Heart and](#)

[Estrogen/progestin Replacement Study \(HERS\) Research Group. JAMA. 1998;280\(7\):605-13.](#)

- Herrington DM, Reboussin DM, Brosnihan KB, et al. [Effects of estrogen replacement on the progression of coronary-artery atherosclerosis. N Engl J Med. 2000;343\(8\):522-9.](#)

Answer Statistics



Times answered: 8019

Test Analysis

CorrectIncorrectPartially
Correct

Score: 20%

Total Answered: 5

Work Smart

Question 10 of 100

Which of the following statements is true of the peroxisome proliferator activated receptor gamma (PPAR gamma):

(Please select 1 option)

<input type="checkbox"/>	Is a G-protein coupled receptor
<input type="checkbox"/>	Is a member of the cytokine receptor superfamily
<input checked="" type="checkbox"/>	Is activated by free fatty acid as the endogenous ligand This is the correct answer
<input type="checkbox"/>	Is antagonised by low density lipoprotein (LDL).
<input type="checkbox"/>	Is antagonised by thiazolinediones Incorrect answer selected

PPAR gamma is an intracellular receptor that is activated by free fatty acids (which are the natural endogenous ligands) and the thiazolinediones such as pioglitazone.

On ligand binding it associates with the retinoid X receptor and couples with deoxyribonucleic acid (DNA) producing downstream gene activation with protein synthesis that controls adipocyte differentiation and function, and is also related to cellular anti-inflammatory effects.

Work Smart

Question 6 of 73

A 32-year-old female presents with a two month history of agitation, menstrual irregularity, and weight loss.

Examination reveals a tremor and a palpable goitre with a bruit.

Which one of the following would most likely be present in this patient?

(Please select 1 option)

<input type="checkbox"/>	Anti-thyroglobulin antibody
<input type="checkbox"/>	Thyroid microsomal antibodies
<input type="checkbox"/>	Thyroid peroxidase antibodies
<input type="checkbox"/>	TSH receptor inhibiting antibodies
<input checked="" type="checkbox"/>	TSH receptor stimulating antibodies Correct

This patient is most likely to have Graves' disease as revealed by the thyroid bruit.

Thyroid-stimulating hormone (TSH) receptor stimulating antibody is specific for Graves' disease and is present in the vast majority of cases.

Work Smart

Question 11 of 100

A 60-year-old woman presents with vague aches and pains and has a family history of osteoporosis. She is 10 years post-menopausal but has not taken any female HRT.

Dual energy x ray absorptiometry (DEXA) is requested.

Which of the following values of bone mineral density measured by DEXA would signify osteopenia at a measured site?

(Please select 1 option)

<input type="checkbox"/>	A T score of -0.9
<input checked="" type="checkbox"/>	A T score of -1.8 This is the correct answer
<input type="checkbox"/>	A T score of -2.6
<input type="checkbox"/>	A Z score of -1.5
<input type="checkbox"/>	A Z score of -2.0 Incorrect answer selected

Osteopenia is defined as a T score of between -1 and -2.5 standard deviations below the bone mineral density of a young female.

Osteoporosis is defined as <-2.5 SD.

These measurements are important as they signify a greatly increased risk of fracture.

Z scores refer to the bone mineral density compared with that of a 'normal' age matched subject.

Work Smart

Question 7 of 73

A 64-year-old female is diagnosed with osteoporosis and is receiving treatment with raloxifene.

What is raloxifene?

(Please select 1 option)

<input type="checkbox"/>	An androgenic steroid
<input type="checkbox"/>	A bisphosphonate
<input type="checkbox"/>	A selective androgen receptor modulator (SARM)
<input checked="" type="checkbox"/>	A selective oestrogen receptor modulator (SERM) This is the correct answer
<input type="checkbox"/>	A synthetic oestrogen Incorrect answer selected

Raloxifene, like tamoxifen, is a SERM with oestrogen-like activity at sites such as bone but anti-oestrogen-like effects on breast/endometrium.

Answer Statistics

1		4%
2		4%

Work Smart

Question 12 of 100

A 38-year-old male presents with concerns relating to obesity.

Which of the following is the average daily energy used by a male of this age?

(Please select 1 option)

<input type="checkbox"/>	1500 kcal
<input type="checkbox"/>	2000 kcal
<input checked="" type="checkbox"/>	2500 kcal This is the correct answer
<input type="checkbox"/>	3000 kcal
<input type="checkbox"/>	3500 kcal Incorrect answer selected

The average daily energy consumption of a male is 2500 kcal and 2000 kcal for a female.

These values are important when determining the dietary calorie restriction.

Answer Statistics

1		5%
2		22%

Work Smart

Question 13 of 100

A 35-year-old man presents with weakness and tiredness.

He is noted to be hypertensive. Electrolytes show a hypokalaemia and hypomagnesaemia.

Which investigation would you select for this patient?

(Please select 1 option)

<input type="checkbox"/>	Colonoscopy <input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	Oral glucose tolerance test
<input checked="" type="checkbox"/>	Plasma renin to aldosterone ratio <input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Serum amylase
<input type="checkbox"/>	Serum calcium

This scenario illustrates that young patients with hypertension may have underlying secondary causes.

This patient has primary hyperaldosteronism, which is thought to be a reasonably common cause of hypertension. Primary hyperaldosteronism is associated with high aldosterone, suppressed renin, alkalosis, low potassium, low magnesium, and normal/high sodium.

An important differential diagnosis here is renal artery stenosis.

Causes of primary hyperaldosteronism include:

- Conn's syndrome (adrenal adenoma) causes over 50%

- Adrenal hyperplasia
- Adrenal carcinoma (rare)
- Glucocorticoid deficiency - also called glucocorticoid-remediable aldosteronism. Note that this is isolated glucocorticoid (cortisol) deficiency driving high ACTH levels and increased aldosterone production. Addison's disease is different as it involves both glucocorticoid and mineralocorticoid deficiencies.

Answer Statistics



Times answered: 8609

Test Analysis

CorrectIncorrectPartially
Correct

Score: 0%

Total Answered: 13

Work Smart

Question 1 of 71

A 32-year-old male physical education teacher has a three year history of type 1 diabetes.

At the last annual review, his HbA_{1c} was 51 mmol/mol but he complains of hypoglycaemic events particularly during exercise. He has been commenced on the insulin analogue, aspart insulin.

Compared with conventional short-acting insulins what is the advantage of insulin analogue therapy?

(Please select 1 option)

<input type="checkbox"/>	Longer duration of action
<input checked="" type="checkbox"/>	More rapid onset of action This is the correct answer
<input type="checkbox"/>	Reduces the incidence of hypoglycaemic events
<input type="checkbox"/>	Reduces the incidence of long-term diabetic complications
<input type="checkbox"/>	Significant improvement in HbA _{1c} Incorrect answer selected

Short-acting insulin analogue, like lispro-insulin, aspart insulin and glulisine insulin have a rapid onset of action and a shorter duration of action than conventional short-acting soluble insulins.

Consequently studies reveal reduced post-prandial glucose excursions versus soluble insulin and potentially a reduced incidence of hypoglycaemia although the evidence for this is debated.

Work Smart

Exam Themes May 2002

Question 2 of 71

A 30-year-old lady with long-standing type I diabetes presents with a three month history of pain and stiffness of the right shoulder.

Passive and active movements of the shoulder are equally restricted.

What is the most likely diagnosis?

(Please select 1 option)

<input checked="" type="checkbox"/>	Adhesive capsulitis Correct
<input type="checkbox"/>	Calcific tendinitis
<input type="checkbox"/>	Osteoarthritis
<input type="checkbox"/>	Pyrophosphate arthropathy (pseudogout)
<input type="checkbox"/>	Rheumatoid arthritis

Adhesive capsulitis (frozen shoulder) is strongly associated with diabetes with as many as 40% of patients developing this problem at some stage.

The restricted active and passive movements confirm that this patient's problems are either capsular or articular in origin rather than periarticular tendon problems where active movements are generally more restricted than passive movements.

The shoulder joint is rarely affected by primary osteoarthritis.

Work Smart

Question 3 of 71

Which of the following is correct according to the current criteria for diagnosing diabetes in an asymptomatic patient?

(Please select 1 option)

<input checked="" type="checkbox"/>	75 g oral glucose test (OGT) is mandatory for diagnosing diabetes	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	A fasting venous plasma concentration of <6.9 can be ignored	
<input type="checkbox"/>	A single fasting venous plasma glucose concentration of >7 mmol/L can be used to diagnose diabetes	
<input type="checkbox"/>	Impaired glucose tolerance is signified by a venous glucose concentration of <7 mmol and >11.1 mmol	
<input type="checkbox"/>	Two separate fasting venous plasma glucose concentration of >7 mmol/L are diagnostic of diabetes	<input type="checkbox"/> This is the correct answer

Questions about diagnosing diabetes are common in the AKT exam and often crop up on examiners' feedback reports.

In an asymptomatic individual, a single sample alone is not sufficient for diagnosis.

Diabetes can be diagnosed if separate fasting samples show above 7 mmol/L. 75 g.

OGT is still the gold standard for diagnosing diabetes, although fasting glucose can be used, provided adequate fast is ensured.

Fasting glucose of above 6.1 but below 6.9 is classed as impaired fasting glycaemia, which is a new category of glycaemia. Impaired glucose tolerance is defined as glucose levels of 7.8-11.1 mmol/L.

Answer Statistics



Times answered: 7282

Test Analysis

CorrectIncorrectPartially
Correct

Score: 33.33%

Total Answered: 3

Feedback

Work Smart

Question 4 of 71

An asymptomatic 56-year-old man with a family history of type 2 diabetes was found to have a fasting venous glucose of 6.5 mmol/L (3.0-6.0).

Which of the following relating to his further investigation is correct?

(Please select 1 option)

<input type="checkbox"/>	He has impaired glucose tolerance
<input type="checkbox"/>	He should be investigated further by another fasting venous sampling
<input checked="" type="checkbox"/>	He should be treated with oral hypoglycaemics in the first instance ❑ Incorrect answer selected
<input type="checkbox"/>	He should undergo a 75 gm oral glucose tolerance test ❑ This is the correct answer
<input type="checkbox"/>	This does not need further investigation

According to the World Health Organization criteria for the diagnosis of diabetes, a fasting venous plasma glucose (VPG) of 6.1-6.9 is categorised as impaired fasting hyperglycaemia (IFG). This level requires further assessment with a 75 gram oral glucose tolerance test (OGTT) which is still the gold standard.

A two hour value of equal to or over 11.1 mmol/L is diagnostic of diabetes.

Impaired glucose tolerance is a two hour VPG of 7.8-11.1 during an OGT.

Initial treatment of type 2 diabetes is patient education, diet and lifestyle changes.

Reference:

1. Turner H, Wass J (eds.) *Oxford Handbook of Endocrinology and Diabetes*. Second Edition. Oxford: Oxford University Press; 2009. pp 724-744.
2. World Health Organization (WHO) [Definition and diagnosis of diabetes mellitus and intermediate hyperglycaemia](#).

Answer Statistics



Times answered: 8456

Test Analysis

CorrectIncorrectPartially
Correct

Score: 25%

Total Answered: 4

Work Smart

Question 5 of 71

A 75-year-old man is admitted with a blood sugar of 40 mmol/L and lobar pneumonia and dies despite treatment.

Post-mortem examination reports the presence of amyloid polypeptide on pancreatic histology.

What would this would suggest?

(Please select 1 option)

<input type="checkbox"/>	That he had chronic pancreatitis as a cause of diabetes
<input type="checkbox"/>	That he had diabetes secondary to amyloidosis
<input type="checkbox"/>	That he had type 1 diabetes
<input checked="" type="checkbox"/>	That he had type 2 diabetes Correct
<input type="checkbox"/>	This can be a non-specific finding

The presence of amyloid polypeptide on pancreatic histology is highly suggestive of type 2 diabetes.

Although the primary defect in type 2 diabetes is insulin resistance, loss of insulin secretory function over time does occur in patients with type 2 diabetes, and reduction in beta cell mass due to amyloid deposition may partly account for this.

Work Smart

Question 14 of 100

Which of the following is the thyroid hormone receptor?

(Please select 1 option)

<input type="checkbox"/>	A cell surface receptor
<input type="checkbox"/>	A cytoplasmic protein
<input type="checkbox"/>	A G-protein coupled receptor
<input type="checkbox"/>	A gated ion channel
<input checked="" type="checkbox"/>	A nuclear receptor Correct

The thyroid hormone receptor is a nuclear receptor.

When it binds tri-iodothyronine (T3) it is able to bind to the thyroid hormone response element (TRE) in the promoter region of thyroid hormone responsive genes and initiates transcription.

Answer Statistics



Work Smart

Question 15 of 100

A 19-year-old female is concerned following exposure to meningococcal meningitis. Her flatmate contracted meningococcal meningitis and she now wants preventative treatment.

She is generally well without any past medical history. She takes Logynon as a contraceptive agent and uses a salbutamol inhaler infrequently.

Which prophylactic antimicrobial treatment would you select?

(Please select 1 option)

<input type="checkbox"/>	Augmentin
<input checked="" type="checkbox"/>	Ciprofloxacin Correct
<input type="checkbox"/>	Clarithromycin
<input type="checkbox"/>	Doxycycline
<input type="checkbox"/>	Rifampicin

Rifampicin is a reasonable choice as prophylaxis against meningococcal infection but in this 19-year-old sexually active student may be expected to reduce the efficacy of the oral contraceptive through liver enzyme induction.

Therefore Ciproxin would be the most appropriate agent from the above list as it does not induce cytochrome p450.

Work Smart

Question 16 of 100

A 28-year-old female presents in the 24th week of pregnancy with profound tiredness and anxiety. Examination reveals a tremor, a pulse of 100 beats per minute, and a soft bruit heard over the thyroid gland.

Thyroid function tests show:

Free T4	32.9 pmol/L	(10-22)
TSH	0.04 mU/L	(0.4-5)

Which of the following treatments would you select for this patient?

(Please select 1 option)

<input checked="" type="checkbox"/> Carbimazole Correct
<input type="checkbox"/> Potassium perchlorate
<input type="checkbox"/> Propanolol
<input type="checkbox"/> Propylthiouracil
<input type="checkbox"/> Radioactive iodine therapy

This patient has Graves' disease and the most appropriate treatment for the thyrotoxicosis is Carbimazole. She should receive in the lowest dose to maintain euthyroidism.

A block and replacement regime is not appropriate in pregnancy.

Radioactive iodine is contraindicated as it would also be taken up by the fetal thyroid.

Propranolol would ameliorate the symptoms but may impact upon the fetus.

Lithium is contraindicated in pregnancy as is potassium perchlorate.

Of course, surgery may also be used in severe cases.

Due to the small risk of fetal abnormalities with carbimazole it is recommended to use PTU in the first trimester during organogenesis and then carbimazole in trimester 2 + 3.

Further Reading:

O'Doherty MJ, McElhatton PR, Thomas SH. [Treating thyrotoxicosis in pregnant or potentially pregnant women](#). *BMJ*. 1999;318:5.

Answer Statistics

1		32%
2		1%
3		13%
4		51%
5		3%

Times answered: 7439

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 6 of 71

You are consulted by a 52-year-old man with type 2 diabetes diagnosed for one year.

His blood pressure is 156/88 mmHg, his cholesterol is 5.3 mmol/L (<5.2), he has a BMI of 29 kg/m² and does not smoke. His HbA_{1c} is 63 mmol/mol (20-42), he currently takes only metformin 500 mg bd.

What is the single intervention most likely to reduce his overall risk of both microvascular and macrovascular events?

(Please select 1 option)

<input checked="" type="checkbox"/>	Antihypertensive therapy □ This is the correct answer
<input type="checkbox"/>	Aspirin therapy
<input type="checkbox"/>	Statin therapy
<input type="checkbox"/>	Sulphonylurea therapy
<input type="checkbox"/>	Weight reduction □ Incorrect answer selected

Note this question asks about reducing both micro and macrovascular complications. The best evidence seems to be for multifactorial intensive therapy as in the Steno studies from Denmark. However, in this question, as worded, BP is the simplest answer.

Trials have shown that antihypertensive therapy reduces the risk of cardiovascular events and microvascular complications. The intensity of the treatment is currently of debate.

Lowering HbA_{1c} only resulted in a significant reduction in microvascular events and, in some trials

after a longer period, shows cardiovascular benefit. However, the trial showed an excess of deaths in the intensive glycaemic control arm perhaps because the intensification occurred later in the course of the disease when cardiovascular disease was present and may have put participants at increased risk from hypoglycaemia.

Lipid lowering therapy benefits patients with diabetes as much as those without diabetes in preventing macrovascular events in sub-group analyses but has no effect on microvascular events demonstrated so far. Adding fibrate may have an effect on retinopathy (FIELD5).

The jury is out on aspirin as the ADA recommend prescribing only to high risk patients, but NICE had recommended all normotensive patients over 50 (men) or 60 (women), they now also agree with risk stratification.

Weight reduction may reduce progression to overt diabetes from states of impaired glucose tolerance but has not been demonstrated to reduce microvascular risk in diabetes.

Further Reading:

GP Notebook. [Type 2 Diabetes Mellitus \(Aims of Treatment\)](#).

Answer Statistics

1		31%
2		5%
3		13%
4		8%
5		43%

Times answered: 8405

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 7 of 71

A 50-year-old man with a history of diabetes mellitus and hypertension attends an ophthalmic clinic for regular assessment.

On fundoscopy he is diagnosed to have preproliferative diabetic retinopathy.

Which of the following is characteristic of preproliferative diabetic retinopathy?

(Please select 1 option)

<input type="checkbox"/>	Hard exudates
<input type="checkbox"/>	Macular oedema
<input type="checkbox"/>	Microaneurysms
<input type="checkbox"/>	New vessels at the disc
<input checked="" type="checkbox"/>	Venous beading Correct

Microaneurysms and hard exudates are features of background diabetic retinopathy.

Macular oedema is associated with microaneurysms and hard exudates and is due to fluid leakage but is not necessarily a feature pre-proliferative or proliferative retinopathy although it may still require laser photocoagulation.

Venous beading, loops and soft exudates (cotton wool spots) are characteristic of the ischaemia associated with preproliferative diabetic retinopathy.

New vessels suggest proliferative retinopathy.

Work Smart

Question 17 of 100

A 26-year-old woman presents with episodes of dizziness mainly on standing.

Her biochemical profile shows hyperkalaemic acidosis.

Which underlying condition is she most likely to have?

(Please select 1 option)

<input type="checkbox"/>	Addison's disease	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Bulimia nervosa	
<input type="checkbox"/>	Conn's syndrome	
<input type="checkbox"/>	Cushing's syndrome	
<input type="checkbox"/>	Type 1 renal tubular acidosis	<input type="checkbox"/> Incorrect answer selected

Her symptoms are suggestive of postural hypotension, which together with hyperkalaemic (and hyponatraemia) acidosis would strongly indicate the presence of Addison's disease.

Cushing's and Conn's syndromes are associated with hypertension and hypokalaemia.

Hypokalaemia is the most frequent complication of bulimia which may cause cardiac arrhythmias, fits and paraesthesia.

Renal tubular acidosis (RTA) is due to inability of the renal tubules to maintain acid-base balance, causing a hyperchloraemia and a normal anion-gap.

In type 1 (distal) RTA, there is hypokalaemic acidosis with low urinary ammonium production.

Patients present with hyperventilation/acidosis and muscular weakness from hypokalaemia.

In type 4 RTA (hyporeninaemic hypoaldosteronism), there is hyperkalaemic acidosis caused by chronic renal insufficiency from diabetes or tubulointerstitial disease.

Answer Statistics



Times answered: 7593

Test Analysis

CorrectIncorrectPartially
Correct

Score: 17.65%

Total Answered: 17

Work Smart

Question 8 of 71

To which of the following drug classes does the oral hypoglycaemic agent pioglitazone belong?

(Please select 1 option)

<input type="checkbox"/>	A biguanide
<input type="checkbox"/>	A peroxisome proliferator activated receptor (PPAR)-alpha agonist
<input checked="" type="checkbox"/>	A peroxisome proliferator activated receptor (PPAR)-gamma agonist This is the correct answer
<input type="checkbox"/>	A sulphonylurea
<input type="checkbox"/>	An alpha-glucosidase inhibitor Incorrect answer selected

Pioglitazone belongs to the PPAR gamma agonist class of blood glucose lowering agents.

Through activation of this receptor they modulate adipocyte function and improve insulin sensitivity.

Blood glucose lowering effect is around 1-1.3% HbA_{1c}, but associated adverse events include fluid retention and decreased bone mineral density.

Pioglitazone is contraindicated in patients with a prior history of heart failure.

Work Smart

Question 8 of 73

A 53-year-old male is suspected of having acromegaly.

Which of the following is the best investigation to confirm the diagnosis?

(Please select 1 option)

<input type="checkbox"/>	9 am growth hormone (GH) concentrations
<input type="checkbox"/>	An insulin tolerance test with growth hormone concentrations
<input checked="" type="checkbox"/>	Glucose tolerance test with growth hormone concentrations This is the correct answer
<input type="checkbox"/>	Growth hormone releasing hormone test
<input type="checkbox"/>	Insulin-like growth factor-1 (IGF-1) Incorrect answer selected

The diagnosis of acromegaly is confirmed by inadequate suppression of GH concentrations in an oral glucose tolerance test. GH should be undetectable or <0.6 mcg/L.

Although IGF-1 concentrations are elevated these are not diagnostic and may fall during illness.

Answer Statistics

Work Smart

Question 9 of 73

A 60-year-old female was prescribed thyroxine 150 microgrammes daily for hypothyroidism.

She was clinically hypothyroid and no goitre was present.

She attends a follow up clinic and following are her results:

Serum total T4	68 nmol/L	(55-145)
Serum total T3	0.5 nmol/L	(0.9-2.5)
Serum TSH	70 mU/L	(0.4-5)

Which of the following would be the next step in her management?

(Please select 1 option)

<input type="checkbox"/> Investigation for TSH secreting pituitary tumour	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> Measurement of free thyroxine concentration	
<input type="checkbox"/> Questioning of the patient about compliance	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/> She has sick euthyroid syndrome, no further investigation required	
<input type="checkbox"/> Thyroid ultrasound scan	

Apart from by the RCP total thyroid hormone levels are now seldom measured.

This patient has a raised thyroid-stimulating hormone but normal total thyroxine (T4) and a low tri-

iodothyronine (T3).

Either there is a block on the conversion of T4 to T3 or as seems more likely the patient has taken the T4 just prior to coming to clinic.

The explanation is non-compliance.

Answer Statistics

1		10%
2		15%
3		68%
4		3%
5		4%

Times answered: 8550

Test Analysis

CorrectIncorrectPartially
Correct

Score: 22.22%

Total Answered: 9

Work Smart

Question 18 of 100

In the treatment of osteoporosis, which of the following best describes the drug raloxifene?

(Please select 1 option)

<input type="checkbox"/>	A bisphosphonate
<input type="checkbox"/>	A calcium receptor modulator
<input type="checkbox"/>	A PTH receptor agonist
<input checked="" type="checkbox"/>	A selective oestrogen receptor modulator This is the correct answer
<input type="checkbox"/>	An oestrogen Incorrect answer selected

Raloxifene is the first of the so-called selective oestrogen receptor modulators.

There are fundamentally two types of oestrogen receptor, alpha and beta, distributed at locations such as breast, uterus, bone, and in the vasculature.

Raloxifene acts as an oestrogen agonist at some sites, for example, bone to increase mineralisation, but acts as an antagonist at other sites, for example, uterus/breast (preventing endometrial/breast hyperplasia).

It differs from tamoxifen in this regard, because tamoxifen (another SERM) acts as a partial agonist at the endometrium, so can promote endometrial hyperplasia.

Work Smart

Question 19 of 100

A 16-year-old girl complains of feeling tired and lethargic for the last six months.

She also has generalised abdominal discomfort and constipation. She denies depression but her performance at school has deteriorated this year.

Examination shows a pale and thin young woman. Her blood pressure is 110/60 mmHg.

Haemoglobin	134 g/L	(115-165)
White cell count	$4.8 \times 10^9/L$	(4-11)
Platelet	$290 \times 10^9/L$	(150-400)
ESR	17 mm/1st hr	(0-20)
Sodium	131 mmol/L	(137-144)
Potassium	2.7 mmol/L	(3.4-4.5)
Urea	3.0 $\mu\text{mol/L}$	(2.5-7.5)
Creatinine	90 mmol/L	(60-110)
Bicarbonate	35 mmol/L	(20-28)
Alkaline phosphatase	90 IU/L	(50-110)
Bilirubin	12 $\mu\text{mol/L}$	(1-22)
AST	30 IU/L	(5-40)
Albumin	36 g/L	(33-44)

CXR	Normal	-
-----	--------	---

Which of the following is the most likely underlying diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Addison's disease
<input checked="" type="checkbox"/>	Anorexia nervosa This is the correct answer
<input type="checkbox"/>	Conn's syndrome
<input type="checkbox"/>	Cushing's syndrome Incorrect answer selected
<input type="checkbox"/>	Phaechromocytoma

This patient has anorexia nervosa with vomiting, which would explain the low sodium and potassium. Although it sounds counterintuitive, several studies have shown that albumin levels remain normal in anorexia nervosa. The biological mechanism is not fully understood. If albumin levels are reduced you should look for other causes, such as occult sepsis.

Addison's disease causes hyponatraemia and hyperkalaemic acidosis, whilst Cushing's disease causes hypokalaemic alkalosis. The clinical presentation does not fit with the latter.

Conn's syndrome (adrenal adenoma) is associated with hypertension and hypokalaemia.

Further Reading:

Narayanan V, Gaudiani JL, Mehler PS. [Serum albumin levels may not correlate with weight status in severe anorexia nervosa.](#) *Eat Disord.* 2009;17:322-6.

Answer Statistics		
1		16%
2		70%
3		10%
4		2%
5		2%
Times answered: 8594		

Work Smart

Question 9 of 71

A 50-year-old woman presented with a recently discovered, solitary, thyroid nodule.

Which of the following would suggest a diagnosis of thyroid malignancy?

(Please select 1 option)

<input type="checkbox"/>	Elevated serum thyroglobulin concentration
<input checked="" type="checkbox"/>	Features of thyrotoxicosis ❌ Incorrect answer selected
<input type="checkbox"/>	Ipsilateral Horner's syndrome ❑ This is the correct answer
<input type="checkbox"/>	Previous I ₁₃₁ therapy
<input type="checkbox"/>	Tenderness over the nodule

The association of Horner's syndrome and a thyroid nodule would suggest invasion of the sympathetic chain and would suggest that this thyroid nodule is malignant.

Previous I₁₃₁ is not associated with the development of malignancy.

Thyroglobulin may be elevated in any thyroiditis.

Tenderness over the nodule would suggest a thyroiditis and thyrotoxicosis suggests a functional adenoma making the malignancy extremely unlikely.

Work Smart

Question 10 of 73

A 29-year-old woman presents with a one year history of irregular periods, deteriorating hirsutism, and weight gain.

Investigations reveal:

Serum testosterone	4 mmol/L	(0.5-3)
Serum dehydroepiandrosterone sulphate(DHEAS)	15 µmol/L	(0.3-9.3)

Which one of the following statements is most probable for this patient?

(Please select 1 option)

<input type="checkbox"/>	Pituitary gonadotrophins are likely to become suppressed
<input type="checkbox"/>	She has an increased risk of multiple pregnancies
<input type="checkbox"/>	She is at increased risk of autoimmune disease
<input type="checkbox"/>	She is at increased risk of ovarian carcinoma
<input checked="" type="checkbox"/>	She is likely to develop acanthosis nigricans Correct

This patient has oligomenorrhoea, weight gain, and hirsutism.

The investigations show a modest elevation of androgens and support a diagnosis of polycystic ovarian syndrome.

This condition is associated with insulin resistance and acanthosis nigricans is a feature.

Work Smart

Question 20 of 100

A 16-year-old girl with obesity was referred with abdominal swelling and mild ankle oedema.

On examination the blood pressure was 140/90 mmHg.

Investigations revealed:

Haemoglobin	105 g/L	(115-165)
Serum albumin	34 g/L	(37-49)
Serum biochemistry	Normal	
Urine dipstick	Proteinuria +	

Which is the most appropriate investigation that you would request next for this patient?

(Please select 1 option)

<input type="checkbox"/>	24 hour urinary protein estimation
<input type="checkbox"/>	Abdominal ultrasound
<input type="checkbox"/>	Plasma protein electrophoresis
<input type="checkbox"/>	Urinary albumin: creatinine ratio
<input checked="" type="checkbox"/>	Urinary B-human chorionic gonadotrophin test (B-HCG) Correct

This young girl has been gaining weight, has abdominal swelling and ankle oedema.

She is hypertensive and has a mild anaemia with proteinuria.

These signs should ring a bell, suggesting a concealed pregnancy with pre-eclampsia.

The most relevant investigation would be a pregnancy test - urinary B-HCG.

Answer Statistics

1		29%
2		12%
3		2%
4		14%
5		43%

Times answered: 8537

Test Analysis

CorrectIncorrectPartially
Correct

Score: 20%

Total Answered: 20

Work Smart

Question 21 of 100

An 18-year-old male presented with delayed pubertal development. He had always noted an impaired sense of smell.

Examination revealed that his height was on 90th centile and his weight on the 90th centile. His external genitalia showed a small penis with testicular volumes of 3 mL bilaterally and no pubic hair.

Investigations revealed:

LH concentration	1.0 U/L	(1-10)
FSH concentration	1.0 U/L	(1-7)
Serum testosterone	3.0 pmol/L	(9-35)
Free T4	19 pmol/L	(10-22)
TSH	3.0 mU/L	(0.4-5)

CT scan reported as normal.

Which is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Constitutional delay of puberty
<input checked="" type="checkbox"/>	Kallmann's syndrome This is the correct answer
<input type="checkbox"/>	Klinefelter's syndrome
<input type="checkbox"/>	Noonan's syndrome

The combination of hypogonadotrophic hypogonadism and anosmia would suggest a diagnosis of Kallmann's syndrome.

This is one of the commonest causes of isolated hypogonadotrophic hypogonadism and is due to a failure of migration of the olfactory neurones and gonadotropin-releasing hormone (GnRh) neurones during development.

Answer Statistics



Times answered: 7352

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 11 of 73

A 20-year-old man with asthma was found to be hypertensive.

Investigations revealed:

Serum sodium	144 mmol/L	(137-144)
Serum potassium	2.4 mmol/L	(3.5-4.9)
Serum bicarbonate	30 mmol/L	(20-28)

Which one of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/> Barter's syndrome
<input type="checkbox"/> Coarctation of the aorta
<input type="checkbox"/> Congenital adrenal hyperplasia
<input checked="" type="checkbox"/> Conn's syndrome This is the correct answer
<input type="checkbox"/> Inhaled salbutamol therapy Incorrect answer selected

This is a tough question as a number of answers are possible.

This young asthmatic has a hypokalaemic hypertension and it is assumed that his hypertension is sustained.

This would therefore suggest a secondary cause which may be either hyperaldosteronism or pseudohyperaldosteronism.

A rare CAH (11-beta hydroxysteroid dehydrogenase [11-BHSD] deficiency) may be responsible for hypokalaemic hypertension and the presentation is variable ranging from birth to adulthood but typically birth.

Bartter's syndrome is not associated with hypertension.

Conn's syndrome is usually found in middle aged patients and would be unusual in a patient of this age but even so is probably the best answer here.

Liquorice ingestion could fit this picture but would again be somewhat unusual in this patient.

Salbutamol may cause hypokalaemia particularly when given via nebuliser or particularly intravenously but should not produce hypertension.

Answer Statistics

1		12%
2		1%
3		5%
4		63%
5		19%

Times answered: 7413

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 10 of 71

A 16-year-old male presents with a day history of malaise, weakness, and vomiting. He was diagnosed with insulin-dependent diabetes mellitus three years previously.

Which one of the following supports a diagnosis of diabetic ketoacidosis (DKA)?

(Please select 1 option)

<input type="checkbox"/>	A random serum glucose 14 mmol/L (4.5-6.4)
<input checked="" type="checkbox"/>	A serum standard bicarbonate of 10 mmol/L (22-26) Correct
<input type="checkbox"/>	Abdominal pain at onset
<input type="checkbox"/>	Decreased appetite in the past few days
<input type="checkbox"/>	Shallow respirations

Abdominal pain at onset is an unusual but recognised feature, particularly in children. However it does not support a diagnosis of DKA.

'Normoglycaemic DKA' can occur and a glucose of 14 is compatible with a diagnosis, but is not suggestive as one might expect to find these sort of concentrations with diabetes per se.

The low plasma bicarbonate is highly suggestive of a metabolic acidosis.

Usually patients are unwell with infections and anorexia. Fasting is itself associated with the presence of ketones in the urine but not necessarily ketoacidosis.

Respiratory compensation leads to rapid deep (Kussmaul's) breathing.

Work Smart

Question 11 of 71

Which of the following concerning diabetic retinopathy is correct?

(Please select 1 option)

<input type="checkbox"/>	Improved glycaemic control is more effective than hypertensive control in reducing progression of disease
<input type="checkbox"/>	Is unusual in patients with type 2 diabetes
<input checked="" type="checkbox"/>	Normal visual acuity is seen in proliferative retinopathy This is the correct answer
<input type="checkbox"/>	Progression may be reduced with statin therapy Incorrect answer selected
<input type="checkbox"/>	Soft exudates are a feature of background retinopathy

Diabetic retinopathy occurs in both type 1 and 2 DM and may be a presenting feature in type 2 as the condition may have existed for many years prior to diagnosis.

Progression may be slowed with improved glycaemic and hypertensive control but the latter has been shown to be more effective at reducing progression (UKPDS).

There are no data at present to suggest that statin therapy reduces disease progression.

Soft exudates are a feature of pre-proliferative Rn and despite quite marked new vessel disease the visual acuity may be normal.

Work Smart

Question 12 of 71

Which of the following is correct of insulin?

(Please select 1 option)

<input type="checkbox"/>	It acts via a similar mechanism to steroid receptors
<input type="checkbox"/>	It cannot be detected in the lymph
<input checked="" type="checkbox"/>	It causes an increased glucose-protein transport on the endoplasmic reticulum This is the correct answer
<input type="checkbox"/>	It interacts with the nuclear membrane
<input type="checkbox"/>	It is synthesised in the alpha cells of islets of Langerhans Incorrect answer selected

It acts via a similar mechanism to cell surface receptors.

Insulin binding to its receptor results in receptor autophosphorylation on tyrosine residues and the tyrosine phosphorylation of insulin receptor substrates (IRS-1, IRS-2 and IRS-3) by the insulin receptor tyrosine kinase.

It is synthesised in the beta cells of the islets of Lagerhans.

Further Reading:

Colorado State University. [Physiologic Effects of Insulin.](#)

Work Smart

Question 22 of 100

A 16-year-old female patient is referred with primary amenorrhoea.

Investigations reveal a 46 XY karyotype.

Which of the following concerning the condition is true?

(Please select 1 option)

<input type="checkbox"/>	A diagnosis of Turner's syndrome is likely
<input type="checkbox"/>	It is likely that her mother received carbimazole for thyrotoxicosis during pregnancy
<input type="checkbox"/>	Low testosterone and oestradiol concentrations would be expected
<input checked="" type="checkbox"/>	The diagnosis is likely to be androgen insensitivity syndrome This is the correct answer
<input type="checkbox"/>	The diagnosis is Noonan's syndrome Incorrect answer selected

A female phenotype can occur in androgen insensitivity syndrome due to an androgen receptor defect. This was previously referred to as testicular feminisation syndrome.

Stilboestrol therapy has been associated with the induction of latent tumours and with influencing sexual behaviour, but is not associated with abnormalities of sexual identity.

In Noonan's syndrome, infants are males but physical features resemble those found in Turner's syndrome.

Neither prednisolone nor maternal thyrotoxicosis would cause gender malassignment problems.

Work Smart

Question 13 of 71

In active acromegaly with associated diabetes mellitus which of the following findings would be expected?

(Please select 1 option)

<input type="checkbox"/>	Diabetes mellitus is due to an auto-immune process	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	Growth hormone concentrations are suppressed with hyperglycaemia	
<input type="checkbox"/>	IGF-1 concentrations are low	
<input type="checkbox"/>	There is insulin resistance	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Treatment with a somatostatin analogue is contraindicated	

Insulin resistance stems from the excessive growth hormone concentrations (anti-insulin effects) that of course fail to suppress with hyperglycaemia.

Acromegaly is often effectively treated with somatostatin analogues which may improve glycaemic control.

Many of the effects of growth hormone (GH) are mediated through insulin-like growth factor (IGF)-1 the concentrations of which are high in acromegaly.

Diabetes mellitus is due to the insulin resistance and is not due to auto-immune insulinitis.

Work Smart

Question 23 of 100

Which of the findings listed below is true of acromegaly?

(Please select 1 option)

<input type="checkbox"/>	A random growth hormone (GH) concentration may be diagnostically useful
<input type="checkbox"/>	Growth hormone concentrations are suppressed to normal by bromocriptine therapy
<input type="checkbox"/>	It is unusual for the pituitary fossa to be enlarged
<input type="checkbox"/>	Pituitary hormones other than growth hormone are rarely affected
<input checked="" type="checkbox"/>	The majority of patients demonstrate an abnormal glucose tolerance test (GTT) Correct

Random GH concentrations are pretty useless in the diagnosis of acromegaly, which depends upon non-suppression of GH in the oral glucose tolerance test, in which approximately 50% also have either impaired GTT or diabetes.

GH concentrations seldom suppress to normal with bromocriptine but often respond far better with octreotide.

Usually at presentation the fossa is enlarged (about 80%).

Prolactin is often elevated (30%) although hypopituitarism would be unusual unless the tumour is particularly large.

Work Smart

Question 1 of 10

Which of the following is true of radioactive iodine (¹³¹I) therapy?

(Please select 1 option)

<input checked="" type="checkbox"/>	Causes a deterioration in ophthalmopathy in patients with Graves' disease	<input type="checkbox"/> Correct
<input type="checkbox"/>	Causes hypothyroidism in 90% of treated patients within three months	
<input type="checkbox"/>	Is associated with a subsequently increased risk of infertility	
<input type="checkbox"/>	Is associated with an increased risk of thyroid lymphoma	
<input type="checkbox"/>	Is the preferred treatment in amiodarone induced thyrotoxicosis	

RAI is associated with the induction of hypothyroidism in the majority of subjects by three months (70%) with 10% failing at the first dose at about 18 months.

It may precipitate deterioration in ophthalmopathy in patients with Graves'.

There is no evidence of increased risk of lymphoma after RAI. Radioactive iodine treatment does hold a small risk of reduced fertility in men who undergo multiple treatments, but not a subsequently increased risk as referred to in the question. Treatment is not thought to affect fertility in women.

Withdrawing amiodarone is the preferred treatment in amiodarone induced thyrotoxicosis and often the iodine uptake would be low in these patients making ¹³¹I therapy unhelpful.

Work Smart

Question 12 of 73

Which of the following suggests a diagnosis of familial combined hyperlipidaemia (FCHL) rather than heterozygous familial hypercholesterolaemia (FH)?

(Please select 1 option)

<input type="checkbox"/>	Absence of hyperuricaemia
<input type="checkbox"/>	Presence of arcus senilis
<input checked="" type="checkbox"/>	Presence of glucose intolerance This is the correct answer
<input type="checkbox"/>	Strong family history of premature coronary artery disease
<input type="checkbox"/>	Tendon xanthomas Incorrect answer selected

The genetic dislipidaemias occur in one third of patients who have suffered from their first myocardial infarction below the age of 50 years in men.

The commonest is familial combined hyperlipidaemia (two thirds), with a fifth due to familial hypercholesterolaemia. The former can be diagnosed only on family studies, and there is elevation of fasting plasma triglycerides not associated with hyperchylomicronaemia.

It is autosomal dominant, and some family members may have hyperchylomicronaemia.

Only 20% of children have elevated triglycerides before the age of 25.

Obesity, insulin resistance, hyperinsulinaemia, glucose intolerance, and hyperuricaemia are associated.

Heterozygous familial hypercholesterolaemia is dominantly inherited, and results from defects in the

low-density lipoprotein (LDL) receptor. The most important clinical manifestation is premature coronary artery disease, particularly with onset between the third or fourth decade.

Tendon xanthomata and arcus cornea are rarely present in children, but are very important signs to identify.

Copyright © 2002 Dr Colin Melville

Answer Statistics



Times answered: 8156

Test Analysis

CorrectIncorrectPartially
Correct

Score: 25%

Total Answered: 12

Work Smart

Question 24 of 100

A 73-year-old female is diagnosed with Cushing's disease.

Which of the following is correct?

(Please select 1 option)

<input type="checkbox"/>	Adrenalectomy would be the treatment of choice
<input checked="" type="checkbox"/>	Ketoconazole may be used as a treatment if unfit for surgery This is the correct answer
<input type="checkbox"/>	op-DDD is a treatment if unfit for surgery
<input type="checkbox"/>	Recurrence of Cushing's disease after transphenoidal surgery is less than 5%
<input type="checkbox"/>	Yttrium implantation is an effective treatment Incorrect answer selected

Transphenoidal hypophysectomy/adenomectomy would be the initial treatment of choice.

Laparoscopic adrenalectomy would be advised where pituitary surgery has failed.

Ketoconazole may be an effective treatment for patients unfit for surgery.

opDDD is used for adrenal carcinomas.

Yttrium implantation has been abandoned even for acromegaly as is pretty useless.

The recurrence rate for Cushing's disease after surgery is of the order of 20-30% in most series and depends on the size of the tumour with macroadenomas having a higher rate of relapse.

Work Smart

Question 25 of 100

In which of the following conditions would it be expected to find an elevated plasma total cortisol concentration?

(Please select 1 option)

<input type="checkbox"/>	Congenital adrenal hyperplasia	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	Patients on long-term benzodiazepine therapy	
<input type="checkbox"/>	Patients taking prednisolone	
<input checked="" type="checkbox"/>	Pregnancy	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Primary aldosteronism	

Cortisol levels are increased in pregnancy, conditions of physical and emotional stress, and drug therapy (oestrogens, oral contraceptives, amphetamines, cortisone, and spironolactone).

Treatment with other forms of steroid lead to decreased levels of cortisol.

Answer Statistics



33%

Work Smart

Question 26 of 100

Which of the following is not associated with hyponatraemia and hyperkalaemia?

(Please select 1 option)

<input type="checkbox"/>	Acute hypoadrenalism
<input checked="" type="checkbox"/>	Carbenoxolone therapy This is the correct answer
<input type="checkbox"/>	Co-amilofruse therapy
<input type="checkbox"/>	Congestive cardiac failure
<input type="checkbox"/>	Type IV renal tubular acidosis Incorrect answer selected

Carbenoxolone therapy may be associated with hypokalaemia and salt retention due to pseudohypoaldosteronism through inhibition of the enzyme 11 beta hydroxysteroid dehydrogenase.

Type IV renal tubular acidosis is associated with hyporeninaemic hypoaldosteronism and both hyponatraemia and hyperkalaemia can occur.

Hypoadrenalism is associated with hyperkalaemia and hyponatraemia as is cardiac failure, hepatic and renal failure.

Co-amilofruse, the combination of amiloride and furosemide, may also produce this biochemical picture.

Work Smart

Question 14 of 71

A 36-year-old male with Type 1 diabetes of three years duration presented with decreased libido and erectile dysfunction since diagnosis. No abnormalities were noted on genital examination.

Investigations revealed:

Plasma testosterone	6.0 nmol/L	(9 - 35)
Plasma follicle stimulating hormone	1.0 u/L	(1-8)

Which of the following investigations is the most appropriate next step?

(Please select 1 option)

<input type="checkbox"/>	Autonomic function testing
<input checked="" type="checkbox"/>	Doppler studies of penile artery Incorrect answer selected
<input type="checkbox"/>	Nerve conduction studies
<input checked="" type="checkbox"/>	Serum ferritin This is the correct answer
<input type="checkbox"/>	Serum prolactin

This type 1 diabetes patient appears to have hypogonadotrophic hypogonadism (HH) as reflected by low testosterone and low follicle-stimulating hormone (FSH).

The combination is compatible with a diagnosis of haemochromatosis and measuring ferritin would be a reasonable investigation.

Haemochromatosis typically causes hypogonadotropic hypogonadism as a consequence of the ferritin deposition within the pituitary rather than primary testicular dysfunction.

Autonomic nerve dysfunction is one of the commoner causes of impotence in a person with diabetes but in this case is not the cause of his HH.

For similar reasons, both nerve conduction studies and Doppler studies are irrelevant.

Prolactin would be a sensible measurement, but if you were looking to confirm a diagnosis that incorporates the diabetes as well, ferritin would be the investigation of choice.

Answer Statistics



Times answered: 7796

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 27 of 100

A 55-year-old female complaining of vague tiredness is found to have a serum corrected calcium concentration of 2.9 mmol/L.

Examination was unremarkable.

Which of the following results confirms the suspected diagnosis of primary hyperparathyroidism?

(Please select 1 option)

<input type="checkbox"/>	High normal 1,25-dihydroxyvitamin D concentration
<input type="checkbox"/>	High normal 24 hour urinary calcium concentration
<input checked="" type="checkbox"/>	High normal plasma parathyroid hormone (PTH) concentration This is the correct answer
<input type="checkbox"/>	Low normal plasma phosphate concentration
<input type="checkbox"/>	Low normal serum 25-hydroxyvitamin D concentration Incorrect answer selected

A high or even normal PTH concentration in the presence of hypercalcaemia would support the diagnosis of hyperparathyroidism.

A high urinary calcium concentration may be expected as would a low plasma phosphate but neither confirm the diagnosis.

Elevated 1,25 vitamin D suggests a diagnosis of hypervitaminosis D.

Work Smart

Question 13 of 73

A diagnosis of diabetes mellitus is being considered in 32-year-old woman who is 16 weeks pregnant. Her body mass index (BMI) was 22 kg/m² (18-25).

A 75 g oral glucose tolerance test (OGTT) revealed:

Time	Plasma glucose concentration	
0 hr	6.0 mmol/L	(3.0-6.0)
2 hr	12.5 mmol/L	(<11.1)

Which of the following is the most appropriate step in the management of this patient?

(Please select 1 option)

<input type="checkbox"/> Glipizide therapy	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> Insulin therapy	
<input type="checkbox"/> Low calorie diet and exercise	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/> Metformin therapy	
<input type="checkbox"/> Repeat her oral glucose tolerance test in four weeks	

In England and Wales, 2.5% of pregnancies involve women with diabetes. Approximately 87% of these are due to gestational diabetes, 7.5% type 1 diabetes and 5% type 2 diabetes. There are a number of risks to both mother and fetus, including miscarriage, pre-eclampsia, preterm labour,

stillbirth, congenital malformations, macrosomia, birth injury, perinatal mortality, and neonatal hypoglycaemia.

Risk factors for gestational diabetes are:

- BMI >30 kg/m²
- previous macrosomic baby (>4.5 kg)
- previous gestational diabetes
- first-degree relative with diabetes, and
- ethnic origin (South Asian, Caribbean, Middle Eastern).

Screening with fasting plasma glucose, random blood glucose, glucose challenge tests, and urinalysis is recommended for any women with one of these risk factors. The 2-hour 75 g oral glucose tolerance test is used to definitively diagnose gestational diabetes. This is performed at 16-18 weeks in women who have been affected in a previous pregnancy (with home BM monitoring prior to this, and a repeat test at 28 weeks if this is normal) and 24-28 weeks for women with any other risk factor.

If it is safely achievable, women with gestational diabetes should aim to keep fasting blood glucose between 3.5-5.9 mmol/L and one hour postprandial blood glucose below 7.8 mmol/L during pregnancy. It is important to note HbA_{1c} should not be routinely used to monitor glycaemic control in the second and third trimesters.

Most gestational diabetes will respond to changes in diet and exercise. Only 10-20% of women need oral hypoglycaemia agents or insulin therapy. Women should therefore be given dietary advice, and those with a pre-pregnancy BMI of >27 should be advised to restrict calorie intake and exercise for at least 30 minutes daily.

Hypoglycaemic therapy should be considered for women in whom diet and exercise fails to maintain blood glucose targets during a period of 1-2 weeks. If there is any evidence of fetal macrosomia, therapy should be initiated immediately. Treatment should be tailored to the individual patient, but in general may include oral hypoglycaemics (metformin and glibenclamide) and insulin. There is insufficient evidence regarding long-acting insulin analogues, and isophane insulin therefore remains the first choice for long-acting insulin during pregnancy. Insulin aspart and lispro are safe rapid-acting analogues.

Women with insulin-treated gestational diabetes should be advised of the risk of hypoglycaemia (which they may be unaware of) and provided with a concentrated glucose solution.

During labour and birth, capillary blood glucose would be monitored on an hourly basis in patients with diabetes and maintained between 4 and 7 mmol/L. This may require the use of a sliding scale.

In this patient, diet and exercise has not yet been trialled, and there is no mention of foetal macrosomia. Metformin can then be started if glycaemic control is not achieved within 1-2 weeks. Waiting another four weeks to instigate therapy exposes both mother and foetus to potential harm.

Insulin can be used if glycaemic control is not achieved with metformin.

Glipizide is not used in pregnancy.

References:

NICE. [Diabetes in pregnancy: management of diabetes and its complications from preconception to the postnatal period \(NG3\)](#).

Answer Statistics



Times answered: 9686

Test Analysis

CorrectIncorrectPartially
Correct

Score: 23.08%

Total Answered: 13

Work Smart

Question 28 of 100

A 35 year-old woman presented with a five year history of weight gain associated with a one year history of amenorrhoea.

Over this time she had also noticed hirsutism and had been trying to conceive.

On examination, she had a BMI of 32 kg/m², a pulse was 84 beats per minute, and a blood pressure of 154/100 mmHg.

Features suggestive of Cushing's syndrome were also noted.

Which of the following would be the most useful initial investigation?

(Please select 1 option)

<input checked="" type="checkbox"/>	24 hour urinary free cortisol (UFC) concentration	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Combined 9 am ACTH concentration and serum cortisol concentration	
<input type="checkbox"/>	Midnight cortisol concentration	
<input type="checkbox"/>	Serum sodium and potassium concentrations	
<input type="checkbox"/>	The 1 mg overnight dexamethasone suppression test (ODST)	<input type="checkbox"/> Incorrect answer selected

Of 1 mg ODST or UFC, either test would be appropriate, but UFC is often recommended and has a 95% specificity (85% specificity in the obese) and a 98% sensitivity.

It is however important to recognise that these values for specificity and sensitivity only apply to a high threshold for abnormal urinary free cortisol, set at 3-4 times the upper limit of the normal range. A number of patients with Cushings may therefore not fulfil the criteria for diagnosis of Cushings

based on UFC alone.

The ODST has a sensitivity and specificity of 98% and 75-80% in obese subjects with a cut-off value of 50 nmol/L.

Therefore, purely for convenience sake, a UFC would probably be the expected response here.

Midnight cortisol is pointless as a screening test expecting the patient to be fast asleep when blood is taken.

Sodium and potassium concentrations offer nothing, nor do ACTH and cortisol.

Answer Statistics



Times answered: 8435

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 29 of 100

With which of the following is hyperprolactinaemia associated?

(Please select 1 option)

<input type="checkbox"/>	Cabergoline therapy
<input type="checkbox"/>	Depression
<input checked="" type="checkbox"/>	Fluoxetine therapy This is the correct answer
<input type="checkbox"/>	Hyperthyroidism
<input type="checkbox"/>	Sheehan's syndrome Incorrect answer selected

Hyperprolactinaemia may manifest as a milky discharge from the breasts.

The causes include:

- prolactinoma
- hypothyroidism (far increased thyrotropin-releasing hormone or TRH)
- non-functional tumour with stalk compression, and
- drugs, in particular dopamine antagonists such as chlorpromazine, haloperidol, and domperidone.

Pregnancy is a particularly common cause of hyperprolactinaemia.

Other drugs that are occasionally reported include selective serotonin reuptake inhibitors (SSRIs).

Polycystic ovary syndrome (PCOs) is often associated with idiopathic hyperprolactinaemia.

Work Smart

Question 15 of 71

A 59-year-old woman has had insulin dependent diabetes mellitus for over two decades. The degree of control of her disease is characterised by the laboratory finding of a HbA_{1c} of 87 mmol/mol (20-42).

She complains of repeated episodes of abdominal pain following meals. These episodes have become more frequent and last for longer periods over the last couple of months.

On physical examination, there are no abdominal masses or enlarged liver, spleen, or kidneys and no tenderness to palpation.

Which of the following findings is most likely to be present?

(Please select 1 option)

<input type="checkbox"/>	Acute pancreatitis
<input checked="" type="checkbox"/>	Chronic renal failure Incorrect answer selected
<input type="checkbox"/>	Hepatic infarction
<input checked="" type="checkbox"/>	Mesenteric artery occlusion This is the correct answer
<input type="checkbox"/>	Ruptured aortic aneurysm

Diabetes, especially type 2 diabetes, is associated with macrovascular disease.

Smoking is a further risk factor for macrovascular atherosclerosis.

After a meal, splanchnic blood flow is increased. If the mesenteric artery is occluded, the lack of blood flow to the bowel will produce ischaemic type pain.

Chronic renal failure may be present but would not cause post prandial pain.

Ruptured aortic aneurysm would normally present acutely with hypotension, cold lower limbs with reduced pulses, and a pulsatile, tender abdominal mass.

Pancreatitis is unlikely given the history and the lack of epigastric tenderness.

Hepatic infarction should lead to right upper quadrant pain.

Answer Statistics

1		16%
2		6%
3		3%
4		74%
5		1%

Times answered: 6865

Test Analysis

CorrectIncorrectPartially
Correct

Score: 26.67%

Total Answered: 15

Work Smart

Question 14 of 73

A 79-year-old female suffers a fractured neck of femur following a fall at home.

Investigations are normal but her x ray shows the bones to be rather 'thin'. It is assumed that she is osteoporotic and she is started on alendronate therapy.

Which of the following is correct concerning this drug?

(Please select 1 option)

<input type="checkbox"/>	Enhances vitamin D action on bone
<input type="checkbox"/>	Increases absorption of calcium
<input type="checkbox"/>	Increases osteoblast activity
<input type="checkbox"/>	Increases the action of oestrogen on bone
<input checked="" type="checkbox"/>	Inhibits osteoclast activity Correct

The bisphosphonates of which alendronate is one, increase bone mineralisation by inhibiting osteoclastic activity.

They have been demonstrated in numerous studies to reduce subsequent risk of fracture.

Work Smart

Question 16 of 71

A 33-year-old woman with an 18 year history of type I diabetes mellitus presents with proteinuria. She is a smoker of 20 cigarettes daily.

Examination reveals a blood pressure of 155/95 mmHg.

Investigations reveal:

Serum cholesterol	7.6 mmol/L	(<5.2)
HbA _{1c}	67 mmol/mol	(20-42)
24 hour urinary protein excretion	1.5 g	(<0.2)

Which intervention is most likely to retard the development of renal failure?

(Please select 1 option)

<input type="checkbox"/> Bendroflumethiazide Incorrect answer selected
<input type="checkbox"/> Improve glycaemic control with HbA _{1c} less than 53 mmol/mol
<input checked="" type="checkbox"/> Lisinopril This is the correct answer
<input type="checkbox"/> Simvastatin
<input type="checkbox"/> Stop smoking

This patient has diabetic nephropathy with marked proteinuria.

To attenuate the progression towards end stage renal disease, stringent blood pressure control should be employed maintaining a BP less than 130/80 mmHg and an angiotensin-converting enzyme (ACE) inhibitor would probably offer even greater reno-protection than any other anti-hypertensive.

Simvastatin has no proven benefit on renal disease and improved glycaemic control although of benefit would be of less benefit than BP control (UKPDS/DCCT trials).

Again stopping smoking would probably be of greatest benefit to her with regard to reducing cardiovascular risk but would not itself offer any reno-protective effect.

Answer Statistics



Times answered: 7521

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 15 of 73

A 40-year-old female who has been prescribed thyroid replacement therapy has routine thyroid function tests.

On examination she appeared clinically euthyroid with no abnormal findings.

Her thyroid function tests revealed:

TSH	3.2 mU/L	(0.4-5.0)
Total T ₄	20 nmol/L	(55-144)
Free T ₄	2.6 pmol/L	(10-22)
Total T ₃	2.5 nmol/L	(0.9-2.8)

Which one of the following statements is correct?

(Please select 1 option)

<input checked="" type="checkbox"/>	Her thyroid hormone replacement is adequate Correct
<input type="checkbox"/>	Investigation of pituitary function is required
<input type="checkbox"/>	She has a thyroiditis
<input type="checkbox"/>	She has sick euthyroid syndrome
<input type="checkbox"/>	She has tertiary hypothyroidism

This question is extremely poorly presented as no one, except for the RCP, measures total thyroid hormone concentrations.

However, this patient has normal TSH, low total T₄ with normal total T₃ and really low free T₄ which would suggest that she is taking T₃ as replacement therapy. This may explain why no fT₃ figures are provided.

Consequently she is receiving adequate replacement as reflected by the normal thyroid-stimulating hormone (TSH).

She does not have sick euthyroidism as it states in the run in that these measurements were routine. Although TSH is normal and tT₄ and fT₄ low, secondary/tertiary hypothyroidism would not explain the plum normal total T₃ concentration.

She may well have had a thyroiditis such as Hashimoto's to have given her the hypothyroidism originally but she is now on replacement therapy and the former would not explain her thyroid function tests.

Answer Statistics

1		41%
2		14%
3		5%
4		26%
5		14%

Times answered: 8518

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 17 of 71

An overweight, 60-year-old female with an eight year history of type 2 diabetes mellitus presents with deteriorating glycaemic control. She takes gliclazide 160 mg twice daily.

Investigations reveal:

Sodium and potassium	Normal	-
Serum urea	10 mmol/L	(2.5-7.5)
Serum creatinine	160 µmol/L	(60-110)
Serum alanine transaminase	31 U/L	(5-35)
Serum aspartate transferase	30 U/L	(1-31)
HbA _{1c}	73 mmol/mol	(20-42)

Which of the following would be the most appropriate additional therapy for improved glycaemic control?

(Please select 1 option)

<input type="checkbox"/> Acarbose
<input type="checkbox"/> Guar gum
<input type="checkbox"/> Metformin
<input type="checkbox"/> Repaglinide
<input checked="" type="checkbox"/> Pioglitazone Correct

This woman with diabetes has poor glycaemic control with renal impairment.

With creatinine concentrations above 150 $\mu\text{mol/L}$, metformin is not recommended due to the small risk of lactic acidosis. Therefore, the most appropriate treatment would be pioglitazone, as liver function tests are normal and there is no suggestion of heart failure. It should be noted however, that given her renal impairment she should be closely monitored for fluid retention, and if this occurs, insulin is the other realistic option for her.

Acarbose is poorly tolerated and is now rarely prescribed.

Guar gum has little place in the treatment of diabetes.

Repaglinide the non-sulphonylurea insulin secretagogue would have little benefit in conjunction with a traditional SU such as gliclazide.

Answer Statistics



Times answered: 8552

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 18 of 71

A 60-year-old man who was previously fit and well presented with a six week history of blurring of vision.

His investigation revealed a fasting plasma glucose of 12.9 mmol/L (3.0 - 6.0).

What is the most likely cause of his blurred vision?

(Please select 1 option)

<input type="checkbox"/>	Cataract
<input type="checkbox"/>	Maculopathy
<input checked="" type="checkbox"/>	Osmotic changes in the lens This is the correct answer
<input type="checkbox"/>	Proliferative diabetic retinopathy
<input type="checkbox"/>	Retinal vein thrombosis Incorrect answer selected

Without being given too much here, this patient is a newly diagnosed diabetic as we are told he was previously fit and well.

Therefore the most probable explanation for his blurred vision is osmotic change.

Work Smart

Question 16 of 73

A 17-year-old girl presents with vomiting and her investigations show:

Sodium	120 mmol/L	(137-144)
Potassium	3.0 mmol/L	(3.5-4.9)
Urea	2.2 mmol/L	(2.5-7.5)
Urine sodium	2 mmol/L	-
Urine osmolality	700 mosmol/kg	(350-1000)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Addison's disease
<input checked="" type="checkbox"/>	Bulimia nervosa Correct
<input type="checkbox"/>	Diuretic abuse
<input type="checkbox"/>	Syndrome of inappropriate antidiuretic hormone secretion
<input type="checkbox"/>	Water intoxication

This patient is likely to have bulimia: young girl with a likely low body mass contributing to the low urea, vomiting contributing to the hypokalaemia/hyponatraemia.

Her urine sodium is appropriately low and due to a relative dehydration, she has appropriately concentrated urine. This is not Addison's disease as urine sodium would be high with high urea and likely high potassium.

Similarly it is not SIADH due to the low urine sodium.

Diuretic abuse would cause high urine sodium. Water intoxication would produce a dilute urine.

Answer Statistics



Times answered: 7860

Test Analysis

CorrectIncorrectPartially
Correct

Score: 37.5%

Total Answered: 16

Work Smart

Exam Themes May 2007

Question 30 of 100

A 24-year-old female attends clinic complaining of numerous depigmented areas on the arms and legs. She is otherwise fit and well.

Which of the following diseases is most likely to accompany this skin condition?

(Please select 1 option)

<input type="checkbox"/>	Addison's disease
<input checked="" type="checkbox"/>	Hashimoto's thyroiditis This is the correct answer
<input type="checkbox"/>	Pernicious anaemia
<input type="checkbox"/>	Systemic lupus erythematosus Incorrect answer selected
<input type="checkbox"/>	Tuberous sclerosis

The suggested diagnosis is vitiligo which is associated with numerous autoimmune conditions, the most common of which is thyroid disease. It is also associated with Addison's disease, type 1 diabetes and, less commonly, pernicious anaemia.

Discoid lupus can be mistaken for vitiligo, but this would be less common than vitiligo. Tuberous sclerosis would be unusual to be diagnosed this late, and in the absence of any other clinical signs.

Work Smart

Question 19 of 71

A 52-year-old man with a history of diabetes mellitus presented with hepatomegaly.

Investigations revealed:

Albumin	30 g/L	(37-49)
Total bilirubin	22 µmol/L	(1-22)
Alkaline phosphatase	134 U/L	(60-110)
ALT	90 U/L	(5-35)
Gamma-glutamyl transferase	125 U/L	(<50)
Ferritin	1450 µg/L	(15-300)

Which of the following features would be most suggestive of a diagnosis of haemochromatosis?

(Please select 1 option)

<input checked="" type="checkbox"/> Chondrocalcinosis Correct
<input type="checkbox"/> Gynaecomastia
<input type="checkbox"/> Migratory polyarthrititis
<input type="checkbox"/> Myxoedema
<input type="checkbox"/> Rash

This man with diabetes has evidence of liver disease with grossly elevated ferritin, suggesting a diagnosis of haemochromatosis.

Haemochromatosis is caused by dysregulated iron homeostasis due to inappropriate increased iron absorption in the duodenum and proximal small intestine. It is an autosomal recessive hereditary condition which is associated with homozygous C282Y mutation of the HFE gene in North Europeans.

Increased absorption of iron results in its deposition in the organs, notably the liver, pancreas, heart, joints, skin, and pituitary. This causes cirrhosis, restrictive cardiomyopathy, diabetes mellitus, arthropathy, skin hyperpigmentation, and gonadal failure.

Males and females are affected equally, but females are often 'protected' from the clinical features by menstrual blood loss.

Arthropathy is relatively common. It is chronic and progressive and mildly inflammatory. There is a predilection for the MCP joints and it is often accompanied by chondrocalcinosis. Iron load is probably a major determinant but it does not usually respond to venesection.

Early diagnosis and treatment is critical in haemochromatosis as survival and morbidity are improved if phlebotomy is initiated prior to the development of cirrhosis.

Transferrin saturation is suggested as the initial screening test: a level of more than 45% warrants further investigation (less than 45% usually excludes the diagnosis). Genetic screening is then performed. If the usual C282Y HFE mutation is found this makes the diagnosis.

Ferritin is measured to help guide further investigation and treatment: if more than 1000 a liver biopsy should be performed and treatment initiated. If the ferritin is within normal range and the liver function tests are normal patients can be followed closely. If the C282Y HFE mutation is not present other genotypes should be looked for and if present a liver biopsy is indicated.

The goal of therapy is to remove excess body iron stores; it is commonly done via phlebotomy. Initially, this is weekly or twice weekly (if tolerated) venesections of 500 cm³ until the serum ferritin is less than 50 ng/mL. Transferrin saturation should also be reduced to less than 50% if possible.

After these goals are reached maintenance therapy is typically required three to four times per year. When iron overload and anaemia are present concomitantly chelation with desferoxamine may be required. Patients should be told to avoid vitamin C supplementation as this can enhance iron toxicity.

End stage liver disease, portal hypertension, and hepatocellular carcinoma (which is increased up to 200-fold) may necessitate liver transplantation. This is associated with poorer outcome compared with other indications because of increased incidence of infection and cardiac complications.

Haemochromatosis is classically associated with a non-migratory, rather than migratory, polyarthritides. This particularly affects the hands: in over 50% of patients there is involvement of the second and third metacarpophalangeal joints, but the proximal interphalangeal joints, knees, feet, wrists, back

and neck are also commonly involved.

Skin pigmentation rather than a rash is more typical.

Myxoedema is not a feature of haemochromatosis.

Gynaecomastia is a feature of liver disease/cirrhosis per se and not just haemochromatosis.

Haemochromatosis can cause hypogonadism which can also be associated with gynaecomastia but costochondrosis is a more reliable sign.

Reference:

Whittington CA, Kowdley KV. [Review article: haemochromatosis](#). *Aliment Pharmacol Ther.* 2002;16:1963-75.

Answer Statistics



Times answered: 9735

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 17 of 73

A 17-year-old female attends clinic complaining of hirsutism and oligomenorrhoea.

Which of the following would be most suggestive of a diagnosis of Polycystic Ovarian Syndrome?

(Please select 1 option)

<input checked="" type="checkbox"/>	Increased androstenedione concentration	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Increased FSH concentration	
<input type="checkbox"/>	Increased insulin concentration	
<input type="checkbox"/>	Increased Prolactin concentration	
<input type="checkbox"/>	Increased Sex Hormone binding globulin (SHBG) concentration	<input type="checkbox"/> Incorrect answer selected

PCOS is associated with a raised LH:FSH ratio, with insulin resistance and hyperandrogenism as evidenced by raised androstenedione and slightly raised testosterone.

Elevated prolactin concentrations, although a feature of PCOS, is not specific of the diagnosis and may suggest microprolactinoma.

Although insulin resistance is a feature of PCOS, a raised insulin concentration is rather irrelevant and no one would measure this in clinical practice. It is often elevated in association with testosterone secreting tumours.

Work Smart

Core Questions

Question 18 of 73

A 16-year-old female presents with hypertension and increasing weight.

Which of the following features would be most suggestive of Cushing's syndrome rather than simple obesity?

(Please select 1 option)

<input type="checkbox"/>	Abdominal striae
<input type="checkbox"/>	Acanthosis Nigricans
<input type="checkbox"/>	Buffalo Hump (interscapular fat pad)
<input type="checkbox"/>	Moon face
<input checked="" type="checkbox"/>	Proximal myopathy Correct

Proximal myopathy, easy bruising, and thin skin are clinical features that are most suggestive of Cushing's syndrome.

Otherwise, abdominal striae, buffalo hump, and acanthosis nigricans are all features of obesity.

Similarly, oligomenorrhea would be a feature of obesity/polycystic ovarian syndrome.

Work Smart

Question 31 of 100

A 35-year-old woman presents with episodic sweats associated with hunger. She was otherwise well, and had gained some weight recently.

Investigations reveal normal urea and electrolytes, liver function tests, and full blood count. An overnight fasting plasma glucose is 3.8 mmol/L (3.0-6.0).

Which is the most appropriate investigation for this patient?

(Please select 1 option)

<input type="checkbox"/>	24 hour ECG recording
<input checked="" type="checkbox"/>	72 hour fast This is the correct answer
<input type="checkbox"/>	Fasting insulin and C-peptide concentrations
<input type="checkbox"/>	MR scan of pancreas Incorrect answer selected
<input type="checkbox"/>	Short synacthen test

This patient presents with features suggestive of spontaneous hypoglycaemia, often due to an insulinoma. She requires confirmation of the suspected diagnosis and this should be undertaken with a 72 hour fast.

If the patient develops symptoms, then a plasma glucose is measured and if low, insulin and C-peptide is then collected and the fast terminated.

We have been provided with a fasting plasma glucose on this patient which is normal.

Measuring insulin and C-peptides with this normal glucose would provide no meaningful information.

First we have to see whether she actually becomes hypoglycaemic.

Answer Statistics



Times answered: 8015

Test Analysis

CorrectIncorrectPartially
Correct

Score: 16.13%

Total Answered: 31

Feedback

Work Smart

Question 32 of 100

A 70-year-old female presents with a six month history of frontal headaches and weight loss.

On examination a bitemporal hemianopia was noted.

Which of the following suggest the diagnosis of a pituitary tumour?

(Please select 1 option)

<input type="checkbox"/>	9 am cortisol concentration of 350 nmol/L (200-700)
<input type="checkbox"/>	LH concentration of 44 uL (>30)
<input checked="" type="checkbox"/>	Prolactin concentration of 650 mU/L (50-550) This is the correct answer
<input type="checkbox"/>	Random growth hormone concentration 1 µg/L (<8 µg/L)
<input type="checkbox"/>	TSH concentration of 3.8 mU/L (0.5-4.5) Incorrect answer selected

The raised prolactin would most likely reflect stalk compression in this patient.

Otherwise, the normal cortisol would be unhelpful as is the normal thyroid-stimulating hormone (TSH).

The elevated luteinising hormone (LH) is a reflection of this patient being menopausal.

Growth hormone (GH) concentrations are frequently undetectable as they are released episodically usually during the night.

Work Smart

Question 33 of 100

You have been called to the ward by the senior nurse, to review a repeat calcium result. The repeat result is 3.9 mmol/L (2.2-2.6), the previous result four hours earlier was 3.2.

The patient has a disseminated malignancy with an unknown primary.

Which of the following statements is most correct when considering the hypercalcaemia of malignancy?

(Please select 1 option)

<input type="checkbox"/>	A prolonged QT interval is associated with hypercalcaemia
<input type="checkbox"/>	Bisphosphonates inhibit osteoblast function thereby lowering calcium
<input type="checkbox"/>	Calcitonin is of greater benefit than bisphosphonates in the treatment of hypercalcaemia of malignancy
<input type="checkbox"/>	NSAIDs are indicated for bone pain in this patient
<input checked="" type="checkbox"/>	On neurological examination, hyporeflexia may be exhibited Correct

This is an oncological emergency affecting 20-40% of patients with advanced cancer.

Hyporeflexia is a common clinical sign in patients with significant hypercalcaemia.

Other signs include the classic mnemonic, "bones, stones, groans, and moans":

- Bones - bone pain, especially if the PTH is elevated
- Stones - renal calculi
-

- Groans - constipation and likely subsequent abdominal pain
- Pyschic moans - depression and confusion
- Nausea and vomiting, fatigue, and pancreatitis.


Electrocardiogram changes in hypercalcaemia include bradycardia, prolonged PR interval, short QT interval, widened T waves, and arrhythmias.

Bisphosphonates inhibit bone resorption by osteoclasts, and are the first line pharmacological treatment of hypercalcaemia of malignancy. However, they take 3-4 days to reduce the calcium level, and can result in worsening renal function. It is therefore critical to fully hydrate the patient prior to treatment; in clinical practice we tend to give 3 litres of fluids over a 12-18 hour period prior to giving bisphosphonate. Clearly, this needs to be altered if the patient is at risk of fluid overload and cardiac failure.

Calcitonin use is limited by its association with anaphylaxis.

Non-steroidal anti-inflammatory drugs (NSAIDs) should not be prescribed in patients with hypercalcaemia as they reduce renal blood flow thus inhibiting urinary calcium excretion.

Answer Statistics

1		22%
2		16%
3		21%
4		16%
5		25%

Times answered: 9266

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 34 of 100

A 70-year-old female, who is receiving amiodarone for paroxysmal atrial fibrillation, presents with tiredness and weight loss.

Investigations reveal:

C-reactive protein	6 mg/L	(<10)
Free Thyroxine	38 pmol/L	(10-22)
TSH	<0.05 mU/L	(0.4-5)

Which is the most appropriate treatment for this patient?

(Please select 1 option)

<input type="checkbox"/>	Carbimazole
<input type="checkbox"/>	Lithium therapy
<input checked="" type="checkbox"/>	Prednisolone This is the correct answer
<input type="checkbox"/>	Radioiodine therapy Incorrect answer selected
<input type="checkbox"/>	Thyroidectomy

Two types of amiodarone-induced hyperthyroidism are recognised:

- The first occurs in patients with underlying thyroid pathology, such as a nodular goitre or Graves

disease. Amiodarone contains a significant amount of iodine, which results in increased thyroid hormone synthesis.

- The second type is a result of amiodarone causing a subacute thyroiditis with release of preformed thyroid hormones into the circulation. This is a direct toxic effect on the thyroid follicular cells, and occurs in patients without underlying thyroid disease. A thyrotoxic phase, which may last several weeks to months, is usually followed by a hypothyroid phase and then recovery.

Both these types of amiodarone-induced hyperthyroidism can take a number of years to manifest, for reasons which are not fully understood. The second type is most common in Europe and North America whereas the first type is most often seen in iodine-deficient areas. You cannot tell exactly whether this is type 1 or 2 amiodarone-induced hyperthyroidism just based on the information from the question stem. However, type 2 is far more common unless you are in iodine-deficient areas, therefore this is much more likely to be correct.

Differentiating between the two forms of amiodarone-induced hyperthyroidism has therapeutic implications, but can be difficult especially as there can be a mixture of the both mechanisms. Thyroid function tests alone cannot differentiate. A careful history and examination can determine whether the patient has underlying thyroid disease. The iodine-131 uptake scan is the most useful: uptake is typically normal or high in type 1 but minimal or none in type 2. IL-6 levels are highest in type 2.

Mild amiodarone-induced hyperthyroidism can resolve spontaneously on stopping amiodarone. However, the majority of cases require treatment. Type 1 is usually treated with a thionamide, but potassium perchlorate and lithium carbonate can be used. Type 2 cases are treated with glucocorticoids, usually prednisolone, which are weaned over two to three months.

Reference:

Tsang W, Houlden RL. [Amiodarone-induced thyrotoxicosis: a review](#). *Can J Cardiol*. 2009;25:421-4.

Answer Statistics

1		71%
2		1%
3		15%
4		9%
5		3%

Times answered: 8975

Work Smart

Question 35 of 100

An 18-year-old girl receives radioactive iodine (RAI) as treatment of thyrotoxicosis.

Which of the following is the most likely long-term complication of this treatment?

(Please select 1 option)

<input type="checkbox"/>	Hypoparathyroidism
<input checked="" type="checkbox"/>	Hypothyroidism This is the correct answer
<input type="checkbox"/>	Increased risk of developing cancer
<input type="checkbox"/>	Osteoporosis
<input type="checkbox"/>	Recurrent laryngeal nerve damage Incorrect answer selected

RAI is safe and that is why it is given across all ages as a definitive treatment of thyrotoxicosis.

The most likely side effect of radioactive iodine is hypothyroidism with approximately 80% developing hypothyroidism after therapy.

There is no evidence to suggest that RAI is associated with any cancers.

However, RAI must not be given to pregnant females particularly after the 12th gestational week as it would be taken up by the developing fetal thyroid causing fetal hypothyroidism and is also considered to be teratogenic.

Recurrent laryngeal nerve damage is a potential risk of thyroid surgery, not RAI.

Work Smart

Question 36 of 100

A 17-year-old female presented with a one year history of secondary amenorrhoea. She had been prescribed temazepam and dihydrocodeine previously.

On examination she had galactorrhoea to expression. Her prolactin concentration was 6000 mU/L (50-450). Pregnancy test was negative.

Which is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Drug-induced hyperprolactinaemia
<input type="checkbox"/>	Non-functioning pituitary tumour
<input checked="" type="checkbox"/>	Pituitary microadenoma This is the correct answer
<input type="checkbox"/>	Polycystic ovarian syndrome
<input type="checkbox"/>	Turner's syndrome Incorrect answer selected

This patient presents with the classical signs of hyperprolactinaemia, confirmed with the finding of elevated serum levels of prolactin.

There are a number of different causes of hyperprolactinaemia, and it is useful to classify them as below:

1. Hypothalamic stimulation:

- Primary hypothyroidism

- Adrenal insufficiency.

2. Medications (inhibit dopamine release, leading to reduced inhibition and therefore higher prolactin release):

- Neuroleptics - phenothiazines, haloperidol
- Antihypertensives - calcium-channel blockers, methyldopa
- Psychotropic agents - tricyclic antidepressants
- Anti-ulcer agents - H₂ antagonists
- Opiates and opiate antagonists.

3. Neurogenic (via autonomic nervous system):

- Chest wall injury
- Breast stimulation
- Breast feeding.

4. Physiological causes (via oestrogen stimulation):

- Pregnancy
- Coitus
- Exercise
- Sleep
- Stress.

5. Increased prolactin production:

- Ovarian: polycystic ovarian syndrome
- Pituitary tumours - adenomas, hypothalamic stalk interruption, hypophysitis

6. Reduced prolactin elimination:

- Renal failure
- Hepatic insufficiency.

The grossly elevated prolactin concentration in this scenario is most suggestive of a microprolactinoma.

This is not polycystic ovarian syndrome as the hyperprolactinaemia is far too high.

The drugs that she is taking would not cause this level of hyperprolactinaemia.

If she were to have a non-functioning pituitary tumour, stalk compression would be expected to produce a prolactin concentration of less than 2000 mU/L.

Prolactin levels can be raised in Turner's syndrome, but you would expect some of the other classical features of the condition to be present.

Further Reading:

1. Melmed S, et al. [Diagnosis and treatment of hyperprolactinemia: an Endocrine Society clinical practice guideline](#). *J Clin Endocrinol Metab*. 2011;96:273-88.
2. Serri O, et al. [Diagnosis and management of hyperprolactinemia](#). *CMAJ*. 2003;169:575-81.

Answer Statistics



Times answered: 8893

Test Analysis

CorrectIncorrectPartially
Correct

Score: 16.67%

Work Smart

Exam Themes January 2006

Question 20 of 71

A 42-year-old man being investigated for diabetes and impotence is noted to have the following results:

Alanine aminotransferase	30 U/L	(5-35)
Aspartate aminotransferase	22 U/L	(1-31)
Fasting plasma glucose	7.4 mmol/L	(3.0-6.0)
Ferritin	500 µg/L	(15-300)

Which one of the following would be the next most appropriate investigation?

(Please select 1 option)

<input type="checkbox"/> Bone marrow smear and iron stain
<input type="checkbox"/> Liver biopsy
<input type="checkbox"/> Red cell protoporphyrins
<input type="checkbox"/> Serum transferrin receptors
<input checked="" type="checkbox"/> Transferrin saturation Correct

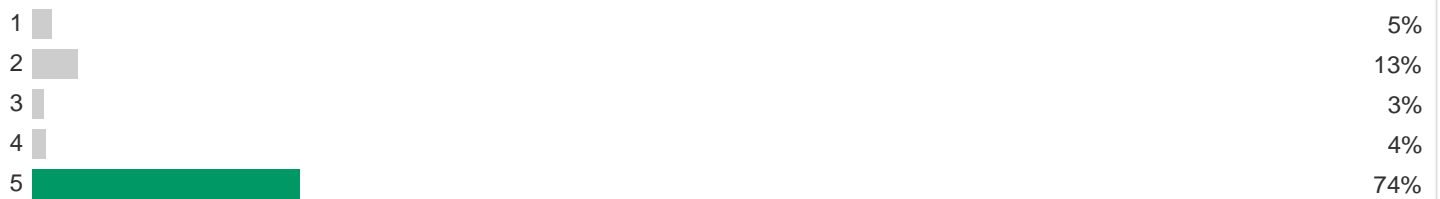
This patient has a suspected diagnosis of haemochromatosis as suggested by the presentation and laboratory investigations including elevated ferritin.

The next investigation would be measurement of transferrin saturation, and then, if elevated (above

45%), genotyping (homozygosity for C282y mutations) would next be considered and would be expected to clinch the diagnosis.

In the event of rarer mutations, confirmation with liver biopsy may be required.

Answer Statistics



Times answered: 9507

Test Analysis

CorrectIncorrectPartially
Correct

Score: 35%

Total Answered: 20

Work Smart

Question 19 of 73

On routine screening of a 50-year-old woman who complained of tiredness, she is found to be hypercalcaemic.

She is being treated for manic depression and cardiac failure.

Which of the following is most likely to be the cause of the raised calcium?

(Please select 1 option)

<input type="checkbox"/>	ACE Inhibitor therapy
<input type="checkbox"/>	Furosemide therapy
<input checked="" type="checkbox"/>	Lithium therapy This is the correct answer
<input type="checkbox"/>	Seroxat treatment
<input type="checkbox"/>	Vitamin D deficiency Incorrect answer selected

Lithium can produce diabetes insipidus and also raise calcium.

Neither Seroxat nor angiotensin-converting enzyme (ACE) inhibitors are related to hypercalcaemia.

Excess of vitamin D causes elevated calcium.

Furosemide lowers calcium but thiazides reduce excretion and so can exacerbate hypercalcaemia.

Work Smart

Question 37 of 100

A 47-year-old schoolteacher presents to her GP with fatigue.

The GP noted her to be hypercalcaemic, and investigations revealed:

Albumin	39 g/L	(37-49)
Globulin	28 g/L	-
Ca ⁺⁺	2.80 mmol/L	(2.2-2.6)

Which of the following statements is true?

(Please select 1 option)

<input type="checkbox"/> 24 hour urinary calcium assay is of no use at all
<input checked="" type="checkbox"/> A DEXA scan would assist with a decision regarding parathyroidectomy This is the correct answer
<input type="checkbox"/> Modern assays for PTH and PTHrp may cross-react so assays are unreliable
<input type="checkbox"/> Primary hyperparathyroidism will be diagnosed only if the PTH is at least three times the normal range
<input type="checkbox"/> The most likely diagnosis is myeloma Incorrect answer selected

Twenty four hour urinary calcium may be useful if used in comparison to the serum calcium in order to distinguish familial hypocalciuric hypercalcaemia from primary hyperparathyroidism.

Parathyroid hormone (PTH) may be less than twice the upper limit of normal in primary

hyperparathyroidism.

PTH-related peptide can be raised in a number of malignancies. Old PTH assays may have also picked up PTH-rp but modern assays are able to distinguish between the two.

Several indications for parathyroidectomy exist including:

- serum albumin-adjusted calcium greater than 0.25 mmol/L above the normal range
- 24 hour total urinary calcium excretion greater than 10 mmol
- creatinine clearance reduced by 30% or more
- bone mineral density T-score less than -2.5 at any site
- age less than 50, and
- unwillingness of patient to follow advice of medical surveillance.

Myeloma is unlikely given the normal immunoglobulins.

Answer Statistics



Times answered: 7547

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 2 of 10

A 60-year-old man is admitted with a productive cough with flecks of blood in his sputum.

Chest x ray reveals a mass lesion in the right mid zone.

Investigations reveal:

Sodium	110 mmol/L	(137-144)
Potassium	4.0 mmol/L	(3.5-4.9)
Bicarbonate	24 mmol/L	(20-28)
Urea	3.0 mmol/L	(2.5-7.5)
Creatinine	80 µmol/L	(60-110)

Which of the following findings suggest a diagnosis of the syndrome of inappropriate ADH (SIADH) secretion?

(Please select 1 option)

<input type="checkbox"/>	Plasma osmolality 236 mosmol/kg (278-305)
<input type="checkbox"/>	Presence of ascites
<input type="checkbox"/>	Urine flow rate 20 mL/hour
<input type="checkbox"/>	Urine osmolality 250 mosmol/kg (350-1000)
<input checked="" type="checkbox"/>	Urine sodium 110 mmol/L Correct

The serum osmolality associated with hyponatraemia is generally low and so would not in itself suggest SIADH.

However, in the context of the low plasma osmolality, a high urine osmolality (twice that of the plasma osmolality) with an elevated urine sodium (above 20 mmol/L) is suggestive of this diagnosis.

Answer Statistics

1		48%
2		1%
3		2%
4		20%
5		29%

Times answered: 8833

Test Analysis

CorrectIncorrectPartially
Correct

Score: 100%

Total Answered: 2

Work Smart

Question 21 of 71

A 40-year-old man with diabetes presents with deteriorating thirst and nocturia.

He has been diagnosed with diabetes mellitus five years ago and is now taking maximal metformin and gliclazide yet his HbA_{1c} is 96 mmol/mol (20-46).

You want to change him to insulin but he informs you that he is employed as a lorry driver.

What would be the impact of converting him to insulin on his heavy goods vehicle (HGV) licence?

(Please select 1 option)

<input checked="" type="checkbox"/>	Can regain his HGV licence after a Consultant reviews 3 months of BM readings on insulin This is the correct answer
<input type="checkbox"/>	Can regain his HGV licence after one year without hypoglycaemic episodes
<input type="checkbox"/>	Can continue to hold his HGV licence with no further conditions
<input type="checkbox"/>	Temporary suspension of his HGV licence until established on stable doses of insulin
<input type="checkbox"/>	Will lose his HGV licence indefinitely whilst treated with insulin Incorrect answer selected

The DVLA has published guidelines regarding diabetes and driving. Patients on insulin are now able to drive a heavy goods vehicle, providing they are able to meet a stringent set of criteria. These include:

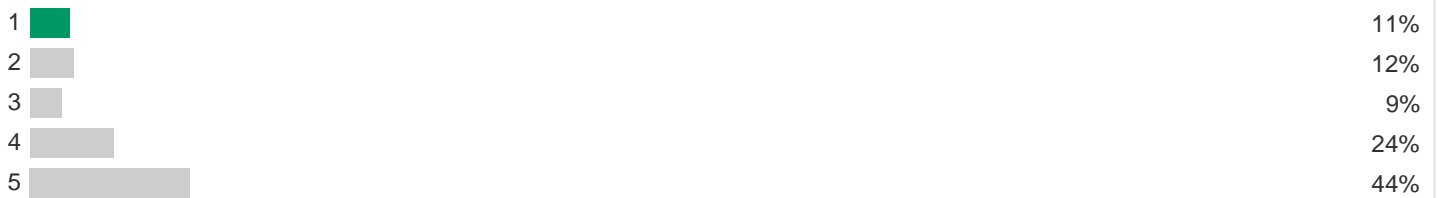
- having no episodes of hypoglycaemia requiring the assistance of another person within the preceding 12 months
- evidence of good glycaemic control - demonstrated by review of 3m of BM readings on insulin

- close BM monitoring (at least BD)
- full hypoglycaemia awareness, and
- the ability to manage hypoglycaemia independently.

Reference:

1. Gov.uk. [DVLA's current medical guidelines for professionals - Diabetes - Insulin treated.](#)
2. Gov.uk. [Diabetes and driving.](#)

Answer Statistics



Times answered: 8199

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 22 of 71

Which of the following statements is true of type 2 diabetes mellitus?

(Please select 1 option)

<input type="checkbox"/>	20% of patients develop macrovascular complications within 10 years of diagnosis
<input type="checkbox"/>	A single fasting plasma glucose above 8 mmol/l is diagnostic of diabetes
<input type="checkbox"/>	Drug treatment is associated with a 25% reduction in microvascular complications compared with diet alone
<input checked="" type="checkbox"/>	Metformin is the preferable treatment in the obese patient with type 2 diabetes This is the correct answer
<input type="checkbox"/>	Type 2 diabetes is associated with being underweight Incorrect answer selected

The diagnosis of type 2 diabetes is made by demonstrating a fasting plasma glucose >6.9 on two separate occasions and is associated with being overweight.

Drug treatment of type 2 diabetes is associated with a linear reduction in mortality related to level of glycaemic lowering.

The rate of macrovascular complications within 10 years of diagnosis is much higher than 20%.

UKPDS (United Kingdom Prospective Diabetes Study) has shown that metformin is the preferable first line therapy in type 2 diabetes.

Sulphonylureas are associated with marginally higher cardiovascular mortality and weight gain.

Work Smart

Question 38 of 100

A 40-year-old man is undergoing investigation for acromegaly.

MRI of the pituitary fossa is normal, but a routine chest x ray reveals a large centrally based mass. The patient is a non-smoker.

Which is the most likely type of this lung tumour?

(Please select 1 option)

<input type="checkbox"/>	Adenocarcinoma
<input checked="" type="checkbox"/>	Carcinoid This is the correct answer
<input type="checkbox"/>	Large cell
<input type="checkbox"/>	Small cell
<input type="checkbox"/>	Squamous cell Incorrect answer selected

This history is consistent with a bronchial carcinoid which is secreting GHRH and resulting in acromegaly.

Carcinoid tumours are the most common neuroendocrine tumours, and usually originate in the enterochromaffin cells. The most common location is the gastrointestinal tract, but that can also occur in the bronchi and lungs. The masses are typically silent, but they can present due to ectopic hormone secretion or carcinoid heart disease.

The carcinoid syndrome presents in approximately 10% of cases, more commonly those with GI tract primaries, and is predominantly due to release of 5-HT. Surgical resection is the treatment of choice,

but somatostatin analogues can be used where this is not possible.

None of the other malignancies are associated with acromegaly in this way.

Answer Statistics



Times answered: 8660

Test Analysis

CorrectIncorrectPartially
Correct

Score: 15.79%

Total Answered: 38

Feedback

Work Smart

Question 39 of 100

Which one of the following statements applies to an infant with undiagnosed congenital hypothyroidism?

(Please select 1 option)

<input type="checkbox"/>	Gastrointestinal disturbances, especially diarrhoea, may develop
<input type="checkbox"/>	Haemolytic jaundice occurs
<input type="checkbox"/>	Tachyarrhythmias may occur
<input checked="" type="checkbox"/>	They may be asymptomatic This is the correct answer
<input type="checkbox"/>	They may later have early acceleration of bone age and short stature at maturity Incorrect answer selected

Lack of symptoms may be a feature.

Prolonged conjugated hyperbilirubinaemia is seen with this condition.

Bone age and growth will be delayed.

Constipation rather than diarrhoea is observed.

Bradycardia may occur, but tachyarrhythmias are not associated.

Work Smart

Question 3 of 10

A 38-year-old man presented with intermittent severe headaches. He was prescribed spironolactone 50 mg and bendroflumethiazide 2.5 mg daily for hypertension.

On examination his pulse was 112 beats per minute, with regular rhythm, and blood pressure was 190/110 mmHg.

Investigations revealed:

Serum sodium	132 mmol/L	(137-144)
Serum potassium	3.4 mmol/L	(3.5-4.9)
Serum urea	7.0 mmol/L	(2.5-7.5)

Which one of the following is the most useful investigation in establishing the diagnosis?

(Please select 1 option)

<input type="checkbox"/>	A 24 hour urinary 5-hydroxyindoleacetic acid concentration
<input checked="" type="checkbox"/>	A 24 hour urinary catecholamine concentration This is the correct answer
<input type="checkbox"/>	A 24 hour urinary free cortisol concentration
<input type="checkbox"/>	A radionuclide Hippuran renogram Incorrect answer selected
<input type="checkbox"/>	The serum aldosterone:renin ratio

This question seems nebulous at first but on further investigation it is extremely complex.

The answer is unlikely to be carcinoid given the lack of symptoms of carcinoid syndrome. The flushing attacks of the carcinoid syndrome are accompanied by hypotension. Renal anatomy and function are studied with sequential images using radionuclides that are indexes of tubular function (¹³¹I Hippuran). The clinical history here is not suggestive of renal artery stenosis.

Given the patient's young age, and markedly raised BP on treatment we should consider an endocrine cause.

The electrolyte disturbance is mild and is of dubious relevance in this question.

Diuretic use may be causing the hyponatraemia and hypokalaemia, indeed the commonest cause of hypokalaemia in hypertension is diuretic therapy. However, spironalactone use could, theoretically, mask a more significant hypokalaemia.

There is no clinical history to suggest Cushing's and primary aldosteronism is not associated with a tachycardia. An aldosterone:renin ratio would not be appropriate at this stage given that the patient is receiving spironalactone.

The history of episodic headaches is central to this question, together with the tachycardia. These paroxysmal headaches suggest the diagnosis of pheochromocytoma; often the symptoms are vague and rarely is the classical presentation encountered.

Patients with pheochromocytoma may develop a severe vascular headache¹.

Thomas et al.² reviewed the histories of 100 patients with proven pheochromocytoma seen at the Mayo Clinic and found that episodic headache was present in 80%. It was usually of rapid onset, bilateral, severe, throbbing, and associated with nausea in about half of the cases.

Reference:

1. Bridgwater GR, Starling JR. [Pheochromocytoma: paroxysmal hypertensive headaches. Headache.](#) 1982;22:84-5.
2. Thomas JE, et al. [The neurologist's experience with pheochromocytoma. A review of 100 cases. JAMA.](#) 1966;197:754-8.

Answer Statistics

1		12%
2		50%
3		9%

Work Smart

Question 40 of 100

Which one of the following types of thyroid cancer in a 45-year-old woman has the worst prognosis following optimal treatment?

(Please select 1 option)

<input type="checkbox"/>	Anaplastic cancer in a long standing goitre	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Follicular cancer with bone metastases	
<input type="checkbox"/>	Medullary cancer as part of the MEN type II syndrome	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	Papillary cancer with cervical lymph node metastases	
<input type="checkbox"/>	Thyroid lymphoma	

Anaplastic carcinoma usually occurs in middle-aged and older patients with longstanding goitre.

The gland may suddenly increase in size producing pressure symptoms, dysphagia, or vocal cord paralysis.

The tumour is resistant to therapy.

Death from massive local extension usually occurs within 3-36 months.

Thyroid medullary carcinoma is the next most aggressive, especially so in multiple endocrine neoplasia (MEN) 2B subjects, but less so in 2A subjects.

Lymphoma may respond dramatically to irradiation.

Work Smart

Question 41 of 100

A 51-year-old woman presented with nocturia and pruritus vulvae.

Investigations revealed:

Urine dipstick analysis

Glucose 2%

Which one of the following would most reliably confirm a diagnosis of diabetes mellitus?

(Please select 1 option)

<input type="checkbox"/>	50 g oral glucose tolerance test
<input type="checkbox"/>	Fasting plasma glucose of 6.7 mmol/L (3.0-6.0)
<input checked="" type="checkbox"/>	HbA _{1c} of 68 mmol/mol This is the correct answer
<input type="checkbox"/>	Random plasma glucose of 8.3 mmol/L
<input type="checkbox"/>	Two hour post-prandial plasma glucose of 10 mmol/L (<11.1) Incorrect answer selected

The WHO guidelines are used to make a formal diagnosis of diabetes mellitus. These require the symptoms of diabetes to be present (polyuria, polydipsia, and unexplained weight loss), plus:

- a random venous plasma glucose of >11.1 mmol/L
- a fasting plasma glucose of >7 mmol/L (whole blood >6.1 mmol/L), or
- a two hour plasma glucose concentration of >11.1 mmol/L two hours after 75 g anhydrous glucose in an oral glucose tolerance test.

With no symptoms, a diagnosis requires two confirmatory samples on separate occasions. If the fasting or random values are not diagnostic, the two hour value should be used.

The WHO guidelines for the diagnosis of diabetes mellitus were updated in 2011. This update states that the HbA_{1c} (glycosylated haemoglobin) can be used for diagnosis, as long as assays are standardised and no exclusion criteria are met. Such exclusions include children, patients suspected of having type 1 diabetes, patients with symptoms for less than two months, patients who are acutely ill, patients taking steroids or antipsychotics (which can cause a rapid glucose rise), patients with acute pancreatic damage, and pregnant patients.

An HbA_{1c} of 48 mmol/mol (6.5%) is recommended as the cut off point for a diagnosis of diabetes. A value of less than this does not preclude a diagnosis made using the traditional WHO criteria. If patients are asymptomatic, the HbA_{1c} should be repeated. If this value is less than 48 mmol/mol the patient should be treated as high risk for developing diabetes, and the test should be repeated in 6 months (or sooner if symptoms develop).

Based on these diagnostic criteria, the only correct answer listed is the raised HbA_{1c} value.

Answer Statistics

1		17%
2		14%
3		34%
4		4%
5		32%

Times answered: 9261

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 20 of 73

A 21-year-old male is referred to the endocrine clinic with poorly developed secondary sexual characteristics. The only relevant finding on history is that he has a very poor sense of smell.

On examination he has no axillary or pubertal hair, a 3 cm penis and testicular volumes of approximately 5 ml bilaterally. Smell test reveals that he is unable to distinguish acetone and coffee.

Investigations reveal:

Testosterone	4 nmol/L	(10-30)
Prolactin	380 mU/L	(<450)
FSH	2.1 IU/L	(1-7)
LH	1.5 IU/L	(1-10)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	5-alpha reductase deficiency
<input type="checkbox"/>	Craniopharyngioma
<input checked="" type="checkbox"/>	Kallman's syndrome This is the correct answer
<input type="checkbox"/>	Klinefelter's syndrome
<input type="checkbox"/>	Microdeletion of the Y chromosome Incorrect answer selected

This patient has evidence of hypogonadotropic hypogonadism with a low testosterone and a relative low follicle-stimulating hormone (FSH) and luteinising hormone (LH). In this case, there is isolated gonadotrophic deficiency as evidenced by a normal prolactin. This is seen in Kallman's syndrome, which is often associated with anosmia.

In Klinefelter's syndrome an elevated LH/FSH would be expected, as this is due to testicular failure as would be the case in 5-alpha reductase deficiency (which also results in partial male pseudohermaphroditism).

Craniopharyngioma is a possibility as it does cause hypogonadotropic hypogonadism but abnormalities in sense of smell would not be expected.

Y chromosome microdeletion is a cause of reduced fertility in men, but there are not usually any other signs or symptoms which accompany this.

5-alpha reductase deficiency results in a failure of the full development of male sexual characteristics before birth and during puberty. The external genitalia often appear female or ambiguous, and therefore you would expect a diagnosis much earlier in life than this. Smell is not affected.

Answer Statistics



Times answered: 8099

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 21 of 73

A 55-year-old female presents with episodic sweats and tremors which are relieved by glucose. She has gained approximately 6 kg in weight of late and drinks approximately 10 units of alcohol weekly.

Her investigations show normal full blood count, normal urea and electrolytes, and a fasting plasma glucose concentration of 4 mmol/L (3.0-6.0).

Which is the most appropriate investigation for this patient?

(Please select 1 option)

<input checked="" type="checkbox"/>	72 hour fast This is the correct answer
<input type="checkbox"/>	CT scan of pancreas
<input type="checkbox"/>	EEG
<input type="checkbox"/>	Insulin and C peptide concentration
<input type="checkbox"/>	Oral glucose tolerance test Incorrect answer selected

This patient describes symptoms suggestive of hypoglycaemia which are relieved by carbohydrate. The likely cause is an insulinoma which is producing the weight gain.

The standard method for achieving a diagnosis is during a 72 hour fast by demonstration of inappropriately high insulin and C peptide during spontaneous hypoglycaemia.

Measurement of C peptide is useful for excluding factitious hypoglycaemia from self injection of insulin. Insulin preparations contain no C peptide.

Further Reading:

Medscape. [Insulinomas.](#)

Answer Statistics



Times answered: 8264

Test Analysis

CorrectIncorrectPartially
Correct

Score: 33.33%

Total Answered: 21

Feedback

Work Smart

Question 42 of 100

A 17-year-old female who is 16 weeks pregnant reports that her elder brother has vitamin D resistant rickets.

Which of the following is the most likely mode of inheritance of this condition?

(Please select 1 option)

<input type="checkbox"/>	Autosomal dominant
<input type="checkbox"/>	Autosomal dominant with incomplete penetrance
<input type="checkbox"/>	Autosomal recessive
<input checked="" type="checkbox"/>	X-linked dominant This is the correct answer
<input type="checkbox"/>	X-linked recessive Incorrect answer selected

Vitamin D resistant rickets is inherited in an X-linked dominant manner.

Therefore an affected female will transmit the disease to 50% of her sons and 50% of her daughters.

An affected male will transmit the condition to all of his daughters but none of his sons.

In this case as the mother is unaffected, therefore there is no risk of the condition being passed to her unborn child.

Work Smart

Exam Themes January 2006

Question 4 of 10

An 18-year-old female with polycystic ovary syndrome was prescribed metformin.

Which is the most important pharmacological action of metformin in this situation?

(Please select 1 option)

<input type="checkbox"/>	Increasing gluconeogenesis
<input type="checkbox"/>	Increasing insulin levels
<input type="checkbox"/>	Increasing luteinising hormone levels
<input type="checkbox"/>	Increasing oestradiol levels
<input checked="" type="checkbox"/>	Increasing peripheral glucose uptake Correct

Lowering serum insulin concentrations with metformin ameliorates hyperandrogenism by reduction of ovarian enzyme activity that results in ovarian androgen production.

Clinical studies have shown that metformin reduces insulin resistance and have demonstrated a fall in serum androgens, luteinising hormone, and weight.

The reduced insulin resistance is associated with reduced insulin drive to the insulin sensitive ovary in polycystic ovarian syndrome and hence reduces androgen production.

Work Smart

Question 22 of 73

A 17-year-old boy was brought to clinic as his parents were concerned regarding possible delayed puberty.

He was otherwise well, played sports regularly, and academic performance was good. His height was 1.7 m and weight was 70 kg.

On examination he had small penis and testes, absent pubic hair, but no other abnormalities.

Investigations revealed:

Serum testosterone	4 nmol/L	(9-35)
Plasma follicle stimulating hormone (FSH)	1 U/L	(1-7)
Plasma luteinising hormone (LH)	1 U/L	(1-10)
Plasma prolactin	300 mU/L	(<450)
Plasma TSH	2 mU/L	(0.5-5)

Which one of the following is the most likely cause?

(Please select 1 option)

<input type="checkbox"/> Constitutional delay	<input checked="" type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> Hypopituitarism	
<input type="checkbox"/> Hypothyroidism	
<input type="checkbox"/> Kallman's syndrome	<input checked="" type="checkbox"/> This is the correct answer

The low follicle-stimulating hormone (FSH) and luteinising hormone (LH), together with the low testosterone, suggests a hypogonadotropic hypogonadism.

We know that there is no mental retardation, and we are told that physical examination is normal and sense of smell would usually not be tested.

Consequently a diagnosis of Kallman's is suggested.

We are not told of a family history of growth delay, thus this is unlikely to be constitutional delay.

The thyroid-stimulating hormone (TSH) is normal, making hypothyroidism unlikely and this together with the normal prolactin make hypopituitarism most unlikely.

Answer Statistics



Times answered: 7574

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 23 of 71

An 85-year-old woman with diabetes mellitus presented with sudden onset of wild flinging movements of the left arm which disappeared during sleep.

What is the most likely explanation?

(Please select 1 option)

<input type="checkbox"/>	Contralateral subthalamic nucleus infarction	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Focal motor seizures	
<input type="checkbox"/>	Hypoglycaemia	
<input type="checkbox"/>	Ipsilateral caudate nucleus infarction	
<input checked="" type="checkbox"/>	Ipsilateral cerebellar infarction	<input type="checkbox"/> Incorrect answer selected

This is hemiballismus, and in a patient with diabetes is likely to be due to a vascular event in the contralateral subthalamic nucleus.

Hemiballismus is usually characterised by involuntary flinging motions of the extremities, which are often violent. It is continuous and random, and can involve proximal, distal or facial muscles. It is always unilateral, but it is common for arms and legs to move together. The movements worsens with activity, and decrease with relaxation. It results from a decrease in activity of the subthalamic nucleus of the basal ganglia, which results in decreased suppression of involuntary movements.

In addition to strokes there are a number of other causes of hemiballismus. These include:

- traumatic brain activity

- amyotrophic lateral sclerosis
- hyperglycaemia
- malignancy
- vascular malformations
- tuberculomas, and
- demyelinating plaques.

Treatment should initially start with identifying and treating the cause. When pharmacological treatment is necessary this is usually initially with an antidopaminergic such as haloperidol or chlorpromazine.

Topiramate can be used, as can intrathecal baclofen, botulinum toxin and tetrabenazine.

Functional neurosurgery can be used for cases which have failed to respond to other treatment.

Answer Statistics



Times answered: 9123

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 24 of 71

A 45-year-old female attends the diabetic annual review clinic.

Her body mass index has increased over the year to 33.3 kg/m².

How do you calculate body mass index?

(Please select 1 option)

<input type="checkbox"/>	Height/Weight	
<input checked="" type="checkbox"/>	Height/(Weight) ²	Incorrect answer selected
<input type="checkbox"/>	Weight/Height	
<input type="checkbox"/>	Weight/(Height) ²	This is the correct answer
<input type="checkbox"/>	Weight/√ Height	

BMI is one of the most important calculations of anthropometry and is calculated as weight over (height) squared and measured in kg/m².

BMI can be described as:

- Underweight (less than 18.5)
- Normal (18.5-24.9)
- Overweight (25-29.9)
- Obese (greater than 30)

A BMI above 30 diagnoses obesity and has prognostic value indicating increased propensity to

develop diabetes, cancer, osteoarthritis and depression. Obesity is also associated with increased surgical risks including technical difficulties, wound infection and dehiscence, venous thromboembolism, incisional hernia, MI and death.

Answer Statistics



Times answered: 8092

Test Analysis

CorrectIncorrectPartially
Correct

Score: 29.17%

Total Answered: 24

Feedback

Work Smart

Question 25 of 71

A 33-year-old male with type 1 diabetes presents with a two-day history of pain, swelling and redness in his left middle finger. This began after he pricked his finger in the garden whilst pruning a bush.

His diabetic control has been quite reasonable with a HbA_{1c} of 54 mmol/mol (20-46) on basal bolus insulin consisting of Lispro tds and Humulin I in the evenings.

On examination, he has a painful, red and swollen middle finger with the redness extending to the metacarpophalangeal joint. He is diagnosed with cellulitis. Hand movements are intact. He is clinically stable with normal observations.

What is the most appropriate initial treatment for this patient?

(Please select 1 option)

<input type="checkbox"/>	Admit to hospital for IV antibiotics
<input type="checkbox"/>	Oral clindamycin
<input checked="" type="checkbox"/>	Oral flucloxacillin Correct
<input type="checkbox"/>	Oral metronidazole
<input type="checkbox"/>	Oral penicillin V

The patient has digital cellulitis and the most likely organisms responsible are *Strep. pyogenes* or *Staph. aureus*.

The most appropriate initial treatment is flucloxacillin, which predominantly covers *Staphylococcus aureus* cellulitis. If there is any suspicion of tendon involvement the plastics or orthopaedics team

(depending on local policy) should be asked to review and intravenous antibiotics initiated. If he were systemically unwell when IV antibiotics would be used.

Flucloxacillin is bactericidal for both *Staphylococcus* and *Streptococcus*, whereas clindamycin has an anti-toxin effect for both these groups of organisms (in addition to *Clostridium perfringens*). Their effect is therefore synergistic, and they should be used together where rapid control is required (e.g. in finger cellulitis) or in severe cases

Intact hand movements, in this case, make this less likely, and therefore a trial of oral antibiotics is appropriate.

The patient should be closely monitored, and readmitted for intravenous antibiotics should there fail to be significant improvement within 48 hours.

Answer Statistics

1		32%
2		29%
3		34%
4		1%
5		3%

Times answered: 8909

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 26 of 71

A 62-year-old female with a six year history of type 2 diabetes attends for annual review.

Her HbA_{1c} is 86 mmol/mol (20-42).

Into what average plasma glucose concentration does her HbA_{1c} translate?

(Please select 1 option)

<input type="checkbox"/>	7.5 mmol/L
<input type="checkbox"/>	10 mmol/L
<input checked="" type="checkbox"/>	13.5 mmol/L This is the correct answer
<input type="checkbox"/>	15.5 mmol/L Incorrect answer selected
<input type="checkbox"/>	19 mmol/L

The HbA_{1c} is an important reflection of control over a three month period (life expectancy of the erythrocyte).

There is a good relationship between the rise in glucose and its ability to glycosylate the Hb molecule (there is a difference between average plasma glucose and blood glucose).

Thus a HbA_{1c} of 53 mmol/mol would translate into an average *plasma* (higher than value of *blood* glucose) glucose of 9.5 mmol/L and a HbA_{1c} of 86 mmol/mol into 13.41 mmol/L.

This is the reason why so much emphasis is placed on controlling HbA_{1c} rather than the specific glucose measurements, as these vary so much throughout the day.

This is a difficult question and it is very unlikely that you would be asked to translate average blood glucose into an exact HbA_{1c} figure without being provided with a conversion calculator; however, the learning point here is that you realise that the numerical values are not the same.

Further Reading:

1. Diabetes.co.uk. [Convert Whole Blood Results to Plasma Readings.](#)
2. Reynolds TM, et al. [Glycated haemoglobin \(HbA_{1c}\) monitoring.](#) *BMJ.* 2006;333:586-8.

Answer Statistics



Times answered: 8609

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Exam Themes September 2004

Question 43 of 100

A 45-year-old man presents with headaches and low libido.

He is found to be hypopituitary.

The CT scan shows a pituitary tumour with suprasellar extension.

Which of the following structures is likely to be compressed?

(Please select 1 option)

<input type="checkbox"/>	Abducens nerve
<input type="checkbox"/>	Hypothalamus
<input type="checkbox"/>	Oculomotor nerve
<input checked="" type="checkbox"/>	Optic chiasm This is the correct answer
<input type="checkbox"/>	Third ventricle Incorrect answer selected

Superior extension of the tumour can lead to compression of firstly the optic apparatus and later the hypothalamus.

Lateral extension of the tumour with compression or invasion of the cavernous sinus can compromise third, fourth, or sixth cranial nerve functions, manifesting as diplopia in 5 to 15% of pituitary tumour patients.

The optic chiasm lies 5-10 mm above the diaphragm sellae and anterior to the stalk.

Adenomas larger than 1.5 cm frequently have suprasellar extension, and a magnetic resonance

imaging (MRI) scan will show compression and upward displacement of the optic chiasm.

Answer Statistics



Times answered: 8542

Test Analysis

CorrectIncorrectPartially
Correct

Score: 13.95%

Total Answered: 43

Feedback

Work Smart

Exam Themes January 2005

Question 44 of 100

A 45-year-old woman presents to the clinic with a three month history of sweats and weight gain of 7 kg. Her sweats tend to be worse in the morning and with exercise and she often feels light headed.

On examination she has a BMI of 30 kg/m² but no abnormality is noted. Urinalysis negative.

Which is the likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Acromegaly
<input type="checkbox"/>	Diabetes mellitus
<input checked="" type="checkbox"/>	Insulinoma This is the correct answer
<input type="checkbox"/>	Phaeochromocytoma
<input type="checkbox"/>	Primary ovarian failure Incorrect answer selected

This patient has sweats and weight gain exacerbated by exercise or fasting (in the morning) and associated with lightheadedness. This information suggests the presence of an insulinoma.

Phaeochromocytoma is unlikely as there is typically weight loss and there is no mention of hypertension.

If this were acromegaly, the features should be described.

In diabetes mellitus per se, possibly urinalysis would be expected to show glycosuria.

Primary ovarian failure means that the patient never has a normal menstrual cycle, and has the triad

of amenorrhea, hypergonadotropinism, and hypoestrogenism. It would be extremely rare for this condition not to be diagnosed by the age of 40.

Presenting features of insulinoma include:

- double vision
- tachycardia/palpitations
- 'weakness'
- confusion
- memory loss
- seizures
- sweating
- hunger, and
- weight gain.

Further Reading:

Medscape. [Insulinoma.](#)

Answer Statistics



Times answered: 8070

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Exam Themes September 2006

Question 27 of 71

A 57-year-old male with diabetes requests sildenafil for erectile dysfunction.

Which of the following are contraindicated with sildenafil?

(Please select 1 option)

<input type="checkbox"/>	Carbamazepine
<input type="checkbox"/>	Carvedilol
<input checked="" type="checkbox"/>	Indomethacin Incorrect answer selected
<input type="checkbox"/>	Nicorandil This is the correct answer
<input type="checkbox"/>	Valsartan

Sildenafil is contraindicated if the patient is taking nitrates, or nitrate derivatives (nicorandil).

We are informed on the prescribing information that if the patient takes nitrates then they should be stopped for the period during which sildenafil is used.

Answer Statistics

Work Smart

Exam Themes January 2005

Question 45 of 100

A 32-year-old woman with known hypothyroidism is admitted to hospital.

Her blood pressure is 86/53 mmHg and her pulse 100 bpm.

Investigations reveal:

Serum sodium	126 mmol/L	(137-144)
Serum potassium	5.8 mmol/L	(3.5-4.9)
Serum glucose	3.0 mmol/L	(3.0-6.0)

What is the most appropriate investigation?

(Please select 1 option)

<input type="checkbox"/>	Anti-thyroglobulin antibody
<input type="checkbox"/>	Plasma insulin concentration
<input type="checkbox"/>	Random serum cortisol concentration
<input checked="" type="checkbox"/>	Short Synacthen test This is the correct answer
<input type="checkbox"/>	Urine and plasma osmolality Incorrect answer selected

This young woman probably has an autoimmune hypothyroidism and now presents with features typical of acute hypoadrenalism.

The biochemistry is also supportive with low sodium, low glucose and elevated potassium.

The diagnosis may be confirmed with inadequate cortisol response in the short Synacthen test.

A random cortisol concentration is not adequate to diagnose hypoadrenalism.

Answer Statistics



Times answered: 7702

Test Analysis

CorrectIncorrectPartially
Correct

Score: 13.33%

Total Answered: 45

Work Smart

Exam Themes January 2005

Question 23 of 73

A 45-year-old woman presents with a one year history of weight gain and intermittent sweating.

Which is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Carcinoid syndrome
<input type="checkbox"/>	Hypothyroidism
<input checked="" type="checkbox"/>	Insulinoma This is the correct answer
<input type="checkbox"/>	Lymphoma
<input type="checkbox"/>	Phaeochromocytoma Incorrect answer selected

The clinical scenario is classic of insulinoma.

Weight gain is the key differentiating feature here; sweating being more commonly shared with the other conditions except hypothyroidism. There is nothing else offered, other than insulinoma, that explains both symptoms in this middle aged woman.

As primary ovarian failure is not offered as an answer (and one which would seem the most probable) then the features would otherwise suggest an insulinoma which is more common in females and, unlike carcinoid and lymphoma, is associated with weight gain rather than weight loss.

Phaeochromocytoma is associated with bouts of sweating but not weight gain; there is also no mention of other typical features such as palpitations and hypertension.

Work Smart

Question 28 of 71

Which of the following genetic loci may be implicated in maturity onset diabetes of the young (MODY)?

(Please select 1 option)

<input type="checkbox"/>	BRCA1 and BRCA2 (breast cancer) gene products	<input type="checkbox"/> Incorrect answer selected
<input checked="" type="checkbox"/>	Glucokinase mutations	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Leptin mutations	
<input type="checkbox"/>	Stargardt's disease mutations	
<input type="checkbox"/>	ZAC/HYMAI	

MODY is a heterogenous group of monogenic disorders characterised by pancreatic B cell dysfunction.

The most common genetic mutations in the UK are:

- glucokinase (32%)
- HNF1A (52%), and
- HNF4A (10%).

It accounts for 1-2% of diabetes cases, and is an important diagnosis as the therapy may be different compared with T1DM and T2DM.

Further Reading:

Answer Statistics



Times answered: 9276

Test Analysis

CorrectIncorrectPartially
Correct

Score: 28.57%

Total Answered: 28

Feedback

Work Smart

Question 46 of 100

A 30-year-old woman with gestational diabetes who is 24 weeks pregnant presents with a blood pressure on three separate occasions of approximately 160/110 mmHg.

Her liver function tests (LFTs) show:

Aspartate transaminase	150 U/L	(5-45)
Alkaline phosphatase	213 U/L	(50-120)
Bilirubin	31 µmol/L	(0-18)

Which antihypertensive is indicated?

(Please select 1 option)

<input type="checkbox"/> Atenolol <input checked="" type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> Irbesartan
<input type="checkbox"/> Labetalol <input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/> Methyldopa
<input type="checkbox"/> Ramipril

Angiotensin-converting enzyme inhibitors are contraindicated in pregnancy as they cause renal dysgenesis in the fetus. For this reason, A2RBs are also not recommended for use in pregnancy.

There is a theoretical risk of intrauterine growth retardation with the use of atenolol in pregnancy

although the studies which showed this effect were done with very large doses of atenolol.

It is not advised to utilise methyldopa in a patient with abnormal LFTs.

Answer Statistics



Times answered: 8651

Test Analysis

CorrectIncorrectPartially
Correct

Score: 13.04%

Total Answered: 46

Feedback

Work Smart

Question 30 of 71

A 26-year-old man with a three year history of type 1 diabetes presents with fever, vomiting and is dehydrated.

Investigations revealed:

Sodium	148 mmol/L	(137-144)
Potassium	3.3 mmol/L	(3.5-4.9)
Urea	24 mmol/L	(2.5-7.5)
Glucose	33 mmol/L	(3.0-6.0)
Blood pH	7.18	(7.36-7.44)

What would be the typical total body water deficit associated with his diabetic ketoacidosis (DKA)?

(Please select 1 option)

<input type="checkbox"/> 1 litre	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> 3 litres	
<input checked="" type="checkbox"/> 6 litres	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/> 8 litres	
<input type="checkbox"/> 10 litres	

The typical fluid deficit associated with DKA is approximately 6 litres.

The initial half of this amount is derived from intracellular fluid and precedes signs of dehydration, while the other half is from extracellular fluid and is responsible for clinical signs of dehydration.

Appropriate fluid replacement requires 1 litre of normal saline over the first 1/2 hour, then 1 litre over the next hour, then 1 litre over the next two hours followed by 1 litre every 4 hours depending on the degree of dehydration.

Answer Statistics



Times answered: 8015

Test Analysis

CorrectIncorrectPartially
Correct

Score: 26.67%

Work Smart

Exam Themes May 2002

Question 47 of 100

A 65-year-old male undergoes a CT head scan after falling from a ladder and knocking himself out.

The CT report reveals that he has a 1.3 cm macroadenoma which does not encroach upon the optic chiasm. On recovery he is perfectly well and examination is entirely normal, including full visual fields to confrontation.

Investigations reveal normal thyroid function, testosterone concentration, and short Synacthen test results. His prolactin concentration is 550 mU/L (50-450).

Which of the following is the most appropriate treatment for this patient?

(Please select 1 option)

<input type="checkbox"/>	Advise trans-sphenoidal hypophysectomy
<input type="checkbox"/>	Arrange pituitary radiotherapy
<input checked="" type="checkbox"/>	Arrange serial imaging This is the correct answer
<input type="checkbox"/>	No further investigation/treatment required
<input type="checkbox"/>	Treat with cabergoline Incorrect answer selected

This man has a coincidentally detected pituitary macroadenoma.

The small elevation in prolactin probably reflects stalk compression and does not indicate that this is a prolactinoma. In macroprolactinomas, the prolactin concentration is greater than 2000 mU/L.

In this man's case, with no visual field defects and the tumour being distant from the chiasm, the most appropriate treatment would be observation with serial scanning to assess for any change in size that

would then merit surgical intervention.

However, this man, who is euhypopituitary may never encounter any growth in this coincidentally detected non-functional pituitary tumour.

Answer Statistics

1		18%
2		1%
3		30%
4		30%
5		21%

Times answered: 8284

Test Analysis

CorrectIncorrectPartially
Correct

Score: 12.77%

Total Answered: 47

Work Smart

Exam Themes May 2002

Question 24 of 73

A 25-year-old female presents with weight gain, oligomenorrhoea, and primary infertility. She has a history of bipolar disorder for which she takes lithium.

On examination she has a BMI of 32 kg/m².

Investigations reveal:

Free T4	6.4 pmol/L	(10-22)
TSH	42 mU/L	(0.4-5)
Prolactin	980 mU/L	(50-450)

Which is the most appropriate treatment for this patient?

(Please select 1 option)

<input type="checkbox"/> Cabergoline
<input type="checkbox"/> Cabergoline plus thyroxine
<input type="checkbox"/> Metformin
<input type="checkbox"/> Stop lithium
<input checked="" type="checkbox"/> Thyroxine Correct

This patient has primary hypothyroidism which would explain the increasing weight and the associated hyperprolactinaemia.

The latter occurs as a consequence of reduced dopaminergic tone.

Lithium may be the cause of this but stopping it is not usually attempted since it may dangerously exacerbate the psychiatric illness. There is an excellent review by John Lazarus on this topic¹ where he says:

"The common clinical side effects of the drug are goitre in up to 40% and hypothyroidism in about 20%. Lithium increases thyroid autoimmunity if present before therapy. Treatment with levothyroxine is effective and lithium therapy should not be stopped."



The most appropriate treatment for her would be thyroxine which would, through euthyroidism, be expected to normalise prolactin concentration.

In turn this may improve weight, menstrual function and fertility.

Reference:

1. Lazarus JH. [Lithium and thyroid](#). *Best Pract Res Clin Endocrinol Metab*. 2009;23:723-733.

Answer Statistics

1		6%
2		18%
3		5%
4		39%
5		31%

Times answered: 7769

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 31 of 71

A 42-year-old male with a 15 year history of type 1 diabetes presents with a two month history of deteriorating pain and stiffness of the right shoulder.

On examination he has painful limitation of internal rotation and can abduct the right arm to only 90 degrees. Flexion is relatively unimpaired. There is some weakness of movement of that shoulder with slight wasting of shoulder muscles. He has some reduced vibration sensation in both hands.

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input checked="" type="checkbox"/> Adhesive capsulitis	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/> Brachial plexopathy	
<input type="checkbox"/> Calcium pyrophosphate arthropathy	
<input type="checkbox"/> Diabetic arthropathy	
<input type="checkbox"/> Rheumatoid arthritis	<input type="checkbox"/> Incorrect answer selected

This patient has typical features of a frozen shoulder and this is typified by the reduced internal rotation and abduction of the shoulder. Slight wasting due to pain and reduced use of the shoulder muscles is expected.

Brachial plexopathy is associated with involvement of the brachial plexus with associated specific dermatomal loss of sensation (not the peripheral neuropathy associated with diabetes as in this case) as well as specific loss of strength (not often the shoulder) such as wrist drop, ulna nerve palsy,

etc.

The reduced vibration sense in both hands is a slightl distractor here, and likely represents the early stages of diabetic peripheral neuropathy.

Reference:

Manske RC, Prohaska D. [Diagnosis and management of adhesive capsulitis](#). *Curr Rev Musculoskelet Med*. 2008;1:180-9.

Answer Statistics



Times answered: 8975

Test Analysis

CorrectIncorrectPartially
Correct

Score: 25.81%

Work Smart

Exam Themes January 2006

Question 25 of 73

A 19-year-old male presents with concerns regarding his pubertal development.

On examination he is 1.8 m tall, thin and has little pubic and axillary hair. Both testes are approximately 5 ml in volume (NR 15 ml). No other abnormalities are encountered.

Investigations reveal:

LH	3.3 mU/L	(3-10)
FSH	5.5 mU/L	(3-10)
Testosterone	5.5 nmol/L	(9-30)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Anorexia nervosa
<input type="checkbox"/>	Craniopharyngioma
<input checked="" type="checkbox"/>	Kallmann's syndrome This is the correct answer
<input type="checkbox"/>	Klinefelter's syndrome
<input type="checkbox"/>	Primary testicular failure Incorrect answer selected

This young male has delayed puberty with hypogonadotrophic hypogonadism. The most likely explanation would be Kallmann's syndrome.

Klinefelter's would be associated with elevated luteinising hormone/follicle stimulating hormone (LH/FSH), as would primary testicular failure. In Klinefelter's you would also expect testicular dysgenesis.

His height of 1.8 m, suggesting that he is tall, would argue against this being anorexia despite his thin appearance. If anorexia had preceded puberty then his stature should also have been affected.

The only other possibility is craniopharyngioma, but this is probably less likely in an otherwise well man, and other possible features should be included to suggest this diagnosis.

Answer Statistics



Times answered: 8598

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 26 of 73

A 53-year-old female presents with a four month history of weight gain, episodic sweats, and shakiness which occur during episodes of fasting and are relieved by eating chocolate bars.

She informs you that she has a friend who is a nurse and has provided her with a glucose meter. During one of these episodes the glucose concentration was recorded at 2.8 mmol/L (3.0-6.0).

On examination she has a body mass index of 30.2 kg/m², a pulse of 82 bpm, and a blood pressure of 144/86 mmHg. No other abnormalities are noted.

Which of the following is the most appropriate next investigation for this woman?

(Please select 1 option)

<input checked="" type="checkbox"/> 72 hour fast	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/> Fasting insulin and C-peptide measurement	
<input type="checkbox"/> MRI pancreas	
<input type="checkbox"/> Oral glucose tolerance test	
<input type="checkbox"/> Sulphonylurea measurement	<input type="checkbox"/> Incorrect answer selected

This woman has features of spontaneous hypoglycaemia which is relieved by eating and precipitated by fasting and exercise.

The most relevant investigation to prove or disprove this would be a 72 hour fast which has a virtual 99% sensitivity. If proven then further investigation for an insulinoma or factitious hypoglycaemia is warranted.

Work Smart

Question 48 of 100

A 45-year-old male presents with sweats and change in appearance.

A diagnosis of acromegaly is confirmed with failure to suppress GH concentrations on an oral glucose tolerance test. MRI reveals a 0.5 cm microadenoma of the pituitary.

Which of the following is the most appropriate therapeutic option for this patient?

(Please select 1 option)

<input type="checkbox"/>	Depot somatostatin analogue
<input type="checkbox"/>	Dopamine agonist therapy
<input checked="" type="checkbox"/>	Pituitary surgery This is the correct answer
<input type="checkbox"/>	Short acting somatostatin analogue
<input type="checkbox"/>	Stereotactic pituitary irradiation Incorrect answer selected

Surgery is the most appropriate primary therapy for acromegaly with a cure rate of above 80% expected for a tumours of this size.

Although somatostatin analogues are very effective at suppressing growth hormone (GH) concentrations to what would be regarded as a 'cure' range (GH less than 5 mu/L on day profile), their expense limits use on the longer term basis.

However, in patients unsuitable for surgery or in those not cured following surgery selective mini somatostatin analogue (SMS) would be employed.

Work Smart

Question 27 of 73

A 33-year-old female presents with a one year history of galactorrhoea and amenorrhoea. She informs you that she does not want to become pregnant.

On examination there is galactorrhoea to expression and visual fields are normal to confrontation.

Investigations confirm the diagnosis of a macroprolactinoma, with a prolactin concentration of 10,500 mU/L (50-500) and MRI of the pituitary revealing a 1.5 cm tumour with some suprasellar extension.

Which of the following is the most appropriate treatment for this woman?

(Please select 1 option)

<input checked="" type="checkbox"/>	Cabergoline therapy This is the correct answer
<input type="checkbox"/>	Combined oral contraceptive
<input type="checkbox"/>	Pituitary surgery
<input type="checkbox"/>	Somatostatin analogue therapy
<input type="checkbox"/>	Stereotactic pituitary irradiation Incorrect answer selected

This young woman has a macroprolactinoma and these are exquisitely sensitive to dopamine agonist therapy and rapid tumour reduction with restoration of menses and cessation of galactorrhoea expected. If she were asymptomatic, there is no absolute requirement for treatment. Indications for treatment are adverse effect of tumour size or effects of prolactinaemia.

The dopamine agonists, cabergoline and bromocriptine, reduce prolactin levels thereby allowing oestrogen levels to normalise. They are effective in most patients, but do normally need to continued

long-term. Contraindications to treatment are cardiac valve fibrosis and pulmonary fibrosis.

Pituitary surgery is rarely required in prolactinomas and is generally reserved for patients intolerant of or resistant to dopamine agonist therapy. Radiotherapy can be used to reduce the chance of tumour recurrence, but is rarely required.

The fact that she does not want to become pregnant is a bit of an irrelevance. However, it is important to note that there is a small risk of tumour enlargement during pregnancy and the patient should be closely monitored by an Endocrinologist. If possible, dopamine agonists can be held during pregnancy but if treatment is required bromocriptine has the most safety data.

Combined oral contraceptives can lead to mild rises in serum prolactin, and therefore should only be used with caution in patients with prolactinomas.

Somatostatin analogues are used to treat carcinoid and other neuroendocrine tumours, but not prolactinomas.

Answer Statistics

1		22%
2		4%
3		60%
4		8%
5		7%

Times answered: 7620

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 32 of 71

A 54-year-old male who is a HGV driver and has a ten year history of type 2 diabetes is seen on annual review.

His glycaemic control is poor with a HBA1c of 91 mmol/mol (20-42) on maximal oral hypoglycaemic therapy. He has no retinopathy and no episodes of hypoglycaemia. You suggest switching to insulin but he refuses to do this as he would initially lose his HGV licence and then have to reapply. The DVLA is aware that he has diabetes treated with oral hypoglycaemics.

Which is the most appropriate action in this case?

(Please select 1 option)

<input checked="" type="checkbox"/>	Continue to review patient in clinic and accept that he continues to drive	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Discharge him from clinic as there is nothing more that you can do	
<input type="checkbox"/>	Inform his employer that he must stop driving and suggest administrative work	
<input type="checkbox"/>	Inform the DVLA he is unfit to drive	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	Tell his next of kin that they should inform the DVLA that he is no longer fit to drive	

In this particular case, the patient has poor glycaemic control, but otherwise has no features that preclude him from driving such as retinopathy, neuropathy, or hypoglycaemic episodes. You cannot therefore force this patient to switch to insulin and neither can you stop him driving. Patients can now hold a HGV license and be treated on insulin however they will initially lose their license, then have to reapply for it.

He will continue to need a regular medical every three years for his continued HGV licence.

Further Reading:

1. Diabetes.co.uk. [Diabetes and Driving for Work.](#)
2. Driver and Vehicle Licensing Agency (DVLA). [Current medical guidelines: DVLA guidance for professionals.](#)

Answer Statistics



Times answered: 9205

Test Analysis

CorrectIncorrectPartially
Correct

Score: 25%

Work Smart

Question 33 of 71

In a study healthy volunteers are given 50 mls of 50% dextrose solution by one of two routes. Route A is intravenous and route B is via a nasogastric tube.

Every 15 minutes the plasma insulin level and glucose are measured and plotted on a graph.

Which of the following statements would best describe the likely results comparing route A to route B in this experiment?

(Please select 1 option)

<input type="checkbox"/>	Insulin and glucose the same in route A and route B	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	Insulin higher, glucose higher in route A	
<input type="checkbox"/>	Insulin higher, glucose higher in route B	
<input type="checkbox"/>	Insulin higher, glucose lower in route A	
<input type="checkbox"/>	Insulin higher, glucose lower in route B	<input checked="" type="checkbox"/> This is the correct answer

Glucose given via the gut elicits a greater insulin response as compared to the same quantity given intravenously even though the plasma glucose peak is higher when it is given IV. This phenomenon is called the 'incretin effect'.

The incretin effect denominates the phenomenon that oral glucose elicits a higher insulin response than does intravenous glucose.

The two hormones responsible for the incretin effect, glucose-dependent insulinotropic hormone (GIP) and glucagon-like peptide-1 (GLP-1), are secreted after oral glucose loads and augment insulin

secretion in response to hyperglycaemia.

The investigation of the incretin effect is not usually performed using the same quantity of glucose as in this question. An 'isoglycaemic study' is often used where an infusion of glucose is designed to copy exactly the blood glucose profile generated in an individual or animal by a certain enteral glucose load.

Exenatide (synthetic exendin-4) is a new agent for the treatment of type 2 diabetes. Exendin-4 occurs naturally in the saliva venom of the North American lizard called the Gila Monster. It mimics the action of the gut hormone GLP-1 (Glucagon-like peptide 1).

Reference:

Nauck MA, Baller B, Meier JJ. [Gastric Inhibitory Polypeptide and Glucagon-Like Peptide-1 in the Pathogenesis of Type 2 Diabetes](#). *Diabetes*. 2004;53:S190-6.

Answer Statistics



Times answered: 8351

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 34 of 71

Which of the following is a metabolic effect of exenatide?

(Please select 1 option)

<input type="checkbox"/>	Accelerates gastric emptying	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	Improves insulin sensitivity	
<input type="checkbox"/>	Inhibits insulin release	
<input type="checkbox"/>	Promotes gluconeogenesis by the liver	
<input type="checkbox"/>	Suppresses appetite	<input type="checkbox"/> This is the correct answer

Exenatide mimics the effect of the gut hormone GLP-1 (glucagon-like peptide 1) and has favourable effects on the metabolism of individuals with diabetes mellitus.

Exenatide suppresses appetite, inhibits glucose production in the liver, slows gastric emptying and stimulates insulin release. It does not increase insulin sensitivity which is achieved by drugs such as metformin and the glitazones.

In summary exenatide has the following metabolic effects:

- Stimulates insulin release
- Inhibits glucose production by the liver
- Slows gastric emptying, and
- Suppresses appetite.

Reference:

1. Buse JB, Henry RR, Han J, et al. [Effects of exenatide \(exendin-4\) on glycemic control over 30 weeks in sulfonylurea-treated patients with type 2 diabetes.](#) *Diabetes Care.* 2004;27:2628-35.
2. NICE. [Type 2 diabetes in adults \(NG28\).](#)

Answer Statistics

1		11%
2		37%
3		3%
4		13%
5		35%

Times answered: 8579

Test Analysis

CorrectIncorrectPartially
Correct

Score: 23.53%

Total Answered: 34

Work Smart

Question 49 of 100

A 64-year-old man presents with new onset bilateral gynaecomastia.

He has been diagnosed with Zollinger-Ellison syndrome and heart failure in the last year. He underwent normal puberty at age 14.

Which of the following drugs would be most likely to cause gynaecomastia?

(Please select 1 option)

<input type="checkbox"/>	Bisoprolol
<input type="checkbox"/>	Lanzoprazole
<input type="checkbox"/>	Rabeprazole sodium
<input type="checkbox"/>	Ranitidine ❌ Incorrect answer selected
<input type="checkbox"/>	Spironolactone ✅ This is the correct answer

Research has shown that the other drugs listed above which may also be used as part of the treatment of Zollinger-Ellison syndrome have a much lower almost insignificant risk in the development of gynaecomastia.

Other drugs that can cause gynaecomastia include:

- spironolactone
- digoxin
- methyldopa
- gonadotrophins, and

- cyproterone acetate.

Zollinger-Ellison syndrome: The association of peptic ulcer with a gastrin-secreting pancreatic adenoma - 50-60% are malignant. It occurs in approximately 0.1% of patients with duodenal ulcer disease and is to be suspected in those with multiple peptic ulcers that are resistant to drugs.

A case study into male gynaecomastia states that "spironolactone induces gynecomastia by blocking androgen production, by blocking androgens from binding to their receptors, and by increasing both total and free oestrogen levels".¹

Reference:

1. Haynes BA, Mookadam F. [Male gynecomastia](#). *Mayo Clin Proc.* 2009;84:672.

Answer Statistics



Times answered: 8279

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 28 of 73

A 78-year-old male is brought to the Emergency Department and has a witnessed seizure in the resuscitation room.

His blood glucose is recorded as 1.0 mmol/L. He does not have diabetes, nor other significant medical history.

He is given 50 ml of 50% dextrose and he slowly recovers over the next one hour. A serum cortisol concentration later returns as 800 nmol/L (120-600).

Which of the following would be the most relevant investigation for this man?

(Please select 1 option)

<input type="checkbox"/>	Chest x ray
<input type="checkbox"/>	CT head scan
<input type="checkbox"/>	Electrocardiogram
<input checked="" type="checkbox"/>	Prolonged 72 hour fast This is the correct answer
<input type="checkbox"/>	Short Synacthen test Incorrect answer selected

The historical and biochemical evidence here suggests a diagnosis of spontaneous hypoglycaemia and the most likely cause would be an insulinoma. However, one would wish to exclude possible drug administration and although not mentioned here, a sulphonylurea screen should be undertaken.

He has presented with symptomatic hypoglycaemia, is not diabetic and therefore should not have received insulin or a sulphonylurea.

There is nothing to suggest alcohol or drug misuse. Similarly, there is nothing to suggest sepsis.

However, to prove a diagnosis of spontaneous hypoglycaemia, a prolonged fast is required and, should he develop hypoglycaemia, measurement of insulin and C peptide will be needed to confirm the diagnosis.

The appropriate cortisol response during his hypoglycaemic episode (cortisol 800) excludes hypoadrenalism.

Answer Statistics



Times answered: 9253

Test Analysis

CorrectIncorrectPartially
Correct

Score: 28.57%

Work Smart

Core Questions

Question 50 of 100

A 27-year-old female presents to the surgical intake with abdominal pain and a five day history of vomiting.

Over the last three months she has also been aware of a 6 kg weight loss.

On examination, she is pale, has a temperature of 38.5°C, blood pressure of 90/60 mmHg and pulse rate of 130 in sinus rhythm. The chest is clear on auscultation but she has a diffusely tender abdomen with no guarding. Her BM reading is 2.5.

Initial biochemistry is as follows:

Sodium	124 mmol/L	(137-144)
Potassium	6.0 mmol/L	(3.5-4.9)
Urea	7.5 mmol/L	(2.5-7.5)
Creatinine	78 µmol/L	(60-110)
Glucose	2.0 mmol/L	(3.0-6.0)

Which of the following is the probable diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Abdominal migraine
<input type="checkbox"/>	Acute appendicitis
<input type="checkbox"/>	Acute cholecystitis
<input type="checkbox"/>	

Addison's disease	<input checked="" type="checkbox"/> This is the correct answer
Insulinoma	<input type="checkbox"/> Incorrect answer selected

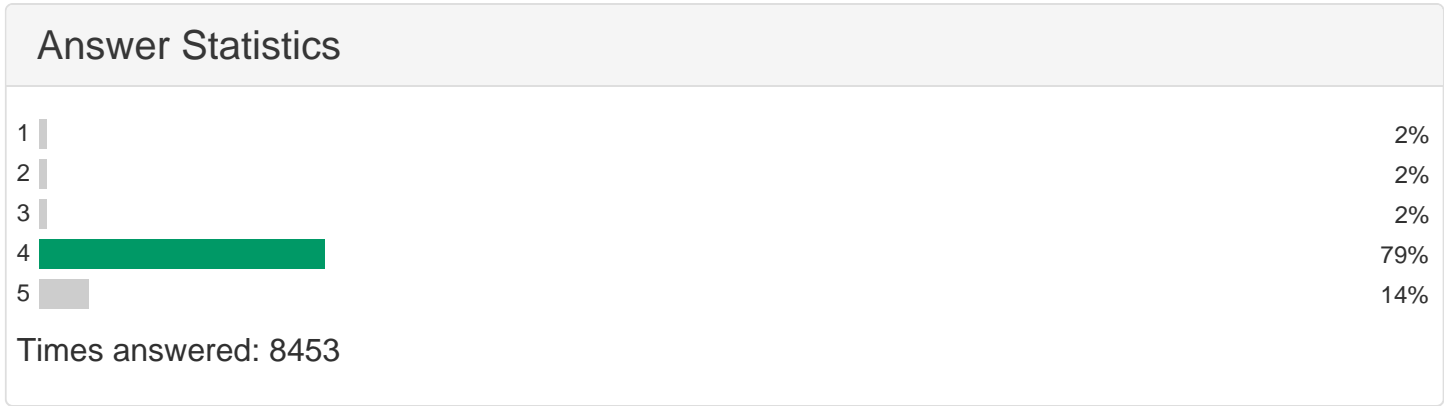
This patient has clinical features of hypoadrenal crisis with abdominal pain, vomiting, and shock with hypoglycaemia, hyponatraemia, and hyperkalaemia. In the United Kingdom this is commonly due to autoimmune destruction of the adrenal glands (Addison's disease).

Rarer causes are TB, HIV, adrenal haemorrhage, or anterior pituitary disease.

Patients classically present with weight loss, abdominal pain, lethargy, and nausea and vomiting. Addison's disease is also associated with oral pigmentation (due to excess ACTH and therefore MSH), and other autoimmune disease (including thyroid disease and vitiligo).

Patients such as this need emergency fluid resuscitation, steroid administration (prior to this urgent cortisol measurement), and careful search for occult infection.

None of the other options explain the biochemical findings.



Test Analysis

Correct	Incorrect	Partially Correct
Correct		

Work Smart

Question 51 of 100

Which of the following is regarded as a physiological effect of thyroid hormones?

(Please select 1 option)

<input type="checkbox"/>	Decreased gluconeogenesis
<input checked="" type="checkbox"/>	Enhanced insulin sensitivity This is the correct answer
<input type="checkbox"/>	Reduced myocardial oxygen demand
<input type="checkbox"/>	Reduced nerve conduction
<input type="checkbox"/>	Reduced oxidation of fatty acids in tissues Incorrect answer selected

Thyroid hormones enhance:

- insulin-dependent entry of glucose into cells
- myocardial oxygen consumption
- nerve conduction
- gluconeogenesis, and
- oxidation of fatty acids.

Work Smart

Question 29 of 73

A patient with type 2 diabetes being treated with gliclazide presents with sweating and dizziness. Blood glucose was 1.9 mmol/L (3.0-6.0).

He is on long-standing treatment for hypertension, atrial fibrillation, joint pain, and indigestion. These treatments have not changed recently. You understand that he has recently been prescribed an agent for balanitis by his GP.

Which of the following drugs may be responsible for increasing the likelihood of hypoglycaemia in this situation?

(Please select 1 option)

<input type="checkbox"/>	Aspirin
<input type="checkbox"/>	Atenolol
<input type="checkbox"/>	Digoxin
<input checked="" type="checkbox"/>	Fluconazole This is the correct answer
<input type="checkbox"/>	Ranitidine Incorrect answer selected

As a result of drug interaction, hypoglycaemia may be potentiated when a sulfonylurea is used concurrently with agents such as:

- Long-acting sulfonamides
- Tuberculostatics
- Phenylbutazone

- Clofibrate
- Monoamine oxidase (MAO) inhibitors
- Coumarin derivatives
- Salicylates
- Probenecid
- Propranolol
- Cimetidine
- Disopyramide, and
- Angiotensin converting enzyme inhibitors.

Gliclazide is a sulphonylurea drug with an intermediate half life of around 11 hours. It is extensively metabolised within the liver by CYP2C9. Within the circulation, gliclazide is highly bound to plasma proteins, about 94%. Renal clearance accounts for only 4% of total drug clearance.

Therefore gliclazide action can be potentiated predominantly by two mechanisms:

- displacement of the drug from plasma proteins to give more free (unbound) drug - some agents such as aspirin can do this, and
- interference with the hepatic metabolism of the drug.

The only change in this patient's treatment recently has been the addition of an antimicrobial agent.

Fluconazole has a low level of plasma protein binding and it is excreted by the kidney. However, it is also a potent inhibitor of CYP2C8 and CYP2C9 and can thus interact with gliclazide and other sulphonylureas (for example, glimepiride, glibenclamide, tolbutamide, and glipizide).

Thus the best answer in this scenario would be likely to be fluconazole.

Answer Statistics



Times answered: 8462

Test Analysis

Work Smart

Question 30 of 73

A 48-year-old woman presents with a history of intestinal polyps, and multiple lipomas on the arms and back. She now has a small palpable nodule in her neck.

Thyroid function tests and thyroid antibodies are normal.

Which of the following tumours is she at increased risk of developing?

(Please select 1 option)

<input type="checkbox"/>	Anaplastic carcinoma of the thyroid
<input type="checkbox"/>	Follicular carcinoma of the thyroid
<input type="checkbox"/>	Medullary carcinoma of the thyroid
<input checked="" type="checkbox"/>	Papillary carcinoma of the thyroid Correct
<input type="checkbox"/>	Thyroid lymphoma

This lady has Gardner's syndrome characterised by multiple small and large intestinal tumours and lipomas.

Osteomas and fibromas are also seen.

It is a rare familial condition that carries an increased risk of papillary carcinoma of the thyroid.

Work Smart

Exam Themes May 2006

Question 35 of 71

A 55-year-old obese man with type 2 diabetes mellitus is uncontrolled on diet alone.

Which antidiabetic therapy would increase insulin sensitivity in this patient?

(Please select 1 option)

<input type="checkbox"/>	Acarbose
<input checked="" type="checkbox"/>	Gliclazide ❌ Incorrect answer selected
<input type="checkbox"/>	Glimepiride
<input checked="" type="checkbox"/>	Pioglitazone ✅ This is the correct answer
<input type="checkbox"/>	Repaglinide

Type 2 diabetes is due to two defects: insulin resistance and insulin deficiency. In 95% of patients it is insulin resistance that is the main cause of the diabetes. These patients are typically obese with features of the metabolic syndrome. The bulk of the insulin resistance appears to be in skeletal muscle.

The state of insulin resistance is associated with abnormal glucose metabolism and excessive free fatty acids in the blood. Drugs and lifestyle modifications that increase insulin sensitivity (and thereby reduce insulin resistance) help to reverse these abnormalities.

Of the drugs listed only pioglitazone would boost insulin sensitivity. Metformin also boosts insulin sensitivity, but pioglitazone has more effect on peripheral insulin resistance.

Pioglitazone, a PPAR gamma agonist, is an insulin sensitiser. It upregulates genes for enzymes

which deal with the metabolism of free fatty acids. These lead to increased peripheral insulin sensitivity, and improve glucose uptake. It also leads to fluid retention in around 10% of patients, is contraindicated in cardiac failure, and leads to a reduction in bone mineral density. It reduces HbA_{1c} by between 1 and 1.3%.

Gliclazide, glimepiride and repaglinide are insulin secretagogues; they boost insulin secretion. Acarbose has a modest effect on the absorption of sugars from the gut, but its main effect is to cause flatulence.

Answer Statistics



Times answered: 9074

Test Analysis

CorrectIncorrectPartially
Correct

Score: 22.86%

Work Smart

Question 52 of 100

During routine investigation of a healthy couple for primary subfertility semen analysis reveals azoospermia.

On examination of the male there are no abnormalities on general examination and testicular examination shows a normal testicular volume.

Investigations reveal:

LH	5.1 IU/L	(2-10)
FSH	4.3 IU/L	(2-10)
Testosterone	15.3 nmol/L	(9-30)

Which of the following is the most likely cause of his azoospermia?

(Please select 1 option)

<input type="checkbox"/>	Androgen insensitivity
<input checked="" type="checkbox"/>	Genital tract obstruction Correct
<input type="checkbox"/>	Idiopathic testicular failure
<input type="checkbox"/>	Kallman's syndrome
<input type="checkbox"/>	Sperm autoimmunity

Azoospermia can occur because of reproductive tract obstruction or inadequate production of

spermatozoa.

It is diagnosed after centrifuged samples of complete semen specimens are analysed microscopically. History, physical examination, and hormone analysis are needed to determine the cause. In less than 10% of cases a testicular biopsy is required to diagnose the cause of azoospermia.

Obstructive azoospermia may be congenital (absence of the vas deferens, idiopathic epididymal obstruction) or acquired (from infection, vasectomy, trauma).

Couples in whom the man has congenital reproductive tract obstruction should have cystic fibrosis gene mutation analysis for both partners, as there is a high risk of the male being a CF carrier.

Acquired obstruction of the genital tract can be treated using microsurgical reconstruction. Alternatively, sperm can be retrieved from the testes and subsequently used for assisted reproduction.

The cause of non-obstructive azoospermia needs to be identified prior to any treatment.

Androgen insensitivity syndrome results from the inability of cells to respond to androgens.

In males, this can prevent masculinisation of the genitalia and development of secondary sexual characteristics. You would therefore expect some phenotypic abnormalities, as well as elevated LH levels.

LH is raised in cases of idiopathic testicular failure.

Kallman's syndrome is hypothalamic gonadotrophin releasing hormone (GnRH) deficiency associated with hyposmia or anosmia. Serum LH and FSH are low.

Antisperm antibodies can cause 'immune infertility'. Sperm are usually present in semen but are unable to penetrate the cervical mucus to gain access to the ovum.

Further Reading:

1. Bohring C, Krause W. [Immune infertility: towards a better understanding of sperm \(auto\)-immunity. The value of proteomic analysis.](#) *Hum Reprod.* 2003;18:915-24.
2. Schlegel PN. [Causes of azoospermia and their management.](#) *Reprod Fertil Dev.* 2004;16:561-72.

Work Smart

Question 53 of 100

A 42-year-old male presents with tiredness and central weight gain, two years after having undergone pituitary surgery for a non-functional pituitary tumour.

He has otherwise recovered from his pituitary surgery well, has been found to have complete anterior hypopituitarism and is receiving stable replacement therapy with testosterone monthly injections, thyroxine, and hydrocortisone.

On examination there are no specific abnormalities, his vision is 6/9 in both eyes and he has no visual field defects. From his notes you see that he has gained 8 kg in weight over the last six months and his BMI is 31 kg/m². His blood pressure is 122/72 mmHg.

Thyroid function tests and testosterone concentrations have been normal. A post-operative MRI scan report shows that the pituitary tumour has been adequately cleared with no residual tissue.

Which of the following is the likely cause of his current symptoms?

(Please select 1 option)

<input type="checkbox"/>	Aldosterone deficiency
<input type="checkbox"/>	Depression
<input type="checkbox"/>	DDAVP deficiency
<input checked="" type="checkbox"/>	Growth hormone deficiency This is the correct answer
<input type="checkbox"/>	Somatisation disorder Incorrect answer selected

This patient presents with deteriorating tiredness and weight gain after having had pituitary surgery

for a non-functioning pituitary tumour.

He has associated anterior hypopituitarism but is receiving appropriate and stable replacement therapy.

However, these symptoms are typical of an untreated adult growth hormone deficiency and reductions in quality of life, reduced energy and detrimental changes in body composition are well recognised.


Recent evidence would suggest that growth hormone (GH) replacement therapy in addition to his current replacement therapy does improve symptoms and quality of life and is endorsed by NICE guidance on [Growth hormone deficiency \(adults\) - human growth hormone \(TA64\)](#).

The renin-aldosterone system is independent of the hypothalamo-pituitary axis and therefore aldosterone is not necessary.

The patient does not have any symptoms of thirst or polyuria and therefore vasopressin deficiency is also an unlikely cause of his problems.

Whilst depression or somatisation are possibilities it is important to recognise that the symptoms of tiredness and the weight gain are more in keeping with GH deficiency and no other features of either of the former diagnoses are suggested.

Answer Statistics

1		12%
2		29%
3		13%
4		35%
5		11%

Times answered: 7467

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 54 of 100

A 16-year-old girl is diagnosed with Turner's syndrome.

Which of the following autoimmune conditions is most commonly associated with Turner's?

(Please select 1 option)

<input type="checkbox"/>	Addison's disease
<input type="checkbox"/>	Autoimmune hepatitis
<input checked="" type="checkbox"/>	Hashimoto's thyroiditis This is the correct answer
<input type="checkbox"/>	Sjogren's syndrome Incorrect answer selected
<input type="checkbox"/>	Vitamin B ₁₂ deficiency

Hypothyroidism is quite common occurring in up to 24% of patients with Turner's syndrome.

It is typically autoimmune in origin: Hashimoto's thyroiditis, although the exact explanation for its high prevalence is not known.

Reference:

Livadas S, Xekouki P, Fouka F, et al. [Prevalence of thyroid dysfunction in Turner's syndrome: a long-term follow-up study and brief literature review](#). *Thyroid*. 2005;15:1061-6.

Work Smart

Exam Themes September 2006

Question 55 of 100

A 32-year-old female is being investigated for tinnitus by the ENT department and undergoes an MRI scan. The scan is normal except for a pituitary tumour of 0.9 cm confined to the pituitary fossa.

Thyroid function tests, prolactin, LH, FSH and estradiol concentrations are all normal.

Which of the following would be the most appropriate management approach for this patient?

(Please select 1 option)

<input type="checkbox"/>	Pituitary biopsy
<input checked="" type="checkbox"/>	Reassure and continued observation This is the correct answer
<input type="checkbox"/>	Stereotactic pituitary irradiation
<input type="checkbox"/>	Transphenoidal hypophysectomy
<input type="checkbox"/>	Treat with dopamine agonist therapy Incorrect answer selected

This patient has a coincidentally noted pituitary tumour, has no endocrine symptoms, and appears to have normal endocrine function although we are not provided with information pertaining to cortisol secretory function nor growth hormone (GH).

With this caveat in mind, the most appropriate strategy would be observation and repeat scanning.

Further Reading:

Freda PU, Beckers AM, Katznelson L, et al. [Pituitary incidentaloma: an endocrine society clinical practice guideline](#). *J Clin Endocrinol Metab*. 2011;96:894-904.

Work Smart

Question 36 of 71

A 45-year-old male presents concerned about his risk of developing diabetes.

His family history reveals that his mother and maternal uncle both have diabetes. He has central obesity with a waist measurement of 110 cm. On examination, his blood pressure is 130/82 mmHg, his BMI is 30.2 kg/m².

His investigations reveal:

Fasting cholesterol	5.2 mmol/L	(<5.2)
	200 mg/dL	(<200)
Triglycerides	1.4 mmol/L	(0.45-1.69)
	124 mg/dL	(40-150)
HDL cholesterol	1.1 mmol/L	(>1.55)
	42 mg/dL	(>60)
Fasting glucose	6.2 mmol/L	(3.0-6.0)
	111 mg/dL	(54-108)

In addition to his waist measurement which one of this man's observations is a criterion for the diagnosis of the metabolic syndrome?

(Please select 1 option)

<input type="checkbox"/> Blood pressure of 130/82 mmHg	<input checked="" type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> BMI of 30.2 kg/m ²	

Fasting plasma glucose of 6.2 mmol/L (110 mg/dL)	<input checked="" type="checkbox"/> This is the correct answer
HDL concentration of 1.1 mmol/L (42 mg/dL)	
Triglyceride concentration of 1.4 mmol/L (124 mg/dL)	

The [metabolic syndrome](#) is becoming hugely important as a cluster of features associated with increased cardiovascular and diabetes risk.

The condition is defined by various criteria the latest of which is the global definition for the IDF as central obesity (≥ 94 cm for men, ≥ 80 cm for women) plus any two of the following:

- Hypertriglyceridaemia >1.7 mmol/L
- Low HDL concentration <1.03 mmol/L male, <1.29 mmol/L female
- BP $\geq 130/85$ mmHg, or on treatment for hypertension
- Fasting glucose ≥ 5.6 mmol/L, or known to have type 2 diabetes.

Thus, in our patients case the elevated fasting glucose of 6.2 mmol/L fulfils this diagnostic criterion.

The BMI is not a function of the diagnostic criterion as the waist circumference appears to be a far more powerful predictor of risk.

Answer Statistics



Times answered: 8587

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 56 of 100

A 26-year-old man presented with polydipsia and polyuria for the last two years.

Investigations:

Serum urea	8.4 mmol/L	(2.5-7.5)
Serum creatinine	108 µmol/L	(60-110)
Serum corrected calcium	2.82 mmol/L	(2.2-2.6)
Serum phosphate	0.73 mmol/L	(0.8-1.4)
Plasma parathyroid hormone	6.8 pmol/L	(0.9-5.4)

Which of the following mechanisms is responsible for the hypophosphataemia observed?

(Please select 1 option)

<input type="checkbox"/>	Increased deposition of calcium phosphate crystals in soft tissues
<input type="checkbox"/>	Increased gastrointestinal secretion of phosphates
<input type="checkbox"/>	Increased renal tubular secretion of phosphates
<input type="checkbox"/>	Reduced gastrointestinal absorption of phosphates
<input checked="" type="checkbox"/>	Reduced renal tubular reabsorption of phosphates Correct

This young patient has mild hypercalcaemia, elevated parathyroid hormone (PTH) and low phosphate

indicating primary hyperparathyroidism.

The hypophosphataemia is due to the reduced renal reabsorption of phosphate.

Answer Statistics



Times answered: 7420

Test Analysis

CorrectIncorrectPartially
Correct

Score: 14.29%

Total Answered: 56

Feedback

Work Smart

Question 31 of 73

A 26-year-old man with a past history of parathyroid surgery presented with galactorrhoea.

Investigations showed:

Plasma follicle-stimulating hormone	4.2 U/L	(1-7)
Plasma luteinising hormone	5.6 U/L	(1-10)
Plasma prolactin	1654 mU/L	(<360)
Plasma thyroid-stimulating hormone	3.8 mU/L	(0.4-5)
Insulin-like growth factor 1	33.4 nmol/L	(7.5-37.3)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input checked="" type="checkbox"/> MEN type 1	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/> MEN type 2a	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> MEN type 2b	
<input type="checkbox"/> Polyglandular syndrome type 1	
<input type="checkbox"/> Polyglandular syndrome type 2	

The story of galactorrhoea suggests hyperprolactinaemia and in the context of primary

hyperparathyroidism suggests MEN type 1.

MEN type 1 is an autosomal dominant condition and is associated with hyperparathyroidism, pancreatic neuroendocrine tumours, and pituitary tumours.

Answer Statistics



Times answered: 7693

Test Analysis

CorrectIncorrectPartially
Correct

Score: 29.03%

Total Answered: 31

Work Smart

Question 57 of 100

A 22-year-old woman presented with a five year history of hirsutism, having noticed coarse dark hair under her chin. Being a teacher in a primary school, these symptoms are very distressing for her. She has tried local measures such as shaving and applying depilatory creams but without lasting success.

Her periods are irregular with oligomenorrhoea. She attained menarche at the age of 14 years. She has not yet conceived and has had a coil fitted for contraception. She takes 5 mg diazepam at night.

On examination, she had a BMI of 24. She had coarse, dark hair over her chin, lower back and inner thighs. She does not have galactorrhoea to expression and there were no other clinical features to suggest Cushing's.

Investigations during the follicular phase:

Serum androstenedione	10.1 nmol/L	(0.6-8.8)
Serum dehydroepiandrosterone sulphate	11.6 µmol/L	(2-10)
Serum 17-hydroxyprogesterone	18.6 nmol/L	(1-10)
Serum oestradiol	380 pmol/L	(200-400)
Serum testosterone	2.6 nmol/L	(0.5-3)
Plasma luteinising hormone	3.3 U/L	(2.5-10)
Plasma follicle-stimulating hormone	3.6 U/L	(2.5-10)

Which is the next most appropriate investigation?

(Please select 1 option)

24 hour urinary free cortisol Incorrect answer selected

	CT scan of adrenals
	GnRH test
	Short Synacthen test with measurement of 17 hydroxy progesterone (17OHP) <input checked="" type="checkbox"/> This is the correct answer
	Ultrasound scan of ovaries

In this case the patient has features that would suggest polycystic ovary syndrome (PCOS) yet the 17OHP concentration is elevated and is compatible with non-classical congenital adrenal hyperplasia (CAH).

Congenital adrenal hyperplasia is caused by an inherited defect in the cortisol and/or aldosterone biosynthetic pathways. Non-classical forms result from milder enzyme dysfunction and therefore manifest later in life (adolescence or adulthood). The most common form is due to 21-hydroxylase deficiency, but it can also result from 11 beta hydroxylase deficiency. The clinical presentation may be indistinguishable from polycystic ovarian syndrome, with hirsutism being a dominant feature.

The synacthen stimulation test can evaluate adrenal gland function, and when 17-OHP levels are measured concurrently, can help to distinguish between PCOS and non-classical CAH. N-CAH due to 21-hydroxylase deficiency is diagnosed with the ACTH-stimulated 17-OHP levels are more than 30 nmol/L (although this value varies with the assay used). If this is diagnosed, antiandrogens can be used to treat hirsutism, but glucocorticoids are generally not required.

Answer Statistics



Times answered: 7344

Test Analysis

Work Smart

Question 37 of 71

A 48-year-old lady has obesity with a BMI of 37kg/m^2 and a waist circumference of 115cm (NR <80cm). She reports significant weight gain 10 years ago, and diets and slimming clubs have subsequently been unsuccessful. She enjoys swimming, but reports her walking is restricted to a few hundred metres due to foot pain.

Her diet consists of about 1800 KCal per day, with at least five portions of vegetables or fruit per day, plenty of fibre and starch.

According to NICE guidance, which of the following management strategies would be advisable for this lady?

(Please select 1 option)

<input checked="" type="checkbox"/>	Supported diet and physical activity modification Correct
<input type="checkbox"/>	Extended period of a very low calorie diet
<input type="checkbox"/>	General advice on healthy weight and lifestyle
<input type="checkbox"/>	Referral for bariatric surgery
<input type="checkbox"/>	Pharmacological intervention

NICE recommendations are first to classify the level of this lady's obesity:

Classification	BMI kg/m^2
Healthy weight	18.5-24.9

Overweight	25-29.9
Obesity I	30-34.9
Obesity II	35-39.9
Obesity III	40 or more

The health risks associated with being overweight or obese should be based on both assessment of BMI and waist circumference. In people with obesity II and a very high waist circumference, as is the case for this lady, management should be with diet and physical activity advice with consideration of medication if needed.

Diets that have a 600kcal/day deficit or are low-fat, in combination with expert support and intensive follow-up, are recommended for sustainable weight loss.

Pharmacological treatment is only indicated after dietary, exercise and behavioural approaches have been started and evaluated, and are generally reserved for those who have not reached their target weight loss or have reached a plateau despite other approaches.

A very low calorie diet (usually <800kcal/day) is only recommended as part of a multicomponent weight management strategy for obese patients who have a clinically-assessed need to rapidly lose weight (e.g. fertility treatment, joint replacement surgery). It should be followed for a maximum of 12 weeks.

Bariatric surgery is a treatment option if all the following criteria are fulfilled:

- BMI of 40kg/m² or more, or between 35-40kg/m² and other significant disease (e.g. T2DM) which could be improved by weight loss
- Non-surgical measures have been tried but clinically beneficial weight loss has not been achieved or maintained adequately
- The patient is fit for anaesthesia and surgery
- The patient commits to the need for long-term follow-up, which includes intensive management in a tier 3 service

General advice on healthy eating and exercise is good for obesity prevention but is unlikely to be successful in this lady who has been significantly obese for a decade.

Reference & Further Reading:

<https://www.nice.org.uk/guidance/cg189/chapter/1-Recommendations>

Work Smart

Question 38 of 71

A 70-year-old man who has had type 2 diabetes for 20 years is referred to the clinic because of poor glycaemic control despite recent dietetic input.

He has a history of two previous myocardial infarctions, and gets exertional angina at 50 yards. He has previously had angioplasty to both his lower limbs and despite this has a claudication distance of 40 yards. He has New York Heart Association failure class II-III.

Additionally he has diabetic maculopathy, and distal sensory neuropathy.

His home blood monitoring readings are 10-15 mmol/L before breakfast.

His current treatment includes; metformin 500 mg tds, glimepiride 4 mg daily, insulin detemir 20 units at night, perindopril 8 mg OD, furosemide 80 mg daily, aspirin 75 mg daily and atorvastatin 20 mg daily.

On examination his BMI is 33, with a BP of 140/70 mmHg.

Investigations show:

HbA _{1c}	77 mmol/mol	(20-46)
	9.2%	(3.8-6.4)
Fasting glucose	13.4 mmol/L	(3.0-6.0)
Creatinine	130 µmol/L	(60-110)
Liver function	Normal	-

Which of the following strategies is the most appropriate for his glycaemic control?

(Please select 1 option)

Add liraglutide 1.2 mg daily	<input checked="" type="checkbox"/> Correct
Add prandial insulin (e.g. NovoRapid) three times daily	
Add premixed insulin (e.g. Humalog 25) twice daily and stop insulin detemir	
Substitute metformin with pioglitazone/metformin 15/500 mg twice daily	
Up titrate the dose of insulin detemir	

This patient has uncontrolled glycaemia despite the current dose of insulin, oral hypoglycaemic therapy and dietary intervention.

Pioglitazone is already contraindicated because of the history of heart failure.

The current basal insulin regime of the insulin analogue detemir is failing to control his glycaemia, however the current dose is inadequate. Current practice would favour increasing the dose of glargine, aiming for a fasting (pre-breakfast) BM of <7.0, or adding a GLP-1 analogue such as liraglutide.

Adding a GLP-1 analogue has the advantage of improving glycaemic control, with modest weight loss, without increasing the risk of hypoglycaemia compared with uptitration of insulin.

Only once fasting readings of this level are achieved, (with a sub-optimal HbA_{1c}), would one think of adding a prandial insulin.

Answer Statistics



Times answered: 8278

Test Analysis

Work Smart

Exam Themes January 2007

Question 39 of 71

A 52-year-old male with a history of dyslipidaemia and hypertension attends the surgery for a 75 g oral glucose tolerance test (OGTT) as part of his cardiovascular risk assessment and screening for type 2 diabetes.

He is overweight with a BMI of 29 kg/m², his blood pressure is 135/85 mmHg on a combination of amlodipine and perindopril.

His venous plasma OGTT result is as follows.

0 minutes	6.3 mmol/L	(3.0-6.0)
120 minutes	10.4 mmol/L	(3.0-6.0)

Which of the following is the correct interpretation of these results?

(Please select 1 option)

<input type="checkbox"/> Impaired fasting glucose (IFG)
<input type="checkbox"/> Impaired fasting glucose and impaired glucose tolerance ❑ Incorrect answer selected
<input checked="" type="checkbox"/> Impaired glucose tolerance (IGT) ❑ This is the correct answer
<input type="checkbox"/> Normal glucose tolerance.
<input type="checkbox"/> Type 2 diabetes

The WHO guidelines are used to make a formal diagnosis of diabetes mellitus. These require the

symptoms of diabetes to be present (polyuria, polydipsia and unexplained weight loss), plus:

- A random venous plasma glucose of >11.1 mmol/L
- A fasting plasma glucose of >7 mmol/L (whole blood >6.1 mmol/L) OR
- A two hour plasma glucose concentration of >11.1 mmol/L two hours after 75 g anhydrous glucose in an oral glucose tolerance test (OGTT).

With no symptoms a diagnosis requires two confirmatory samples on separate occasions. If the fasting or random values are not diagnostic, the two hour value should be used.

The WHO guidelines for the diagnosis of diabetes mellitus were updated in 2011. This update states that the HbA_{1c} (glycosylated haemoglobin) can be used for diagnosis, as long as assays are standardised and no exclusion criteria are met. Such exclusions include children, patients suspected of having type 1 diabetes, patients with symptoms for less than two months, patients who are acutely ill, patients taking steroids or antipsychotics (which can cause a rapid glucose rise), patients with acute pancreatic damage and pregnant patients.

An HbA_{1c} of 48 mmol/mol (6.5%) is recommended as the cut off point for a diagnosis of diabetes. A value of less than this does not preclude a diagnosis made using the traditional WHO criteria. If patients are asymptomatic, the HbA_{1c} should be repeated. If this value is less than 48 mmol/mol the patient should be treated as high risk for developing diabetes, and the test should be repeated in 6 months (or sooner if symptoms develop).

Impaired glucose tolerance (IGT) is defined as a stage of impaired glucose regulation. It is diagnosed if the fasting plasma glucose is less than 7 mmol/L and the OGTT two hour value is more than 7.8 mmol/L but less than 11.1 mmol/L. If this diagnosis is present, the patient cannot be described as having impaired fasting glycaemia.

Impaired fasting glycaemic (IFG) describes those individuals who have fasting glucose values above the normal range but below those diagnostic of diabetes, i.e. fasting plasma glucose >6.1 mmol/L but <7 mmol/L. In the UK it is generally recommended that these patients have an OGTT to exclude the diagnosis of diabetes. In addition, they should be actively managed with lifestyle advice and monitored for the development of diabetes.

Whilst this patient does have impaired fasting glucose, this diagnosis is trumped by the diagnosis of impaired glucose tolerance. You may find it easier to remember that there are steps towards diabetes: 1. Impaired fasting glucose 2. Impaired glucose tolerance 3. Diabetes mellitus. Any diagnosis down the list trumps the ones above it. A patient with diabetes may also fit the criteria for impaired glucose tolerance or impaired fasting glucose but you would not give them these diagnoses when they were known to have diabetes.

Answer Statistics



Times answered: 8769

Test Analysis

CorrectIncorrectPartially
Correct

Score: 25.64%

Total Answered: 39

Feedback

Question Navigator

Revision Notes

Work Smart

Exam Themes January 2007

Question 40 of 71

A 64-year-old retired Caucasian solicitor attends the surgery.

He is overweight and takes little exercise. He has been treated for hypertension for five years and is controlled on 5 mg of ramipril. He also takes 20 mg of simvastatin for hypercholesterolaemia.

A 75 g oral glucose tolerance test was recently performed and gave a result consistent with impaired glucose tolerance (IGT) with a two hour plasma glucose concentration of 9.3 mmol/L (7.8-11.0 mmol/L).

The patient is keen to know what would be his risk of developing type 2 diabetes.

What do you tell him?

(Please select 1 option)

<input type="checkbox"/>	6% over 6 years
<input type="checkbox"/>	10% over 6 years
<input checked="" type="checkbox"/>	33% over 6 years This is the correct answer
<input type="checkbox"/>	60% over 6 years Incorrect answer selected
<input type="checkbox"/>	100% over 6 years

Individuals with IGT are at significant risk of progression to type 2 diabetes.

A number of studies have looked at the absolute risk of progression from IGT to type 2 diabetes. The large and widely-quoted Hoorn study which looked at 1342 Caucasian non-diabetic subjects found that 33.8% progressed to type 2 diabetes over six years follow up. This increased to 64.5% if

individuals had both IGT and impaired fasting glycaemia (IFG).

A similar rate of progression for individuals with IGT was Vaccaro who studied a Caucasian group in Italy.

Intensive lifestyle changes involving diet changes, regular exercise and weight loss have been shown to reduce the rate of progression to type 2 diabetes.

Answer Statistics



Times answered: 8679

Test Analysis

CorrectIncorrectPartially
Correct

Score: 25%

Total Answered: 40

Work Smart

Question 32 of 73

A 32-year-old lady presented with episodes of polydipsia and polyuria for the last six months.

Investigations:

Serum urea	8.1 mmol/L	(2.5-7.5)
Serum creatinine	92 µmol/L	(60-110)
Serum corrected calcium	2.85 mmol/L	(2.2-2.6)
Serum phosphate	0.75 mmol/L	(0.8-1.4)
Plasma parathyroid hormone	6.2 pmol/L	(0.9-5.4)

Which of the following is directly responsible for her increased reabsorption of calcium in the distal tubule of the kidney?

(Please select 1 option)

<input type="checkbox"/> 1,25 dihydroxy vitamin D
<input type="checkbox"/> 25 hydroxy vitamin D
<input type="checkbox"/> Calcitonin
<input type="checkbox"/> Hypophosphataemia
<input checked="" type="checkbox"/> Parathyroid hormone Correct

This patient has hypercalcaemia due to hyperparathyroidism.

Parathyroid hormone has a number of direct effects:

- it enhances the release of calcium from bones by binding to osteoblasts which stimulates the formation of osteoclasts, and
- it enhances reabsorption of calcium in the distal tubules.

Answer Statistics



Times answered: 7569

Test Analysis

CorrectIncorrectPartially
Correct

Score: 31.25%

Work Smart

Exam Themes May 2006

Question 33 of 73

A 50-year-old man presented with a milky discharge from his nipples. He had a history of depression and nausea thought to result from gastro-oesophageal reflux disease and was on a number of medications.

Plasma prolactin	650 mU/L	(< 360)
------------------	----------	---------

Which of the following is the most likely cause of his symptoms?

(Please select 1 option)

<input type="checkbox"/>	Cimetidine
<input type="checkbox"/>	Citalopram
<input type="checkbox"/>	Cyclizine
<input checked="" type="checkbox"/>	Metoclopramide This is the correct answer
<input type="checkbox"/>	Omeprazole Incorrect answer selected

Drug-induced hyperprolactinaemia has a relatively high prevalence, and the symptoms are often under-reported, especially in men, due to the perceived embarrassing nature of symptoms. Multiple drugs are implicated, acting either to remove inhibitor pathways or directly stimulating prolactin production from lactotroph cells.

Of those listed above, metoclopramide is the one which is most commonly associated with symptomatic hyperprolactinaemia. It stimulates prolactin release by blocking dopamine.

Symptomatic hyperprolactinaemia has only been reported in association with cimetidine in case reports.

Omeprazole, citalopram and cyclizine are not thought to cause hyperprolactinaemia.

Reference:

Torre DL, Falorni A. [Pharmacological causes of hyperprolactinemia](#). *Ther Clin Risk Manag*. 2007;3:929-51.

Answer Statistics



Times answered: 8217

Test Analysis

CorrectIncorrectPartially
Correct

Score: 30.3%

Work Smart

Question 58 of 100

A 26-year-old woman was being treated in the outpatient clinic for autoimmune hypothyroidism.

She was taking 150 µg of thyroxine and 200 mg of amiodarone.

Investigations reveal:

Plasma prolactin	654 mU/L	(<360)
Plasma free T4	24 pmol/L	(10-22)
Plasma free T3	5.2 pmol/L	(5-10)
Plasma thyroid-stimulating hormone	68 mU/L	(0.4-5)

Which of the following is the most likely explanation for her high TSH levels?

(Please select 1 option)

<input type="checkbox"/> Amiodarone effect
<input type="checkbox"/> Hyperprolactinaemia
<input checked="" type="checkbox"/> Poor compliance with medications This is the correct answer
<input type="checkbox"/> Thyroid hormone resistance
<input type="checkbox"/> TSH producing pituitary adenoma Incorrect answer selected

This young woman has a slightly elevated thyroxine (T4) and an elevated thyroid-stimulating hormone

(TSH).

The most probable explanation is poor compliance. This also explains the slightly high prolactin concentration too; a consequence of reduced dopaminergic tone on the lactotrophs.

The typical scenario is that the patients take their medication in the days before the clinic.

The most likely explanation is that thyroid hormone is not being absorbed or even taken, (the compliance argument). Given that amiodarone has no effect on thyroid hormone absorption, it can't be the answer here.

Answer Statistics

1		33%
2		6%
3		32%
4		6%
5		22%

Times answered: 8037

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 59 of 100

A 68-year-old woman presented to her general practitioner with a history of generalised tiredness. She had recently been commenced on a water tablet to ease her swollen feet. She was also diagnosed with glaucoma for which she used topical eye drops.

Investigations showed:

Serum sodium	138 mmol/L	(137-144)
Serum potassium	Haemolysed sample	
Serum urea	4.3 mmol/L	(2.5-7.5)
Serum creatinine	88 µmol/L	(60-110)
Serum corrected calcium	2.68 mmol/L	(2.2-2.6)


Which diuretic was this lady most probably taking?

(Please select 1 option)

<input type="checkbox"/>	Acetazolamide
<input type="checkbox"/>	Amiloride ❌ Incorrect answer selected
<input checked="" type="checkbox"/>	Bendroflumethiazide ✅ This is the correct answer
<input type="checkbox"/>	Furosemide
<input type="checkbox"/>	Indapamide

Thiazide diuretics are associated with increased calcium concentrations as well as raised urate.

Answer Statistics

1		16%
2		8%
3		56%
4		15%
5		5%

Times answered: 8673

Test Analysis

CorrectIncorrectPartially
Correct

Score: 13.56%

Total Answered: 59

Feedback

Work Smart

Question 34 of 73

A 56-year-old man presented to the Emergency Department with an episode of collapse at home. He had been feeling increasingly tired for the last two months and also reported a loss of libido. He had undergone a transsphenoidal surgery two years ago, followed by external beam radiation for a non-functional pituitary adenoma. He took ramipril 10 mg OD for hypertension.

On examination, pulse was 102 beats per minute and regular, BP measured 104/66 mmHg in the lying position, dropping to 80/40 mmHg on standing. Heart sounds were normal. There was no galactorrhoea to expression and testicular volume was normal.

Investigations showed:

Serum sodium	129 mmol/L	(137-144)
Serum potassium	4.8 mmol/L	(3.5-4.9)
Serum urea	7.2 mmol/L	(2.5-7.5)
Serum creatinine	88 µmol/L	(60-110)
Serum testosterone	4.5 nmol/L	(9-35)
Plasma LH	0.3 U/L	(1-10)
Plasma thyroid-stimulating hormone	0.1 mU/L	(0.4-5)
Plasma Free T4	7 pmol/L	(10-22)
Insulin-like growth factor	15.2 nmol/L	(5.6-23.3)
ECG	Normal	

Which is the next most appropriate investigation?

(Please select 1 option)

<input type="checkbox"/>	GHRH-arginine test
<input type="checkbox"/>	Insulin stress test ❑ Incorrect answer selected
<input type="checkbox"/>	MRI scan of pituitary
<input checked="" type="checkbox"/>	Short Synacthen test ❑ This is the correct answer
<input type="checkbox"/>	TRH test

The most likely diagnosis in this case is panhypopituitarism induced by cranial irradiation. Patients are classically described to have smooth baby skin and lack of wrinkles, and possibly features of individual hormone deficiencies.

Diagnosis is usually aimed at detecting hormone deficiencies. Growth hormone production can be assessed with the insulin stress test or GHRH-arginine stimulation; LH, FSH and oestrogen/testosterone for gonadal function; free T4 for hypothyroidism; and short-synacthen test or insulin stress test for to assess for cortisol production.

As replacement with steroids and thyroxine is most critical initially, it is appropriate to test these first. The short-synacthen test is the most appropriate if there has been longstanding hypopituitarism (months duration, as in this case).

Reference:

Kalra PA. *Essential Revision Notes for MRCP*. 3rd ed. Knutsford: Pastest; 2009.

Answer Statistics



Times answered: 7637

Work Smart

Question 41 of 71

A 40-year-old obese man with a BMI of 36 kg/m² was diagnosed with type 2 diabetes mellitus one year ago. He is now eating a healthy diet and getting sufficient exercise.

He did not report any osmotic symptoms and so far had been free from any micro- or macrovascular complications. He is currently not taking any medications.

Investigations at his annual diabetic follow-up were as follows:

HbA _{1c}	57 mmol/mol	(20-46)
	7.4 %	(3.8-6.4)
Fasting plasma glucose	9.8 mmol/L	(3.0-6.0)
	176 mg/dL	(54-108)
Serum sodium	138 mmol/L	(137-144)
Serum potassium	4.7 mmol/L	(3.5-4.9)
Serum urea	4.3 mmol/L	(2.5-7.5)
Serum creatinine	88 µmol/L	(60-110)

Which would be the most appropriate management to optimise his glycaemic control?

(Please select 1 option)

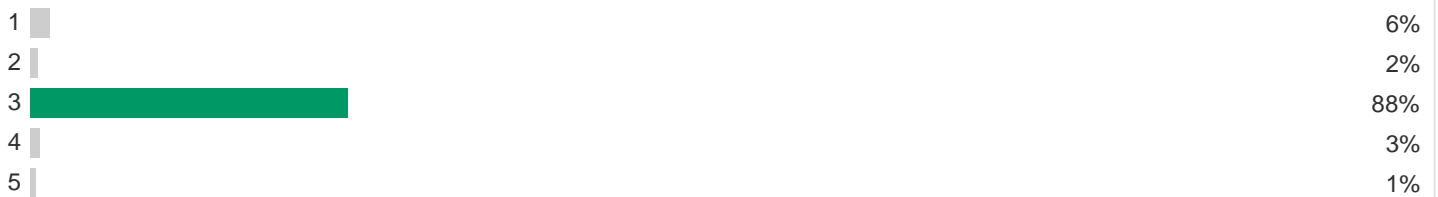
<input type="checkbox"/>	Continue with lifestyle measures
<input type="checkbox"/>	Gliclazide therapy

Metformin therapy	<input checked="" type="checkbox"/> This is the correct answer
Orlistat therapy	<input type="checkbox"/> Incorrect answer selected
Pioglitazone therapy	

This obese male has sub-optimal control of his hyperglycaemia (HbA_{1c} 57 mmol/mol) despite diet.

One should aim for a HbA_{1c} below 53 mmol/mol and so the addition of metformin would be the most appropriate choice for this man. In the event that he was not able to tolerate metformin, an alternative agent which does not increase the risk of weight gain should be prescribed, such as a DPPIV inhibitor.

Answer Statistics



Times answered: 8960

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 42 of 71

A 48-year-old lady with hyperthyroidism was reviewed in the endocrine clinic.

She had initially presented to her general practitioner a month ago with flu-like symptoms and tremulousness. Her thyroid function tests at that time were consistent with hyperthyroidism and she was commenced on propranolol.

On examination, her pulse was 88 beats per minute and regular. She did not have any eye signs. She had a diffuse, tender goitre.

Investigations showed:

Plasma thyroid-stimulating hormone	<0.01 mU/l	(0.4-5)
Plasma free T4	66 pmol/l	(10-22)

Radioactive iodine (RAI) uptake scan revealed less than 2% uptake within the thyroid gland.

Which of the following is the most appropriate treatment?

(Please select 1 option)

<input type="checkbox"/>	Carbimazole
<input type="checkbox"/>	Lugol's iodine
<input checked="" type="checkbox"/>	Prednisolone This is the correct answer
<input type="checkbox"/>	Propylthiouracil
<input type="checkbox"/>	Thyroidectomy Incorrect answer selected

This patient is likely to have de Quervain's thyroiditis as suggested by the diffuse tender goitre, hyperthyroidism due to rapid release of preformed thyroid hormones, and very low uptake on RAI uptake scan.

The most appropriate treatment of de Quervain's thyroiditis is symptomatic control.

Beta blockers help control the tremor and anxiety associated with thyrotoxicosis and prednisolone or NSAIDs for the thyroiditis.

Answer Statistics



Times answered: 8240

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Exam Themes May 2007

Question 43 of 71

A 55-year-old male with type 2 diabetes is seen at annual review.

His glycaemic control is sub-optimal on diet alone and his most recent HbA_{1c} is 63 mmol/mol (20-46).

You elect to treat him with metformin 500 mg bd.

According to NICE NG28 guidance on the management of diabetes, which of the following would be the most appropriate interval to re-check his HbA_{1c} after each treatment intensification?

(Please select 1 option)

<input type="checkbox"/>	Two to three weeks
<input type="checkbox"/>	One to two months
<input checked="" type="checkbox"/>	Three to six months Correct
<input type="checkbox"/>	Six to nine months
<input type="checkbox"/>	Annually

The glycated haemoglobin (HbA_{1c}) is a reflection of the glycosylation of the haemoglobin moiety by glucose.¹

There is a strong correlation between the glycosylation of this molecule and average plasma glucose concentrations hence its widespread use in clinical practice as a tool to assess glycaemic control.

Furthermore, studies reveal its prognostic significance in both microvascular and macrovascular risk.

The life span of the red cell is 120 days. HbA_{1c} reflects average blood glucose levels during the half

life of the red cell (about 60 days).

According to NICE guidelines, the recommended interval for re-checking HbA_{1c} with each treatment intensification is at 3/6 monthly intervals.²

Reference:

1. Lyon AW, Higgins T, Wesenberg JC, et al. [Variation in the frequency of hemoglobin A1c \(HbA_{1c}\) testing: population studies used to assess compliance with clinical practice guidelines and use of HbA_{1c} to screen for diabetes.](#) *J Diabetes Sci Technol.* 2009;3:411-7.
2. NICE. [Type 2 diabetes in adults: management \(NG28\).](#)

Answer Statistics



Times answered: 8789

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 60 of 100

A 70-year-old woman is referred by a GP colleague to the hospital with a breast lump.

She is asymptomatic but her investigations reveal:

Corrected calcium	2.72 mmol/L	(2.2-2.6)
Phosphate	0.80 mmol/L	(0.8-1.4)
Alkaline phosphatase	110 U/L	(45-105)
PTH concentration	5.1 pmol/L	(0.9-5.4)

Whilst your colleague is away, you are shown these results by one of the receptionists.

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Bony metastases
<input type="checkbox"/>	Chronic vitamin D excess
<input type="checkbox"/>	Ectopic PTH related peptide (PTHrp) secretion
<input type="checkbox"/>	Multiple myeloma
<input checked="" type="checkbox"/>	Primary hyperparathyroidism Correct

This patient has hypercalcaemia with a borderline low phosphate concentration, but an

inappropriately normal parathyroid hormone (PTH) concentration.

This suggests hyperparathyroidism which is a relatively common disorder amongst elderly females.


Vitamin D excess would be expected to cause an elevated phosphate.

Bony metastases and multiple myeloma can both result in hypercalcaemia, which should result in a suppressed PTH.

PTH related peptide is a common cause of hypercalcaemia in malignancy. It is not usually detected by normal lab tests for PTH and therefore you would expect a low PTH in the setting of hypercalcaemia.

If this was multiple myeloma you would expect a physiological decrease in PTH as a response to the hypercalcaemia. PTH is inappropriately normal here, as mentioned above, which should lead you to a diagnosis of primary hyperparathyroidism.

Answer Statistics

1		40%
2		6%
3		25%
4		6%
5		23%

Times answered: 8349

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 35 of 73

A 17-year-old female with type 1 diabetes, who is known to be poorly compliant with treatment, is admitted with diabetic ketoacidosis.

The respiratory rate is 41 per minute and the blood pressure 85/66 mmHg. She is confused and lethargic. An arterial blood gas shows the pH to be 7.01, and the potassium is 4.9 mmol/l.

Which condition carries the highest risk of mortality to this patient?

(Please select 1 option)

<input checked="" type="checkbox"/>	Cerebral oedema This is the correct answer
<input type="checkbox"/>	Cerebrovascular accident
<input type="checkbox"/>	Myocardial infarction
<input type="checkbox"/>	Seizure
<input type="checkbox"/>	Ventricular tachycardia Incorrect answer selected

The risk of mortality in some reported series of diabetic ketoacidosis (DKA) is 5%.

The incidence of cerebral oedema in paediatric patients treated for DKA is approximately 1%. The risk of cerebral oedema is highest in paediatric and adolescent patients, and is rarer in adults.

The rate of fluid, sodium, and insulin replacement seems not to be related to the development of cerebral oedema, and often its development may be idiosyncratic. Thus the warning signs of cerebral oedema - headache, lethargy, confusion, reduced conscious level, incontinence, pupillary changes - must be considered in this patient group.

Ventricular tachycardia is a theoretical risk in the presence of hypokalaemia, which is not present at this stage.

Seizures may occur as a consequence of the underlying cerebral oedema.

Answer Statistics



Times answered: 5949

Test Analysis

CorrectIncorrectPartially
Correct

Score: 28.57%

Total Answered: 35

Work Smart

Question 61 of 100

A 78-year-old woman with type 2 diabetes and rheumatoid arthritis is brought to the medical admissions unit with confusion. She can give no useful history.

There is a swollen right knee, and a temperature of 38.6°C. A BM reading records 24.8 mmol/L.

Which of the following statements in relation to her condition is correct?

(Please select 1 option)

<input checked="" type="checkbox"/>	Insulin inhibits ketogenesis Correct
<input type="checkbox"/>	Mortality risk is low
<input type="checkbox"/>	The patient is likely to be hypo-osmolar
<input type="checkbox"/>	There is osmotic shift to the extravascular space
<input type="checkbox"/>	Urine dipstick reveals reduced specific gravity

The diagnosis in this patient is hyperosmolar hyperglycemic state (HHS). In general, there is enough insulin in patients with type 2 diabetes to suppress ketogenesis, but insufficient to prevent hyperglycaemia and the hepatic resistance to glucagon.

The risk of mortality in HHS is 10-20%, with a strong predilection to thrombotic events. In general, HHS results in osmotic fluid shift to the intravascular space.

Urinalysis reveals increased specific gravity denoting dehydration.

Work Smart

Question 36 of 73

A 25-year-old woman is admitted on the medical intake. She is 10 weeks post partum and has been generally unwell for two weeks with malaise, sweats, and anxiety.

On examination she is haemodynamically stable, and clinically euthyroid.

TFTs show the following:

Free T4	33 pmol/L	(9-23)
Free T3	8 nmol/L	(3.5-6)
TSH	<0.02 mU/L	(0.5-5)

Which of the following is the appropriate management?

(Please select 1 option)

<input type="checkbox"/>	Carbimazole 40 mg/day
<input type="checkbox"/>	Lugol's iodine
<input checked="" type="checkbox"/>	Propranolol 20 mg/tds Correct
<input type="checkbox"/>	Propylthiouracil 50 mg/tds
<input type="checkbox"/>	Radioactive iodine therapy

The diagnosis here is likely to be [postpartum thyroiditis](#) which tends to occur within the three months of delivery followed by a hypothyroid phase at three to six months, followed by spontaneous recovery

in one third of cases. In the remaining two-thirds, a single-phase pattern or the reverse occurs.

Management is centred on symptomatic treatment using beta blockers for relief of tremor or anxiety, and observation for the development of persistent hypo- or hyperthyroidism.

Graves' disease is a less likely diagnosis based on the proximity to delivery and the absence of any other signs to suggest Graves' ophthalmopathy, goitre, and bruit.

Hashitoxicosis is a possibility but is less likely than Graves'.




Carbimazole and propylthiouracil (PTU) are thyroid peroxidase inhibitors. They are used in thyrotoxicosis, however postpartum thyroiditis is usually transient, therefore symptomatic treatment (with beta blockers) should be enough.

Radioactive iodine is used in thyrotoxicosis that has not responded to PTU or carbimazole. Lugol's iodine is part of the treatment of a thyrotoxic storm, in which the patient would be much more clinically unwell and is not the diagnosis here.

Further Reading:

NICE Clinical Knowledge Summaries. [Hyperthyroidism - Management](#).

Answer Statistics

1		38%
2		3%
3		28%
4		30%
5		2%

Times answered: 8902

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 37 of 73

A 26-year-old male body builder is referred to the clinic by his general practitioner (GP). He and his wife have been trying to conceive for three years. The GP found him to be azospermic.

An MRI of the pituitary demonstrates no abnormality.

The results of his initial investigations are shown below:

TSH	3.7 pmol/L	(0.5-5.0)
T4	11.1 pmol/L	(12.5-25.0)
IGF-1	16.1 nmol/L	(9-36)
LH	<1.0 IU/L	(3.6-17.1)
FSH	<1.0 IU/L	(2.25-20)
Testosterone	16.0 nmol/L	(9-34.7)

Which is the likely diagnosis?

(Please select 1 option)

<input checked="" type="checkbox"/> Anabolic steroid use Correct
<input type="checkbox"/> Androgen insensitivity syndrome
<input type="checkbox"/> Kallman's syndrome
<input type="checkbox"/> Non-functioning pituitary adenoma

The most likely diagnosis is steroid induced hypogonadism.

Body builders may be involved in the illicit use of anabolic and androgenic steroids. These results are consistent with ongoing use of androgens. The hypogonadism, if persistent, may be treated with human chorionic gonadotropin.

In the event of a non-functioning pituitary tumour, the testosterone would be low together with the luteinising hormone (LH) and follicle-stimulating hormone (FSH), and a magnetic resonance imaging (MRI) of the pituitary would not miss this diagnosis.

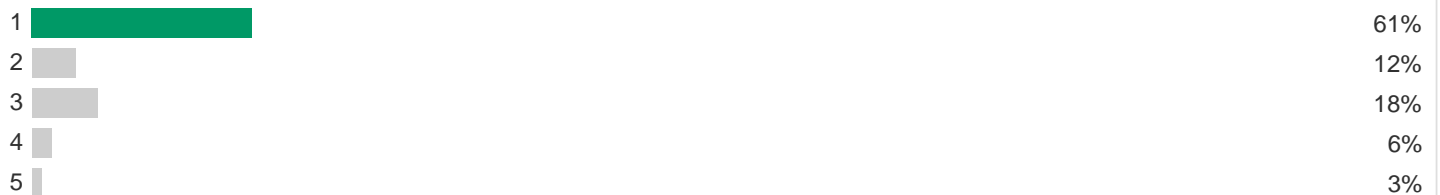
The growth hormone (GH) axis would also be likely to be suppressed, and a low insulin-like growth factor (IGF)-1 would result.

In the event of androgen insensitivity, the patient may appear phenotypically female.

One would expect a low testosterone in isolated gonadotrophin deficiency.

Kallman's syndrome results in hypogonadotrophic hypogonadism. A teratoma is unlikely to cause hypogonadotrophic hypogonadism.

Answer Statistics



Times answered: 7112

Test Analysis

Correct Incorrect Partially Correct

Work Smart

Question 44 of 71

Which of the following is true regarding diabetic foot ulceration?

(Please select 1 option)

<input type="checkbox"/>	Autonomic neuropathy results in increased resting blood flow
<input checked="" type="checkbox"/>	Callus formation at pressure areas is an important predictor of ulceration This is the correct answer
<input type="checkbox"/>	Plantar ulceration is most commonly due to atherosclerosis
<input type="checkbox"/>	Radiography can readily distinguish between Charcot's joint and osteomyelitis
<input type="checkbox"/>	Skin infection is the most common initiating event in ulceration Incorrect answer selected

Callus formation at pressure areas is an important predictor of potential ulceration.

Plantar ulceration is usually a consequence of neuropathy and minor skin trauma is probably the most common initiating event.

Blood flow is often decreased with autonomic neuropathy hence sympathectomy may be performed to improve skin blood flow.

It is difficult radiographically to distinguish between Charcot's joint and osteomyelitis.

Answer Statistics



Times answered: 8697

Test Analysis

CorrectIncorrectPartially
Correct

Score: 25%

Total Answered: 44

Feedback

Question Navigator

Revision Notes

Work Smart

Question 62 of 100

A 17-year-old boy has learning difficulties and is seen in the genetics clinic as his maternal uncles also had learning difficulties.

Examination reveals that the patient has large ears and large testes.

Which of the following is the most likely genetic diagnosis?

(Please select 1 option)

<input type="checkbox"/>	47 XYY
<input type="checkbox"/>	Acromegaly
<input checked="" type="checkbox"/>	Fragile X syndrome This is the correct answer
<input type="checkbox"/>	Klinefelter's syndrome
<input type="checkbox"/>	Mosaic Down's syndrome Incorrect answer selected

In addition to moderate to severe mental retardation, other characteristics of individuals with Fragile X syndrome may include:

- large ears
- macroorchidism
- prognathism
- speech delays
- prominent forehead
- double-jointedness
- autistic symptoms, and

- occasional self-mutilation.

The face is typically long and narrow, with a high arched palate and large ears.

Otitis media, strabismus, and dental problems may be present. Other common characteristics include:



- hyperextensible joints
- hypotonia, and
- heart problems, including mitral valve prolapse.

In post pubertal males, abnormally large testes are a distinctive feature.

The following can occur in young children:

- delayed motor development
- hyperactivity
- behavioural problems
- toe walking, and
- occasional seizures.

Answer Statistics

1		14%
2		5%
3		65%
4		10%
5		7%

Times answered: 8850

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 45 of 71

A 63-year-old patient with bipolar disorder and type 2 diabetes trips over a step and sustains an injury to her left hand. She is unable to dorsiflex her left hand, and an orthopaedic registrar diagnoses a ruptured extensor tendon.

She is receiving treatment for an infected diabetic foot ulcer.

Which of the following therapies may be implicated in this injury?

(Please select 1 option)

<input type="checkbox"/>	Aripiprazole
<input type="checkbox"/>	Exenatide
<input type="checkbox"/>	Fusidic acid
<input checked="" type="checkbox"/>	Levofloxacin Correct
<input type="checkbox"/>	Naproxen

The quinolones have recently been associated with tendon rupture.

Rupture has been reported in the achilles, shoulder and hand.

This may occur due to disruption of the extracellular matrix and depletion of collagen which is observed in animal models.

Aripiprazole is a second generation antipsychotic, and exenatide is a glucagon-like peptide 1 analogue used in the management of type 2 diabetes. Neither of these products has been associated with tendon rupture.

Work Smart

Question 46 of 71

A 32-year-old man who is overweight is screened for diabetes mellitus because he complains of excessive tiredness and nocturia.

On examination his BMI is 34, his BP is 155/90 mm/Hg.

Investigations show:

Haemoglobin	123 g/L	(135-180)
White cell count	6.1 ×10 ⁹ /L	(4-10)
Platelets	212 ×10 ⁹ /L	(150-400)
Sodium	139 mmol/L	(134-143)
Potassium	4.6 mmol/L	(3.5-5)
Creatinine	120 µmol/L	(60-120)
Fasting glucose	12.9 mmol/L	(<7.0)
	232 mg/dL	(<100)

According to the ADA/EASD consensus algorithm 2006, which of the following is the most appropriate management for him?

(Please select 1 option)

<input type="checkbox"/> A period of six months diet and lifestyle measures then review	<input checked="" type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> A period of three months diet and lifestyle measures then review	

	BD s/c exenatide injections with diet and lifestyle measures commenced concurrently
	Metformin 500 mg BD commenced with diet and lifestyle measures <input type="checkbox"/> This is the correct answer
	Pioglitazone 30 mg with diet and lifestyle measures commenced concurrently

The authors state in their consensus document that over time diet and lifestyle measures fail to maintain the desired degree of weight loss or glucose control.

For this reason they recommend commencing metformin concurrently with these interventions at the point of diagnosis.

They state the recommendation is made because of metformin's

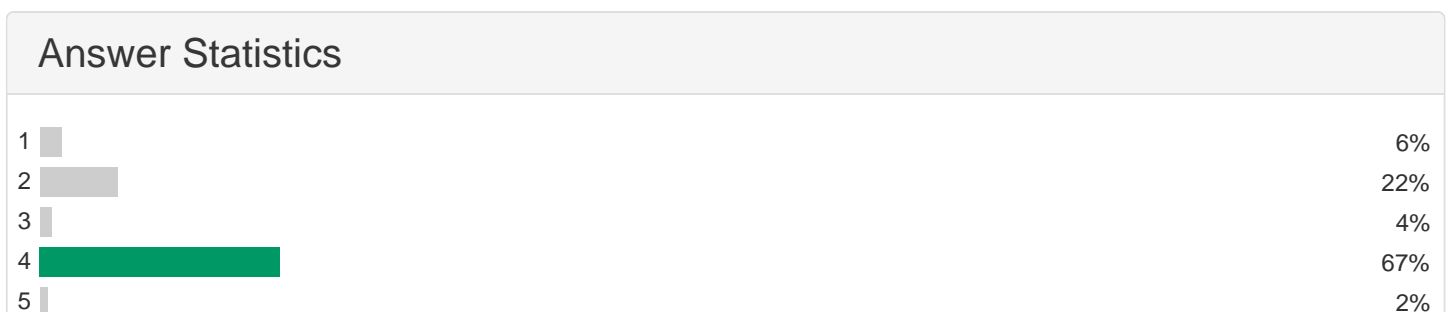
- Glucose-lowering effect without significant hypoglycaemia
- Lack of weight gain
- Generally high level of acceptance
- Low cost.

In patients who cannot take metformin they recommend the use of either a sulphonylurea or insulin.

They do not recommend one of the newer agents such as a glitazone or dipeptidyl peptidase IV (DPPIV) inhibitor as a first line alternative.

Reference:

Nathan DM, et al. [Management of Hyperglycemia in Type 2 Diabetes: A Consensus Algorithm for the Initiation and Adjustment of Therapy: A consensus statement from the American Diabetes Association and the European Association for the Study of Diabetes](#). *Diabetes Care*. 2006;29:1963-72.



Work Smart

Question 47 of 71

A 59-year-old man is diagnosed with type 2 diabetes after suffering an acute myocardial infarction. His discharge medication from the cardiac unit includes ramipril 10 mg daily, atorvastatin 10 mg daily, aspirin 75 mg and furosemide 40 mg daily. You are asked to review him for his diabetes care. On examination his BP is 142/82 mm/Hg, his BMI is 31 kg/m².

Investigations show:

Haemoglobin	131 g/L	(135-180)
White cell count	5.0 ×10 ⁹ /L	(4-10)
Platelets	199 ×10 ⁹ /L	(150-400)
Sodium	140 mmol/L	(134-143)
Potassium	5.4 mmol/L	(3.5-5)
Creatinine	152 µmol/L	(60-120)
Fasting glucose	9.2 mmol/L	(<7.0)

According to the ADA/EASD consensus algorithm, which of the following initial therapies would be most appropriate for him in addition to diet and lifestyle measures?

(Please select 1 option)

<input type="checkbox"/> Exenatide	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> Gliclazide	<input checked="" type="checkbox"/> This is the correct answer

Metformin
Pioglitazone
Sitagliptin

In this case, metformin therapy is not recommended, due to the creatinine of 152.

The presence of furosemide, for presumptive treatment of cardiac failure, rules out use of pioglitazone.

Of the choices remaining, the consensus states that in patients who are unable to take metformin, sulphonylurea (SU) or insulin are the other options; so in this case gliclazide monotherapy is the most appropriate option.

Answer Statistics



Times answered: 6203

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Core Questions

Question 48 of 71

A 54-year-old truck driver with a history of type 2 diabetes comes to the clinic for review.

He is concerned as he is finding his sugars hard to keep under control, with morning self-monitored blood glucose sometimes rising as high as 8 mmol/L or more. Current medication for blood sugar control includes metformin 1 g twice daily and gliclazide 160 mg twice daily.

On examination his BP is 148/81 mmHg, his BMI is 29 kg/m².

Investigations show:

Haemoglobin	130 g/L	(135-180)
White cell count	5.3 ×10 ⁹ /L	(4-10)
Platelets	231 ×10 ⁹ /L	(150-400)
Sodium	141 mmol/L	(134-143)
Potassium	5.4 mmol/L	(3.5-5)
Creatinine	138 μmol/L	(60-120)
HbA _{1c}	68 mmol/mol	(20-42)
	8.4%	(<5.5)

According to the ADA/EASD consensus algorithm, which of the following is the most appropriate management for him?

(Please select 1 option)

Add acarbose Incorrect answer selected

Add pioglitazone <input checked="" type="checkbox"/> This is the correct answer
Start a basal bolus insulin regime
Start basal insulin at night
Start BD mixed insulin

Current NICE guidelines recommend that initial treatment for type 2 diabetes should be lifestyle interventions. If the HbA_{1c} remains above 48 mmol/mol (6.5%) then metformin therapy should be initiated. A sulphonylurea can be considered if the patient is not overweight, metformin is contraindicated or not tolerated, or a rapid therapeutic response is required because of hyperglycaemic symptoms.

If the HbA_{1c} remains above 48 mmol/mol (6.5%) with monotherapy then the combination of metformin and a sulphonylurea should be given. A DPP-4 inhibitor or a thiazolidinedione can be used instead of a sulphonylurea if there is a significant risk of hypoglycaemia or a sulphonylurea is contraindicated or not tolerated.

If the HbA_{1c} remains above 58 mmol/mol (7.5%) despite treatment with metformin and a sulphonylurea, NICE recommends addition of insulin. However, they state you can consider using sitagliptin or a thiazolidinedione instead of insulin if there would be employment, social, recreational or personal issues. Exenatide can be used if the BMI is more than 35 and there are problems with weight gain, or insulin is unacceptable because of occupational implications.

According to these guidelines, the most appropriate choice in this case would be pioglitazone. Although the DVLA rules have currently changed, it is still more difficult for heavy goods drivers to be on insulin as they are required to fulfil a strict set of criteria and provide a great deal of evidence.

Acarbose does not feature in current NICE guidelines.

Reference:

NICE. [Type 2 diabetes in adults: management \(NG28\)](#).

Answer Statistics



Work Smart

Question 49 of 71

You review a 54-year-old man with respect to his diabetes control. He has had type 2 diabetes for some five years and currently takes metformin 1 g twice daily.

There is a history of hypertension for which he takes ramipril and amlodipine, and he has microalbuminuria.

On examination his BMI is 27 (lost 4 kg over the past six months but not by trying), and his BP is 143/78 mmHg.

Investigations show:

Haemoglobin	129 g/L	(135-180)
White cell count	5.3 ×10 ⁹ /L	(4-10)
Platelets	202 ×10 ⁹ /L	(150-400)
Sodium	139 mmol/L	(134-143)
Potassium	4.8 mmol/L	(3.5-5)
Creatinine	124 µmol/L	(60-120)
HbA _{1c}	76 mmol/mol	(20-42)
	9.1%	(<5.5)
Total cholesterol	5.4 mmol/L	(<4.5)
HDL cholesterol	0.7 mmol/L	(>1.0)

According to the ADA/EASD consensus algorithm, which of the following would be the most appropriate addition to his glucose lowering therapy?

(Please select 1 option)

<input checked="" type="checkbox"/> Start bedtime intermediate acting insulin ☐ This is the correct answer
<input type="checkbox"/> Start BD mixed insulin ☐ Incorrect answer selected
<input type="checkbox"/> Start glimepiride
<input type="checkbox"/> Start pioglitazone
<input type="checkbox"/> Start prandial insulin

This man's HbA_{1c} is high at 76 mmol/mol (9.1%), he has a low high density lipoprotein (HDL) cholesterol, is losing weight, and has a history of microalbuminuria.

The two established therapy options at this stage, as stated in the consensus, are either to add a sulfonylurea (SU) or insulin. Given his need for greatly improved metabolic control, insulin is the better option here.

The guidelines recommend starting with either morning or evening long-acting insulin, or with bedtime intermediate acting insulin.

Answer Statistics



Times answered: 5902

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 50 of 71

A 60-year-old woman with type 2 diabetes comes to the clinic three months after adding a daily injection of long-acting insulin to her regime.

She has had type 2 diabetes for some six years, and also takes metformin 1 g BD, ramipril 10 mg, aspirin 75 mg and atorvastatin 10 mg.

You review her results, and her average morning fasting sugar is 5.9 mmol/L. Unfortunately, her pre-lunch glucose is consistently out of range, at around 9.5 mmol/L.

Which of the following is the correct intervention according to the ADA/EASD consensus algorithm 2006?

(Please select 1 option)

<input type="checkbox"/>	Add a pre-breakfast injection of NPH insulin	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	Add a pre-breakfast injection of rapid acting insulin	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Add a pre-lunch injection of NPH insulin	
<input type="checkbox"/>	Add a pre-lunch injection of rapid acting insulin	
<input type="checkbox"/>	Add a pre-dinner injection of NPH insulin	

This is the course of action recommended by the consensus.

It seems with a pre-lunch glucose level of 9.5, that there is a significant post-breakfast peak in glucose levels. As such, the best way to manage this is with a breakfast time injection of rapid acting insulin.

The consensus does not recommend using BD pre-mixed preparations until the need for rapid acting insulin and any necessary dose titration has been adequately assessed.

Answer Statistics



Times answered: 5802

Test Analysis

CorrectIncorrectPartially
Correct

Score: 24%

Total Answered: 50

Feedback

Work Smart

Core Questions

Question 51 of 71

A 52-year-old woman with type 2 diabetes comes to the clinic. She has had type 2 diabetes for the past three years and is currently treated with metformin 850 mg twice daily.

On examination her BP is 152/85 mmHg and her BMI is 29.

Investigations show:

Haemoglobin	125 g/L	(135-180)
White cell count	$5.0 \times 10^9/L$	(4-10)
Platelets	$199 \times 10^9/L$	(150-400)
Sodium	141 mmol/L	(134-143)
Potassium	5.0 mmol/L	(3.5-5)
Creatinine	125 $\mu\text{mol/L}$	(60-120)
HbA _{1c}	65 mmol/mol	(20-42)
	8.1%	(<5.5)

You are planning to add a sulphonylurea to her regime.

Which of the following features, according to the consensus, is true regarding sulphonylurea therapy?

(Please select 1 option)

<input type="checkbox"/> Delayed onset of glucose lowering effect	<input checked="" type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> Increased cardiovascular risk	

Low risk of hypoglycaemia
Synergistic effects when used with DPP-IV inhibitors
Weight gain <input type="checkbox"/> This is the correct answer

The question of increased cardiovascular risk for sulphonylureas (SUs) was raised after the university group diabetes programme (UGDP) study conducted during the 1970s.

The consensus authors state, however, that the question has since been answered by the UK prospective diabetes study (UKPDS) and ADVANCE studies, where no cardiovascular risk signal was seen for SUs.

Whilst SUs are well known to have a rapid onset of glucose lowering effect, their side-effects of hypoglycaemia and weight gain are well known.

Any synergistic effect with DPP-IV inhibitors is widely debated.

Answer Statistics



Times answered: 7106

Test Analysis

Correct Incorrect Partially Correct

Work Smart

Question 52 of 71

You are visited by a 67-year-old woman who has a history of type 2 diabetes for the past six years, which was initially controlled with lifestyle and exercise, and then metformin 1 g twice daily. Her most recent HbA_{1c} prior to clinic was 74 mmol/mol.

On examination she has a blood pressure of 145/89 mmHg, and a BMI of 29. You discuss options with her and come to the decision that insulin initiation would be the best option for her.

According to the ADA/EASD consensus, which of the following is the appropriate starting dose for intermediate acting insulin?

(Please select 1 option)

<input type="checkbox"/>	0.1 U/kg
<input checked="" type="checkbox"/>	0.2 U/kg This is the correct answer
<input type="checkbox"/>	0.7 U/kg
<input type="checkbox"/>	1.0 U/kg
<input type="checkbox"/>	1.5 U/kg Incorrect answer selected

0.2 U/kg or a flat dose of 10 U is the recommended starting dose for intermediate acting insulin.

A titration schedule based on fasting glucose levels is then recommended, with an increase of 2 U of insulin every three days until fasting glucose is in the target range of 3.9-7.2 mmol/L.

If the fasting plasma glucose is more than 10 mmol/L, then a more aggressive uptitration schedule of 4 U every three days can be considered.

Work Smart

Question 53 of 71

A 52-year-old taxi driver with type 2 diabetes comes for review.

He is currently managed with metformin 1 g twice daily but finds it very difficult to comply with diet and lifestyle recommendations because of the nature of his work.

There is a past history of myocardial infarction for which he takes ramipril 10 mg, atorvastatin 10 mg, aspirin 75 mg and furosemide 40 mg daily.

On examination he has a BMI of 31.

Investigations show:

Haemoglobin	125 g/dL	(135-180)
White cell count	$5.0 \times 10^9/L$	(4-10)
Platelets	$205 \times 10^9/L$	(150-400)
Sodium	140 mmol/L	(134-143)
Potassium	5.0 mmol/L	(3.5-5)
Creatinine	130 $\mu\text{mol/L}$	(60-120)
HbA _{1c}	68 mmol/mol	(20-42)
	8.4%	(<5.5)

According to ADA/EASD consensus, which of the following therapies would be most appropriate to gain additional glycaemic control?

(Please select 1 option)

Exenatide
Gliclazide <input checked="" type="checkbox"/> This is the correct answer
Insulin
Pioglitazone
Vildagliptin <input type="checkbox"/> Incorrect answer selected

Standard treatment of type 2 diabetes in the UK is initially metformin monotherapy, with sulphonylurea (gliclazide) if sugars remain poorly controlled.

Gliptins, such as vildagliptin, are only recommended as second-line therapy with metformin if patients are at significant risk of hypoglycaemia or its consequences (e.g. older patients, those working at heights or heavy machinery, isolated patients) or if a sulphonylurea is not tolerated or contraindicated.

Pioglitazone carries a contraindication with respect to heart failure and is therefore not an option.

Exenatide should be given with metformin and a sulphonylurea or a thiazolidinedione if sugars remain uncontrollable AND:

- BMI 35 or above with health problems associated with this,

OR:

- BMI less than 35, but insulin would interfere with profession or other significant health problems would be helped by weight loss.

Insulin would have a significant impact on this patient's profession, and other treatments should be tried first to control blood sugars.

Reference:

NICE. [Type 2 diabetes in adults: management \(NG28\)](#).

Answer Statistics

Work Smart

Question 54 of 71

A 52-year-old man who works as an HGV driver comes to the clinic for review.

He is currently taking metformin 1 g twice daily. On examination his blood pressure is 142/80 mmHg, and his BMI is 42. His latest pre-clinic HbA_{1c} is 73 mmol/mol.

Which of the following according to the ADA/EASD consensus would be the most appropriate therapy for him?

(Please select 1 option)

<input type="checkbox"/>	Albiglutide
<input checked="" type="checkbox"/>	Exenatide This is the correct answer
<input type="checkbox"/>	Liraglutide
<input type="checkbox"/>	Pramlintide
<input type="checkbox"/>	Taspoglutide Incorrect answer selected

The consensus recommends the use of proven therapies (sulphonylurea or insulin) as first choice add-in options to metformin.

However in special situations, for example, morbid obesity or risk of hypoglycaemia, exenatide may be considered as an alternative.

Pramlintide is an amylin agonist, the predominant effects of which include:

- reduction in glucagon

- inhibition of gastric emptying, and
- nausea.

The guidelines do not recommend it, and it is only licensed in the United States as an adjunct to insulin therapy.

Albiglutide is a weekly GLP-1 analogue in development. Liraglutide is a daily GLP-1 analogue which shares close homology with human GLP-1.

Answer Statistics



Times answered: 5968

Test Analysis

CorrectIncorrectPartially
Correct

Score: 22.22%

Work Smart

Question 63 of 100

A 26-year-old woman presents with concern about her weight gain and excessive hairiness. She has hair around her nipples and extending up from her groin, and is concerned that it is significantly affecting her self confidence.

She also finds it difficult to control her weight, having increased to over 16 stone in the past two to three years, and has periods only once every three to four months.

On examination she has a BP of 145/85 mmHg, a pulse of 75, and a BMI of 31 kg/m². She has midline hair spreading up to her navel, and around her areolae. She is obese, but otherwise there are no other abnormal findings.

Investigations show:

Hb	130 g/L	(135-180)
WCC	6.0 ×10 ⁹ /L	(4-10)
PLT	193 ×10 ⁹ /L	(150-400)
Na	140 mmol/L	(134-143)
K	4.4 mmol/L	(3.5-5)
Gluc	6.1 g/dL	(7.0-11.0)

Which of the following investigations would be most useful in supporting an underlying diagnosis of PCOS?

(Please select 1 option)

<input type="checkbox"/>	17-OH progesterone
--------------------------	--------------------

Pelvic ultrasound scan	<input checked="" type="checkbox"/> This is the correct answer
LH:FSH ratio	<input type="checkbox"/> Incorrect answer selected
Oral glucose tolerance test	
Serum testosterone	

Historically, a biochemical diagnosis of polycystic ovary syndrome (PCOS) was considered on the basis of a mild elevation of testosterone, and raised LH:FSH ratio.

It is recognised however that LH:FSH ratio is not always predictive of the presence of polycystic ovaries, so for this reason pelvic ultrasound scan is the investigation of choice.

Weight loss is the management of choice, and metformin has been used both to enhance weight loss (in combination with a low-calorie diet) and induce ovulation.

Answer Statistics



Times answered: 5770

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 55 of 71

A 45-year-old woman presents with polydipsia and polyuria. She says that she is having difficulty sleeping as she is constantly thirsty, drinking many glasses of water during the day, and passing urine excessively at night.

She has a history of anxiety and depression and is currently managed with fluoxetine to control her symptoms. She also has a history of mild hypertension, which is controlled with ramipril 5 mg.

On examination her BP is 135/70 mmHg, and a general physical examination is normal.

Investigations show:

Hb	131 g/L	(115-165)
WCC	$5.6 \times 10^9/L$	(4-11)
PLT	$203 \times 10^9/L$	(150-400)
Na	134 mmol/L	(135-146)
K	4.0 mmol/L	(3.5-5)
Cr	90 $\mu\text{mol/L}$	(79-118)
Glucose	5.6 mmol/L	(4.5-5.6)
Ca	2.2 mmol/L	(2.2-2.67)
Plasma osmolality	275 mOsm/L	(282-295)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Cranial diabetes insipidus	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/>	Hyperglycaemia-related polyuria	
<input type="checkbox"/>	Nephrogenic diabetes insipidus	
<input checked="" type="checkbox"/>	Psychogenic polydipsia	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Syndrome of inappropriate antidiuretic hormone hypersecretion (SIADH)	

This patient has a previous history of anxiety and depression and has been prescribed fluoxetine, which may invoke SIADH which could cause these biochemical results. However, the history of polyuria and polydipsia, with only a marginally reduced sodium make psychogenic polydipsia the more likely diagnosis.

The low sodium seen is likely to result from water overload due to excess fluid intake. Her glucose and calcium are not in the range to precipitate thirst and polyuria.

In this case, cognitive therapy is likely to have the greatest impact on her symptoms.

Answer Statistics



Times answered: 6709

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 64 of 100

A 60-year-old woman with a history of type 2 diabetes comes to the clinic for review.

She is currently managed with gliclazide 160 mg BD as she failed to tolerate metformin, but she is finding it difficult to manage her blood sugar control. Her morning finger prick testing glucoses approaches 10 mmol/L glucose.

On examination her BMI is 36, her BP is 155/90 mmHg, her pulse is 86 and regular. Apart from her obesity, physical examination is unremarkable.

Investigations reveal:

Haemoglobin	122 g/L	(115-165)
White cell count	$5.1 \times 10^9/L$	(4-11)
Platelets	$203 \times 10^9/L$	(150-400)
Sodium	141 mmol/L	(135-146)
Potassium	4.3 mmol/L	(3.5-5)
Creatinine	210 $\mu\text{mol/L}$	(79-118)
HbA _{1c}	73 mmol/mol	(<48)

Which of the following is the next most appropriate step in managing her blood glucose control?

(Please select 1 option)

<input type="checkbox"/> Exenatide	<input checked="" type="checkbox"/> Incorrect answer selected

Metformin slow release
Pioglitazone
Sitagliptin
Switch to insulin <input type="checkbox"/> This is the correct answer

This woman has significant renal impairment, as illustrated by a creatinine of 210 $\mu\text{mol/L}$. As such, options are limited; both sitagliptin and exenatide are not recommended in patients with this degree of renal impairment, and metformin is contraindicated.

While glitazones are effective in lowering blood glucose, in this patient type they are likely to lead to significant fluid retention.

This leaves insulin switch as the most appropriate option, despite the fact it is likely to result in further weight gain.

Answer Statistics

1		29%
2		3%
3		23%
4		12%
5		33%

Times answered: 5791

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 38 of 73

A 71-year-old man presents with chronic back and right hip pain which has been increasingly affecting him over the past few months. He finds it very difficult to mobilise in the mornings, and cannot dig his garden.

Clinical examination is unremarkable, apart from limitation of right hip flexion due to pain.

Investigations show:

Haemoglobin	121 g/L	(135-177)
White cell count	$8.2 \times 10^9/L$	(4-11)
Platelets	$200 \times 10^9/L$	(150-400)
C reactive protein	9 nmol/L	(<10)
ESR	15 mm/hr	(<20)
Sodium	140 mmol/L	(135-146)
Potassium	3.9 mmol/L	(3.5-5)
Creatinine	92 $\mu\text{mol/L}$	(79-118)
Alanine aminotransferase	12 U/L	(5-40)
Alkaline phosphatase	724 U/L	(39-117)
Calcium	2.55 mmol/L	(2.20-2.67)

Which of the following is the most likely diagnosis?

(Please select 1 option)

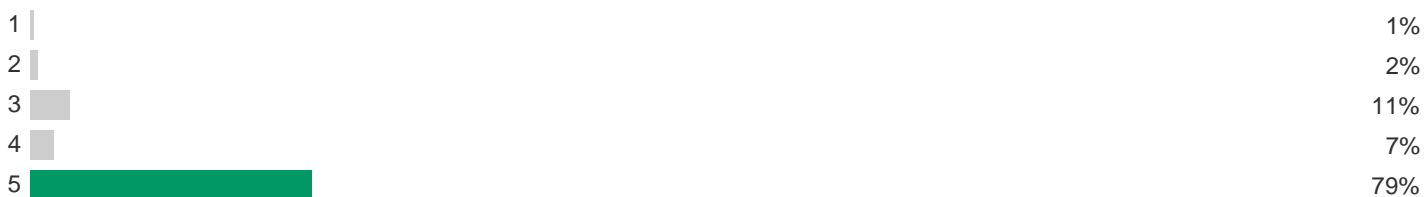
Chronic liver disease
Malignant melanoma
Osteoarthritis right hip
Osteoporotic collapse lumbar spine
Paget's disease <input checked="" type="checkbox"/> Correct

This man's markedly elevated alkaline phosphatase in the presence of normal liver enzymes, normal calcium and normal ESR, and his history of lumbar spine and right hip pain points towards Paget's disease as the most likely diagnosis.

X ray examination of his lumbar spine and hip is likely to show areas of both osteolysis and new bone formation typical of the disease.

Pain relief with non-steroidals, and either oral or intermittent IV pulsed bisphosphonate therapy represents the treatment of choice.

Answer Statistics



Times answered: 5812

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 39 of 73

A 38-year-old patient comes to the clinic with hypertension he is finding difficult to control.

Despite taking ramipril 10 mg, atenolol 50 mg and amlodipine 10 mg, his BP is 155/97 mmHg. He has no other significant past medical history. His BMI is 22 and general examination is unremarkable.

Investigations show:

Haemoglobin	135 g/L	(135-180)
White cells	$7.9 \times 10^9/L$	(4-11)
Platelets	$231 \times 10^9/L$	(150-400)
Sodium	138 mmol/L	(135-146)
Potassium	3.1 mmol/L	(3.5-5)
Creatinine	95 $\mu\text{mol/L}$	(79-118)
Spot aldosterone:renin ratio	830	

Which of the following is the most appropriate next step to optimise his management?

(Please select 1 option)

<input type="checkbox"/>	Add doxazosin
<input type="checkbox"/>	Add indapamide
<input type="checkbox"/>	Add moxonidine
<input type="checkbox"/>	

Echocardiogram
MRI abdomen <input checked="" type="checkbox"/> Correct

The spot aldosterone:renin ratio greater than 800 raises the strong possibility that this man is suffering from hyporeninaemic hyperaldosteronism. Quite marked hypokalaemia, even in the presence of ACE inhibition, is a further pointer to the diagnosis.

MRI abdomen is the investigation that is likely to confirm the possibility of an adrenal adenoma.

Whilst addition of further anti-hypertensives may drive his blood pressure closer to goal they are unlikely to be effective and surgery is the most appropriate intervention.

Beta blockers, however, can significantly raise the aldosterone:renin ratio, increasing the risk of false positives.

Answer Statistics



Times answered: 5768

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 56 of 71

A 61-year-old man with type 2 diabetes comes to the clinic for review.

He is currently managed with metformin 500 mg and gliclazide 40 mg. He is also treated with ramipril 10 mg, amlodipine 5 mg, bisoprolol 5 mg, atorvastatin 10 mg, and aspirin 75 mg.

On examination his BP is 140/80 mm hg, his pulse is 70 and his BMI is 28.

Investigations show:

Haemoglobin	124 g/L	(135-177)
White cells	$7.2 \times 10^9/L$	(4-11)
Platelet	$229 \times 10^9/L$	(150-400)
Sodium	141 mmol/L	(135-146)
Potassium	4.9 mmol/L	(3.5-5)
Creatinine	123 $\mu\text{mol/L}$	(79-118)
HDL cholesterol	0.7 mmol/L	(0.8-1.8)
LDL cholesterol	2.2 mmol/L	(<4.0)
Triglycerides	3.4 mmol/L	(0.7-2.1)
HbA _{1c}	56 mmol/mol	(<37)
	7.3%	(<5.5%)

Which of the following strategies is likely to be most effective in reducing his overall 10 year

cardiovascular risk?

(Please select 1 option)

<input type="checkbox"/>	Further anti-hypertensive medication with a target of 130/70 mmHg
<input type="checkbox"/>	Further hypoglycaemic medication with a target of 6.5%
<input type="checkbox"/>	Increasing his statin dosage
<input checked="" type="checkbox"/>	Increasing consumption of omega-3 fatty acids □ This is the correct answer
<input type="checkbox"/>	Weight loss of 5 kg □ Incorrect answer selected

The answer is increasing consumption of omega 3 fatty acids.

Elevated triglycerides are common in patients with type 2 diabetes, even in those who are established on effective statin therapy.

His blood pressure is only just above target, and in the absence of probable renal disease, further lowering of his BP may not substantially increase benefit.

A study (ACCORD) suggests that in those with a previous cardiac history, targeting HbA_{1c} reduction to below 53 mmol/mol (7%) may be associated with increased sudden death. However, a 2009 meta-analysis¹ concluded that intensive glucose control in type 2 diabetes has no significant effect on all-cause mortality, and a well-designed retrospective study² has shown that a HbA_{1c} of about 48 mmol/mol (6.5%) has a favourable effect on survival.

The PROCAM, Paris Prospective Study, Copenhagen Male Study and Helsinki Heart Studies have all indicated that elevated triglyceride levels are associated with increased cardiovascular risk, particularly in the presence of low HDL cholesterol, a situation seen most commonly in patients with type 2 diabetes.

Trials of omega 3 supplementation suggest that it is associated with triglyceride reduction of up to 38%.

Reference:

1. Ray KK, et al. [Effect of intensive control of glucose on cardiovascular outcomes and death in patients with diabetes mellitus: a meta-analysis of randomised controlled trials. *Lancet*. 2009;373:1765-72.](#)
2. Currie CJ, et al. [Survival as a function of HbA\(1c\) in people with type 2 diabetes: a retrospective cohort study. *Lancet*. 2010;375:481-9.](#)

Work Smart

Question 57 of 71

A 62-year-old man comes to the surgery for review.

He has a history of peripheral vascular disease, characterised by intermittent claudication, particularly when he walks up a slight incline. He has a history of smoking 20 cigarettes per day.

Medication includes amlodipine 10 mg, valsartan 40 mg, and atorvastatin 10 mg.

On examination his BP is 135/72 mmHg, his pulse is 82. His BMI is 32. There are trophic changes on examination of both legs consistent with chronic peripheral vascular disease.

Investigations show:

Haemoglobin	123 g/L	(135-177)
White cells	6.2 ×10 ⁹ /L	(4-11)
Platelet	234 ×10 ⁹ /L	(150-400)
Sodium	139 mmol/L	(135-146)
Potassium	4.2 mmol/L	(3.5-5)
Creatinine	118 µmol/L	(79-118)
HDL cholesterol	0.8 mmol/L	(0.8-1.8)
LDL cholesterol	2.0 mmol/L	(<4.0)
Triglycerides	2.8 mmol/L	(0.7-2.1)
Glucose	6.2 mmol/L	(<7.0)

Which of the following is the most appropriate way to impact on his cardiovascular risk?

(Please select 1 option)

<input checked="" type="checkbox"/>	Switch the statin for a fibrate or omega 3 fatty acids	Correct
<input type="checkbox"/>	Further reduce his blood pressure	
<input type="checkbox"/>	Increase his dose of atorvastatin	
<input type="checkbox"/>	Start metformin	
<input type="checkbox"/>	Start pioglitazone	

The answer is to switch the statin for a fibrate or omega 3 fatty acids.

This patient's blood pressure is relatively close to target, and increasing his blood pressure medication is unlikely to impact much further on his overall cardiovascular risk profile.

Statins also result in only a modest reduction in triglycerides versus their impact on LDL cholesterol.

Other options (metformin or pioglitazone) centre on the fact that he has impaired fasting glucose, but in reality neither agent is licensed for the treatment of pre-diabetes.

As such the most appropriate option is to consider medication such as a fibrate or omega 3 fatty acids, target at triglyceride reduction. Triglycerides above 1.7 are thought to be associated with around a 30% relative increase in cardiovascular disease events.

Answer Statistics



Times answered: 5841

Test Analysis

Work Smart

Question 58 of 71

A 72-year-old woman with a history of type 2 diabetes for the past eight years is currently managed with oral metformin and gliclazide. She had an inferior myocardial infarction some four years earlier. On examination her BP is 142/83 mmHg, pulse is 67 and regular. Her chest is clear and there is no ankle swelling.

Which of the following findings on laboratory investigation or clinical examination would be most associated with increased cardiovascular risk?

(Please select 1 option)

<input type="checkbox"/>	HbA _{1c} 57 mmol/mol (<37)
<input type="checkbox"/>	HDL cholesterol 2.3 mmol/L (1.0-2.3)
<input type="checkbox"/>	LDL cholesterol 2.4 mmol/L (<4.0)
<input checked="" type="checkbox"/>	Triglyceride 2.8 mmol/L (0.5-1.7) This is the correct answer
<input type="checkbox"/>	Urate 0.4 mmol/L (0.18-0.42) Incorrect answer selected

The answer is triglyceride 2.8 mmol/L.

High triglycerides and low high-density lipoprotein (HDL) cholesterol are the commonest lipid abnormality seen in type 2 diabetes, and both are associated with increased cardiovascular risk.

In total, triglycerides above 1.7 are thought to be associated with a 30% increase in relative cardiovascular risk.

An HbA_{1c} of 58 mmol/mol would not be considered to be a very excessive cardiovascular risk

1c

indicator in a 72-year-old patient with type 2 diabetes.

The ACCORD study suggested that targeting lower HbA_{1c} in patients with long established diabetes may be associated with increased mortality, although this effect has not been seen in other studies.

Low-density lipoprotein (LDL) cholesterol of 2.4 is only just above target.

Answer Statistics



Times answered: 5831

Test Analysis

CorrectIncorrectPartially
Correct

Score: 22.41%

Total Answered: 58

Work Smart

Core Questions

Question 59 of 71

A 62-year-old man comes to the clinic for review of his diabetes.

Current medication includes metformin 1 g BD and 40 units BD mixed insulin. Other medication includes candesartan 16 mg and amlodipine 10 mg.

On examination his BP is 155/84 mmHg, his pulse is 70 and regular. His BMI is 31.

Investigations show:

Haemoglobin	120 g/L	(135-177)
White cells	$7.8 \times 10^9/L$	(4-11)
Platelet	$192 \times 10^9/L$	(150-400)
Sodium	139 mmol/L	(135-146)
Potassium	5.1 mmol/L	(3.5-5)
Creatinine	127 $\mu\text{mol/L}$	(79-118)
Alanine aminotransferase	110 U/L	(5-40)
Alkaline phosphatase	94 U/L	(39-117)
HDL cholesterol	0.7 mmol/L	(0.8-1.8)
LDL cholesterol	2.4 mmol/L	(<4.0)
Triglycerides	3.2 mmol/L	(0.7-2.1)

Which of the following conditions is associated with this clinical picture?

(Please select 1 option)

<input type="checkbox"/>	Acute pancreatitis	
<input type="checkbox"/>	Autoimmune hepatitis	
<input type="checkbox"/>	Chronic pancreatitis	
<input checked="" type="checkbox"/>	Non-alcoholic steatohepatitis (NASH)	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Unpredictable hypoglycaemia	<input type="checkbox"/> Incorrect answer selected

NASH - hypertriglyceridaemia and raised transaminases are suggestive of increased hepatic fat. Over time it is thought that around 10% of patients who have non-alcoholic steatosis progress to chronic inflammation and NASH.

A proportion of these may go on to develop cirrhosis and end stage liver disease, and a smaller proportion of these go on to get hepatocellular carcinoma.

Key to the management of NASH is weight loss, which is associated with a reduction in lipid overflow.

NB: Candesartan can also cause elevated liver enzymes.

Answer Statistics



Times answered: 5921

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 60 of 71

A 64-year-old man comes to the clinic for review of his type 2 diabetes. He is currently managed with metformin 1 g BD and sitagliptin 100 mg.

On examination his blood pressure is 156/90 mmHg, his pulse is 80 and his BMI is 30. Of note on routine investigations is a raised triglyceride level of 3.1 mmol/L (0.7-2.1).

Which of the following is associated with elevated triglycerides?

(Please select 1 option)

<input type="checkbox"/>	Decreased hepatic fat
<input checked="" type="checkbox"/>	Increased insulin resistance This is the correct answer
<input type="checkbox"/>	Increased subcutaneous fat
<input type="checkbox"/>	Reduced cardiovascular risk
<input type="checkbox"/>	Reduced insulin requirements Incorrect answer selected

The answer is increased insulin resistance.

Elevated triglycerides are associated with disordered energy handling by adipocytes. This is not only manifest by raised lipid levels, but also by an inability of cells to take up glucose properly, leading to increased insulin resistance. This leads to increased insulin requirements.

This increased insulin resistance is associated with a constellation of other cardiovascular risk factors including hypertension, hypercoagulability, and low HDL cholesterol.

Hepatic fat content is a determinant of postprandial triglyceride levels in type 2 diabetes, and

increased hepatic fat is associated with elevated triglyceride levels.

A statement by the American Heart Association in 2011 showed that subcutaneous fat may serve as a protective factor with regard to the metabolic consequences of obesity, and a relative paucity (i.e., lipodystrophy) is associated with hypertriglyceridemia.

Reference:

Miller M et al. [AHA Scientific Statement. Triglycerides and Cardiovascular Disease](#). *Circulation*. 2011;123:2292-2333.

Answer Statistics



Times answered: 5880

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 61 of 71

A 53-year-old woman comes to the clinic for review.

She is obese and has a history of hypertension which is managed with ramipril and amlodipine. Her blood pressure is 155/85 mmHg. Her BMI is 29.

Which of the following most accurately predicts her level of insulin resistance?

(Please select 1 option)

<input type="checkbox"/>	Blood pressure
<input type="checkbox"/>	BMI
<input type="checkbox"/>	HDL cholesterol
<input type="checkbox"/>	LDL cholesterol
<input checked="" type="checkbox"/>	Triglyceride / HDL ratio Correct

The answer is triglyceride / HDL ratio.

Cross-sectional studies across the Caucasian population have suggested that triglyceride/HDL ratio is most predictive of insulin resistance. As such TG/HDL can be used to stratify both future risk of the development of cardiovascular disease and future risk of diabetes mellitus.

Weight loss and exercise training is seen to impact on TG/HDL ratio; pioglitazone and metformin which impact on insulin resistance both lead to modest increases in HDL and a decrease in triglycerides in some patients.

Work Smart

Question 62 of 71

A 58-year-old man who has a history of hypertension and type 2 diabetes presents to the Emergency Department complaining of central chest pain which is going down his left arm.

His medication includes ramipril, metformin, atorvastatin, and gliclazide.

On examination his BP is 129/72 mmHg, and his pulse is 81. He has bibasal crackles on auscultation of his chest.

Investigations reveal:

Haemoglobin	138 g/L	(130-180)
White cell count	8.9 ×10 ⁹ /L	(4-11)
Platelet	197 ×10 ⁹ /L	(150-400)
Sodium	141 mmol/L	(135-146)
Potassium	4.1 mmol/L	(3.5-5)
Creatinine	123 µmol/L	(79-118)
Glucose	12.3 mmol/L	(<7.0)
ECG	Anterolateral ST depression	

He is given sublingual GTN.

Which of the following is the next most appropriate therapy?

(Please select 1 option)

Aspirin 300 mg and low molecular weight heparin
Aspirin 300 mg, clopidogrel 300 mg, and low molecular weight heparin <input checked="" type="checkbox"/> This is the correct answer
Beta blockade <input type="checkbox"/> Incorrect answer selected
Clopidogrel 300 mg
IV GTN infusion

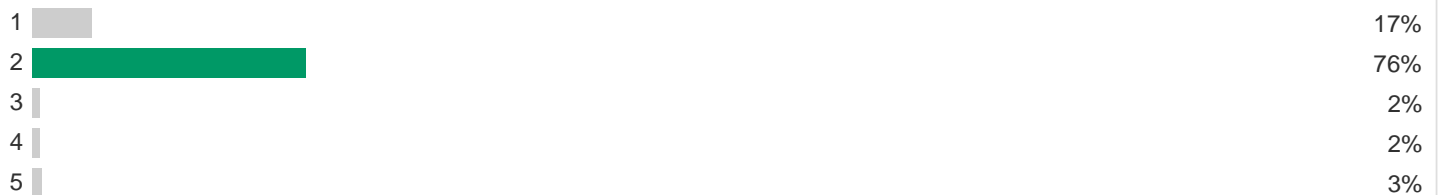
The answer is aspirin, clopidogrel, and low molecular weight heparin.

This patient is high risk given his history of type 2 diabetes mellitus, and as such should be loaded with both aspirin and clopidogrel.

Further chest pain, or failure of his ECG signs to resolve may drive further intervention including progression to angiography.

If this patient does not progress to angiogram then screening for ischaemia should be considered prior to discharge.

Answer Statistics



Times answered: 5869

Test Analysis

CorrectIncorrectPartially Correct

Work Smart

Question 65 of 100

A 43-year-old woman presents with a lump on the left side of her neck.

There is no evidence of hypo- or hyperthyroidism on symptom check and there is no history of recent weight change. The only medication of note is the progesterone only pill.

On examination her BP is 135/80 mmHg, her pulse is 68 and regular. Her BMI is 24, she has a left sided thyroid nodule approximately 0.8 cm in diameter. Her thyroid stimulating hormone (TSH) is normal at 3.6 mU/l.

Which of the following is the most appropriate initial investigation?

(Please select 1 option)

<input type="checkbox"/>	CT scan neck
<input type="checkbox"/>	Fine needle aspiration
<input checked="" type="checkbox"/>	Free T3/T4 ❌ Incorrect answer selected
<input type="checkbox"/>	Radionucleotide scan
<input type="checkbox"/>	Ultrasound scan neck ❌ This is the correct answer

Ultrasound is the initial investigation of choice for thyroid nodules; it can visualise cystic lesions 2 mm or more in diameter, and solid lesions 3 mm or more in diameter.

It is far more sensitive than palpation alone, with less than 10% of nodules detected by ultrasound being clinically palpable. Ultrasound is used to inform progression to fine needle aspiration.

A CT scan neck is not correct because CT scanning is usually only performed to examine for local

spread of malignant disease or for degree of compression of other structures in the neck.

Fine needle aspiration is not correct because this follows on from ultrasound scanning.

Free T3/T4 is not correct because in view of a normal thyroid-stimulating hormone (TSH), tri-iodothyronine/thyroxine (T3/T4) are unlikely to be abnormal or contribute to the underlying diagnosis.

Radionucleotide scan is not correct because this is used for the investigation of thyroiditis or a toxic adenoma.

Answer Statistics

Test Analysis

CorrectIncorrectPartially
Correct

Score: 15.38%

Total Answered: 65

Feedback

Work Smart

Core Questions

Question 66 of 100

A 23-year-old student from central Africa brings her 29-year-old sister who is visiting on holiday to see the GP because she is concerned about a fullness in her neck.

There is also a history of fatigue, a dry cough and a change in the quality of her voice over the past few months. She has no other past medical history of note; you ask about her diet, she tells you she eats mainly local food and they cannot get access to fresh fish.

On examination her BP is 135/70 mmHg, her pulse is 65 and her BMI is 28. There is a large, diffuse multinodular goitre.

Investigations show:

Haemoglobin	108 g/L	(115 - 165)
White cells	$7.5 \times 10^9/L$	(4 - 11)
Platelet	$179 \times 10^9/L$	(150 - 400)
Sodium	136 mmol/L	(135 - 146)
Potassium	4.6 mmol/L	(3.5 - 5)
Creatinine	99 $\mu\text{mol/L}$	(79 - 118)
TSH	6.0	(0.5 - 5.0)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Graves' disease
--------------------------	-----------------

Hashimoto's disease	
Idiopathic hypothyroidism	<input type="checkbox"/> Incorrect answer selected
Iodine deficiency	<input checked="" type="checkbox"/> This is the correct answer
Non-toxic multinodular goitre	

Iodine deficiency and the large goitre, coupled with mild hypothyroidism in a patient from central Africa points you to this as the correct option.

Iodine deficiency occurs more commonly in central Africa. It may present in a euthyroid state, or with severe deficiency, symptoms of hypothyroidism. Diffuse goitre becomes nodular over time with prolonged deficiency. Symptoms of extrinsic compression due to goitre size, including shortness of breath and difficulty swallowing may exist.

The presentation here with mild hypothyroidism (thyroid-stimulating hormone [TSH] just outside the normal range) is entirely consistent with this picture.

Graves' is associated with symptoms of thyrotoxicosis so is incorrect.

Hashimoto's would be an alternative consideration here, but the patient's location and relatively indolent course of her disease is designed to point you towards iodine deficiency.

Likewise, idiopathic hypothyroidism is incorrect as the location should prompt you to consider iodine deficiency.

Non-toxic multinodular goitre is incorrect because of the clues that point you to iodine deficiency. It would be the default correct answer in another situation.

Answer Statistics



Times answered: 5773

Work Smart

Question 40 of 73

A 42-year-old man is referred to the endocrine clinic for investigation of a thyroid mass.

He tells you that his mother and brother both suffered from thyroid cancer, but he has not responded to multiple invitations from the local endocrine clinic to attend for review.

He has been attending his GP who is finding his blood pressure difficult to manage. He is currently taking ramipril 10 mg daily and amlodipine 10 mg.

On examination in the clinic his BP is 155/100 mmHg, his pulse is 85 and regular. There is a firm left sided thyroid mass, around 3 cm in diameter.

Investigations show:

Haemoglobin	135 g/L	(115 - 165)
White cells	$6.5 \times 10^9/L$	(4 - 11)
Platelet	$359 \times 10^9/L$	(150 - 400)
Sodium	139 mmol/L	(135 - 146)
Potassium	4.6 mmol/L	(3.5 - 5)
Creatinine	92 $\mu\text{mol/L}$	(79 - 118)
TSH	3.1	(0.5 - 5.0)
Calcium	2.91 mmol/L	(2.2 - 2.60)

Which of the following is the next step?

(Please select 1 option)

Abdominal MRI	<input checked="" type="checkbox"/> This is the correct answer
Excision biopsy of the thyroid	
Growth hormone suppression test	
MRI pituitary	<input type="checkbox"/> Incorrect answer selected
Pentagastrin stimulation test	

Abdominal MRI is the correct answer because exclusion of pheochromocytoma is crucial before considering thyroidectomy.

The history of thyroid carcinoma in two first degree relatives raises the possibility of a familial thyroid cancer syndrome. The hypercalcaemia further increases suspicion that this is medullary carcinoma of the thyroid.

If there is any suggestion of pheochromocytoma, and the hypertension raises that possibility here, adequate investigation and possible removal of adenoma before thyroidectomy is crucial. In the event of a pheochromocytoma, alpha blockade with phenoxybenzamine is the primary strategy for blood pressure control.

Excision biopsy is incorrect, because surgery should not be attempted prior to excluding pheochromocytoma, and thyroidectomy is the treatment of choice.

Growth hormone suppression test is incorrect; pituitary adenomas are a feature of multiple endocrine neoplasia-1 (MEN-1).

MRI pituitary is incorrect; pituitary adenomas are a feature of MEN-1.

Pentagastrin stimulation test is incorrect because there is an obvious thyroid tumour, and this should not delay progression to surgery. This should be used to diagnose less obvious medullary carcinomas of the thyroid, where injecting pentagastrin will result in calcitonin levels significantly above normal range.

Answer Statistics



33%

Work Smart

Question 41 of 73

A 33-year-old woman is currently treated with carbimazole and thyroxine in a block replace regimen for Graves' disease, and she is thinking about a decision with respect to radioiodine therapy.

Her thyroid function has been stable over the past few months and her most recent TSH is measured at 2.5 mU/l. She is concerned however that her eyes are more itchy and swollen and that she needs treatment from the ophthalmologist.

Which of the following would prompt urgent referral with respect to her thyroid eye disease?

(Please select 1 option)

<input checked="" type="checkbox"/>	Change in the intensity or quality of colour vision <input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Increased itchiness of both eyes
<input type="checkbox"/>	Increased light sensitivity
<input type="checkbox"/>	Intermittent diplopia
<input type="checkbox"/>	Orbital ache <input type="checkbox"/> Incorrect answer selected

Thyroid eye disease occurs in between 25 and 50% of patients with Graves' disease.

Impaired perception of colour implies acute progressive neuropathy and as such is a consideration for urgent ophthalmological referral. Other indications for urgent referral include:

- sudden deterioration in visual acuity
- globe subluxation
- swelling of the optic disc

- corneal opacity, and
- an inability for the eyelids to sufficiently cover the cornea.

High dose corticosteroids are the mainstay of initial therapy for thyroid eye disease. The role of radiotherapy remains controversial, with surgical decompression preferred by many ophthalmologists.

A change in the intensity or quality of colour vision is the correct answer, as it is an indication of acute progressive neuropathy.

Increased itchiness of both eyes is incorrect because increased itchiness is a common feature of thyroid eye disease, a failure to respond to topical steroids may prompt referral.

Increased light sensitivity is incorrect because progressively worsening light sensitivity over one to two months prompts referral.

Intermittent diplopia is incorrect because it is only progressive or worsening diplopia that should prompt referral.

Orbital ache is incorrect because this is a common feature of thyroid eye disease, particularly in the mornings.

Answer Statistics



Times answered: 5690

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 42 of 73

A 28-year-old woman presents to the clinic because she has had no periods for the past four months, she also suffers from problems with vaginal dryness during intercourse, and milk leakage when her boyfriend stimulates her breasts.

On examination her BP is 122/70 mmHg, her pulse is 67, and her BMI is 23. You can express milk on minimal nipple palpation.

You suspect hyperprolactinaemia.

Which of the following prolactin levels fits best with drug related hyperprolactinaemia?

(Please select 1 option)

<input checked="" type="checkbox"/> 800	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/> 1500	
<input type="checkbox"/> 3000	
<input type="checkbox"/> 5000	
<input type="checkbox"/> 10000	<input type="checkbox"/> Incorrect answer selected

Hyperprolactinaemia is commonly related to medication use.

Levels less than 1000 are most likely to be drug related, the 1500 option is an intermediate level between that seen with drug related hyperprolactinaemia and a microprolactinoma.

The drug class most commonly associated with hyperprolactinaemia are the dopamine antagonists, although a range of others may be implicated, these include :

- Antidepressants
- Verapamil
- Methyldopa
- Opiates
- Protease inhibitors
- Omeprazole, and
- H2 antagonists.

800 is the correct answer because it most closely reflects a prolactin within the range of that usually associated with drug induced hyperprolactinaemia.

1500 is incorrect because it may be due to drug induced hyperprolactinaemia or related to a microadenoma.

3000 is incorrect because it is more consistent with a microprolactinoma.

5000 is incorrect because it is more consistent with either a micro- or macro-prolactinoma.

10000 is incorrect because it is more consistent with a macroprolactinoma.

Answer Statistics

1		50%
2		26%
3		14%
4		6%
5		4%

Times answered: 5856

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 67 of 100

A 45-year-old man who has undergone bilateral adrenalectomy for Cushing's returns to the clinic for his yearly follow up appointment.

Over the course of the past few months he has begun to feel increasingly tired and has given up driving after suffering a road traffic accident where he did not see a car coming from the side.

On examination his BP is 132/72 mmHg, his pulse is 70 and regular. His BMI is 28. You notice that his skin appears tanned.

Investigations show:

Haemoglobin	132 g/L	(135-177)
White cell count	5.9 ×10 ⁹ /L	(4-11)
Platelets	203 ×10 ⁹ /L	(150-400)
Sodium	138 mmol/L	(135-146)
Potassium	4.0 mmol/L	(3.5-5)
Creatinine	112 µmol/L	(79-118)
Urea	5.2 mmol/L	(2.5-6.7)
Glucose	5.2 mmol/L	(<7.0)
TSH	0.1	(0.5-4.5)

Which of the following is the most appropriate intervention?

(Please select 1 option)

Carbimazole	
Increased hydrocortisone replacement	<input type="checkbox"/> Incorrect answer selected
Octreotide	
Referral to a pituitary surgeon	<input checked="" type="checkbox"/> This is the correct answer
Thyroxine replacement	

This patient in all likelihood has Nelson's syndrome, an ACTH producing pituitary adenoma which has arisen post adrenalectomy. This has led to optic chiasm compression and loss of peripheral visual fields. For large invasive tumours gamma knife surgery or traditional adenectomy are treatments of choice. Monitoring of ACTH regularly, and follow up MRI pituitary at three to six months post adrenalectomy are recommended to drive early intervention.

Carbimazole is incorrect as this patient actually has pituitary dependent hypothyroidism as a result of his tumour.

Increased hydrocortisone treatment will also not suppress the pituitary adenoma.

Octreotide has shown some success in clinical trials but is inferior to surgical intervention, and thyroxine replacement, whilst correcting hypothyroidism will not resolve the underlying adenoma.

Answer Statistics

1		7%
2		24%
3		4%
4		55%
5		10%

Times answered: 5730

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 68 of 100

A 32-year-old man who is a non-smoker and only occasionally drinks alcohol presents to the outpatient endoscopy unit with worsening symptoms of indigestion.

He was scoped only five months earlier, where multiple gastric ulcers were found and he was started on high dose omeprazole. *Helicobacter* biopsy was negative. Repeat endoscopy showed further evidence of ulceration.

Investigations showed:

Haemoglobin	102 g/L	(135-177)
White cell count	$7.9 \times 10^9/L$	(4-11)
Platelets	$210 \times 10^9/L$	(150-400)
Sodium	139 mmol/L	(135-146)
Potassium	3.8 mmol/L	(3.5-5)
Creatinine	114 $\mu\text{mol/L}$	(79-118)
Glucose	5.2 mmol/L	(<7.0)
Calcium	2.98 mmol/L	(2.2-2.61)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Gastric carcinoma
<input type="checkbox"/>	

MEN-1	<input checked="" type="checkbox"/> This is the correct answer
MEN-2a	<input type="checkbox"/> Incorrect answer selected
MEN-2b	
Missed <i>Helicobacter</i> infection	

MEN-1 is associated with parathyroid hyperplasia and consequent hypercalcaemia in 80% of patients, this accounts for the hypercalcaemia seen here. In addition, the recurrent/resistant gastric ulceration is likely to represent a gastrinoma, with pancreatic endocrine tumours occurring in around 70% of patients with MEN-1.

There is no evidence of obstruction or a mass on endoscopy which would support a diagnosis of gastric carcinoma.

Equally, negative *Helicobacter* biopsies, when in fact infection has occurred, are highly unlikely.

With respect to MEN-2, it is associated with pheochromocytoma, parathyroid adenoma, and medullary carcinoma of the thyroid.

Answer Statistics



Times answered: 5787

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 43 of 73

You are reviewing new potential targets for the treatment of type 2 diabetes.

When thinking about targets, which of the following is true?

(Please select 1 option)

<input type="checkbox"/>	GIP has a more potent effect on insulin release than GLP-1
<input type="checkbox"/>	Glucokinase activators should not cause hypoglycaemia
<input type="checkbox"/>	Metformin non-response is not usually genetic
<input type="checkbox"/>	PPAR gamma agonists increase bone mineral density
<input checked="" type="checkbox"/>	TCF7L2 mutations may be associated with a reduced incretin response Correct

The incretin response to an oral glucose challenge is lost in patients who develop type 2 diabetes. This means that they lose the response generated by incretin hormones such as GLP-1 and GIP which enhances insulin release and leads to satiety. Those patients who carry TCF7L2 mutations have a blunted incretin response.

Infusion of glucagon-like peptide 1 (GLP-1) leads to a more potent incretin effect than gastric inhibitory polypeptide (GIP), as such it is GLP-1 based therapies that have been the first incretin agents to be developed.

Glucokinase activators may lead to both enhanced insulin release and glycogen storage in the liver, as such they are known to cause hypoglycaemia. No glucokinase activators have yet made it to the clinic.

Mutations in organic cation transporters are known to be associated with differences in metformin response, and peroxisome proliferator activated receptor (PPAR) gamma agonists have been shown to reduce bone mineral density.

Answer Statistics

1		18%
2		20%
3		16%
4		13%
5		32%

Times answered: 5658

Test Analysis

CorrectIncorrectPartially
Correct

Score: 34.88%

Total Answered: 43

Feedback

Work Smart

Question 44 of 73

A 32-year-old woman presents with symptoms of palpitations, anxiety, and sleep intolerance. She had a flu-like illness some three weeks prior to presenting, and has tenderness over her neck.

On examination her BP is 145/80 mmHg, her pulse is 100 and regular. She has a fine tremor and tenderness over a smoothly enlarged thyroid gland on palpation. TSH is suppressed at <0.1.

Which of the following is true of her underlying condition?

(Please select 1 option)

<input type="checkbox"/>	There is an association with HLA-B27
<input checked="" type="checkbox"/>	There is an association with HLA-B35 This is the correct answer
<input type="checkbox"/>	There is an association with HLA-DR3
<input type="checkbox"/>	There is an association with HLA-DR4
<input type="checkbox"/>	There is an association with HLA-DR5 Incorrect answer selected

This presentation is typical of that associated with sub-acute or De Quervain's thyroiditis, where flu-like illness is followed by transient hyperthyroidism, then hypothyroidism, then recovery. The gland is diffusely tender, although pain responds to non-steroidal anti-inflammatory drugs. Anti-thyroid drugs have no value in the management of the condition. It is associated with HLA-B35 and it is thought that a viral antigen binds to HLA-B35 molecules on macrophages.

HLA-B27 is associated with inflammatory bowel disease and seronegative arthritis.

DR3 and DR4 are associated with increased risk of type 1 diabetes in particular.

HLA-DR5 is associated with clearance of hepatitis C infection and Hashimoto's thyroiditis.

Answer Statistics



Times answered: 5722

Test Analysis

CorrectIncorrectPartially
Correct

Score: 34.09%

Total Answered: 44

Feedback

Work Smart

Question 69 of 100

A 37-year-old woman is trying for a child with her new partner.

She is very concerned as she has had no menstrual periods for the past seven months, but serial pregnancy tests have proved negative.

If she has entered the menopause then which of the following blood tests would fit most with this picture?

(Please select 1 option)

<input checked="" type="checkbox"/>	Elevated FSH <input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Elevated oestradiol
<input type="checkbox"/>	Low LH
<input type="checkbox"/>	Low LHRH
<input type="checkbox"/>	Low testosterone <input type="checkbox"/> Incorrect answer selected

Ovarian failure is most likely to be associated with elevated FSH, but levels can vary and should be repeated over four to eight weeks. FSH levels above 30 IU/L are generally considered post menopausal. Levels above 12 are considered raised in a woman still having periods.

Testosterone levels vary in women and are increased in women who are overweight because of peripheral conversion to androgens in fat, and in patients with polycystic ovarian syndrome.

Low luteinising hormone (LH) is not consistent with the menopause, nor is low luteinising hormone-releasing hormone (LHRH), as sex hormone releasing hormones would be elevated in an attempt to

drive LH and follicle-stimulating hormone (FSH) release.

Elevated oestradiol is not associated with ovarian failure.

Answer Statistics



Times answered: 5818

Test Analysis

CorrectIncorrectPartially
Correct

Score: 14.49%

Total Answered: 69

Feedback

Work Smart

Question 45 of 73

You are looking at a potential inhibitor of gastrin for the treatment of Zollinger-Ellison (ZE) syndrome. When considering gastrin, which of the following correctly reflects its function or the pathophysiology associated with it?

(Please select 1 option)

<input checked="" type="checkbox"/>	Fasting gastrin >1000 pg/ml and gastric pH <2 suggests ZE syndrome	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Gastric mucosal atrophy is usually seen in ZE syndrome	
<input type="checkbox"/>	Gastrin promotes small bowel mucosal growth	
<input type="checkbox"/>	Gastrin receptors do not bind cholecystokinin	
<input type="checkbox"/>	It is secreted by L cells	<input type="checkbox"/> Incorrect answer selected

Fasting gastrin levels >1000 with low pH is highly correlated with a diagnosis of ZE syndrome. Where levels are less than 1000 and the diagnosis is suspected, then secretin stimulation testing, (where a rise >200 15 minutes after dosing is considered positive), or calcium stimulation testing, (where a rise >395 is considered positive) may be useful.

Gastrin receptors also bind cholecystokinin and as such are also known as CCK-B receptors.

Gastrin promotes gastric mucosal growth and as such gastric mucosal hypertrophy is seen in the ZE syndrome.

Gastrin is synthesised in G cells which are found in gastric pits, primarily in the antrum of the

stomach.

Answer Statistics



Times answered: 5728

Test Analysis

CorrectIncorrectPartially
Correct

Score: 33.33%

Total Answered: 45

Feedback

Work Smart

Question 46 of 73

A 69-year-old man is admitted with rapidly worsening nausea, vomiting, polyuria, polydipsia and confusion. He has been treated by his GP for chronic back pain which was thought to be related to his work as a builder.

On examination he is drowsy and confused, his BP is 110/70 mmHg and his pulse is 88 and regular.

Investigations show:

Haemoglobin	138 g/L	(135-177)
White cell count	6.2 ×10 ⁹ /L	(4-11)
Platelets	186 ×10 ⁹ /L	(150-400)
Sodium	146 mmol/L	(135-146)
Potassium	4.4 mmol/L	(3.5-5)
Creatinine	167 µmol/L	(79-118)
Urea	13.2 mmol/L	(2.5-6.7)
Glucose	5.4 mmol/L	(<7.0)
Calcium	3.6 mmol/L	(2.20-2.61)

Which of the following is true with respect to his hypercalcaemia?

(Please select 1 option)

<input type="checkbox"/>	A normal alkaline phosphatase would increase suspicion of underlying bony metastases
--------------------------	--

A raised alkaline phosphatase would increase suspicion of underlying myeloma	
Abdominal pain is uncommonly seen	
It is likely to be associated with PR prolongation	
It is likely to be associated with QT shortening	<input checked="" type="checkbox"/> Correct

Hypercalcaemia above 3.5 mmol/L is known to be associated with shortening of the QT interval. This in turn significantly increases the risk of cardiac arrhythmias.

In severe hypercalcaemia J (osborn) waves can be seen. PR prolongation is possible, but is much less common than QT shortening. Ventricular fibrillation has been reported in extreme cases.

Raised alkaline phosphatase associated with hypercalcaemia is more likely to be due to bony metastases; normal alkaline phosphatase raises the possibility of underlying myeloma.

At this level of calcium, abdominal pain is commonly seen and there is increased risk of acute pancreatitis.

Answer Statistics



Times answered: 5720

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 70 of 100

A 42-year-old alcoholic presents to the clinic with symptoms of lethargy and muscle pains. He also reports intermittent tingling and loss of sensation in his hands and feet. He admits to drinking six to eight pints of lager per day.

On examination his BP is 116/72 mmHg, his pulse is 65 and regular. There are signs of chronic liver disease.

Investigations show:

Haemoglobin	108 g/L	(135-177)
White cell count	5.2 ×10 ⁹ /L	(4-11)
Platelets	180 ×10 ⁹ /L	(150-400)
Sodium	138 mmol/L	(135-146)
Potassium	3.6 mmol/L	(3.5-5)
Creatinine	100 µmol/L	(79-118)
Urea	5.2 mmol/L	(2.5-6.7)
Glucose	5.8 mmol/L	(<7.0)
Calcium	2.02 mmol/L	(2.20-2.61)
Phosphate	1.6 mmol/L	(0.8-1.5)
Alkaline phosphatase	82 U/L	(39-117)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Hyperparathyroidism
<input checked="" type="checkbox"/>	Hypoparathyroidism This is the correct answer
<input type="checkbox"/>	Hypothyroidism Incorrect answer selected
<input type="checkbox"/>	Osteomalacia
<input type="checkbox"/>	Pseudopseudohypoparathyroidism

The picture of low calcium with mild elevation in phosphate and normal alkaline phosphatase fits best with hypoparathyroidism. The condition is known to occur with increased frequency in alcoholics, particularly in association with hypomagnesaemia.

The biochemical abnormalities automatically preclude pseudopseudohypoparathyroidism, as both the calcium and phosphate are abnormal.

Pseudohypoparathyroidism may fit with this picture, but only if the PTH is elevated.

In osteomalacia it would be expected to see a raised alkaline phosphatase.

Hypothyroidism is not associated with abnormalities in calcium metabolism.

Answer Statistics

1		8%
2		45%
3		4%
4		16%
5		28%

Times answered: 5811

Test Analysis

Work Smart

Question 5 of 10

A 16-year-old girl comes to the clinic for review with primary amenorrhoea. Apart from surgery for hernias as an infant, she has no significant past medical history.

On examination she is 1.65 m in height and has a BP of 110/70 mmHg, her pulse is 64 and regular. She has relatively normal breast development but sparse body hair and no secondary sexual hair. Her external genitalia look normal.

Investigation shows:

Haemoglobin	128 g/L	(115-160)
White cell count	$6.0 \times 10^9/L$	(4-11)
Platelets	$192 \times 10^9/L$	(150-400)
Sodium	139 mmol/L	(135-146)
Potassium	4.6 mmol/L	(3.5-5)
Creatinine	80 $\mu\text{mol/L}$	(79-118)
Urea	5.2 mmol/L	(2.5-6.7)
Testosterone	15 nmol/L	(11-40)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Androgen insensitivity syndrome (AIS) <input checked="" type="checkbox"/> Correct
<input type="checkbox"/>	

	Kallman's syndrome
	Klinefelter's syndrome
	Noonan's syndrome
	Turner's syndrome

AIS is associated with resistance to androgens. As such, patients have a spectrum of external genitalia development which ranges from normal female, to female with cliteromegaly, to under-developed male (hypospadias). Cryptorchidism is common, as is the development of abdominal hernias. Unfortunately some patients are still diagnosed relatively late when they present with primary amenorrhoea in their teenage years.

Kallman's syndrome is associated with failure of the olfactory bulb to develop, leading to loss of gonadotropin releasing hormones.

Klinefelter's is associated with male phenotype, and an XXY karyotype.

Noonan's is associated with short stature and a similar phenotype to Turner's in women, although patients with Noonan's do have normal female organs. In males, Noonan's may be associated with delayed puberty.

Turner's is associated with X0 karyotype, absent uterus and streak ovaries.

Answer Statistics



Times answered: 5744

Test Analysis

Correct Incorrect Partially Correct

Work Smart

Question 47 of 73

A 39-year-old man presents to his GP for review.

He has a history of carpal tunnel syndrome and osteoarthritis of his weight bearing joints, and has recently begun to suffer from symptoms of sleep apnoea.

On examination he has a prominent jaw line and macroglossia. His BP is elevated at 155/95 mmHg. There is peripheral visual field loss.

Investigations show:

Haemoglobin	139 g/L	(135-177)
White cell count	8.2 ×10 ⁹ /L	(4-11)
Platelets	202 ×10 ⁹ /L	(150-400)
Sodium	136 mmol/L	(135-146)
Potassium	4.4 mmol/L	(3.5-5)
Creatinine	90 µmol/L	(79-118)
Fasting glucose	8.8 mmol/L	(<7.0)

Which of the following is true?

(Please select 1 option)

Growth hormone antagonists do not improve surgical survival
Pegvisomant can be used where IGF-1 is not normalised post surgery <input checked="" type="checkbox"/> This is the correct answer

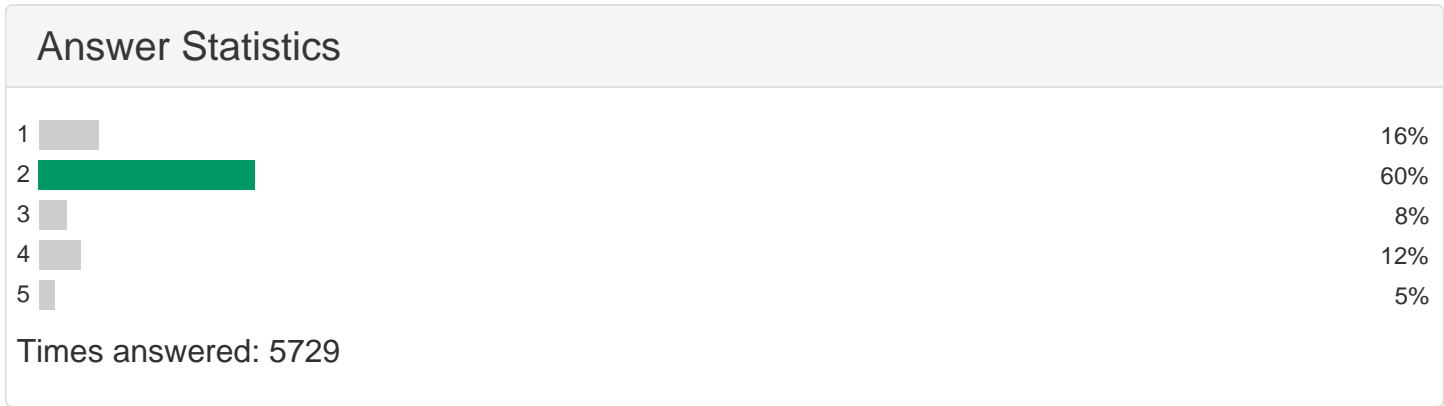
Prolactin is most likely to be normal	<input type="checkbox"/> Incorrect answer selected
Random growth hormone is always elevated	
Risk of colonic carcinoma is not increased in this patient	

Pegvisomant is a genetically modified analogue of human growth hormone and is a highly selective growth hormone receptor antagonist. It has been shown to normalise insulin-like growth factor-I (IGF-I) levels in 90-100% of patients with a history of acromegaly. Growth hormone levels increase during treatment and no decrease in tumour size is seen, as such the major use of pegvisomant is in patients who have an inadequate response to surgery or radiotherapy.

Growth hormone antagonists used prior to surgery improve metabolic risk factors for surgery, such as hypertension and hyperglycaemia, as such even use over a few weeks before adenectomy may impact positively on morbidity / mortality associated with surgery.

Prolactin may be elevated due to mass effect, and risk of colonic carcinoma is elevated in patients with acromegaly.

Growth hormone secretion is pulsatile, as such it may not always be elevated, and therefore IGF-1 is a better screening test for acromegaly.



Test Analysis

Correct	Incorrect	Partially
Correct		

Work Smart

Question 71 of 100

A 31-year-old man who works as a fitness instructor is referred to the clinic with resistant hypertension.

He is currently taking a combination of amlodipine, ramipril, and indapamide. His BP is elevated at 155/95 mmHg. Other physical examination is unremarkable.

Investigations show:

Haemoglobin	125 g/L	(135-177)
White cell count	$5.0 \times 10^9/L$	(4-11)
Platelets	$204 \times 10^9/L$	(150-400)
Sodium	135 mmol/L	(135-146)
Potassium	3.2 mmol/L	(3.5-5)
Creatinine	119 $\mu\text{mol/L}$	(79-118)

Which of the following is the next appropriate investigation?

(Please select 1 option)

<input type="checkbox"/>	Abdominal CT
<input checked="" type="checkbox"/>	Aldosterone / renin ratio This is the correct answer
<input type="checkbox"/>	DMSA
<input type="checkbox"/>	Renal angiogram

Hypokalaemia in the presence of ACE inhibition and thiazide use is highly suspicious of primary hyperaldosteronism. The incidence of primary aldosteronism is now thought to be much higher than previously considered, (up to 4-5% of patients with hypertension). The next investigation of choice is the aldosterone/renin ratio which will help differentiate between primary hyperaldosteronism and renovascular disease as possible causes.

If renovascular disease is suspected, then angiography is a reasonable approach to investigation, but this may follow aldosterone/renin estimation.

CT scanning is appropriate if an adrenal adenoma is suspected.

DMSA has largely fallen out of favour and been replaced by either MRA or traditional angiography.

Urinary electrolytes are of less value as an investigation as they may be confounded by factors such as use of diuretics.

Answer Statistics



Times answered: 5751

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 48 of 73

An 18-year-old man comes to the endocrine clinic for review. He has been followed up since entering puberty at the age of 10. There are visible bony deformities and he walks slowly with a stick.

On examination his BP is 148/82 mmHg, pulse is 70 and regular. He has a number of café au lait spots. There are obvious multiple healed fractures.

Investigations show:

Haemoglobin	132 g/L	(135-177)
White cell count	7.3 ×10 ⁹ /L	(4-11)
Platelets	160 ×10 ⁹ /L	(150-400)
Sodium	140 mmol/L	(135-146)
Potassium	4.1 mmol/L	(3.5-5)
Creatinine	103 µmol/L	(79-118)
TSH	0.3 IU	(0.5-4.5)
Alkaline phosphatase	230 U/L	(39-117)
Calcium	2.2 mmol/L	(2.20-2.61)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Autoimmune polyglandular syndrome
--------------------------	-----------------------------------

McCune-Albright syndrome	<input checked="" type="checkbox"/> This is the correct answer
Neurofibromatosis type 2	
Neurofibromatosis type 1	<input type="checkbox"/> Incorrect answer selected
Osteomalacia	

The diagnosis of McCune-Albright is established on clinical grounds, with the presence of precocious puberty, bony fibromas leading to possible pathological fractures, thyrotoxicosis, and café au lait spots all supporting this as the underlying cause.

Autoimmune polyglandular syndrome leads to multiple hormone deficiencies, including Addison's, hypothyroidism, and hypoparathyroidism.

Whilst neurofibromatosis is a cause of café au lait spots, it is not usually a cause of precocious puberty and other endocrine abnormalities such as the thyrotoxicosis seen here.

Osteomalacia can occur as a consequence of McCune-Albright, but is not the primary diagnosis seen here.

Answer Statistics



Times answered: 5803

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 49 of 73

A 48-year-old man with a history of obesity and alcoholism comes to the endocrine clinic for assessment.

He has difficulties with hypertension for which he currently takes three agents, and diabetes which is currently managed with metformin monotherapy. On examination his BP is 160/94 mmHg. His pulse is 75 and regular.

Investigations show:

Haemoglobin	135 g/L	(135-177)
White cell count	8.2 ×10 ⁹ /L	(4-11)
Platelets	184 ×10 ⁹ /L	(150-400)
Sodium	137 mmol/L	(135-146)
Potassium	4.8 mmol/L	(3.5-5)
Creatinine	132 µmol/L	(79-118)
Cortisol post low dose dexamethasone	30 nmol/L	

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/> Conn's syndrome	<input checked="" type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> Cortisol producing adrenal adenoma	
<input type="checkbox"/>	

	Ectopic ACTH production
	Pituitary adenoma
	Pseudo Cushing's <input checked="" type="checkbox"/> This is the correct answer

The lower limit of detectability for cortisol is 28 nmol/L. As such, a result of 30 after low dose dexamethasone suppression test is consistent with a euadrenal state.

Before the development of more effective assays, the upper limit of normal was said to be 140 nmol/L, although around 10% of patients with Cushing's have cortisol levels below 140.

This patient does not fit the Conn's phenotype, and the potassium of 4.8 is also high for a patient with aldosterone excess.

Given the cortisol is only just above the lower limit of detectability, all of the options for Cushing's are incorrect.

Answer Statistics

1		9%
2		21%
3		12%
4		10%
5		47%

Times answered: 5885

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 50 of 73

A 54-year-old woman presents to the clinic with hypercalcaemia detected at GP screening.

She has no significant medical history apart from mild hypertension for which she has been advised by the GP to lose weight.

On examination her BP is 150/90 mmHG, her BMI is 29. General physical examination is unremarkable.

Investigations show:

Haemoglobin	115 g/L	(115-160)
White cell count	$5.6 \times 10^9/L$	(4-11)
Platelets	$168 \times 10^9/L$	(150-400)
Sodium	139 mmol/L	(135-146)
Potassium	4.2 mmol/L	(3.5-5)
Creatinine	110 $\mu\text{mol/L}$	(79-118)
PTH	12.2 $\mu\text{mol/L}$	
Hip T score	-2.7	

Which of the following treatments should she be offered?

(Please select 1 option)

<input type="checkbox"/> Cinacalcet	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> Furosemide	

Risedronate
Parathyroidectomy <input type="checkbox"/> This is the correct answer
Vitamin D

Guidelines from the NIH on the management of primary hyperparathyroidism suggest that this patient should be offered surgery.

Considerations for surgery include:

- serum albumin-adjusted calcium greater than 0.25 mmol/L above the upper limit of local laboratory reference range
- twenty four hour total urinary calcium excretion greater than 10 mmol (400 mg)
- creatinine clearance reduced by 30% or more
- bone mineral density T score less than -2.5 (at any site)
- age younger than 50 years, and
- patient request; adequate follow-up unlikely.

This woman fulfils the guidelines due to osteoporosis.

Risedronate is incorrect because this patient already fulfils the diagnosis of osteoporosis and as such should be offered surgery in the first instance.

Cinacalcet is incorrect because it should be only offered in patients with tertiary hyperparathyroidism who are unfit for surgery.

Furosemide may be useful in situations of acute hypercalcaemia, and vitamin D is a treatment for secondary hyperparathyroidism.

Answer Statistics

1		12%
2		3%
3		45%
4		30%
5		10%

Times answered: 5767

Work Smart

Question 51 of 73

A 25-year-old woman comes for a discussion about contraception some four weeks after she has given birth to her first child.

She complains that her hair seems to be falling out excessively when she brushes it. There is no medical history of note and she is coping well with caring for her baby.

On examination her BP is 105/70 mmHg, her BMI is 26.

Investigations show:

Haemoglobin	108 g/L	(115-160)
White cell count	6.9 ×10 ⁹ /L	(4-11)
Platelets	181 ×10 ⁹ /L	(150-400)
Sodium	137 mmol/L	(135-146)
Potassium	4.0 mmol/L	(3.5-5)
Creatinine	102 µmol/L	(79-118)

Which of the following is the most appropriate initial management?

(Please select 1 option)

<input type="checkbox"/> LH/FSH ratio	<input type="checkbox"/> Incorrect answer selected
<input checked="" type="checkbox"/> Reassurance	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/> Testosterone	

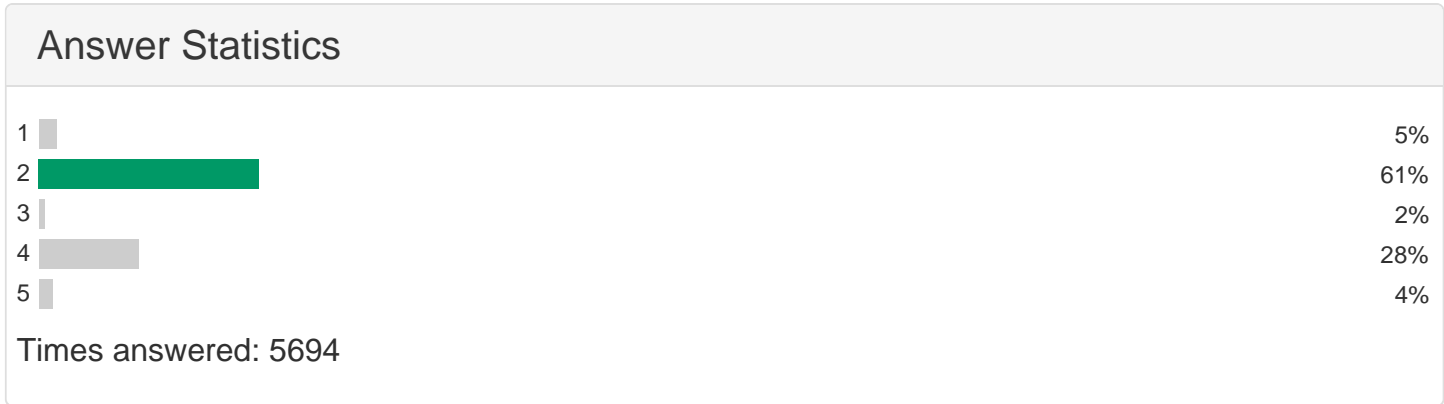
Thyroid hormone testing
Topical minoxidil

The most likely explanation here is that an abnormal number of hairs have entered the telogen phase. This results in shedding of hair leading to loss of thickness. It occurs as a normal phenomenon one to three months after pregnancy. No treatment is required and hair thickness eventually recovers without further intervention.

Luteinising hormone/follicle-stimulating hormone (LH/FSH) ratio and testosterone are both potential tests which could be considered if polycystic ovary syndrome (PCOS) or another condition leading to androgenic alopecia were considered. We are given no evidence of that in the scenario, accordingly they are not appropriate.

Equally, we are not told of weight gain or lethargy, hence thyroid function testing would not be a first choice.

Topical minoxidil is a therapy which promotes hair regrowth, but it is not required here.



Test Analysis

Correct	Incorrect	Partially Correct
---------	-----------	-------------------

Work Smart

Core Questions

Question 72 of 100

A 39-year-old woman comes to the clinic complaining of excessive hairiness and problems with acne. She also reports increased libido over the past few months.

There is no medical history of note and she has two healthy children. On examination her BP is 131/82 mmHg, pulse is 75 and regular and her BMI is 25. She has androgenic alopecia and evidence of increased hair around her areolae, upper lip, and lower abdomen.

Investigations show:

Haemoglobin	122 g/L	(115-160)
White cell count	4.9 ×10 ⁹ /L	(4-11)
Platelets	281 ×10 ⁹ /L	(150-400)
Sodium	140 mmol/L	(135-146)
Potassium	3.9 mmol/L	(3.5-5)
Creatinine	90 µmol/L	(79-118)
Testosterone	8.9 nmol/L	(<2.5)

Which of the following is the most likely underlying diagnosis?

(Please select 1 option)

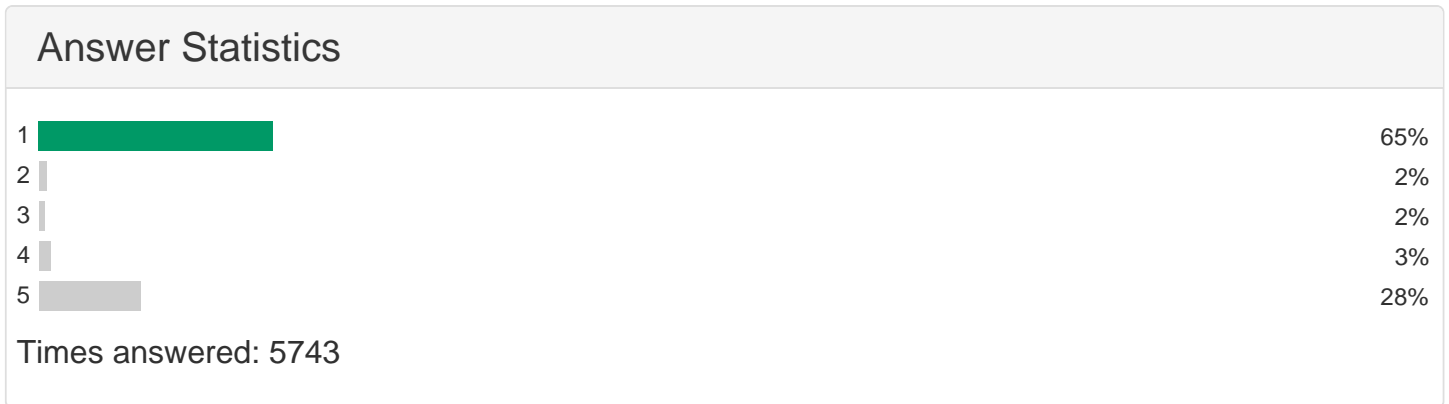
<input checked="" type="checkbox"/> Androgen secreting tumour	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/> Cushing's disease	

Normal individual	<input type="checkbox"/> Incorrect answer selected
Obesity related testosterone excess	
Polycystic ovarian syndrome	

The key here is the testosterone level, which is more than three times the upper limit of normal. As such an androgen secreting tumour must be considered as a possible diagnosis. Abdominal ultrasound, CT or MRI would be follow-on investigations to elucidate whether an adrenal or ovarian tumour is the underlying cause.

This woman is of normal weight and has no features suggestive of Cushing's. Therefore this is not a likely diagnosis, although rarely Cushing's may be associated with hyperandrogenism.

Equally the possibility that she is a normal individual is ruled out by the testosterone level. Whilst obesity and PCOS may be associated with rises in testosterone, it is never to this degree.



Test Analysis

Correct	Incorrect	Partially Correct
Correct		

Work Smart

Core Questions

Question 52 of 73

A 25-year-old woman presents with sickness and lethargy some 10 weeks into her first pregnancy. She was previously fit and well with no significant medical history. On examination her BMI is 22, her BP is 95/60 mmHg, pulse is 75. There are no abnormal findings on examination.

Investigations show:

Haemoglobin	104 g/L	(115-160)
White cell count	$4.9 \times 10^9/L$	(4-11)
Platelets	$177 \times 10^9/L$	(150-400)
Sodium	136 mmol/L	(135-146)
Potassium	3.2 mmol/L	(3.5-5)
Creatinine	90 $\mu\text{mol/L}$	(79-118)
TSH	0.2	(0.5-4.5)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	De Quervain's thyroiditis
<input type="checkbox"/>	Graves' disease
<input type="checkbox"/>	Hashimoto's disease
<input type="checkbox"/>	

Hyperemesis gravidarum	<input type="checkbox"/> This is the correct answer
Riedel's thyroiditis	<input type="checkbox"/> Incorrect answer selected

We are told that this patient has significant problems with sickness, which may be driven by high levels of beta-human chorionic gonadotropin (HCG).

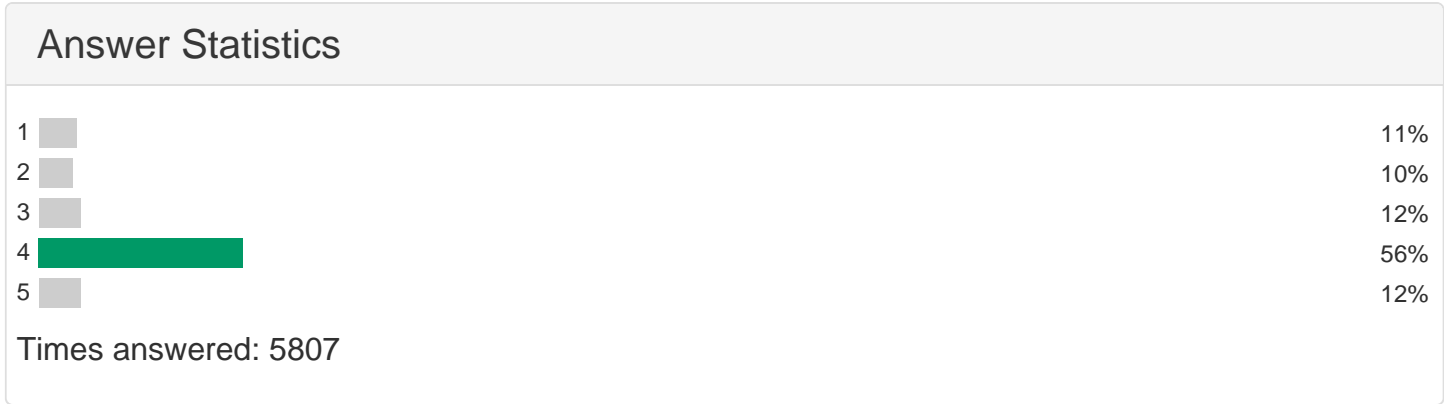
Beta-HCG has a degree of thyroid stimulating activity. In the circumstances it is likely that this has driven thyroid-stimulating hormone (TSH) down to below the lower limit of normal. No intervention is necessary, and there is no value in using anti-thyroid drugs in this situation.

De Quervain's thyroiditis follows symptoms of a viral illness and is usually associated with pain over the gland. It may be associated with transient hypo- or hyperthyroidism.

Graves' disease is associated with a goitre and thyrotoxicosis.

Hashimoto's is associated with hypothyroidism.

Riedel's is associated with a woody feel to the gland.



Test Analysis

Correct	Incorrect	Partially Correct
---------	-----------	-------------------

Work Smart

Question 53 of 73

A 32-year-old man is referred to the clinic with hypertension.

He is currently taking amlodipine, ramipril, and bendroflumethiazide but his blood pressure in the clinic is 160/90 mmHg. Clinical examination is unremarkable and a range of investigations are arranged.

Investigations show:

Haemoglobin	114 g/L	(135-177)
White cell count	$6.3 \times 10^9/L$	(4-11)
Platelets	$193 \times 10^9/L$	(150-400)
Sodium	139 mmol/L	(135-146)
Potassium	3.6 mmol/L	(3.5-5)
Creatinine	140 $\mu\text{mol/L}$	(79-118)

Ultrasound: Right kidney 6.9 cm, left kidney 10.5 cm.

Which of the following most accurately reflects the likely findings on renin/aldosterone testing?

(Please select 1 option)

<input type="checkbox"/>	Levels are not likely to be linked to any pathology seen here
<input type="checkbox"/>	Renin and aldosterone will be low
<input checked="" type="checkbox"/>	Renin will be high and aldosterone will be high This is the correct answer

Renin will be high and aldosterone will be low

Renin will be low and aldosterone will be high Incorrect answer selected

This man's hypertension is significant, bearing in mind he has elevated blood pressure even after three anti-hypertensive medications.

The differential size on renal ultrasound scan raises the possibility of renal artery stenosis, which would result in elevated renin and aldosterone levels.

Even in essential hypertension, renin and aldosterone may be elevated. As such the stems suggesting that both will be low, or that the levels are not linked to any pathology here must be incorrect.

Hyporeninaemic hyperaldosteronism is consistent with adrenal hyperplasia or a Conn's adenoma.

Hyperreninaemic hypoaldosteronism is linked to aldosterone deficiency which may be genetic in origin and would not result in hypertension.

It is also important to note that ideally antihypertensives should be stopped prior to measuring renin and aldosterone, if it is possible to do so safely. In this case the gentleman is still severely hypertensive and therefore the renin and aldosterone are likely to still be raised.

The effect of antihypertensives on renin and aldosterone levels (and the renin:aldosterone ratio) is shown below:

Medication	Renin	Aldosterone	Overall Effect
Non-dihydropyridine CCB (nifedipine, verapamil)	Minimal	Minimal	No effect
Dihydropyridine CCB (amlodipine)	Minimal	Decreased (minimal)	No effect
Alpha blockers	Nil	Nil	No effect
Hydralazine	Minimal	Minimal	No effect
ACE inhibitors	Increased	Decreased	False negative
Diuretics	Increased markedly	Increased	False negative
Minoxidil	Increased	Minimal	False negative

Angiotension receptor blockers	Increased	Decreased	False negative
Beta blockers	Decreased	Minimal	False positive
Methyldopa	Decreased	Minimal	False positive

Answer Statistics



Times answered: 6837

Test Analysis

CorrectIncorrectPartially
Correct

Score: 30.19%

Work Smart

Question 6 of 10

A 45-year-old man is admitted with drowsiness and confusion. According to a neighbour he has been complaining of increasing problems with thirst and passing large volumes of urine over the past few days.

On examination his BP is 100/60 mmHg, his pulse is 95 and regular, and he has signs of a right lower respiratory tract infection.

Whilst you are examining him, a nurse checks his finger prick glucose which is measured at 36.2 mmol/l.

Which of the following investigations would be most suggestive of a diagnosis of diabetic ketoacidosis?

(Please select 1 option)

<input checked="" type="checkbox"/>	Amylase 400 U/L	<input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Bicarbonate 24 mmol/L	
<input type="checkbox"/>	Lactate 1.6 mmol/L	
<input type="checkbox"/>	Right lower lobe consolidation on chest x ray	
<input type="checkbox"/>	Urinary tract infection on urine screen	<input type="checkbox"/> Incorrect answer selected

A raised amylase in the absence of frank pancreatitis is common in patients with diabetic ketoacidosis (DKA), indeed many patients complain of a degree of abdominal pain at the time of presentation. No specific management is required and amylase falls with rehydration and control of blood glucose.

Bicarbonate of 24 and lactate of 1.6 would both count against a diagnosis of ketoacidosis and favour an alternative such as hyperosmolar hyperglycemic state (HHS).

Infection can precipitate presentation with HHS or DKA, therefore, possible urine infection or pneumonia would not be useful differentiators here.

Answer Statistics



Times answered: 5757

Test Analysis

CorrectIncorrectPartially
Correct

Score: 66.67%

Total Answered: 6

Work Smart

Question 73 of 100

A 16-year-old woman presents to the clinic with primary amenorrhoea.

Her only past medical history of note is bilateral inguinal hernias repaired as a baby during a period when she lived abroad. No records are available from that time.

On examination she is 1.65 m in height. There is no evidence of acne or secondary sexual hair. Breasts and her external genitalia look normal.

Investigations show:

Haemoglobin	120 g/L	(115-160)
White cell count	$5.3 \times 10^9/L$	(4-11)
Platelets	$278 \times 10^9/L$	(150-400)
Sodium	138 mmol/L	(135-146)
Potassium	4.2 mmol/L	(3.5-5)
Creatinine	80 $\mu\text{mol/L}$	(79-118)
Testosterone	9.1 nmol/L	(<2.5)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input checked="" type="checkbox"/> Androgen insensitivity syndrome Correct
<input type="checkbox"/> Autoimmune ovarian failure

	Kallman's syndrome
	Klinefelter's syndrome
	Turner's syndrome

The testosterone which is in the male range, the history of hernias as a baby and absence of acne or secondary sexual hair are all pointers towards androgen insensitivity syndrome.

The woman will in fact have a male XY karyotype although with breast development and normal external genitalia will appear female.

Cryptorchidism goes hand in hand with the condition, and often it is the testes which herniated through the abdominal wall.

Given the complete absence of menarche, autoimmune ovarian failure is extremely unlikely as it is usually a cause of secondary amenorrhoea. Additionally, the absence of secondary sexual hair counts against this diagnosis.

Klinefelter's is associated with a male phenotype.

Kallman's is associated with loss of sense of smell and failure of secondary sexual development, including breast growth.

Turner's, XO karyotype is associated with a number of other features such as short stature, webbing of the skin around the neck, hypertension, and abnormalities of the aorta.

Answer Statistics



Times answered: 5713

Test Analysis

Work Smart

Question 74 of 100

A 45-year-old woman comes to the clinic for review.

She takes long term risperidone for schizophrenia. There is also a history of hypertension for which she takes bendroflumethiazide, ramipril, and amlodipine. She also uses ranitidine for gastro-oesophageal reflux disease.

On examination her BP is 155/92 mmHg, her pulse is 68 and regular. Her BMI is 33. Unfortunately a fasting plasma glucose is elevated, measured at 9.2 mmol/L.

Which of the following agents is most likely to have contributed to her presentation with diabetes?

(Please select 1 option)

<input type="checkbox"/>	Amlodipine
<input type="checkbox"/>	Bendroflumethiazide
<input type="checkbox"/>	Ramipril
<input type="checkbox"/>	Ranitidine
<input checked="" type="checkbox"/>	Risperidone Correct

Both typical antipsychotics and antihypertensives (thiazides and beta blockers), have been shown in meta-analyses to be associated with impaired glucose tolerance and increased risk of type 2 diabetes.

The risk is relatively larger for risperidone than thiazides however, so it is risperidone which is the correct answer here.

One epidemiology study suggested a relative risk for development of diabetes of 1.6, versus controls not taking risperidone.

Amlodipine, ramipril, and ranitidine are not thought to be associated with increased risk of impaired glucose tolerance or type 2 diabetes.

Bendroflumethiazide and atenolol were shown in a meta-analysis of blood pressure lowering to be associated with impaired glucose tolerance, although on an individual patient basis, this risk is less than that for risperidone.

Answer Statistics



Times answered: 5761

Test Analysis

CorrectIncorrectPartially
Correct

Score: 16.22%

Work Smart

Question 54 of 73

A 48-year-old woman presents with weight gain and lethargy.

She is finding it difficult to hold down her job and has taken sick leave for the past six weeks.

On examination her BP is 150/80 mmHg, her pulse is 52 and she has a BMI of 29. She has thinning hair.

Investigations show:

TSH	9 IU	(0.5-4.5)
Free T4	10.2 nanomol/l	(10-24)
Total cholesterol	6.2 mmol/l	(<5.2)
Anti-TPO	Antibody positive	

Which of the following is the most appropriate treatment?

(Please select 1 option)

<input type="checkbox"/>	Atorvastatin 10 mg
<input type="checkbox"/>	Carbimazole 10 mg
<input type="checkbox"/>	Reassurance
<input checked="" type="checkbox"/>	Thyroxine 50 mcg This is the correct answer
<input type="checkbox"/>	Thyroxine 100 mcg Incorrect answer selected

This patient's symptoms are consistent with subclinical hypothyroidism. She is at significant risk of becoming clinically euthyroid with a thyroxine (T4) below the lower limit of normal over the next few months.

Her weight gain and lethargy necessitate replacement with low dose thyroxine at this stage, aiming to titrate therapy until the thyroid-stimulating hormone (TSH) is within the normal range.

Atorvastatin is not an appropriate treatment because this patient's raised total cholesterol is likely to be related at least in part to her hypothyroidism which should be treated first.

Carbimazole has no value in the treatment of hypothyroidism.

Reassurance is not appropriate given this patient has symptoms.

100 mcg is too high an initial starting dose for thyroxine, given her T4 is at the lower limit of the normal range.

Answer Statistics



Times answered: 5751

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 75 of 100

A 28-year-old woman with a history of hypothyroidism comes to the clinic for review. She is happy to tell you that she is ten weeks pregnant with her first child.

She normally takes 100 mcg of thyroxine daily, and her TSH has been stable at 1.2 for the past two to three years.

Which of the following represents the correct advice with respect to managing her thyroxine dose in pregnancy?

(Please select 1 option)

<input type="checkbox"/>	She should reduce the dose to 75 mcg for fear of inducing foetal hyperthyroidism
<input checked="" type="checkbox"/>	She will probably be able to remain on 100 mcg for the duration of the pregnancy This is the correct answer
<input type="checkbox"/>	She will probably need to increase the dose to 150 mcg during the pregnancy
<input type="checkbox"/>	She will probably need to increase the dose to 150 mcg immediately postpartum to cope with feeding the child
<input checked="" type="checkbox"/>	She will probably need to increase the dose to 200 mcg during the pregnancy Incorrect answer selected

Hypothyroidism is the commonest pre-existing endocrine disorders in pregnancy, with an incidence of 9 in 1000 pregnancies. It is most commonly caused by Hashimoto's thyroiditis.

Hypothyroidism has significant consequences for both the mother and foetus. Women can develop congestive cardiac failure, megacolon, adrenal crisis, psychosis, myxoedema coma, and

hyponatraemia. For the foetus, there is a small increase in the stillbirth rate and there is a need to therefore monitor the pregnancy more closely. Untreated maternal hypothyroidism can lead to pre-eclampsia, low birth weight, placental abruption, and miscarriage.

Foetal thyroid development begins at 10-12 weeks gestation, with T4 secretion beginning at 18-20 weeks. T4 is critical for neural development, and is especially important during the second trimester. Maternal thyroid hormone is needed for neuronal development until 12-13 weeks, and recent research has shown children of mothers with hypothyroidism may have a lower IQ than those born to women with normal thyroid function.

Prognosis for mother and foetus is however excellent with appropriate treatment.

Thyroid function tests should be measured every 8-12 weeks if stable, and 4-6 weeks if medication is changed. Thyroxine treatment should be altered according to the free T4 levels as thyroid-stimulating hormone (TSH) may remain elevated even with appropriate treatment (especially in the third trimester). If the patient is stable with regard to thyroxine dose pre-pregnancy then they are likely to remain stable without any dose adjustment during the pregnancy.

Reducing the dose of thyroxine is inappropriate as it runs the risk of inducing maternal hypothyroidism, and the complications associated with this.

Increasing the dose without monitoring the TSH runs the risk of inducing maternal thyrotoxicosis which is potentially damaging to the viability of the pregnancy. There is no evidence that increasing the dose of thyroxine in the immediate postpartum period is required.

Reference:

Smallridge RC, Ladenson PW. [Hypothyroidism in pregnancy: consequences to neonatal health.](#) *J Clin Endocrinol Metab.* 2001;86:2349-53.

Answer Statistics



Times answered: 6621

Work Smart

Core Questions

Question 55 of 73

A 23-year-old man is referred to the clinical pharmacology clinic with resistant hypertension. He is taking maximal ramipril and amlodipine, yet his blood pressure is raised at 160/95 mmHg.

Further questioning reveals that his father and uncle both suffer from hypertension and have suffered haemorrhagic strokes in the past few years.

General clinical examination is unremarkable.

Investigations show:

Haemoglobin	139 g/L	(135-177)
White cell count	$7.0 \times 10^9/L$	(4-11)
Platelets	$180 \times 10^9/L$	(150-400)
Sodium	137 mmol/L	(135-146)
Potassium	3.2 mmol/L	(3.5-5)
Creatinine	110 $\mu\text{mol/L}$	(79-118)
Renal ultrasound scan	bilateral normal sized kidneys	

He is given a trial of hydrocortisone and his blood pressure falls over a few weeks to 140/82 mmHg.

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Adrenal adenoma
<input type="checkbox"/>	

Bilateral adrenal hyperplasia	
Essential hypertension	<input type="checkbox"/> Incorrect answer selected
Familial glucocorticoid remediable aldosteronism	<input checked="" type="checkbox"/> This is the correct answer
Renal artery stenosis	

Familial GRA is an autosomal dominant condition where a mutation leads to ACTH responsive aldosterone production from the zona fasciculata rather than the zona glomerulosa. It occurs because the regulatory portion of the 11b-OH gene binds to the aldosterone synthase gene. The hypokalaemia, resistant hypertension, and strong family history are all pointers to the underlying diagnosis.

An adrenal adenoma or bilateral adrenal hyperplasia should not be responsive to corticosteroid therapy, ruling these out as possible scenarios.

Equally, essential hypertension is highly unlikely given hypokalaemia in the presence of maximal angiotensin-converting enzyme (ACE) inhibitor dose.

Finally, normal kidney size with no differential, and no bruits on clinical examination, whilst not ruling out renal artery stenosis, certainly diminishes the chances of this being the potential problem.

Answer Statistics



Times answered: 5732

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 56 of 73

A 62-year-old woman is admitted with progressive confusion and decreasing consciousness to the Emergency Department.

On examination she is cold with a temperature of 35.2°C. Her BP is 100/60 mmHg and her pulse is 51. She has periorbital oedema on examination of her face; the most striking neurological abnormality is slow relaxing reflexes.

You notice on her laboratory records there is a TSH recorded at 11.2 some two months earlier. Her hospital notes record that she has recently started treatment for TB.

Which of the following agents is most likely to be responsible?

(Please select 1 option)

<input type="checkbox"/>	Ethambutol
<input type="checkbox"/>	Isoniazid
<input type="checkbox"/>	Pyrazinamide
<input checked="" type="checkbox"/>	Rifampicin This is the correct answer
<input type="checkbox"/>	Streptomycin Incorrect answer selected

It is to be assumed that this patient commenced thyroxine replacement after her TSH of 11.2 was recorded.

Certain drugs are recognised to interfere with absorption of thyroxine, these include rifampicin, calcium supplements, amiodarone, and ferrous sulphate. As such rifampicin is likely to have blocked

thyroxine absorption in this woman, leading to a hypothyroid crisis.

Isoniazid, pyrazinamide, streptomycin, and ethambutol are not known to interfere with thyroxine absorption, and so cannot be the correct options here.

Answer Statistics

1		11%
2		30%
3		17%
4		30%
5		11%

Times answered: 5712

Test Analysis

CorrectIncorrectPartially
Correct

Score: 28.57%

Total Answered: 56

Work Smart

Question 76 of 100

A 16-year-old boy with short stature, bony aches and pains, and learning difficulties comes to the clinic for review.

The most marked abnormality on examination is a short fifth digit on each hand.

Investigations reveal a calcium of 2.05 mmol/l (2.20-2.61), and a phosphate of 1.8 mmol/l (0.8-1.5).

Which of the following abnormalities is most likely to be present?

(Please select 1 option)

<input checked="" type="checkbox"/>	Alpha subunit G protein mutation	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Beta subunit G protein mutation	
<input type="checkbox"/>	Gamma subunit G protein mutation	
<input type="checkbox"/>	Renal tubular disorder	
<input type="checkbox"/>	Vitamin D receptor mutation	<input type="checkbox"/> Incorrect answer selected

The PTH receptor is a G protein receptor, and mutations in the alpha subunit lead to elevated levels of PTH, but a loss of function, resulting in hypocalcaemia. Abnormalities of other G protein receptors may also occur, including abnormalities of the thyroid receptor which lead to development of hypothyroidism.

Mutations in the other G protein subunits do not occur in pseudohypoparathyroidism, so the beta and gamma subunit G protein mutation options are incorrect.

Whilst a renal tubular disorder or vitamin D receptor mutation could in theory lead to hypocalcaemia,

the short digit seen in this patient is characteristic of pseudohypoparathyroidism.

Answer Statistics

1		28%
2		16%
3		14%
4		13%
5		29%

Times answered: 5754

Test Analysis

CorrectIncorrectPartially
Correct

Score: 15.79%

Total Answered: 76

Feedback

Work Smart

Question 77 of 100

A 49-year-old city worker attends the clinic for review because of gynaecomastia and erectile dysfunction.

He has mild hypertension for which he takes amlodipine 5 mg daily, but no other past medical history of note. He admits to working long hours and spends a great deal of time entertaining clients.

On examination his BP is 145/82 mmHg, his pulse is 70 and regular and his BMI is 31. He has obvious bilateral gynaecomastia.

Investigations show:

Haemoglobin	105 g/L	(135-177)
White cell count	$6.8 \times 10^9/L$	(4-11)
Platelets	$197 \times 10^9/L$	(150-400)
Sodium	139 mmol/L	(135-146)
Potassium	4.0 mmol/L	(3.5-5)
Creatinine	117 $\mu\text{mol/L}$	(79-118)
Alkaline phosphatase	130 U/L	(39-117)
Alanine aminotransferase	160 U/L	(5-40)

Which of the following is the most likely diagnosis?

(Please select 1 option)

Chronic alcoholism	<input type="checkbox"/> This is the correct answer
--------------------	---

Cushing's syndrome
Haemochromatosis
Klinefelter's syndrome <input type="checkbox"/> Incorrect answer selected
Simple obesity

This patient's lifestyle is likely to be associated with heavy alcohol consumption. This has resulted in abnormal liver function tests and weight gain. The gynaecomastia may be related purely to obesity or to increased peripheral production of oestrogens coupled with decreased hepatic metabolism of sex steroids. Erectile dysfunction is also of course related to alcohol consumption.

Given the history we are provided with, and the fact this patient only has mild obesity and controlled hypertension, Cushing's is unlikely.

Haemochromatosis could be considered if when challenged, this patient denied excess alcohol consumption.

Klinefelter's would not fit well with this phenotype and earlier presentation would be expected.

Simple obesity should not be associated with other medical conditions.

Answer Statistics



Times answered: 5728

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 78 of 100

A 19-year-old man comes to the clinic with short stature and bony aches and pains. He attends a day care centre as he was identified as requiring special needs support at a young age.

On examination his BP is 135/72 mmHg, his pulse is 69 and regular. He is short at 160 cm in height and you notice a shortened fifth digit on both hands.

Investigations show:

Haemoglobin	130 g/L	(135-177)
White cell count	6.9 ×10 ⁹ /L	(4-11)
Platelets	207 ×10 ⁹ /L	(150-400)
Sodium	137 mmol/L	(135-146)
Potassium	3.8 mmol/L	(3.5-5)
Creatinine	114 µmol/L	(79-118)
Alkaline phosphatase	165 U/L	(39-117)
Calcium	2.05 mmol/L	(2.20-2.62)

Which of the following hormonal conditions is most likely to be present in addition to his abnormality of calcium metabolism?

(Please select 1 option)

<input type="checkbox"/>	Addison's disease
<input type="checkbox"/>	

Hypergonadism	
Hyperthyroidism	<input type="checkbox"/> Incorrect answer selected
Hypogonadism	
Hypothyroidism	<input checked="" type="checkbox"/> This is the correct answer

Hyperthyroidism is incorrect because the G protein receptor mutation associated with pseudohypoparathyroidism is a non-functioning one.

Pseudohypoparathyroidism occurs because of a mutation in the alpha subunit of the G protein receptor which renders it non-functioning. This leaves patients with hypocalcaemia and raised alkaline phosphatase, but with a significant elevation in PTH levels. The commonest other mutation which leads to a loss of function is that in the TSH receptor.

Mutations in the gonadotrophin receptor are less common than those seen causing hypothyroidism; mutations leading to low levels of cortisol are rarer still but are reported in some patients.

Answer Statistics



Times answered: 5689

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 79 of 100

A 45-year-old man is referred to the endocrine clinic by his GP.

He has been found on routine new patient screening to have an isolated elevated calcium of 2.9 mmol/L. There is no past medical history of note, and clinical examination is entirely normal.

On further questioning you understand that his father and uncle have been reported to have high calcium levels but had no other significant problems.

Investigations show:

Haemoglobin	137 g/L	(135-177)
White cell count	8.0 ×10 ⁹ /L	(4-11)
Platelets	202 ×10 ⁹ /L	(150-400)
Sodium	139 mmol/L	(135-146)
Potassium	3.8 mmol/L	(3.5-5)
Creatinine	117 µmol/L	(79-118)
Calcium	2.89 mmol/L	(2.20-2.62)

What is the diagnosis?

(Please select 1 option)

<input checked="" type="checkbox"/> Familial isolated hyperparathyroidism (FIHP) <input type="checkbox"/> This is the correct answer
<input type="checkbox"/> Hyperparathyroidism jaw tumour syndrome

MEN 1
MEN 2a <input type="checkbox"/> Incorrect answer selected
MEN 2b

FIHP is a rare condition characterised by an autosomal dominant mode of inheritance. It is closely related to MEN1 but the development of other tumours is not seen over the course of many years, despite the fact that a number of MEN1 germline mutations are now described. Parathyroidectomy is the treatment of choice.

Hyperparathyroidism jaw tumour syndrome is a syndrome of hyperparathyroidism and fibro-osseous tumours of the jaw. It is described as having increased incidence in Romany families.

MEN 1 is associated with hyperparathyroidism in 80%, pancreatic tumours and pituitary adenomas.

MEN 2a is associated with parathyroid hyperplasia, medullary carcinoma of the thyroid, and phaeochromocytoma.

Parathyroid hyperplasia is not a usual feature of MEN 2b.

Answer Statistics



Times answered: 5672

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 57 of 73

An 18-year-old woman comes to the clinic complaining of acne and hirsutism. She has no medical history of note and her only medication is the oral contraceptive pill.

On examination her BP is 140/82 mmHg, pulse is 80 and regular, and her BMI is 28. There are obvious features of virilisation.

Investigations show:

Haemoglobin	120 g/L	(115-160)
White cell count	$5.4 \times 10^9/L$	(4-11)
Platelets	$200 \times 10^9/L$	(150-400)
Sodium	135 mmol/L	(135-146)
Potassium	5.2 mmol/L	(3.5-5)
Creatinine	110 $\mu\text{mol/L}$	(79-118)
LH/FSH ratio	normal	

Which of the following is most likely to be elevated?

(Please select 1 option)

<input checked="" type="checkbox"/> 17-OH progesterone	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/> 21-OH progesterone	
<input type="checkbox"/> Aldosterone	<input type="checkbox"/> Incorrect answer selected

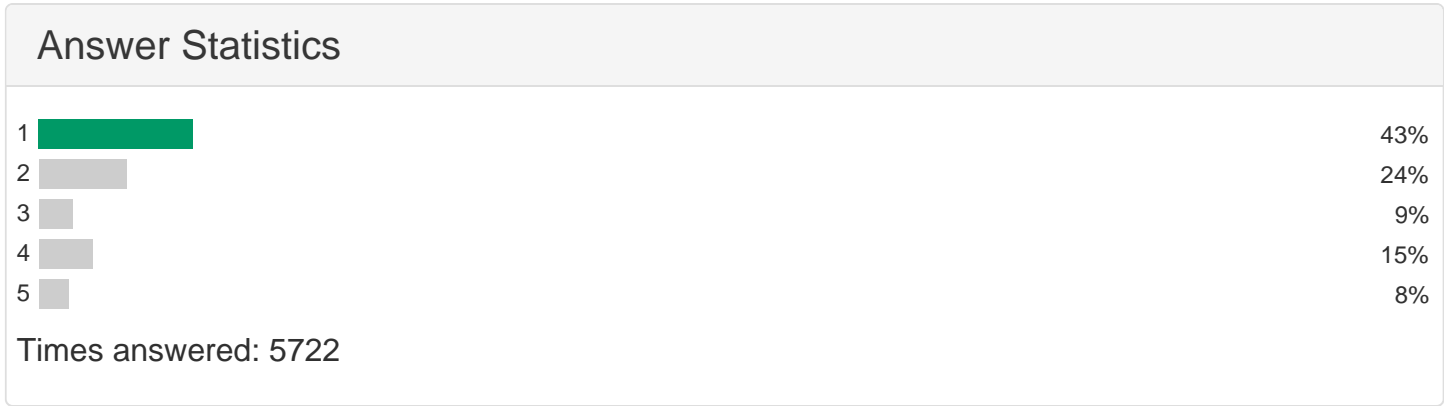
Cortisol
Urinary 21-ketosteroids

This patient has non-classical congenital adrenal hyperplasia; CAH is caused by 21-hydroxylase deficiency in around 95% of cases. This results in cortisol deficiency, aldosterone deficiency, and androgen excess. The classical form has its onset in infancy or childhood. The non-classical "mild" form, as here, can present in later childhood or adolescence. 17-OH progesterone is elevated because of the enzyme deficiency.

21-hydroxylase deficiency leads to a reduction rather than an elevation in aldosterone and cortisol levels. Due to the enzyme block, cortisol cannot be made effectively and androgens are made instead.

Urinary 17-ketosteroid levels (androgen metabolites) are elevated in the condition.

21-OH progesterone levels are not elevated in congenital adrenal hyperplasia (CAH).



Test Analysis

Correct	Incorrect	Partially Correct
---------	-----------	-------------------

Work Smart

Question 80 of 100

A 42-year-old woman who is known to have Hashimoto's thyroiditis presents to the clinic with muscle pains and fatigue, and pins and needles affecting her hands intermittently. She takes no regular medication apart from thyroxine replacement.

Clinical examination is unremarkable.

Investigations show:

Haemoglobin	122 g/L	(115-160)
White cell count	6.4 ×10 ⁹ /L	(4-11)
Platelets	190 ×10 ⁹ /L	(150-400)
Sodium	141 mmol/L	(135-146)
Potassium	4.7 mmol/L	(3.5-5)
Creatinine	108 µmol/L	(79-118)
Calcium	2.05 mmol/L	(2.20-2.61)
Phosphate	1.65 mmol/L	(0.8-1.5)
Alkaline phosphatase	62 U/L	(39-117)

Which of the following is the most appropriate way to manage her symptoms?

(Please select 1 option)

	Calcitonin
--	------------

Calcium and vitamin D3	<input checked="" type="checkbox"/> This is the correct answer
Cinacalcet	<input type="checkbox"/> Incorrect answer selected
PTH analogue	
Risedronate	

The blood picture raises the possibility of osteomalacia, as such calcium and vitamin D are most appropriate. Hypophosphataemia is only present in 25% of cases of osteomalacia, and therefore this level should not preclude the diagnosis.

Calcitonin is licensed for the treatment of osteoporosis and is therefore not appropriate here.

Risedronate is a bisphosphonate, which can also be used to treat osteoporosis.

Cinacalcet is appropriate for the treatment of tertiary hyperparathyroidism where the patient cannot undergo surgery, such as occurs in chronic kidney disease.

Parathyroid hormone (PTH) analogues are used in the treatment of osteoporosis.

Answer Statistics



Times answered: 5657

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 58 of 73

You are asked to review a 76-year-old man who has been admitted with pneumonia as the nurses notice he is significantly confused.

On examination his BP is 142/72 mmHg, his pulse is 78 and regular. He has signs of right sided pneumonia.

Investigations show:

Haemoglobin	129 g/L	(135-177)
White cell count	12.4 ×10 ⁹ /L	(4-11)
Platelets	192 ×10 ⁹ /L	(150-400)
Sodium	127 mmol/L	(135-146)
Potassium	4.0 mmol/L	(3.5-5)
Creatinine	90 µmol/L	(79-118)

Which of the following is likely to be found in this patient?

(Please select 1 option)

<input type="checkbox"/> Free water excretion is likely to be elevated
<input type="checkbox"/> Free water excretion is likely to be normal
<input checked="" type="checkbox"/> Free water excretion is likely to be reduced This is the correct answer
<input type="checkbox"/> Sodium excretion is likely to be increased

Sodium excretion is likely to be normal Incorrect answer selected

This person is most likely to have SIADH, as evidenced by his low sodium in the absence of obvious cardiac failure. ADH excess leads to reduced water excretion but excretion of sodium ions stays roughly the same. This leads to increased urinary sodium concentration and decreased sodium levels on U&E measurement.

Free water excretion is not elevated or normal in conditions of antidiuretic hormone (ADH) excess, therefore these answer options are incorrect.

There is no effect on sodium excretion in syndrome of inappropriate antidiuretic hormone (SIADH) and therefore these answer options are also incorrect.

Although 24 hour excretion rates of sodium are generally unchanged, as the urine volume is low with retention of free water, urine concentrations of sodium will appear inappropriately high.

Answer Statistics

1		11%
2		3%
3		51%
4		29%
5		7%

Times answered: 5727

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 59 of 73

A 26-year-old woman presents with three episodes of collapse over the last nine months. She says that she feels hungry to the pit of her stomach before these episodes occur, sweaty, and tremulous. On examination her BMI is 31, her BP is 142/82 mmHg, pulse is 64. She is obese but there are no other abnormal findings.

Which of the following findings would most point towards an insulinoma?

(Please select 1 option)

<input type="checkbox"/>	Co-existent hypertension	
<input type="checkbox"/>	Co-existent thyroid mass	
<input type="checkbox"/>	Low levels of glucagon	
<input checked="" type="checkbox"/>	Weight gain of 5 kg over the past six months	This is the correct answer
<input type="checkbox"/>	Weight loss of 5 kg over the past six months	Incorrect answer selected

Weight gain is a potentially useful pointer to an underlying insulinoma. Patients eat in an attempt to avoid hypoglycaemia and may avoid physical activity because this is also recognised as a trigger.

Co-existent hypertension may occur because of weight gain, but is not particularly indicative of an insulinoma.

Indeed, hypertension in the context of multiple endocrine neoplasia (MEN) may indicate a pheochromocytoma, which of course is associated with MEN2 where insulinomas do not occur.

A thyroid mass may indicate medullary thyroid carcinoma which is also associated with MEN2 not

MEN1. If anything, glucagon levels are more likely to be elevated than reduced.

Answer Statistics



Times answered: 5765

Test Analysis

CorrectIncorrectPartially
Correct

Score: 27.12%

Total Answered: 59

Feedback

Work Smart

Question 81 of 100

A 51-year-old man with hypertension, morbid obesity, and type 2 diabetes is diagnosed with pituitary-dependent Cushing's.

He is managed with three antihypertensives, metformin, and gliclazide, yet his preoperative BP is elevated at 175/100 mmHg, his BMI is 32 and his fasting glucose is 11.2 mmol/l.

Which of the following is most appropriate to improve his metabolic parameters prior to surgery?

(Please select 1 option)

<input type="checkbox"/>	Insulin
<input checked="" type="checkbox"/>	Metyrapone This is the correct answer
<input type="checkbox"/>	Mitotane
<input type="checkbox"/>	Octreotide
<input type="checkbox"/>	Somatotrophin Incorrect answer selected

Metyrapone inhibits 11-beta hydroxylase and as such inhibits cortisol production. It has a relatively rapid onset of action and as such may be of value preoperatively in improving blood pressure and glycaemic control without associated weight gain of other options such as insulin.

Insulin may be an option to improve glycaemic control pre surgery, but it is likely to result in further weight gain and may therefore exacerbate hypertension.

Mitotane has a more delayed onset of action and as such it is less appropriate for pre-surgical use.

Cushing's has no response to octreotide in the majority of patients and somatotrophin, growth

hormone, has no value.

Answer Statistics



Times answered: 5673

Test Analysis

CorrectIncorrectPartially
Correct

Score: 14.81%

Total Answered: 81

Feedback

Work Smart

Question 82 of 100

You are developing a new long acting antidiuretic hormone antagonist for the treatment of SIADH.

Where would you expect to see binding of your antagonist occur?

(Please select 1 option)

<input type="checkbox"/>	Aquaporin 1 channels
<input type="checkbox"/>	Aquaporin 2 channels
<input type="checkbox"/>	Aquaporin 3 channels
<input type="checkbox"/>	V1 receptors
<input checked="" type="checkbox"/>	V2 receptors Correct

ADH binds to V2 receptors which are found on the peritubular surface of cells in the distal convoluted tubule and medullary collecting duct. This leads to insertion of aquaporin channels into the luminal membrane, enhancing permeability to water.

V1 receptors are involved in mediating platelet aggregation and do not have a role in controlling water reabsorption.

There are multiple subtypes of aquaporin channels, some of which, such as aquaporin 3, are involved in passage of water through the skin.

Work Smart

Question 60 of 73

A 20-year-old woman comes to the endocrine clinic with excessive hairiness and acne.

She tells you that she has a period only every few months and when she has one it tends to be very heavy.

On examination she has obvious facial acne. Her BP is 142/78 mmHg, pulse is 72 and regular and her BMI is 30. There is facial hair and hair around her upper chest and breasts.

Investigations show:

Haemoglobin	119 g/L	(115-160)
White cell count	$6.0 \times 10^9/L$	(4-11)
Platelets	$202 \times 10^9/L$	(150-400)
Sodium	137 mmol/L	(135-146)
Potassium	3.9 mmol/L	(3.5-5)
Creatinine	90 $\mu\text{mol/L}$	(79-118)
Total testosterone	normal	
Free androgen index	elevated	
LH / FSH ratio	2.2	

Which of the following is the most likely diagnosis?

(Please select 1 option)

Cushing's syndrome	
Germ cell tumour	
Polycystic ovarian syndrome	<input checked="" type="checkbox"/> This is the correct answer
Testicular feminisation	
Turner's syndrome	<input type="checkbox"/> Incorrect answer selected

The following signs all point towards PCOS:

- irregular heavy periods
- obesity
- male pattern hirsutism
- normal testosterone but raised free androgen index, and
- raised LH / FSH ratio.

The optimal treatment for PCOS is weight loss, although many women find this difficult to achieve. Dianette reduces both hyperandrogenism and regularises periods.

Cushing's is incorrect as more features including marked obesity, hypertension, and impaired glucose tolerance would be expected.

A germ cell tumour would be expected to result in higher androgen levels.

Testicular feminisation results in an absence of secondary sexual hair.

Turner's syndrome results in primary amenorrhoea.

Answer Statistics



Times answered: 5673

Work Smart

Question 7 of 10

You are taking part in the clinical trials of a new treatment for symptomatic hypoglycaemia which is thought to have a glucagon-like action.

Which of the following features would be consistent with a glucagon like effect?

(Please select 1 option)

<input type="checkbox"/>	Inhibition of catecholamine secretion
<input type="checkbox"/>	Stimulation of gastric emptying
<input type="checkbox"/>	Stimulation of glycogenesis
<input type="checkbox"/>	Stimulation of glycolysis
<input checked="" type="checkbox"/>	Stimulation of lipolysis Correct

Glucagon is designed to increase provision of energy in a time of need. One of these energy sources may indeed be fat, therefore glucagon stimulates lipolysis.

Glucagon leads to stimulation rather than inhibition of catecholamine secretion. It delays gastric emptying and reduces pancreatic exocrine secretions.

With respect to glucose handling, glucagon stimulates glycogenolysis, at the same time inhibiting glycolysis and activating gluconeogenesis.

Work Smart

Question 83 of 100

A 57-year-old woman presents with a temperature of 39.6°C, tachycardia and jaundice.

Her husband tells you that she has been increasingly confused and agitated over the past few days. Her only past history of note is an inguinal hernia repair in the previous week.

On examination her BP is 105/70 mmHg, her pulse is 130, atrial fibrillation, she has jaundiced sclerae. She is agitated and poorly compliant with the examination.

Investigations show:

Haemoglobin	109 g/L	(115-160)
White cell count	10.8 ×10 ⁹ /L	(4-11)
Platelets	190 ×10 ⁹ /L	(150-400)
Sodium	138 mmol/L	(135-146)
Potassium	4.0 mmol/L	(3.5-5)
Creatinine	120 µmol/L	(79-118)
Alanine aminotransferase	78 U/L	(5-40)
Bilirubin	72 µmol/L	(<17)
TSH	<0.05 IU/L	(0.5-4.5)

Which of the following treatments should be used first?

(Please select 1 option)

Aspirin
Carbimazole <input type="checkbox"/> Correct
Diclofenac
Potassium iodide
Prednisolone

This patient has a thyrotoxic crisis and requires rapid control of her symptoms. This is an uncommon medical emergency, caused by an exacerbation of hyperthyroidism often due to intercurrent illness, trauma, or emergency surgery. It most often occurs in the setting of Graves' disease, but can be seen with toxic adenoma or multinodular toxic goitre.

Thyrotoxic storm presents as described above, with sudden onset of severe hyperthyroidism with hyperpyrexia, tachycardia, nausea, jaundice, vomiting, diarrhoea, confusion, agitation, psychosis, seizures, or coma.

Investigations should look for underlying precipitants. Thyroid function should also be checked, which classically shows elevated T3 and T4, with suppressed TSH levels. There can also be renal impairment, elevated creatine kinase, electrolyte imbalance (due to dehydration), anaemia, thrombocytopenia, leucocytosis, liver derangement (raised transaminases, lactate dehydrogenase, alkaline phosphatase, and bilirubin), hypercalcaemia, and hyperglycaemia.

Treatment should initially be of any precipitating cause. Resuscitation is then often required with oxygen, intravenous saline, and a nasogastric tube if vomiting is dominant. Immediate goals are to decrease thyroid hormone synthesis (antithyroid drugs), prevent thyroid hormone release (iodine), decrease peripheral action of circulating hormone by blocking T4 to T3 conversion (high-dose PTU, propranolol, corticosteroid) or blocking enterohepatic circulation (cholestyramine), and to treat the precipitating condition.

Anti-thyroid treatment is initially with oral carbimazole or propylthiouracil. This should be administered immediately to prevent the formation of further thyroid hormone by inhibiting the iodination of tyrosine residues by TPO enzymes. PTU was traditionally preferred because it has a more rapid onset of action, and has the additional benefit of inhibiting peripheral deiodinase enzyme-mediated conversion of T4 into T3. However, there is now concern regarding the liver toxicity potential of PTU and therefore unless there are compelling reasons to use PTU (e.g. pregnancy) then carbimazole is used and T4 to T3 inhibition is achieved with beta blockers and corticosteroids.

Iodine is then given after at least one hour, to block the release of preformed thyroid hormone. This should not be given prior to carbimazole as this can result in tyrosine residue iodination and

enrichment of thyroid hormone stores. Typical UK practice is to prescribe 1 ml of Lugol's solution orally every six hours.

Betablockers can then be given immediately following carbimazole, to block adrenergic consequences of thyroid hormone release. Propranolol is traditionally used as it can be given intravenously and is relatively short acting. Cardioselective betablockers, such as metoprolol or atenolol, can be used if there is contraindication to propranolol (asthma, COPD). Diltiazem is an alternative option if there is contraindication to all betablockers.

Corticosteroids inhibit peripheral conversion of T4 into T3, and can improve outcomes in thyroid storm. Hydrocortisone is usually used, but dexamethasone is an alternative.

Paracetamol should be used for pyrexia, not aspirin as this can increase T4.

Further management depends on the progress of the patient, but in severe cases exchange transfusion or haemodialysis may be required.

Untreated, such cases are usually fatal. Even with early diagnosis and treatment, the mortality is 20-50%.

Reference:

Carroll R, Matfin G. [Endocrine and metabolic emergencies: thyroid storm](#). *Ther Adv Endocrinol Metab.* 2010;1:139-45.

Patient.info. [Hyperthyroid Crisis \(Thyrotoxic Storm\)](#).

Answer Statistics



Times answered: 5644

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 61 of 73

A 45-year-old woman presents with chronic diarrhoea.

This has worsened over the past six months so that she is opening her bowels up to eight times per day with watery motions. The stool is normal smelling and tea coloured without blood or mucus. Her GP has been encouraging her to use codeine and loperamide to manage her symptoms.

On examination her BP is 110/70 mmHg, pulse is 65 and regular and her BMI is 21. General physical examination is unremarkable.

Investigations show:

Haemoglobin	110 g/L	(115-160)
White cell count	$6.8 \times 10^9/L$	(4-11)
Platelets	$203 \times 10^9/L$	(150-400)
Sodium	141 mmol/L	(135-146)
Potassium	3.0 mmol/L	(3.5-5)
Bicarbonate	15 mmol/L	(22-30)
Creatinine	83 $\mu\text{mol/L}$	(79-118)
Abdominal ultrasound	Pancreatic mass	

Which of the following is the most appropriate medical management of her diarrhoea?

(Please select 1 option)

<input type="checkbox"/>	Bromocriptine
--------------------------	---------------

	Cholestyramine
	Codeine
	Somatostatin analogue <input checked="" type="checkbox"/> This is the correct answer
	Somatotrophin analogue <input type="checkbox"/> Incorrect answer selected

Weight loss in the presence of metabolic acidosis, hypokalaemia, and diarrhoea fits best with a diagnosis of VIPoma. Diarrhoea may persist for many years before the condition is formally diagnosed and any mass on pancreatic ultrasound is often large at the point of diagnosis.

Medical management of choice is with somatostatin analogues, often small doses lead to a cessation of symptoms. Non-metastatic tumours can be surgically resected.

Bromocriptine is a dopamine agonist which can be used in the treatment of prolactinoma.

Cholestyramine is a bile acid sequestrant that can be used in the management of diarrhoea related to small bowel malabsorption or pancreatitis.

Codeine prolongs small bowel transit time and increases stool water absorption, it may be an adjunct in patients who do not adequately respond to somatostatin.

Somatotrophin is growth hormone, and has no place in managing the condition.

Answer Statistics



Times answered: 5583

Test Analysis

CorrectIncorrectPartially

Work Smart

Question 84 of 100

A 39-year-old woman presents with pain and tenderness over the anterior neck, agitation, and palpitations. She has also had flu-like symptoms and generalised aches and pains over the past few weeks.

On examination her BP is 135/72 mmHg, her pulse is 90 and regular. She has a fine tremor and is tender over her thyroid.

Investigations show:

Haemoglobin	119 g/L	(115-160)
White cell count	9.8 ×10 ⁹ /L	(4-11)
Platelets	203 ×10 ⁹ /L	(150-400)
Sodium	137 mmol/L	(135-146)
Potassium	3.9 mmol/L	(3.5-5)
Creatinine	117 µmol/L	(79-118)
TSH	<0.05 IU/L	(0.5-4.5)
Thyroid radio-isotope scan	uptake decreased	

Which is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Graves' disease
<input type="checkbox"/>	

Struma ovarii	
Sub-acute thyroiditis	<input checked="" type="checkbox"/> This is the correct answer
Thyrotoxicosis factitia	
Toxic multinodular goitre	<input type="checkbox"/> Incorrect answer selected

The flu-like symptoms and neck tenderness fit best with a diagnosis of sub-acute thyroiditis. It is the only one of the commoner causes of thyrotoxicosis where radio-isotope uptake is decreased.

Graves' disease and toxic multinodular goitre are associated with increased radio-isotope uptake, diffuse in the case of Graves' and within the multiple nodules in the case of toxic goitre.

Thyrotoxicosis factitia and struma ovarii are associated with reduced radio-isotope uptake, but those diagnoses do not fit with the clinical picture seen here.

Answer Statistics



Times answered: 5715

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 63 of 71

A 50-year-old man with insulin dependent diabetes presents with a two week history of an acutely painful, erythematous, swollen left mid-foot for the last two weeks. He does not drink alcohol, and has had no recent injuries to the foot.

On examination, the mid-foot is warm. Pedal pulses are intact. There is sensory loss in a glove and stocking distribution bilaterally. Recent blood tests show a normal FBC, CRP, urea, and electrolytes and creatinine.

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Cellulitis
<input checked="" type="checkbox"/>	Charcot joint This is the correct answer
<input type="checkbox"/>	Deep venous thrombosis
<input type="checkbox"/>	Fragility fracture
<input type="checkbox"/>	Gout Incorrect answer selected

In patients with longstanding diabetes and peripheral neuropathy, a red hot swollen foot should raise suspicion of Charcot neuroarthropathy.

Charcot neuropathy presents as a warm, swollen, erythematous foot and ankle, and infection is important to exclude. The majority of patients are in their 50-60s, and they often present in the latter stages of the disease.

It can occur in association with a variety of conditions, including leprosy, poliomyelitis, and rheumatoid arthritis, although today the most common cause is diabetes mellitus.

The pathophysiology of Charcot neuroarthropathy is not completely understood, but is thought to start with peripheral neuropathy. The lack of pain sensation may mean that patients subject the foot joints (commonly the midfoot) to stress injuries that lead to the Charcot process. It is important to note however that about half of patients present with pain.

Four stages of Charcot neuropathy are recognised:

- Stage 0 (inflammation) - characterised by erythema and oedema, but no structural changes
- Stage 1 (development) - bone resorption, fragmentation and joint dislocation. Swelling, warmth and erythema persist but there are also radiographic changes such as debris formation at the articular margins, osseous fragmentation, and joint disruption
- Stage 2 (coalescence) - bony consolidation, osteosclerosis, and fusion are all seen on plain radiographs
- Stage 3 (reconstruction) - osteogenesis, decreased osteosclerosis, progressive fusion. Healing and new bone formation occur, and the deformity becomes permanent.

Radiographs are an important part of investigating a patient with possible Charcot arthropathy. All radiographs should be taken in the weight-bearing position.

MRI can demonstrate changes in the earlier stages of the condition, and is therefore important in allowing treatment to be instigated earlier.

In stages 0 and 1, the treatment is immediate immobilisation and avoidance of weight bearing. A total-contact cast is worn until the redness, swelling and heat subside (generally 8-12 weeks, changed every 1-2 weeks to minimise skin damage). After this, the patient should use a removable brace for a total of four to six months.

Bisphosphonates can be used, but evidence of clinical benefit is lacking. Surgery is reserved for severe deformities that are susceptible to ulceration, and where braces and orthotic devices are difficult to use.

A normal FBC and CRP in this case make cellulitis unlikely. There is no swelling of the calf to suggest a deep vein thrombosis.

Fragility fractures are those which are caused by a force equivalent to a fall from the height of a chair or less. They are typically seen on a background of osteoporosis and there is usually a history of trauma.

Gout classically causes an acute monoarthritis and the presentation is typically more acute than described here.

Reference:

Botek G, et al. [Charcot neuroarthropathy: An often overlooked complication of diabetes.](#) *Cleve Clin J*

Answer Statistics



Times answered: 6527

Test Analysis

CorrectIncorrectPartially
Correct

Score: 22.22%

Total Answered: 63

Feedback

Work Smart

Question 62 of 73

A 28-year-old man with type 1 diabetes comes to the clinic with his wife.

They want to know about the aetiology of type 1 diabetes (T1DM) and the chances of any offspring inheriting the disease.

Which of the following accurately represents one aspect of the pathogenesis of T1DM?

(Please select 1 option)

<input type="checkbox"/>	50% of patients developing the disease have a positive family history
<input type="checkbox"/>	All patients are ZnT8 autoantibody positive
<input checked="" type="checkbox"/>	Enteroviruses may play a role in protection from and susceptibility to T1DM This is the correct answer
<input type="checkbox"/>	The disease is primarily mediated by pathogenic B cells
<input type="checkbox"/>	There is 100% twin concordance Incorrect answer selected

Accumulating evidence suggests that enteroviruses may play a role in both protection from and susceptibility to type 1 diabetes. A large cohort study has demonstrated that decline in C peptide in at risk individuals is associated with positive markers for enterovirus infection, and it is quite plausible that autoimmune attack on beta cells stems from an abnormal response to local viral infection.

Type 1 diabetes is a primarily T cell mediated disorder. Whilst autoantibodies to beta cell antigens are measurable in patients with the disease, they are not thought to play direct role in its pathogenesis.

ZnT8 is found within the beta cell; whilst ZnT8 autoantibodies are often positive in patients with type 1

diabetes, it is not invariable.

Conventionally, anti-GAD and anti-IA2 antibodies are measured to support the diagnosis.

Only 10% of patients have a positive family history, and there is 30-50% twin concordance.

Answer Statistics



Times answered: 5625

Test Analysis

CorrectIncorrectPartially
Correct

Score: 25.81%

Total Answered: 62

Work Smart

Core Questions

Question 63 of 73

A 51-year-old man presents with abdominal pain, stiffness and muscle spasms.

You understand that a few days earlier he injured himself when he stabbed a fork through his foot. He cleaned and dressed it himself, but refused to attend the Emergency Department for a check up.

On examination he is pyrexial 37.8°C, his pulse is 95, and his BP is 105/70 mmHg. He has obvious jaw and neck stiffness on examination and his abdominal muscles are held rigid. His left foot is erythematous with signs of local infection.

Investigations show:

Haemoglobin	129 g/L	(135-177)
White cell count	13.6 ×10 ⁹ /L	(4-11)
Platelets	180 ×10 ⁹ /L	(150-400)
Sodium	137 mmol/L	(135-146)
Potassium	3.8 mmol/L	(3.5-5)
Creatinine	120 µmol/L	(79-118)

Which of the following is the most appropriate next intervention?

(Please select 1 option)

<input checked="" type="checkbox"/> Human tetanus immunoglobulin IV	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/> Immediate debridement of the wound	
<input type="checkbox"/>	

	Local application of tetanus toxoid
	Metronidazole IV
	Penicillin IV <input type="checkbox"/> Incorrect answer selected

Prior to wound debridement, it is crucial to give human tetanus immunoglobulin. This is because of the risk that debridement may precipitate further release of tetanus toxin into the systemic circulation. Although debridement is a logical next step after immunoglobulin, it should be delayed for a few hours if possible.

Debridement is incorrect because it should be delayed until a few hours after immunoglobulin has been administered.

Systemic antibiotics are largely disappointing. Whilst penicillin has been the traditional first choice, evidence suggests that where there is sensitivity to metronidazole, this is a better option.

Local application of human tetanus immunoglobulin has no value.

Answer Statistics



Times answered: 5647

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 85 of 100

A 58-year-old man comes to the diabetes clinic for review. He has had type 2 diabetes for eight years and has troublesome neuropathy with pain and burning in both lower limbs for long periods of the night.

Current medication for his diabetes includes metformin 1 g BD and gliclazide 80 mg BD.

On examination his BP is 145/85 mmHg, his pulse is 80 and regular. He has glove and stocking neuropathy with sensory loss to the mid shin.

Investigations show:

Haemoglobin	123 g/L	(135-177)
White cell count	7.1 ×10 ⁹ /L	(4-11)
Platelets	203 ×10 ⁹ /L	(150-400)
Sodium	138 mmol/L	(135-146)
Potassium	3.9 mmol/L	(3.5-5)
Creatinine	90 µmol/L	(79-118)
HbA _{1c}	56 mmol/mol	(<36)
	7.3%	(<5.5)

Which of the following is the most appropriate way to manage his pain?

(Please select 1 option)

<input type="checkbox"/>	Amitriptyline
--------------------------	---------------

Axsain cream
Carbamazepine <input type="checkbox"/> Incorrect answer selected
Duloxetine <input checked="" type="checkbox"/> This is the correct answer
Gabapentin

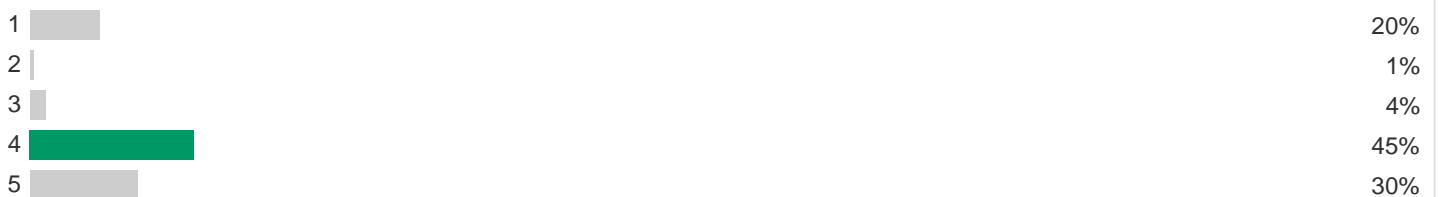
Duloxetine is recommended by NICE as therapy for painful diabetic neuropathy. Starting dose is 60 mg/day although this may be increased to 120 mg/day. If it is contraindicated due to severe closed angle glaucoma, or hypersensitivity, then amitriptyline becomes the initial treatment of choice.

Amitriptyline is first line therapy for diabetic neuropathy only if duloxetine is contraindicated.

Axsain cream, whilst an effective topical agent is not recommended by NICE.

Second line therapy of choice according to NICE is pregabalin, which may be used in combination with amitriptyline.

Answer Statistics



Times answered: 5670

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 86 of 100

A 62-year-old man with a history of type 2 diabetes mellitus takes 30 units of long acting insulin per day and 10 units of actrapid with each meal. His HbA_{1c} is 56 mmol/mol (7.3%) and he is having problems with hypoglycaemic episodes either late in the afternoon or during the early hours of the morning. A recent creatinine is 130 µmol/L.

On examination is BP is 148/82 mmHg, pulse is 70 and regular, respiratory and abdominal examination is unremarkable.

Which of the following is the most appropriate next step?

(Please select 1 option)

<input type="checkbox"/>	Advise him to eat a snack before going to bed
<input type="checkbox"/>	Advise him to eat a snack in the mid afternoon
<input type="checkbox"/>	Decrease all three of his actrapid doses
<input checked="" type="checkbox"/>	Decrease his long acting and lunch time insulin doses This is the correct answer
<input type="checkbox"/>	Decrease his long acting insulin dose Incorrect answer selected

This man is not at HbA_{1c} target, yet he is having hypoglycaemic episodes because of the profile of his mixed insulin. As such, the best way to manage him is to transition him to meal time boluses with basal insulin at night. This can allow short acting insulin to be titrated according to the size of his meals and planned physical activity in the day.

Whilst eating a snack before going to bed will help avoid hypoglycaemia, it will also lead to weight

gain which he should avoid; the same applies with respect to a mid-afternoon snack.

Decreasing his lunchtime insulin will reduce the likelihood of a late afternoon hypo, and decreasing the background will reduce the risk of a hypo in the early hours of the morning. His HbA_{1c} is relatively well controlled at 56 mmol/mol (7.3%) and he is likely to be hungry around the time of the late afternoon hypo in particular, so it is by no means certain this will increase with the reduction in insulin dose.

Answer Statistics



Times answered: 5659

Test Analysis

CorrectIncorrectPartially
Correct

Score: 16.28%

Total Answered: 86

Work Smart

Question 64 of 73

A 23-year-old woman presents to the clinic with lethargy and recurrent fainting attacks.

She is usually fit and well and her only medication of note is the progesterone only pill.

On examination her BP is 110/70 mmHg, she has a postural drop of 20 mmHg on standing. Her BMI is 19. Respiratory and abdominal examination is normal.

Investigations show:

Haemoglobin	109 g/L	(115-160)
White cell count	$7.1 \times 10^9/L$	(4-11)
Platelets	$203 \times 10^9/L$	(150-400)
Sodium	131 mmol/L	(135-146)
Potassium	5.1 mmol/L	(3.5-5)
Creatinine	125 $\mu\text{mol/L}$	(79-118)

Which of the following investigations would be most likely to elucidate the underlying diagnosis?

(Please select 1 option)

<input type="checkbox"/> Abdominal x ray	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> Adrenal autoantibodies	
<input type="checkbox"/> Chest x ray	
<input type="checkbox"/> Random cortisol	

Short Synacthen test This is the correct answer

The hyponatraemia and potassium at the upper end of the normal range are supportive of a diagnosis of adrenal insufficiency. As such the investigation most likely to contribute to making the diagnosis is a short Synacthen test.

Abdominal x ray may be useful if adrenal calcification is suspected, and a chest x ray may reveal underlying TB, but both of these are investigations to be performed after the initial diagnosis is made.

Equally, adrenal antibodies may establish if the cause is autoimmune.

Random cortisol is less useful than a short Synacthen test as cortisol production varies during the course of a day.

Answer Statistics



Times answered: 5738

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 87 of 100

A 25-year-old woman comes to the GP surgery a few weeks after the birth of her first child. Unfortunately she suffered a postpartum haemorrhage and required a three unit blood transfusion.

Over the past few weeks she has been feeling increasingly tired but puts this down to post pregnancy blues. She tells you that she seems to be losing her hair.

On examination her BP is 100/60 mmHg, pulse is 62 and regular.

Investigations show:

Haemoglobin	105 g/L	(115-160)
White cell count	$7.3 \times 10^9/L$	(4-11)
Platelets	$207 \times 10^9/L$	(150-400)
Sodium	130 mmol/L	(135-146)
Potassium	5.1 mmol/L	(3.5-5)
Creatinine	122 $\mu\text{mol/L}$	(79-118)
TSH	0.3 IU/L	(0.5-4.5)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Addison's disease
<input type="checkbox"/>	Graves' disease
<input type="checkbox"/>	

Hashimoto's thyroiditis
Postpartum thyroiditis
Sheehan's syndrome <input type="checkbox"/> Correct

The clues here centre around the postpartum haemorrhage, electrolyte disturbance, and low TSH. The absence of pigmentation in the presence of electrolyte disturbance consistent with adrenal insufficiency also helps point us towards pituitary disease. MRI of the pituitary and pituitary function testing including LH/FSH are indicated.

We are given the low thyroid-stimulating hormone (TSH) as well as electrolyte disturbance, showing that this is panhypopituitarism leading to adrenal insufficiency, rather than Addison's.

Graves' is associated with thyrotoxicosis, and we have no evidence of that here apart from the low TSH, which is in fact consistent with pituitary failure rather than elevated thyroxine leading to negative feedback on TSH production.

Hashimoto's and postpartum thyroiditis would not be associated with the electrolyte disturbance seen here.

Answer Statistics



Times answered: 5701

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 88 of 100

A 56-year-old man with a history of type 2 diabetes comes to the clinic for review. He complains of bilateral burning pain and weakness in both thighs, worse on the left than the right, which is unbearable.

He takes metformin and a sulphonylurea to maximal doses for his diabetic control, and has a history of hypertension.

On examination his BP is 148/79 mmHg, pulse is 70 and regular, BMI is 31. There is bilateral loss of sensation in his feet. He has proximal muscle wasting of both lower limbs.

Investigations show:

Haemoglobin	135 g/L	(135-177)
White cell count	8.3 ×10 ⁹ /L	(4-11)
Platelets	201 ×10 ⁹ /L	(150-400)
Sodium	142 mmol/L	(135-146)
Potassium	4.7 mmol/L	(3.5-5)
Creatinine	132 µmol/L	(79-118)
HbA _{1c}	84 mmol/mol	(<36)
	9.8%	(<5.5)

Which of the following is the most appropriate way to manage the pain and muscle wasting in his thighs?

(Please select 1 option)

Add pioglitazone
Amitriptyline
Duloxetine
Physiotherapy
Transition to insulin <input checked="" type="checkbox"/> Correct

This man's symptoms are consistent with diabetic amyotrophy, which mainly affects middle aged patients with diabetes and is associated with a period of poor glycaemic control. It may also be associated with marked weight loss. Symptoms slowly improve with improved glycaemic control. Given his HbA_{1c} is markedly elevated at 84 mmol/mol (9.8%), insulin is the most appropriate next step.

Whilst duloxetine is first line therapy and amitriptyline second line therapy for peripheral diabetic neuropathy, it is improved glycaemic control which has most effect on diabetic amyotrophy, so these are not correct options.

Whilst pioglitazone would improve his diabetic control, his HbA_{1c} is probably too elevated at 84 mmol/mol (9.8%) to enable him to reach target on triple oral therapy, therefore it is not the correct option.

Whilst physiotherapy may help regain muscle strength, it is improved glycaemic control which is the most important initial therapeutic intervention.

Answer Statistics



Times answered: 5618

Work Smart

Core Questions

Question 89 of 100

A 62-year-old man with extensive metastases from ileal carcinoid is admitted to the Emergency Department with deteriorating health.

He has become increasingly confused with worsening symptoms of diarrhoea over the past few weeks. You find that he has impaired short term memory and increased skin pigmentation.

Deficiency of which vitamin is a potential problem?

(Please select 1 option)

<input type="checkbox"/>	Ascorbic acid
<input type="checkbox"/>	Folate
<input checked="" type="checkbox"/>	Niacin This is the correct answer
<input type="checkbox"/>	Riboflavin
<input type="checkbox"/>	Thiamine Incorrect answer selected

Extensive metastases from carcinoid can lead to metabolism of very large amounts of tryptophan; this then leads to a pellagra-like picture.

In normal patients, only 1% of dietary tryptophan is converted to serotonin, in patients with carcinoid syndrome this value may increase to 70%.

The diversion of tryptophan to making serotonin in patients with metastatic tumors can result in tryptophan deficiency. Carcinoid syndrome can then lead to niacin deficiency, and clinical manifestations of pellagra.

None of the other vitamins listed are deficient in patients with metastatic carcinoid, so niacin is the only possible correct answer.

Thiamine deficiency is associated with memory loss, but is also associated with peripheral neuropathy and tends to occur in alcoholic individuals.

Answer Statistics



Times answered: 5700

Test Analysis

CorrectIncorrectPartially
Correct

Score: 17.98%

Total Answered: 89

Work Smart

Question 65 of 73

A 42-year-old publican who has a significant problem with excess alcohol consumption comes to the clinic for review.

He has had persistent diarrhoea which he says is difficult to flush away and intermittent upper abdominal pain.

On examination his BP is 125/72 mmHg, his pulse is 75 and his BMI is 21. He has signs of chronic liver disease.

Investigations show:

Haemoglobin	102 g/L	(135-177)
White cell count	$8.3 \times 10^9/L$	(4-11)
Platelets	$198 \times 10^9/L$	(150-400)
Sodium	137 mmol/L	(135-146)
Potassium	3.9 mmol/L	(3.5-5)
Creatinine	90 $\mu\text{mol/L}$	(79-118)
Calcium	2.1 mmol/L	(2.2-2.61)
Alanine aminotransferase	92 U/L	(5-40)
Albumin	25 g/L	(35-50)

You suspect malabsorption.

Which of the following is the most appropriate initial test as a pointer to the diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Abdominal CT	
<input type="checkbox"/>	Abdominal ultrasound	
<input type="checkbox"/>	ERCP	
<input checked="" type="checkbox"/>	Faecal elastase	This is the correct answer
<input type="checkbox"/>	Secretin stimulation test	Incorrect answer selected

Faecal elastase is non-invasive and can be performed on a single stool sample. Low levels of faecal elastase are indicative of pancreatic exocrine deficiency and predictive of the response to supplementation.

Abdominal ultrasound, CT, and ERCP may all indicate structural changes consistent with chronic pancreatitis, but do not provide the link to function and thus the cause of the diarrhoea.

As such faecal elastase is the preferred answer.

The secretin stimulation test is also a test of exocrine function but is invasive and therefore not a preferred investigation.

Answer Statistics

1		10%
2		12%
3		3%
4		69%
5		7%

Times answered: 5590

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Core Questions

Question 66 of 73

You are considering prescribing intranasal calcitonin for the treatment of osteoporosis in a 70-year-old woman who has failed to tolerate weekly and then monthly bisphosphonate therapy. She does not want to inject a PTH analogue or denosumab.

Which of the following correctly describes one of the actions of calcitonin?

(Please select 1 option)

<input checked="" type="checkbox"/>	Decreased osteoclast activity	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Increased bone turnover	
<input type="checkbox"/>	Increased osteoclast activity	
<input type="checkbox"/>	Increased urinary hydroxyproline excretion	
<input type="checkbox"/>	Increased urinary sodium excretion	<input type="checkbox"/> Incorrect answer selected

Exogenous calcitonin inhibits osteoclast activity, and is associated with a 1-2% increase in BMD which is sustained for up to five years.

Calcitonin is associated with a marked decrease in bone turnover, and consequently a decrease in urinary hydroxyproline excretion.

In the absence of ADH, calcitonin increases sodium, potassium, calcium, magnesium, and chloride tubular resorption, thereby reducing their urinary excretion. It also decreases urinary hydroxyproline excretion.

Work Smart

Question 90 of 100

A 31-year-old man presents to the clinic with decreased libido and problems maintaining his erection. At first, he consulted his GP and was told that his problems were most likely to be psychological. Clinical examination is unremarkable with a BP of 122/80 mmHg and a pulse of 65 and regular. His prolactin level is elevated at 2900 mU/l.

Which of the following is the most likely cause?

(Please select 1 option)

<input type="checkbox"/>	Drug induced hyperprolactinaemia
<input type="checkbox"/>	Hypothyroidism
<input type="checkbox"/>	Incidental finding
<input type="checkbox"/>	Macroprolactinoma
<input checked="" type="checkbox"/>	Microprolactinoma Correct

Levels of prolactin between around 1000 and 3000 mU/l are consistent with a microprolactinoma. Levels lower than 1000 would be more consistent with exposure to drugs known to increase prolactin, or greater than 3000 would raise suspicion of a macroprolactinoma.

Drug induced hyperprolactinaemia tends to be associated with levels less than 1000, as does hypothyroidism.

Given his symptoms and the degree of elevation, the prolactin level could not be considered incidental.

Macroprolactinomas tend to be associated with prolactin levels above 3000.

Answer Statistics



Times answered: 5810

Test Analysis

CorrectIncorrectPartially
Correct

Score: 18.89%

Total Answered: 90

Feedback

Work Smart

Question 91 of 100

A 62-year-old woman comes to the renal clinic reporting increased tiredness. Her creatinine has been stable at around 240 µmol/L for the past few years and she takes multiple agents to control her blood pressure.

On examination, her BP is 135/72 mmHg, her pulse is 69 and regular, and her BMI is 26. General physical examination is unremarkable.

Investigations show:

Haemoglobin	110 g/L	(115-160)
White cell count	9.3 ×10 ⁹ /L	(4-11)
Platelets	203 ×10 ⁹ /L	(150-400)
Sodium	138 mmol/L	(135-146)
Potassium	5.2 mmol/L	(3.5-5)
Creatinine	242 µmol/L	(79-118)
Prolactin	700 mU/L	(<400)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/> Amlodipine associated hyperprolactinaemia	<input type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> Macroprolactinoma	
<input type="checkbox"/> Microprolactinoma	

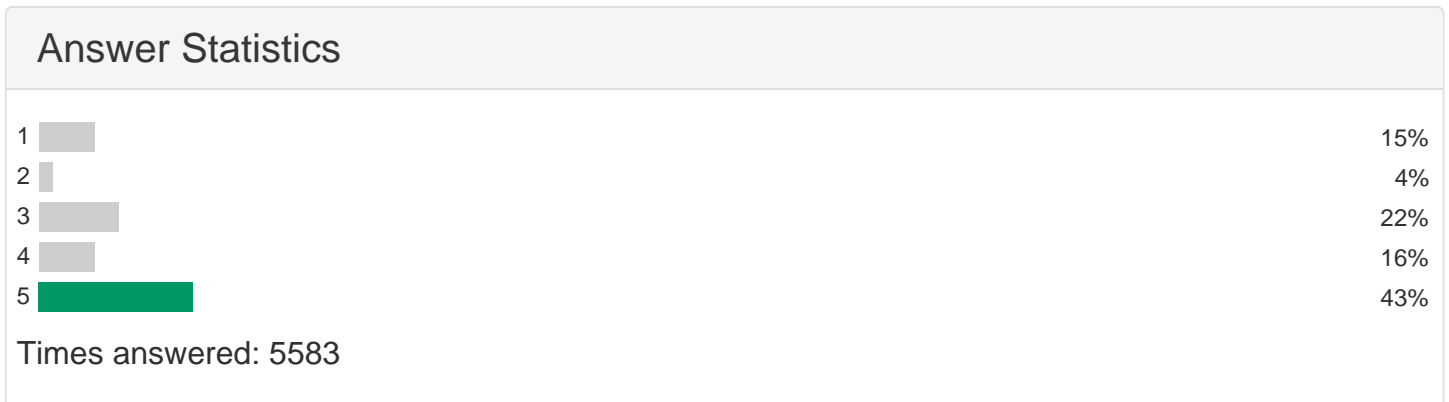
	Ramipril associated hyperprolactinaemia
	Renal failure associated hyperprolactinaemia <input checked="" type="checkbox"/> This is the correct answer

Chronic renal failure is thought to result in reduced prolactin excretion and disordered hypothalamic feedback. This leads to a mild elevation in prolactin levels as seen here.

Amlodipine and ramipril are not thought to be associated with a significant elevation in prolactin levels.

Macroprolactinoma would be associated with levels of prolactin of 3,000-6,000 or higher.

Microprolactinoma is associated with levels of prolactin of 1,000-3,000 mU/L.



Test Analysis

Correct	Incorrect	Partially Correct
Correct		

Work Smart

Question 67 of 73

A 49-year-old man is referred to the clinic with possible Cushing's syndrome.

He is grossly obese having gained 8 kg during the past six months. He has hypertension on four agents and impaired glucose tolerance. On examination his BP is 155/85 mmHg, pulse is 75 and regular and his BMI is 35.

Assuming he has Cushing's, which of the following features would you most expect on routine biochemistry?

(Please select 1 option)

<input type="checkbox"/>	Decreased bicarbonate
<input type="checkbox"/>	Decreased sodium
<input checked="" type="checkbox"/>	Increased bicarbonate This is the correct answer
<input type="checkbox"/>	Increased potassium
<input type="checkbox"/>	Increased sodium Incorrect answer selected

Metabolic alkalosis is commonly seen. Excess ACTH production leads to upregulation of corticosteroid production, increase in mineralocorticoid production, and consequent hypokalaemia with metabolic alkalosis.

Whilst salt and water retention occurs in conjunction with Cushing's syndrome, this does not usually lead to hypernatraemia.

Alkalosis rather than acidosis occurs.

Hypokalaemia rather than hyperkalaemia is seen in some patients.

Answer Statistics



Times answered: 5577

Test Analysis

CorrectIncorrectPartially
Correct

Score: 23.88%

Total Answered: 67

Feedback

Work Smart

Question 68 of 73

A 72-year-old man is found by his home help in a collapsed state. According to neighbours who spoke to paramedics, he had not been seen outside for some days.

He has a history of hypertension and obesity and takes multiple medications.

On examination his BP is 135/72 mmHg, his pulse is 90 and regular and he is pyrexial 38.2°C. There are signs of a right lower lobe pneumonia.

Investigations show:

Haemoglobin	128 g/L	(135-177)
White cell count	12.9 ×10 ⁹ /L	(4-11)
Platelets	189 ×10 ⁹ /L	(150-400)
Sodium	149 mmol/L	(135-146)
Potassium	4.2 mmol/L	(3.5-5)
Bicarbonate	23 mmol/L	(22-30)
Creatinine	172 µmol/L	(79-118)
Glucose	42 mmol/L	(<7.0)

Which of the following represents the optimal rate at which his glucose should be reduced?

(Please select 1 option)

<input type="checkbox"/>	1 mmol/hr
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

3 mmol/hr	<input checked="" type="checkbox"/> This is the correct answer
5 mmol/hr	<input type="checkbox"/> Incorrect answer selected
7 mmol/hr	
10 mmol/hr	

The aim is to reduce glucose levels by approximately 3 mmol/hour if possible. Patients with HONK are often sensitive to insulin replacement and doses can be much lower than those required for DKA.

Correction at 1 mmol/hour is too slow a correction of blood glucose, and 5 mmol/hour or greater correction of glucose is too rapid.

Individual hospitals usually give sliding scale guidance, but insulin replacement of 0.15 IU/kg/hour is recommended as an initial guide.

Fluid management is essential, with replacement tailored to correct significant hyperosmolality, whilst taking account of pre-existing comorbidities such as underlying cardiovascular disease.

Answer Statistics

1		13%
2		39%
3		31%
4		9%
5		8%

Times answered: 5638

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 92 of 100

A 42-year-old man presents with severe hypertension and headaches. An adrenal tumour is identified on ultrasound scan and you are suspicious that this is a pheochromocytoma.

On further questioning it transpires his father died at an early age, and that his sister presented in a similar way with hypertension and was found to have an underlying tumour. You suspect MEN-2.

Which of the manifestations of MEN-2 has the most malignant potential?

(Please select 1 option)

<input type="checkbox"/>	C cell hyperplasia <input checked="" type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Mucosal neuromas
<input type="checkbox"/>	Parathyroid hyperplasia
<input type="checkbox"/>	Pheochromocytoma
<input checked="" type="checkbox"/>	Renal disease <input type="checkbox"/> Incorrect answer selected

C cell hyperplasia eventually undergoes malignant transformation, leading to medullary carcinoma of the thyroid. If patients with MEN-2 are not identified by screening, often at the time of presentation medullary thyroid carcinoma with metastases to cervical lymph nodes has already occurred.

Renal disease in multiple endocrine neoplasia type 2 (MEN-2) is characterised by stone, rather than tumour formation.

Mucosal neuromas and pheochromocytomas are generally not malignant, and parathyroid hyperplasia, rather than adenoma formation, tends to occur.

Work Smart

Core Questions

Question 93 of 100

A 45-year-old woman with a longstanding history of lithium use for bipolar disorder presents to the clinic for review.

She has a history of polyuria and polydypsia. On examination her BP is 135/72 mmHg, pulse is 71 and regular.

Investigations show:

Haemoglobin	118 g/L	(115-160)
White cell count	$6.9 \times 10^9/L$	(4-11)
Platelets	$199 \times 10^9/L$	(150-400)
Sodium	149 mmol/L	(135-146)
Potassium	4.2 mmol/L	(3.5-5)
Creatinine	122 $\mu\text{mol/L}$	(79-118)
Glucose	5.4 mmol/L	(<7.0)
Urinary osmolality (after fluid restriction)	280 mOsm/kg	(>300)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	Cranial diabetes insipidus
<input type="checkbox"/>	Diuretic abuse

Nephrogenic diabetes insipidus	<input checked="" type="checkbox"/> This is the correct answer
Psychogenic polydypsia	
SIADH	<input type="checkbox"/> Incorrect answer selected

The osmolality seen here is consistent with diabetes insipidus, and lithium is recognised as a cause of nephrogenic DI. Diabetes mellitus as an alternative diagnosis is ruled out by the normal glucose which we are given as part of the scenario.

Whilst cranial diabetes insipidus (DI) is not impossible, it is less likely than nephrogenic DI in a patient taking chronic lithium therapy.

Diuretic abuse and psychogenic polydypsia are ruled out by the fluid deprivation test.

Syndrome of inappropriate secretion of antidiuretic hormone (SIADH) results in water retention and hyponatraemia.

Answer Statistics



Times answered: 6507

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 8 of 10

A 29-year-old woman with a history of type 1 diabetes comes to the endocrine clinic for review. She is very concerned as she has begun to lose significant amounts of hair from a patch on her scalp over the course of the last few months.

On examination, she has a circular area of hair loss with an area of normal looking skin in the middle of it. Skin scrapings taken by the GP have not produced any growth.

Which of the following is the most appropriate treatment?

(Please select 1 option)

<input type="checkbox"/>	Griseofulvin
<input checked="" type="checkbox"/>	Intra-lesional triamcinolone This is the correct answer
<input type="checkbox"/>	Oral ciclosporin
<input type="checkbox"/>	Topical clotrimoxazole
<input type="checkbox"/>	Topical hydrocortisone Incorrect answer selected


The non-scarring and circular nature of the hair loss is typical of alopecia, which occurs with increasing frequency in patients suffering from other autoimmune disorders. Intralesional corticosteroids are the initial management of choice in patients with limited disease.

Griseofulvin and topical clotrimoxazole are both anti-fungals. With a negative culture specimen and the lack of scarring this is highly unlikely to be due to fungal infection.

Topical hydrocortisone is likely to be ineffective in managing alopecia, and systemic treatment with

oral ciclosporin is usually an option when disease is more extensive.

Answer Statistics

1		16%
2		31%
3		6%
4		17%
5		29%

Times answered: 5587

Test Analysis

CorrectIncorrectPartially
Correct

Score: 62.5%

Total Answered: 8

Feedback

Work Smart

Question 94 of 100

A 54-year-old woman presents to the clinic with tiredness and a yellow tinge to her skin.

She has increased in weight by a few kilograms over the past six months.

On examination her BP is 139/70 mmHg, pulse is 64 and regular. Her BMI is 29.

Investigations show:

Haemoglobin	109 g/L	(115-160)
White cell count	7.9 ×10 ⁹ /L	(4-11)
Platelets	171 ×10 ⁹ /L	(150-400)
Sodium	133 mmol/L	(135-146)
Potassium	4.0 mmol/L	(3.5-5)
Creatinine	90 µmol/L	(79-118)
Bilirubin	21 µmol/L	(<17)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/> Anorexia nervosa
<input checked="" type="checkbox"/> Chronic liver disease Incorrect answer selected
<input type="checkbox"/> Diabetes mellitus

Dietary carotene excess

Hypothyroidism This is the correct answer

Hypothyroidism is known to be associated with hypercarotenaemia, the most likely diagnosis here. It occurs because of a decrease in conversion from carotene to vitamin A. The consumption of vitamin A in hypothyroidism is also decreased.

Anorexia nervosa is associated with hypercarotenaemia but does not fit here with the history of weight gain and elevated BMI.

Diabetes mellitus is also associated with hypercarotenaemia, but the sodium at the lower end of normal is a better pointer towards hypothyroidism as the alternative diagnosis.

Dietary carotene excess is unlikely, and occurs more frequently in children.

The only mildly raised bilirubin makes chronic liver disease unlikely. Hyperbilirubinaemia is not normally detectable clinically as jaundice until the level is more than 40 $\mu\text{mol/L}$. In hypothyroidism, the activity of bilirubin UDP-glucuronyltransferase is decreased, resulting in a reduction in bilirubin excretion. This would account for the slightly raised value seen here.

Answer Statistics

1		2%
2		20%
3		3%
4		21%
5		54%

Times answered: 5639

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Core Questions

Question 69 of 73

A 45-year-old man presents with joint pains and a flu-like illness a few weeks after returning from a walking holiday in the Austrian alps. He feels absolutely wretched and is unable to work because of fatigue.

On examination he is pyrexial 37.6°C, his pulse is 75 and his BP is 125/70 mmHg. He has arthralgia with limitation of movement affecting both knees and elbows. There is a circular rash on his left lower leg, he tells you he does not know how he got it.

Investigations show:

Haemoglobin	128 g/L	(135-177)
White cell count	10.9 ×10 ⁹ /L	(4-11)
Platelets	125 ×10 ⁹ /L	(150-400)
Sodium	138 mmol/L	(135-146)
Potassium	3.9 mmol/L	(3.5-5)
Creatinine	110 µmol/L	(79-118)
ESR	65 mm/hr	(<10)
ALT	180 U/L	(5-40)

Which of the following is the most likely diagnosis?

(Please select 1 option)

<input type="checkbox"/>	CMV infection
--------------------------	---------------

Hepatitis B	
Lyme disease	<input checked="" type="checkbox"/> This is the correct answer
Reactive arthritis	<input type="checkbox"/> Incorrect answer selected
Rheumatoid arthritis	

The symptoms of flu-like illness and arthritis, coupled with a rash which may well have represented a previous tick bite are consistent with Lyme disease, caused by *Borrelia burgdorferi*. Around 20% of infections in the UK occur abroad, and Austria is a recognised location for Lyme infection. Doxycycline and amoxicillin are typical choices for antibiotic therapy.

The raised alanine aminotransferase (ALT) may be indicative of a hepatic picture, but there is no pharyngitis to suggest a link to cytomegalovirus (CMV), nor is there any history of possible blood-borne transfer of hepatitis B.

Reactive arthritis follows either gastrointestinal or sexually transmitted infection, and the acute picture, coupled with features suggestive of infection, would not fit exactly with a diagnosis of rheumatoid.

Answer Statistics



Times answered: 6932

Test Analysis

Correct Incorrect Partially Correct

Work Smart

Question 9 of 10

A 29-year-old man comes to the endocrine clinic for review of his hypertension. He is currently taking ramipril and amlodipine but his BP is still elevated.

On examination his BP is 155/95 mmHg, pulse is 70 and regular, respiratory and abdominal examination is unremarkable.

Investigations show:

Haemoglobin	138 g/L	(135-177)
White cell count	6.9 ×10 ⁹ /L	(4-11)
Platelets	181 ×10 ⁹ /L	(150-400)
Sodium	143 mmol/L	(135-146)
Potassium	3.1 mmol/L	(3.5-5)
Creatinine	110 µmol/L	(79-118)
Ultrasound	Left adrenal mass	

Which of the following is the most appropriate agent to help manage his blood pressure pre-operatively?

(Please select 1 option)

<input type="checkbox"/> Amiloride	<input checked="" type="checkbox"/> Incorrect answer selected
<input type="checkbox"/> Furosemide	
<input type="checkbox"/>	

Indapamide
Spironolactone <input checked="" type="checkbox"/> This is the correct answer
Valsartan

Spironolactone is a non-selective aldosterone receptor antagonist. As such it blocks both the effects of aldosterone and testosterone, and is known to cause gynaecomastia. Used in this situation, it can help control blood pressure prior to surgery and reduce operative risk.

Amiloride may be useful in treating hypokalaemia, but it is not a mineralocorticoid antagonist, as such it is not the correct choice here.

Indapamide may have utility as an anti-hypertensive agent, but it may worsen hypokalaemia.

Furosemide is a more effective treatment for heart failure than blood pressure.

Valsartan is less effective than spironolactone in reducing blood pressure in this situation.

Answer Statistics



Times answered: 5836

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 95 of 100

A 35-year-old woman comes to the endocrine clinic for review. She has suffered a left Colles' fracture and attends for osteoporosis assessment.

Which of the following factors would put her at increased risk?

(Please select 1 option)

<input type="checkbox"/>	Early menarche	
<input type="checkbox"/>	Europid ethnic origin	
<input checked="" type="checkbox"/>	Family history of osteoporotic fracture	This is the correct answer
<input type="checkbox"/>	Five units/week alcohol consumption	
<input type="checkbox"/>	Use of a thiazide	Incorrect answer selected

A family history of osteoporotic fracture is a known risk for osteoporosis. This may be related to inherited differences in bone structure which put the patient at increased risk.

Early menarche and late menopause are associated with reduced risk of fracture.

Europid ethnic origin is associated with a reduced risk of osteomalacia versus populations with increased skin pigmentation.

Alcoholism is associated with osteoporosis, whereas alcohol consumption within recommended limits is not.

Thiazide diuretics increase serum calcium and are not associated with risk of osteoporosis.

Work Smart

Question 96 of 100

A 29-year-old woman presents to the clinic with diarrhoea which has been progressively worsening over the past six months. Multiple stool samples have proved negative over the past few weeks.

Her GP has been giving her loperamide to no effect. You understand there is a history in the family of hyperparathyroidism, and that her father had a tumour which caused hypoglycaemia. An ultrasound reveals a suspected pancreatic tumour.

Which of the following is a likely feature on biochemistry testing?

(Please select 1 option)

<input type="checkbox"/>	Hyperkalaemia
<input type="checkbox"/>	Hypernatraemia
<input checked="" type="checkbox"/>	Hypokalaemia This is the correct answer
<input type="checkbox"/>	Increased bicarbonate
<input type="checkbox"/>	Increased pH Incorrect answer selected

The suspicion is that this woman has an underlying VIPoma. As such she is over-producing large quantities of small bowel secretions, leading to bicarbonate and potassium loss. This leads to a normal anion gap metabolic acidosis.

Decreased pH rather than increased pH occurs because it is small bowel secretions which increase in volume rather than stomach acid.

Hyperkalaemia does not occur; serum bicarbonate is decreased due to bicarbonate loss.

Hypernatraemia would only be seen in a state of severe dehydration.

The family history should lead you to consider one of the multiple endocrine neoplasia syndromes as a underlying cause.

Answer Statistics



Times answered: 5719

Test Analysis

CorrectIncorrectPartially
Correct

Score: 17.71%

Total Answered: 96

Work Smart

Question 97 of 100

A 54-year-old man who has gained significant amounts of weight over the past six months is referred to the endocrine clinic with suspected Cushing's disease.

He has hypertension and impaired glucose tolerance. On examination his BP is 165/90 mmHg, pulse is 80 and regular, and his BMI is 33. As part of the routine work up, a discrete mass is discovered on chest x ray.

When considering further work up, which of the following is the most appropriate option to rule out/in ectopic ACTH production as a cause of Cushing's?

(Please select 1 option)

<input type="checkbox"/>	24 hour urinary free cortisol
<input checked="" type="checkbox"/>	High dose dexamethasone suppression test This is the correct answer
<input type="checkbox"/>	Low dose dexamethasone suppression test
<input type="checkbox"/>	Midnight cortisol
<input type="checkbox"/>	Plasma ACTH Incorrect answer selected

The 8 mg overnight dexamethasone suppression test and 48 hour high-dose dexamethasone test are useful when baseline ACTH levels are equivocal. They can be very useful in determining whether a patient has pituitary or ectopic ACTH production. Greater than 90% reduction in basal urinary free cortisol levels supports the diagnosis of a pituitary adenoma; ectopic ACTH causes lesser degrees of suppression.

All of the other options are possibilities for determining whether there are excess circulating corticosteroids, or there is excess adrenocorticotrophic hormone (ACTH) production.

They are not useful, however, in determining the origin of excess ACTH.

Answer Statistics



Times answered: 5735

Test Analysis

CorrectIncorrectPartially
Correct

Score: 17.53%

Total Answered: 97

Work Smart

Question 98 of 100

An 18-year-old woman presents with hirsutism and oligomenorrhoea. She is concerned as this has provoked bullying at the college she attends.

On examination her BP is 115/82 mmHg, pulse is 75 and regular, her BMI is 29. She has obvious male pattern facial hair, hair around her upper chest and areolae, and hair over her lower abdomen. She also has oily skin with evidence of facial acne.

Investigations show:

Haemoglobin	132 g/L	(115-160)
White cell count	6.0 ×10 ⁹ /L	(4-11)
Platelets	158 ×10 ⁹ /L	(150-400)
Sodium	135 mmol/L	(135-146)
Potassium	4.7 mmol/L	(3.5-5)
Creatinine	90 µmol/L	(79-118)
17-OH progesterone	elevated	

Which of the following is the most appropriate therapy for her?

(Please select 1 option)

<input checked="" type="checkbox"/> Flutamide	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/> Hydrocortisone	<input type="checkbox"/> Incorrect answer selected

	Metformin
	Pioglitazone
	Weight loss

The clinical picture here, whilst typical of polycystic ovarian syndrome, is confirmed as non-classical congenital adrenal hyperplasia by the presence of raised levels of 17-OH progesterone.

Congenital adrenal hyperplasia results from a defect in the biosynthetic pathway of cortisol and/pr aldosterone. Non-classical forms are characterised by milder enzyme dysfunction, and therefore usually only manifest in adolescence or adulthood. The most common form is 21-hydroxylase deficiency.

The ACTH stimulation test is the best screening evaluation, and can diagnose 21-OH deficiency when the plasma 17-OH progesterone are more than 30 nmol/L. N-classical adrenal hyperplasia is not characterised by cortisol insufficiency, and as such glucocorticoids are rarely indicated. If the main concern is infertility, ovulation induction is the treatment of choice. If, as in this case, hirsutism is the presenting problem then anti-androgens (such as flutamide) should be used.

Metformin, pioglitazone, and weight loss are all therapies which may increase insulin sensitivity in the context of polycystic ovarian syndrome.

Although this woman may benefit per se from weight loss, she is likely to derive most symptomatic benefit from an anti-androgen.

Reference:

Kelestimur F. [Non-classic congenital adrenal hyperplasia](#). *Pediatr Endocrinol Rev*. 2006;3:451-4.

Answer Statistics



Times answered: 5571

Work Smart

Question 70 of 73

A 62-year-old woman presents to the clinic with incontinence. She tells you that the pattern is always the same; with a warning she needs to go to the toilet coming only a few moments before urine starts to leak, and she cannot get to the bathroom in time.

There is no medical history of note apart from mild hypertension which is managed with amlodipine 5 mg daily.

On examination her BP is 145/85 mmHg, pulse is 80 and regular. Respiratory and abdominal examination is unremarkable.

Investigations show:

Haemoglobin	118 g/L	(115-160)
White cell count	8.1 ×10 ⁹ /L	(4-11)
Platelets	198 ×10 ⁹ /L	(150-400)
Sodium	141 mmol/L	(135-146)
Potassium	4.0 mmol/L	(3.5-5)
Creatinine	122 μmol/L	(79-118)
Bladder scan	No significant residual after voiding	

Which of the following is the most appropriate initial treatment?

(Please select 1 option)

<input type="checkbox"/> Bladder training	<input checked="" type="checkbox"/> This is the correct answer
---	--

Doxazosin
Oxybutynin <input type="checkbox"/> Incorrect answer selected
Tamsulosin
Tolterodine

This patient has symptoms of urge incontinence; as such, NICE guidance on [Urinary incontinence \(CG171\)](#) recommends bladder training as the initial intervention of choice. This involves pelvic floor training, scheduled voiding intervals with stepped increases, and suppression of urge with distraction or relaxation techniques.

Doxazosin is an alpha blocker used in the treatment of prostatic hypertrophy and hypertension.

Oxybutynin is first line drug therapy for urge incontinence with tolterodine amongst appropriate second line options.

Tamsulosin is an alpha-1 selective blocker used as an alternative to traditional alpha blockers for prostatic disease.

Answer Statistics



Times answered: 5669

Test Analysis

CorrectIncorrectPartially Correct

Work Smart

Question 99 of 100

You are treating a 48-year-old man for acromegaly.

Unfortunately despite adenectomy, he continues to have an elevated growth hormone. You decide to start a long acting somatostatin analogue, Somatuline LA.

Which of the following correctly describes one aspect of its mode of action?

(Please select 1 option)

<input type="checkbox"/>	High affinity for human somatostatin receptor (HSSR) 3
<input type="checkbox"/>	Increased prolactin
<input type="checkbox"/>	Low affinity for human somatostatin receptor (HSSR) 2
<input type="checkbox"/>	Reduced fasting gastrin secretion
<input checked="" type="checkbox"/>	Reduced meal time superior mesenteric artery blood flow Correct

Somatuline, like naturally occurring somatostatin, results in a marked reduction in mealtime related increases in superior mesenteric artery and portal blood flow.

Somatuline, like most other synthetic somatostatin analogues, has high affinity for HSSR-2 and 5, and low affinity for 1,3, and 4.

It is activity at the 2 and 5 receptors which is thought to be primarily the reason why growth hormone secretion falls.

There is no significant effect of Somatuline on fasting gastrin or secretin secretion.

Prolactin levels are generally reduced by somatostatin use.

Answer Statistics

1		56%
2		5%
3		13%
4		17%
5		9%

Times answered: 5731

Test Analysis

CorrectIncorrectPartially
Correct

Score: 18.18%

Total Answered: 99

Feedback

Work Smart

Question 71 of 73

A 23-year old woman with a history of type 1 diabetes, hypothyroidism and coeliac disease comes to the clinic complaining of increased tiredness and lethargy over the course of the past few months.

She is generally compliant with her insulin, thyroid medication and coeliac diet.

On examination her BP is 115/72 mmHg, pulse is 62 and regular, her BMI is 21. Apart from looking pale, her general physical examination is unremarkable.

Investigations show:

Haemoglobin	104 g/L	(115-160)
MCV	105 fL	(80-96)
White cell count	5.1 ×10 ⁹ /L	(4-11)
Platelets	158 ×10 ⁹ /L	(150-400)
Sodium	138 mmol/L	(135-146)
Potassium	3.7 mmol/L	(3.5-5)
Creatinine	110 μmol/L	(79-118)
HbA _{1c}	57 mmol/mol	(<36)
	7.4%	(<5.5)

Which of the following is the most likely diagnosis?

(Please select 1 option)

Addison's disease	
Pernicious anaemia	<input checked="" type="checkbox"/> This is the correct answer
Poor compliance with coeliac diet	
Poor compliance with thyroid hormone replacement	
Thyroid hormone resistance	<input type="checkbox"/> Incorrect answer selected

Given this patient is already suffering from three autoimmune conditions it is quite possible for her to acquire a fourth.

The picture of tiredness and lethargy, with a raised mean corpuscular volume (MCV) anaemia against a background of well controlled diabetes fits well with this. Her relatively good HbA_{1c} gives us no reason to suspect poor compliance either with her insulin, coeliac diet, or her thyroid medication.

Her electrolytes which are in the normal range make Addison's unlikely.

If she were poorly compliant with coeliac diet or thyroid hormone replacement, we would expect poor compliance with diabetes therapies and we have no evidence of that.

Thyroid hormone resistance would be associated with weight gain and symptoms of hypothyroidism.

Answer Statistics

1		4%
2		81%
3		6%
4		5%
5		4%

Times answered: 5579

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 72 of 73

A 62-year-old man with a long history of type 2 diabetes presents with a swollen left ankle and forefoot. He says that it has been like that for a little while, and he does not notice much pain in the joint apart from an occasional ache.

He has significant neuropathy with numbness to pain and fine touch to his mid shins.

On examination his BP is 152/82 mmHg, his pulse is 82 and regular. His left ankle and forefoot are slightly warm to the touch, erythematous, and swollen with obvious bony deformity.

Investigations show:

Haemoglobin	104 g/L	(135-177)
White cell count	9.1 ×10 ⁹ /L	(4-11)
Platelets	158 ×10 ⁹ /L	(150-400)
ESR	15 mm/hr	(<10)
Sodium	138 mmol/L	(135-146)
Potassium	3.7 mmol/L	(3.5-5)
Creatinine	140 μmol/L	(79-118)
HbA _{1c}	68 mmol/mol	(<36)
	8.4%	(<5.5)

Which of the following interventions is most likely to impact on the condition of his left ankle?

(Please select 1 option)

Aircast boot immobilisation	<input checked="" type="checkbox"/> Correct
Alendronate	
Improved blood pressure control	
Improved glucose control	
IV antibiotic therapy	

This patient is most likely to be suffering from a Charcot's ankle. As such the most effective treatment is a period of immobilisation in a specially made cast.

The normal ESR and white cell count are against an alternative inflammatory or infective diagnosis.

Whilst there is some evidence that bisphosphonates improve the prognosis of the condition, they are likely to be ineffective in the absence of immobilisation.

It is clear that improved blood pressure control and diabetes control will impact on progression of microvascular disease, but they will not impact on the gross Charcot's deformity that this patient already has.

Given infection is highly unlikely, IV antibiotics will not have any impact in this case.

Answer Statistics



Times answered: 5779

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 64 of 71

With which one of the following diabetic medications is weight loss *most* associated?

(Please select 1 option)

<input checked="" type="checkbox"/>	Exenatide	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Gliclazide	
<input type="checkbox"/>	Pioglitazone	
<input type="checkbox"/>	Repaglinide	
<input type="checkbox"/>	Sitagliptin	<input type="checkbox"/> Incorrect answer selected

Exenatide is one of the GLP-1 mimetics.

GLP-1 is a hormone released by the gut in response to food intake that acts on the pancreatic beta cells to trigger insulin secretion. Therefore, the GLP-1 mimetics stimulate insulin release. The GLP-1 mimetics are associated with weight loss and are a good choice in patients who are significantly overweight.

The glitazones and sulphonylureas are all associated with significant weight gain, whilst repaglinide may result in very minimal or no weight gain.

DPPIV inhibitors (the gliptins) are thought to be weight neutral.

Work Smart

Question 65 of 71

A 57-year-old man with poorly controlled diabetes mellitus type 2 is admitted to hospital and found to have a leukocytosis, raised inflammatory markers, a metabolic acidosis, and an amylase of 3480 on his admission blood tests.

Which one of the following medications is most likely to be responsible?

(Please select 1 option)

<input type="checkbox"/>	Acarbose
<input checked="" type="checkbox"/>	Exenatide This is the correct answer
<input type="checkbox"/>	Lantus insulin
<input type="checkbox"/>	Metformin
<input type="checkbox"/>	Sitagliptin Incorrect answer selected

Exenatide is one of the GLP-1 mimetics.

GLP-1 is a hormone released by the gut in response to food intake that acts on the pancreatic beta cells to trigger insulin secretion.

There is an association, albeit uncommon, between exenatide and severe pancreatitis. Patients being started on exenatide should be counselled about the symptoms of pancreatitis and the diagnosis should be suspected in all individuals on the drug who present with abdominal pain.

Pancreatitis is less commonly associated with sitagliptin and not with the other medications listed here.

Lactic acidosis is seen in patients taking metformin but the diagnosis here is pancreatitis on the basis of the raised amylase.

Answer Statistics



Times answered: 6225

Test Analysis

CorrectIncorrectPartially
Correct

Score: 21.54%

Total Answered: 65

Feedback

Work Smart

Question 66 of 71

A patient with type 2 diabetes mellitus presents to the clinic with an HbA_{1c} of 68 mmol/mol.

His recent bloods tests are all normal apart from an eGFR of 54. The patient is a heavy goods vehicle driver, is already on the maximum tolerated doses of metformin and gliclazide, and is attempting to modify his diet and exercise habits. His body mass index is 29. He does not have any other comorbidities.

Which of the following agents is the most appropriate choice to control his diabetes?

(Please select 1 option)

<input type="checkbox"/>	Insulin
<input type="checkbox"/>	Liraglutide
<input type="checkbox"/>	Nateglinide
<input type="checkbox"/>	Pioglitazone
<input checked="" type="checkbox"/>	Sitagliptin Correct

The patient's occupation means that insulin should be avoided if possible due to driving restrictions, whilst ensuring sugar control is optimised.

Liraglutide is a GLP-1 mimetic that is only recommended for use in patients who are overweight or where weight loss would be beneficial to other comorbidities. It is also contraindicated if the eGFR is less than 60.

Nateglinide is one of the insulin secretagogues. These have not been approved for use by the

National Institute for Health and Care Excellence (NICE).

Pioglitazone is a glitazone. These drugs have been associated with a range of problems, including an increased risk of heart failure and cardiovascular disease, bladder cancer, and fractures. The glitazones sensitise tissues to insulin and, given the patient's BMI, insulin resistance may be less of a problem in this patient.

These considerations make sitagliptin the most appropriate choice.

The dose of gliclazide may need to be reduced when starting this drug due to the risk of hypoglycaemia.

Answer Statistics

1		17%
2		8%
3		3%
4		44%
5		29%

Times answered: 6269

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Question 67 of 71

Which of the following medications would not be suitable in a patient undergoing investigation for macroscopic haematuria?

(Please select 1 option)

<input type="checkbox"/>	Exenatide
<input type="checkbox"/>	Glibenclamide
<input type="checkbox"/>	Metformin ❌ Incorrect answer selected
<input checked="" type="checkbox"/>	Pioglitazone ✅ This is the correct answer
<input type="checkbox"/>	Vildagliptin

The glitazones include pioglitazone and rosiglitazone. The latter has been removed from use due to concerns about safety.

The European Medicines Agency has advised that there is an increase in the risk of bladder cancer with pioglitazone and it should therefore not be used in patients with a history of the disease, who have unexplained macroscopic haematuria, or are at a high risk of developing bladder cancer.

There is also an increased risk of pneumonia, fractures (especially women), heart failure, and myocardial infarction.

Work Smart

Question 68 of 71

An elderly patient is referred to the diabetes clinic.

Her type 2 diabetes mellitus is poorly controlled (HbA1c 60 mmol/mol) and she has a history of hypoglycaemia with sulphonylureas.

She lives alone and is currently taking metformin, ramipril, lansoprazole, and amlodipine. Her comorbidities include hypertension, hiatus hernia, and osteoarthritis. Her body mass index is 42. She does not wish to have injectable therapy.

Which of the following agents would be most appropriate?

(Please select 1 option)

<input type="checkbox"/>	Exenatide
<input type="checkbox"/>	Glimepiride
<input checked="" type="checkbox"/>	Pioglitazone Correct
<input type="checkbox"/>	Repaglinide
<input type="checkbox"/>	Sitagliptin

Hypoglycaemia is a major issue in this elderly patient who lives alone.

Whilst pioglitazone is associated with a number of problems, including an increased risk of myocardial infarction, bladder cancer, pneumonia, and fractures, it is not associated with hypoglycaemia, unlike the other agents.

Pioglitazone can cause very mild increase in subcutaneous adipose tissue, but it is not widely

accepted to cause significant weight gain. It can result in fluid retention, and it is therefore contraindicated in patients with heart failure.

NICE guidelines would suggest either pioglitazone or sitagliptin are possibilities, but there is greater clinical experience with pioglitazone (although this may change in the next few years).

Glimepiride is a sulphonylurea.

Exenatide is an injectable therapy which makes it doubly unsuitable.

The risks of pioglitazone should be carefully discussed with the patient before commencing treatment.

Answer Statistics



Times answered: 6231

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Core Questions

Question 69 of 71

A 42-year-old woman attends the endocrine clinic one week after attending the Emergency Department with blurring of vision and loss of colour perception. She was recently diagnosed by her GP with thyrotoxicosis after presenting with weight loss and palpitations and found to have a TSH of <0.05 mU/L.

On attendance in the Emergency Department she is found to have marked Graves' eye disease. She is started on high dose oral corticosteroids.

Which of the following is the most appropriate intervention for her thyrotoxicosis?

(Please select 1 option)

<input checked="" type="checkbox"/>	High dose carbimazole and thyroxine replacement	<input type="checkbox"/> This is the correct answer
<input type="checkbox"/>	Low dose carbimazole	
<input type="checkbox"/>	Potassium perchlorate	
<input type="checkbox"/>	Radioiodine	
<input type="checkbox"/>	Surgery	<input type="checkbox"/> Incorrect answer selected

Stability with respect to thyroid function is the key with respect to avoiding progression of thyroid eye disease. In particular, periods of hypothyroidism can significantly worsen peri-orbital oedema and thus lead to further symptoms related to optic nerve compression. As such, block replace with high dose carbimazole and full dose thyroxine replacement is the optimal step. This may be continued for up to 18 months until thyroid eye disease is stable.

Low dose carbimazole is incorrect as using carbimazole alone is likely to require frequent dose adjustment and runs the risk of inadvertently dipping into hypothyroidism.

Potassium perchlorate is an option for patients with severe thyrotoxicosis where surgery is planned within a very short time period.

Radioiodine is known to lead to transient worsening of thyroid eye disease in some patients, and surgery is generally considered an option for patients who are unable to take thionamides or undergo radioiodine therapy.

Answer Statistics



Times answered: 3756

Test Analysis

CorrectIncorrectPartially
Correct

Score: 23.19%

Work Smart

Question 10 of 10

A 52-year-old man with a history of type 2 diabetes and NASH is reviewed in the diabetes clinic after a recent admission to the hospital with an upper GI haemorrhage which required a 4 unit blood transfusion.

He is stable when reviewed, with a BP of 135/70 mmHg, and pulse 75 bpm and regular. His BMI is 31 kg/m². There is no epigastric tenderness on abdominal palpation. An Hb checked the day before clinic is 125 g/L.

When is the first time his HbA_{1c} is likely to be accurate post blood transfusion?

(Please select 1 option)

<input type="checkbox"/>	2 weeks
<input type="checkbox"/>	1 month
<input type="checkbox"/>	2 months
<input checked="" type="checkbox"/>	3 months This is the correct answer
<input type="checkbox"/>	6 months Incorrect answer selected

Red cell life is between 100 and 120 days, which equates to slightly longer than three months. Given this man has received a significant blood transfusion, it is opportune to wait three months before re-assessing his HbA_{1c}. This allows glycation over the previous three months to also affect the transfused red cells and avoid a falsely low HbA_{1c}.

Fructosamine is a potential alternative measure as it reflects glucose control over the previous month,

and can therefore be measured earlier.

All of the time periods shorter than three months risk underestimating glycation and leading to false reassurance about glucose control. Waiting for six months is unnecessary given that red cell life is approximately 100-120 days and HbA_{1c} reflects three months of glucose control.

Answer Statistics



Times answered: 3546

Test Analysis

CorrectIncorrectPartially
Correct

Score: 50%

Total Answered: 10

Work Smart

Core Questions

Question 73 of 73

A 23-year-old woman comes to the clinic for review. She is distressed because over the past few months she has been feeling significantly more tired and has noticed a reduction in libido which is causing serious problems in her relationship.

She does not take any regular medication but does have a past history of coeliac disease for which she follows a gluten free diet. She has not lost any weight and has not had a menstrual period for the past six months.

On examination her BP is 110/70 mmHg, pulse is 65 bpm and regular. Her BMI is 23 kg/m². She has normal breast development, normal axillary and pubic hair. Routine full blood count, U&E, LFT and TFTs checked by the GP are normal, as are multiple urine pregnancy tests.

Which of the following is likely to be the most useful next investigation?

(Please select 1 option)

<input checked="" type="checkbox"/>	FSH This is the correct answer
<input type="checkbox"/>	Oestrogen
<input type="checkbox"/>	Prolactin
<input type="checkbox"/>	Testosterone
<input type="checkbox"/>	Trans vaginal USS Incorrect answer selected

The suspicion here, given the prolonged cessation of menses with a normal weight, normal thyroid function tests, and a past history of coeliac disease is premature ovarian failure, thought to be

autoimmune in origin. As such looking for elevated FSH (28 is the upper limit of normal, 40 is the value required to confirm menopause) is the optimal next investigation.

Unfortunately spontaneous return of ovarian function is extremely rare. Therefore this patient in all likelihood should be offered hormone replacement therapy.

Although oestrogen may be low, it is not particularly useful in identifying the underlying cause.

Hyperprolactinaemia is a possible differential, but the history of previous autoimmune pathology points us more towards premature ovarian failure rather than hyperprolactinaemia.

Testosterone is a useful investigation where there are signs of virilisation and either PCOS or adrenal pathology is suspected. As such it is not useful here. Similarly, USS is useful to confirm the presence of polycystic ovaries, although that is unlikely as the underlying diagnosis.

Answer Statistics

1		27%
2		10%
3		44%
4		11%
5		7%

Times answered: 3571

Test Analysis

CorrectIncorrectPartially
Correct

Work Smart

Core Questions

Question 70 of 71

A 34-year-old woman with a history of type 1 diabetes for 25 years comes to the endocrine clinic for review. She has lost two stone in weight over the past four months without trying, has suffered from palpitations, and is finding it difficult to complete her regular training sessions at the gym.

On examination her BP is 123/82, pulse is 90 and regular. She has a fine tremor affecting both hands. There is a smooth goitre, mild proximal myopathy, and she is slim with a BMI of 22.5. There is skin thickening/oedema with overlying increased pigmentation affecting both shins, and mild proptosis on eye examination.

Which of the following is the most likely cause of the skin changes over her shins?

(Please select 1 option)

<input type="checkbox"/>	Lichen planus
<input type="checkbox"/>	Necrobiosis lipoidica
<input checked="" type="checkbox"/>	Pre-tibial myxoedema This is the correct answer
<input type="checkbox"/>	Pyoderma gangrenosum Incorrect answer selected
<input type="checkbox"/>	Systemic sclerosis

The answer is pre-tibial myxoedema. This patient's symptoms are consistent with Grave's disease, which is associated with pre-tibial myxoedema. It is thought to occur because of accumulation of glycosaminoglycans secreted by fibroblasts under cytokine stimulation. Normal fibroblasts have been shown to express TSH receptor protein, which may account for why the changes are seen in Grave's disease.

Pyoderma gangrenosum manifests as ulcerated lesions, and is seen most commonly in patients with inflammatory bowel disease. Necrobiosis lipoidica begins as an erythematous lesion on the shin, although this later progresses to necrosis and eventually atrophy, and is classically seen on the shins of insulin-dependent diabetics. Systemic sclerosis results in calcification and thickened skin classically affecting the hands and face. Lichen planus manifests as multiple pruritic purple/violaceous plaques which can affect the skin and mucosal membranes, the cause of which is not fully understood.

Answer Statistics



Times answered: 2524

Test Analysis

CorrectIncorrectPartially
Correct

Score: 22.86%

Work Smart

Question 71 of 71

A 71-year-old woman with a history of type 2 diabetes comes to the Emergency Department for review. She has an extensive erythematous skin rash affecting the underside of both breasts and skin folds over her lower abdomen. Despite using topical moisturiser she says the skin is breaking down, is itchy and bleeding. On examination she has a BP of 145/89, pulse is 70 and regular. She is afebrile. Her BMI is 35. The rash is moist with yellowish adherent plaques and papules around the edges. Routine bloods reveal an elevated glucose and CRP, but are otherwise unremarkable. Her most recent HbA_{1c} is 64 mmol/mol.

Which of the following is the most useful intervention for her rash?

(Please select 1 option)


<input type="checkbox"/>	Intensified glycaemic control
<input checked="" type="checkbox"/>	Oral fluconazole This is the correct answer
<input type="checkbox"/>	Topical clotrimoxazole
<input type="checkbox"/>	Topical hydrocortisone Incorrect answer selected
<input type="checkbox"/>	Topical terbinafine

The answer is oral fluconazole. The presentation here is consistent with candida related intertrigo, as a result of this patient's diabetes and obesity, which leads to skin folds being warm and moist, increasing the chances of fungal infection. The debate is between topical and oral therapy, but given this patient has very extensive infection and a history of diabetes (known to result in relative immunosuppression), oral intervention is preferred to the topical option. In total oral fluconazole can

be given for a period of 2-4 weeks.

Intensified glycaemic control will be useful in reducing the risk of future infection, but it is highly unlikely to eradicate the current problem, and as such anti-fungal intervention is preferred. Both topical clotrimoxazole and terbinafine are options in patients with more limited infection, and hydrocortisone may be added where there is marked inflammation but is not used as monotherapy.

Answer Statistics

1		23%
2		23%
3		29%
4		9%
5		15%

Times answered: 1093

Test Analysis

CorrectIncorrectPartially
Correct

Score: 22.54%

Total Answered: 71

Work Smart

Question 100 of 100

A 48-year-old man presented to the ER with severe low back pain.

X ray revealed compression fracture of L1 and L3 vertebrae. The man had had a colectomy last year for ulcerative colitis with ileal pouch anal anastomosis (IPAA). He had had no symptoms of colitis since but had lost 8 Kg of weight after the surgery. His diet was normal.

A recent medical check-up record was available which showed hemoglobin 120 g/L, bilirubin 1 mg/dl (N: 0.3-1 mg/dl), calcium 1.8 mmol/L (N: 2.2-2.6), phosphate 0.7 mmol/L (N: 0.8-1.4), alkaline phosphatase 230 IU/L (N: 50-150), Albumin: 42 g/L (N: 40-50 g/L).

What is the likely explanation for his clinical presentation?

(Please select 1 option)

<input type="checkbox"/>	Age related bone loss
<input type="checkbox"/>	Hepatic osteodystrophy
<input type="checkbox"/>	Inadequate dietary intake
<input checked="" type="checkbox"/>	Vitamin D deficiency This is the correct answer
<input type="checkbox"/>	Weight loss Incorrect answer selected

This patient shows hypocalcemia, hypophosphatemia and raised alkaline phosphatase levels. This, along with radiological evidence of bone fragility, is suggestive of vitamin D deficiency (VDD).

Studies have shown that colectomy with IPAA in inflammatory bowel disease leads to osteopenia and vitamin D deficiency. After formation of IPAA, villous atrophy occurs and also there is bacterial

overgrowth leading to deconjugation of bile acids. Thus, vitamin D absorption is hampered.

In age-related bone loss, there is no change in calcium and phosphate levels in serum. Also, this bone loss due to senility does not occur at 48 years of age.

Hepatic osteodystrophy is a low bone turnover state in chronic liver disease. The cause is multifactorial. But there is no mention of chronic liver disease here.

Similar to the previous option, there is no mention of inadequate dietary intake. There is mention of weight loss. The weight loss mentioned here can occur after colectomy due to altered intestinal absorption.

Weight loss can, in itself, cause osteoporosis. But the metabolic alterations of VDD will not be found.

References and Further Reading:

Gupta S, Shen B. Bone loss in patients with the ileostomy and ileal pouch for inflammatory bowel disease. *Gastroenterol Rep (Oxf)*. 2013 Nov; 1(3): 159-165

Answer Statistics



Times answered: 278

Test Analysis

CorrectIncorrectPartially
Correct