

2018 - IID - MD4043 - eksamen 1
Eksamensdato: 2018-05-29

1

A 1-year old boy has a high fever (40°C) and a tendency for febrile convulsions. After 3 days the fever has gone, and a non-characteristic maculopapular rash appears over his entire body, but not on his face.

What is the most probable agent underlying the patient's disease?

- A Morbilli (measles virus)
Highly improbable because the general population has been vaccinated, and the disease appears with earlier onset of rash, conjunctivitis and has a longer disease duration.
 - B Rubella (German measles)
Highly improbable because the general population has been vaccinated. The rash spreads from the face and the patient does not normally have such a high fever.
 - C Parvovirus B19
Improbable as these patients are often older (5-15 years) and have a typical rash in the face (cheeks). They generally have a moderate fever and a biphasic course in which the rash appears at the same time as a new fever peak.
 - D X Human herpes virus type 6
Typical clinical signs of exanthema subitum (6th children's disease; previously called the 4th children's disease).
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2

A 23-year old previously healthy woman attends the doctor's surgery with symptoms of cystitis. She has never had anything similar. Urine dipstick investigation reveals leukocytes and nitrite ++. You decide to start a course of antibiotics immediately.

Which microbes would you expect to find, and which antibiotic would you expect the bacteria to be most sensitive to?

- A E. coli and trimethoprim
 - B S. saprophyticus and nitrofurantoin
 - C S. saprophyticus and trimethoprim
 - D X E. coli and nitrofurantoin
The urine dipstick was nitrite positive, which indicates with high specificity an infection caused by a bacterium in the enterobacteriaceae family and probably E.coli, which is the most common cause of uncomplicated cystitis outside hospitals. In Norway, only 1-2% (2016) of E.coli isolates are resistant to nitrofurantoin, while about 20% are resistant to trimethoprim.
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3

One week after he returned from a trip to Tanzania, a 23-year old man is admitted to hospital with symptoms similar to gastroenteritis. A question has been raised as to whether this could be malaria. Which investigations should be ordered to correctly diagnose malaria?

- A Blood culture and spinal puncture
 - B X Blood smear and malaria antigen test
Blood smear with Giemsa staining of thick and thin drops is traditionally the best method for diagnosing malaria. In recent years, the antigen tests, which are generally very good, have been used in the vast majority of hospitals
 - C Blood culture and malaria antigen test
 - D Blood smear and spinal puncture
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4

A results report from the Microbiology Dept. states that at urine culture, a pure culture of *Klebsiella pneumoniae* 10^5 CFU/ml has been found with the following resistance profile:

cefotaxime S
ciprofloxacin R
imipenem S
gentamicin S
nitrofurantoin S
trimethoprim-sulfa S

Which resistance mechanism is most probably present in this bacterium?

A Alternative penicillin-binding protein

B Modified membrane permeability

C X Target modification

Resistance to quinolones is normally due to one or more mutations in the bacterial gene for DNA gyrase.

D Extended-spectrum beta-lactamase

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5

Morphine is normally the first choice for patients with opioid-requiring pain. In patients with renal failure however, use of morphine can pose a problem.

What is the most common cause of this?

A Morphine metabolism is reduced in renal failure

B Morphine is nephrotoxic

C X The active morphine metabolite morphine-6-glucuronide can accumulate in renal failure

Morphine is eliminated via glucuronidation to morphine-3-glucuronide and morphin-6-glucuronide. The latter is an active metabolite that probably has higher analgesic activity than morphine itself. Reduced excretion via the kidneys could result in accumulation of the active metabolite, with potential overdose as a result.

D Active secretion of morphine in the kidneys is reduced in renal failure

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6

When used by the mother during pregnancy, some medicines can harm the fetus and cause malformations or function disorders, particularly during the most sensitive period. Some medicines can affect the central nervous system.

When during a pregnancy would you anticipate the latter could occur?

A In the first to third month

B In the fourth to sixth month

C From the seventh month to the birth

D X During the entire pregnancy

CNS is sensitive to fetus-harming medicinal effects throughout the entire pregnancy. This includes not only malformations, but also demonstrated cognitive effects such as poorer performance in school and lower IQ. You have been given lectures on this and it is also included in handouts.

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7

You are the GP for a 57-year old man who has recently been investigated for high blood pressure. You have diagnosed moderate essential hypertension and, based on his total cardiovascular risk profile, have found indications for antihypertensive treatment. He is otherwise quite healthy but has Raynaud's disease, an idiopathic condition with episodic painful circulatory failure in fingers and toes, which can be quite bothersome. You must now decide which blood pressure medication to prescribe.

Of the various classes of blood pressure lowering medications, there is one type you decide to exclude. Which is it?

A X Beta blockers (e.g. metoprolol)

Has a tendency to give peripheral vasoconstriction and would exacerbate Raynaud's disease.

B Alpha blockers (e.g. doxazosin)

C Calcium blockers (e.g. nifedipine)

D ACE inhibitors (e.g. lisinopril)

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8

The contraindications for the NSAID medication naproxen include «severe renal failure». Naproxen's possible interactions with renal function are primarily associated with a specific mechanism.

Which mechanism is this?

- A X** Naproxen inhibits renal synthesis of prostaglandins so that renal through-blood flow decreases
Correct answer
- B** Naproxen dilates the efferent arteriole, so that the filtration pressure over the glomeruli is reduced
Naproxen gives a reduced filtration pressure by not by dilating the efferent arterioles.
- C** Naproxen constricts the afferent arteriole, so that the filtration pressure over the glomeruli increases
A reduction in prostaglandin synthesis could result in constriction of afferent arterioles, but this would reduce the filtration pressure.
- D** Naproxen stimulates the renin-angiotensin-aldosterone-system via inhibition of cyclooxygenases

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9

Hormonal replacement therapy after the menopause has been associated with an increased incidence of a certain cancer.

Which cancer is this?

- A** Bowel cancer
- B X** Breast cancer
Correct answer
- C** Endometrial cancer
- D** Vulval cancer

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10

Which effects on the heart would you expect if you administer a medicine that blocks beta-1 adrenergic receptors?

- A** Increased heart rate and reduced contractility
- B X** Reduced heart rate and contractility
Adrenergic stimulation gives positive chronotropic and inotropic effects, i.e. increased heart rate and contractility. These effects are primarily mediated via beta-1 receptors. By blocking these receptors with a medicine will give the opposite effects.
- C** Reduced heart rate and increased contractility
- D** Increased heart rate and contractility

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11

To evaluate whether contrast has been taken up in a renal tumour, a contrast phase is required in addition to the nephrogram phase.

Which other phase is most useful?

- A** Excretion phase
There can be some density difference, but not necessarily.
- B** Arterial phase
There can be some density difference, but not necessarily, even with a clearly solid tumour
- C** Venous phase
Venous phase and nephrogram phase are basically the same phase
- D X** Pre-contrast phase
Increase in density from before contrast to the nephrogram phase will reveal the greatest density difference and is the most reliable for evaluation of contrast uptake. This in turn is evidence of a tumour

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12

Mats (26 years of age) has been diagnosed with high blood pressure. It is suspected he has renovascular hypertension and further investigation is wanted using an imaging technique.

Which of the following imaging investigations is most suited to this?

- A CT Abdomen with contrast
 - B CT angiography of the renal veins
 - C Urography
Displays contrast excretion in kidneys/collecting duct system, and will not provide any additional information in regard to the renal arteries
 - D X** CT angiography of the renal arteries
CT angiography can reveal constrictions of renal arteries which can be caused by the following: Atherosclerosis, fibromuscular dysplasia (FMD), Takayasu's arteritis or renal artery aneurism.
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13

You are the doctor in a neonate intensive care department. At 04:15 the nurse calls and says that a 7-day old baby born in week 28 has become more and more ill during the evening/night. You examine the child and find that his/her tummy is bloated and he/she appears to be in pain.

What is the most correct way to deal with this situation?

- A You suspect appendicitis and order MRI abdomen
 - B X** You suspect something serious and order rush ultrasound and X-ray of the abdomen
Appendicitis in the newborn is possible, but the condition is extremely rare. The possibility of necrotising enterocolitis should be investigated first. NEC is a condition with high mortality and morbidity. The condition primarily affects premature babies during the first 10 days of life. This must be investigated initially using ultrasound and X-ray
 - C You suspect it is nothing serious, give analgesics and await a new assessment in the daytime
 - D You suspect pain due to wind and tell the nurse that it will pass
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14

This CT image was taken of a 67-year old man with various types of pain in different places in his abdomen. The patient recently spent a whole week in the summer walking in the mountains, and said that he had drunk little and sweated a lot most of the week. The night after he got home, he woke up with severe pain and was admitted to the Urology Department.

Based on the findings in the image, what would you assume to be the patient's symptoms?



Case courtesy of Dr Varun Babu, Radiopaedia.org, rID: 46796

- A** Left-side diffuse pain under the costal arch and right-side colic pain radiating to the groin. *Spasms in an obstructed ureter give colic pain that radiates to the groin. An intrarenal stone lying in the calyx will not cause ureteral spasms. Therefore right-side strong colic pain is unlikely. Hydronephrosis itself is almost always asymptomatic, even when it occurs acutely. Therefore diffuse pain under the left costal arch is unlikely.*
- B** Diffuse pain under the costal arch on both the left and right sides. *Hydronephrosis itself is almost always asymptomatic, even when it occurs acutely, and there is therefore nothing to indicate that the patient should have diffuse pain under the left costal arch. https://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-urinary-tract-obstruction-and-hydronephrosis?source=search_result&search=hydronephrosis&selectedTitle=1~150*
- C** Severe colic pain radiating to the groin on both the left and right sides. *Spasms in the blocked ureter are causing the colic pain that is radiating down into the groin. An intrarenal stone lying in the calyx will not cause ureteral spasms.*
- D X** Right side diffuse pain under the costal arch and left side strong colic pain radiating to the groin. *The patient has a concrement in the right kidney, which gives diffuse pain under the costal arch. There is marked left-side hydronephrosis, which indicates that the ureter is blocked somewhere between the kidney and the bladder. If you have one stone, the chances are high that you will have more. It is therefore reasonable to believe that the patient has a stone in the left ureter which is causing the colic pain and resulting in hydronephrosis. <http://www.mayoclinic.org/diseases-conditions/kidney-stones/basics/symptoms/con-20024829>*

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15

Patients with ovarian cancer are followed up using diagnostic imaging.
Which modality is best suited for this?

A X CT, because it covers the entire thorax/abdomen

It is correct that ultrasound does not produce radiation, and it is sensitive for identifying ascites. However, it does not provide any assessment of the lungs and reproducibility of the total overview of the abdominal cavity is very poor. Sparing radiation is not normally a topic in patients who have a malignant disease. The disease itself is more of a threat to the patient than the radiation. MRI has excellent soft tissue resolution and can sometimes be relevant when investigating primarily atypical ovarian disease, but it does not generally have a place in later follow-ups. PET can sometimes be indicated if there is uncertainty on the question of metastases, but has poor sensitivity for small tumour masses and is far too resource-demanding. CT is the correct answer. It gives a rapid and reproducible assessment of the entire area in question in a few seconds. Using this method gives a fast overview of all the common metastases in ovarian cancer, including the lungs and intraperitoneally.

B MRI, because it gives optimal soft tissue resolution

C Ultrasound, because it does not give ionising radiation

D PET, because the tumour takes up FDG

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16

Physical abuse of children is something every clinician must have at the back of their minds. The radiologist can be the first person to suspect/give a diagnosis and say something about the extent of injury, particularly when the medical history does not agree completely with the findings on the images.

What type of fractures are very specific for this?

A Greenstick fractures

B Avulsion fractures

C Unilateral, isolated costa fractures

One-sided single costa fractures can occur accidentally, but costa fractures posteriorly and bilaterally are suspicious indicating NAI. This makes metaphyseal injuries in the form of bucket handle and corner fractures more suspicious.

D X Metaphyseal fractures (bucket handle/corner fractures)

Of these alternatives, this is the fracture that is most specific

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17

A child has a bad cough and whistling sounds. X-ray of the thorax is taken. A consolidation up in the right hand corner is described as follows: «Homogenous consolidation up on the right hand side. The horizontal fissure is drawn up. The mediastinum is drawn slightly to the right. No air bronchograms. No pleural fluid.»

What is the most probable diagnosis?

A Pleuropulmonary blastoma

B Lobar pneumonia

C X Atelectasis of the upper lobe due to bronchitis with mucous plug

The cough and whistling are cardinal symptoms of an obstruction, which predisposes for mucous plugs and atelectasis. This type of atelectasis will be a traction atelectasis that pulls the lobe fissures up and the mediastinum to the right. Pneumonias do not normally cause displacement of the mediastinum. Tumours are rarer and therefore less probable, and would most probably not have caused the lobar fissures to draw up and the mediastinum to draw laterally at the same time.

D Mediastinal tumour that stretches out into the right upper thorax cavity

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18

An X-ray of the abdomen of a newborn shows air in the stomach and an air-filled structure to the right of the stomach. We have the so-called «double-bubble-sign». The intestines are otherwise not air-filled.

What is the most probable diagnosis?

- A Malrotation of the small intestine
Non-specific sign at X-ray without contrast. Is preferably diagnosed using X-ray fluoroscopy (duodenal course on right side of column) or US/CT (rotation of crossed vessels where the mesenteric artery and vein "switch" places and the intestines can be in an «abnormal» position).
- B X** Duodenal atresia
Duodenal atresia is most probable because air will fill the stomach and the duodenum up to the atresia, but not pass to the rest of the intestines.
- C Meconium ileus
This gives an obstruction image with dilatation of the intestinal section (primarily the small intestine) proximally for the impacted meconium in the colon. The meconium itself is rarely seen (possibly as bubble-burst contours peripherally, and generally in the lower right quadrant). It is diagnosed using fluoroscopy with contrast rectally (then meconium remains can be seen and a small calibrated colon = «microcolon»)
- D Oesophageal atresia with fistula
Is not diagnosed using X-ray of the abdomen, but X-ray of the thorax. At X-ray of the thorax, a dilated pocket can be seen in the jugulum/upper mediastinum contour; air or aqueous contrast can be given to look for the oesophageal stump and signs of fistula in the trachea. If there is in addition a distal fistula between the trachea and lower oesophageal remains, it will be possible to see air in the stomach and intestines. In general, this must also be diagnosed using X-ray fluoroscopy.

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19

A hyperdense renal cyst on CT is a simple cyst where at some time or other there has been a small bleed from the cyst wall and into the cyst.

What characterises such a cyst on CT?

- A The blood products have the same density as calcium carbonate
Not right. Fresh blood and structures with moderate calcium carbonate content can have about the same density, but this is not a general rule
- B It is filled with contrast in the excretion phase
These are called pyelogenic cysts or calyceal diverticula
- C X** They have the same density in the pre-contrast phase and nephrogram phase
They lack the contrast uptake that solid tumours have
- D The diagnosis cannot be made using CT
Yes, if you have the correct contrast phases

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20

For a "stone CT" of the urinary tract, the patient lies on his/her stomach.

Why is this an advantage?

- A Less painful than lying on the back if they have an attack of ureteral stone
Not correct, these patients are restless and continually change position
- B X** Makes it possible to distinguish between stones in the ureteral orifice and the bladder cavity
Due to the posterior location of the ureteral orifices, the stone that would be seen in/on the posterior bladder wall will be in the ureter/orifice, because free stones in the bladder cavity will fall forwards towards the anterior bladder wall
- C Compresses the intestines so that movement artefacts are reduced
Not right
- D Better urine passage through the ureter
Hardly correct, and would not improve diagnosis in any way

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21

You are working as junior doctor in the emergency at the Paediatric Department. A 3-year old boy arrives as an emergency after he has eaten peanuts for the first time. Shortly after eating the peanuts, he had stomach ache, vomited and developed urticaria which has now spread over his entire body. Which clinical situation is this and which mechanism causes such an acute reaction?

- A X** Anaphylaxis. Mast cell degranulation
Correct answer. This is a very typical clinical situation with an immediate IgE-mediated hypersensitivity reaction and mast cell activation/degranulation.
- B** Allergic reaction. Cell mediated reaction
Incorrect answer
- C** Hypersensitivity reaction. Non-immunologic response
Incorrect answer
- D** Anaphylaxis. Adhesion by eosinophils
Incorrect answer

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22

A baby has been born extremely premature in week 24. After discharge from the neonate department, the baby should according to national guidelines be followed up in the specialist health care services in addition to the primary health care services. When should the first multi-disciplinary development evaluation be performed in the specialist health care service?

- A X** At 3 months corrected age
Correction for prematurity must be applied up to 2-years of age. The first multi-disciplinary evaluation in the specialist health care services should, according to the national guidelines take place at 3 months corrected age.
- B** At 1 year corrected age
Incorrect answer
- C** At 3 months of age
Incorrect answer. You must remember to correct for prematurity
- D** At 1 month corrected age
Incorrect answer

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23

Ane is a first-time pregnant woman and has spontaneous contractions in gestation week 25. She and her husband want to talk to the paediatrician to discuss the prognosis if the baby is born in week 25. What should the paediatrician emphasise in the talks with Ane and her husband?

- A** That one can choose not to offer intensive care to such a premature child
Incorrect. The ethics on decisions on treatment of extremely premature babies are discussed in lectures and the students must know the limits for offering intensive care (from 25 weeks)
- B** The risk of infection and poor nutritional status for a baby born this prematurely
Incorrect. Insufficient relevance for the problem posed by this question (prognosis)
- C** That children born in week 25 normally survive and are healthy
Incorrect. This is an unsatisfactory level of detail for this information
- D X** Prognosis for survival and permanent injury if born in week 25
Correct. It must be possible to present updated prognosis figures if the parents wish this.

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24

You are a general practitioner. A couple come to you with their 3-week old boy. He has started to vomit breast milk. He vomits strongly and is hungry again immediately afterwards. What do you suspect?

- A X** Pyloric stenosis
Classic presentation of pyloric stenosis
- B** Malrotation and volvulus
- C** Gastroenteritis

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25

You are working as a GP. Ida is 5 years old and attends for assessment after 3 episodes this winter of having problems breathing in connection with colds. Her mother says that the girl generally complains quickly about her breathing, that she is often affected by a lot of coughing and mucous and that she cannot keep up with the other children when playing or out walking.

What is the most probable diagnosis and what would you start treatment with?

- A The girl has probably had many colds this winter and you await further diagnosis and therapy
Incorrect answer
 - B X** The girl probably has asthma and you start her on short-acting beta-2-agonists (e.g. Ventoline) and inhalation treatment with steroids
Correct answer
 - C The girl probably has asthma and you start her on inhalation treatment with anticholinergic medication (e.g. Atrovent)
Incorrect answer
 - D The girl probably has asthma and you start her on long-acting beta-2-agonists (e.g. Serevent) and inhalation treatment with steroids
Incorrect answer
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26

You are the on-duty junior doctor at a small local hospital. A previously healthy 8-month old boy is admitted with waves of stomach pain. When he has these attacks he cries inconsolably and pulls his legs up towards his stomach. When you examine him you see he has blood in his feces. Which disease do you suspect?

- A Ileus
 - B Appendicitis
 - C Gastric ulcer
 - D X** Intussusception
The clinical signs are classic for intussusception
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27

You are examining a newborn baby that has a perinatally detected heart condition. The child has no clinical signs or murmurs immediately after the birth, but measurement of peripheral saturation reveals low values that do not respond to O₂ supplied through a funnel. At X-ray you see a heart that looks a little like an egg.

Which heart anomaly is the most probable in this case?

- A ASD
Incorrect answer
 - B Tetralogy of Fallot
Incorrect answer
 - C AVSD
Incorrect answer
 - D X** Transposition of the great arteries
Correct answer
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28

For several months a 4-year old boy has been troubled with a lot of stomach pain, frequent bloating and has loose, foul-smelling stools with frequent bowel movements. His mother says that this became much worse after a bout of gastroenteritis but he had possibly had quite a few problems before that too. Since then he has failed to put on much weight and is often lethargic and tired. You examine the boy as his GP.

What is the probable diagnosis?

- A Crohn's disease
Highly improbable in this age group
 - B Iron deficiency
Incorrect answer, highly improbable. Does not cause stomach pains, borborygmi and foul-smelling diarrhoea
 - C Gastroenteritis
Incorrect answer, highly improbable because the condition has persisted for a long time
 - D X Coeliac disease
Correct answer. At this age, coeliac symptoms can vary considerably, but in this case these are the common symptoms
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29

Why is it recommended to perform one rescue breathe and three compressions in resuscitation in neonates?

- A The soft chest in the neonate amplifies the effect of heart compressions
 - B In neonates, we treat a pulse below sixty as cardiac arrest
 - C X Cardiac arrest in neonates is primarily due to hypoxia
Hypoxia results in bradycardia and subsequently cardiac arrest. The most important part of treatment is to ventilate the patient; therefore more ventilation compared to heart compression compared to adults with cardiac arrest
 - D Congenital heart defects do not cause cardiac arrest in neonates
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30

You are a doctor at the child health centre and are contacted by the public health nurse. She says that she has a baby she is examining who has some remarkable skin changes on the lower part of his back and bottom which she wants you to take a look at.

At examination you find a 3-month old boy of Asian origin. He is happy and in good general health, no neurological anomaly. On the right side of his back on a level with the lower back, you see a blue-grey irregularly delimited mark that stretches down over the right bottom. The change is not tender. You find skin changes with similar colouring on both arms. The mother does not appear concerned.

What do you think this is and how would you deal with it?

- A You inform the mother that you believe they are congenital haemangiomas, and that these will gradually fade by themselves. You make an appointment for check-up in 2 months
Incorrect diagnosis
 - B You become concerned that this could be child abuse, something you explain to the mother. After this you send a notice of concern to the Child Welfare Services.
If you suspect child abuse, you must not inform the parents.
 - C You say you are unsure what it could be, but will refer the child to the GP for further investigations.
This is a little too vague and contributes to relinquishing responsibility.
 - D X You think that this could be congenital skin changes of the Mongolian spot type. For safety's sake, you make an appointment for check-up in 2 weeks.
Arranging a check-up is sensible, to be certain that this is not a bruise.
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31

You are called to attend a child who has a known Tetralogy of Fallot. The child has fainted and is deeply cyanotic.

What can you as the GP do before the ambulance arrives?

- A Give oxygen and i.v. beta blockers
Incorrect answer
- B X** Give i.v morphine and place the child in the fetal position
This is the standard treatment before transfer to hospital
- C Give i.v morphine and i.v. beta blockers
Incorrect answer
- D Give i.v beta blockers and place the child in the fetal position
Incorrect answer

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32

You are working as a GP. You see a 2-year old boy for a routine check-up. While taking the medical history, the father says that during the last few months the boy has had several episodes of pneumonia and that he is now not able to do as much as other boys his age. When you auscultate his heart you hear a grade 2/6 normal high-frequency ejection systolic flow murmur and a fixed split 2nd heart sound.

What should you now do with this boy?

- A Give him an appointment for check-up in 2 months as the boy is not acutely ill
Incorrect answer
- B Do not refer to a specialist as the boy probably has a physiological murmur
Incorrect answer
- C Refer the boy to a specialist as the boy probably has a chronic lung disease
Incorrect answer
- D X** Refer to a specialist as the boy probably has a heart defect
Correct answer. It is important to think of heart defects in this case. Taking into account what you auscultated, the most probable cause is an ASD, but this should be clarified assisted by a paediatric cardiologist and echo' of the heart.

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33

Isak is a 2-month old boy. He arrives with his mother to see you, the Child Health Centre doctor, due to varying amounts of fresh blood in his stools over the last 2-3 weeks. The stools are otherwise soft with normal bowel movements and he does not appear to have stomach pains. Isak is fully breast fed, happy during examination and normally developed. He has shown normal increases in weight and length.

Which diagnosis is most probable?

- A Chronic obstipation
Incorrect answer. Obstipation i children fed on breast milk is rare and would give far more pronounced symptoms, not least fissures that could result in bleeding. Furthermore, the mother does not describe a change in bowel movement, hard stools or varying stool consistency
- B X** Allergic proctitis
Correct answer. This is a relatively common condition with typical clinical symptoms. It is important to call the child back for check-up and to have a low threshold for allergy investigations even though these allergies are most often not IgE-mediated or combination reactions. Provocation is important after about 3-6 months as these children grow out of these allergens.
- C Uncomplicated/physiological condition
Incorrect answer. Infants should not bleed over any length of time from the intestines.
- D Inflammatory bowel disease
Incorrect answer. IBD is extremely rare in this age group and one would expect a considerably iller child.

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34

As the doctor at the Child Health Centre, you are asked to assess the growth of a 6-year old girl. Up until the age of 5 she was on the 2.5 percentile for height for age, but over the last year she has grown very well and is now between the 25th and 50th percentiles. Previously she had a lot of respiratory infections, but the last year she has had very few. What is the most correct assessment?

- A The growth curve expresses that she has been rather slow finding "her" height percentile.
- B The growth spurt over the last year is catch-up growth after previous illness.
- C Growth cannot be assessed without knowing the mid-parental height.
- D X** The growth is clearly pathological and she must be investigated for precocious puberty. *She has crossed more than two percentile bands and at this age precocious puberty is the most probable cause. Hyperthyroidism and growth hormone producing tumour can also explain it, but are very rare conditions.*

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A 2.5-year old girl from a non-European country is seen by the GP for a check-up. She is pale, but in good general health. At examination, the liver and spleen are not definitely enlarged. Due to problems with communication the colour of her urine is not known. The GP takes the following blood tests:

Test	Value	Ref. range
Hb	6.7 g/dl	10.5-13.5 g/dl
MCV	50 FL	75-87 FL
MCH	13.8 PG	23.9-34.1 PG
Tot. reticulocytes	0.07 10 ¹² /L	0.02-0.09 10 ¹² /L
Tot. leukocytes	17.3 10 ⁹ /L	4.0-14.0 10 ⁹ /L
Neutrophil gran.	59%	31-60%
Thrombocytes	717 10 ⁹ /L	145-390 10 ⁹ /L
Ferritin	2 MIKROG/L	10-167 MIKROG/L
LD	245 U/L	230-590 U/L

What is the most probable diagnosis?

- A X** Iron deficiency anaemia
Low ferritin demonstrates iron deficiency. The patient is in quite good shape which indicates slow development of the anaemia. This fits well with iron deficiency. Iron deficiency is a microcytic hypochromic anaemia. The child probably has moderate reactive leukocytosis and thrombocytosis. The apparently normal reticulocyte count is remarkable, but with such a low Hb, the reticulocyte count is in fact very low indicating a failure of erythrocyte production. Otherwise, it is important to investigate the cause of the iron deficiency.
- B G6PD deficiency (Glucose-6-phosphate dehydrogenase deficiency)
Patients with G6PD deficiency can have episodes with haemolytic anaemia. Hb of 6 and lower are not uncommon in acute haemolysis in these children. G6PD deficiency is considerably more frequent in the Middle east and Africa. Normal LD however rebuts acute haemolysis. the anaemia in G6PD deficiency is normochromic normocytic in contrast to the anaemia in this patient. The colour of this patient's urine is uncertain. Dark urine ("Cola coloured") could indicate acute haemolysis. The child has pronounced iron deficiency which better explains the condition.
- C Leukemia
Leukemia is highly improbable due to lack of thrombocytopenia/neutropenia. The liver and spleen do not appear to be enlarged, which also rebuts leukemia, even though hepatosplenomegaly is not always present in leukemia. Most often anaemia is present at onset of leukemia, but this is normally a normochromic normocytic anaemia. In this case there is in addition pronounced iron deficiency, which is rare at onset of leukemia in children.
- D Thalassemia
Thalassemia gives a microcytic hypochromic anaemia as in this patient; however, the reticulocyte count is generally elevated. Iron deficiency is therefore the most probable cause of this anaemia.

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36

Jens (10 years old) has previously been healthy, but now has a fever and sore throat. His father takes him to the doctor who thinks that Jens is lethargic and somewhat weak, but not seriously ill. Clinical examination reveals enlarged and red injected tonsils.

What other information and findings would indicate that the infection is bacterial and caused by *Streptococcus pyogenes*?

- A X** High fever, grey-white coating on the tonsils, enlarged tender glands in the throat in the angle of the jaw.
Typical for gr. A streptococci tonsillitis
- B** Moderate fever, small spot-shaped coatings on the tonsils, generally enlarged glands in the throat.
- C** High fever, no coating on the tonsils, enlarged tender glands in the throat in the angle of the jaw.
- D** High fever, red eyes with discharge, cough and generally enlarged glands in the throat.

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37

What are the characteristics of nephrotic syndrome of the type "minimal change" in children?

- A** Minimal proteinuria, peripheral oedema and increased creatinine
- B X** Peripheral oedema, proteinuria and low serum albumin
- C** Haematuria, increased proteinuria-creatinine ratio, peripheral oedema
- D** Thrombocytopenia, paleness and peripheral oedema

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38

For which of the infections below is the use of medication and avoidance of breastfeeding recommended to prevent transfer from the mother to fetus/baby?

- A** Herpes simplex
- B X** HIV (human immunodeficiency virus)
- C** CMV (cytomegalovirus)
- D** Hepatitis B

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39

Peder (13.5 years old) is 140 cm high and despairing because he is the shortest boy in his class. He feels well but has stopped skiing actively. Both parents are 170 cm tall, and his father's voice dropped when he was 14 years old. At examination, Peder is at Tanner stage 2, and testicular volume is 4 ml bilaterally. X-ray of his left hand reveals a skeletal age of 13.5 years. He was 50 cm at birth (25th-50th percentile).

Which statement is the most correct assessment of Peder's growth?

- A** The boy's skeletal age together with his poor growth indicates an underlying chronic disease.
In the case of an underlying disease he would have a delayed skeletal age (1-2 years).
- B X** The boy has just started his pubertal growth and he will have a final height of 165-170 cm, which is within his genetic potential.
His genetic potential is 176.5 cm +/-10 cm. With a testicular volume of 4 ml, he has all of puberty to grow 25-30 cm, and he will therefore achieve his potential. This is a genetically-related shortness of stature.
- C** This is a normal growth pattern in which the boy has entered puberty late, but will achieve a final height of around 175 cm (25th-50th percentile).
- D** The boy's poor growth is due to delayed puberty, which indicates a failure of the gonads (hypogonadism) and/or pituitary.
The boy has started puberty at the normal time.

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40

Per (10 years old) has been troubled by stomach pains for quite some time. He has had loose stools with mucous and a little blood, and he has possibly lost a couple of kilos. At examination: Height 135 cm (25th percentile), weight 26 kg (2.5th percentile compared to height). He is pale and in poor general health. He has palpation tenderness in the right fossa, where it is also possible to palpate a mass that is probably the intestines. Rectal examination reveals perianal swelling. Blood samples taken at the GP's surgery reveal:

Value	Reference range
SR 30	<10
Hb 9.8 g/L	10.5-13.5 g/L
White blood cells 12.4 x 10 ⁹ /L	4.0-14.0 x 10 ⁹ /L
MCV 76 fl	75-87 fl
MCH 25 pg	24-34 pg
Platelets 578 x 10 ⁹ /L	145-390 x 10 ⁹ /L
CRP < 5 mg/L	
Ferritin 30 microgram/L	29-389 microgram/L
Albumin 34 g/L	43-55 g/L

Which diagnosis is the most probable?

- A** Anaemia and iron deficiency
- B** Gluten intolerance (coeliac disease)
- C** Bacterial enterocolitis
- D X** Chronic inflammatory bowel disease

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41

The patient is a 3-year old boy who has had numerous airway infections since the age of one. He has had several middle ear infections, pneumonia 3 times and sinusitis twice. He has tolerated the normal vaccinations and he has not been particularly ill from varicella. He has always had small tonsils. He is admitted now after a 1-day history of high fever, cough, chest pain and difficulty breathing. CRP 281 (ref < 5 mg/L), white 26.1 x 10⁹/L (ref 4.0 – 14.0 x 10⁹/L). X-ray of the chest reveals an infiltrate basally in the right lung. He slowly recovers, but requires three week's intravenous antibiotics before he is ready to go home. Petter's immune system status is investigated at check-up in the Outpatient Clinic 6 weeks later:

Leukocytes 12.5 x 10 ⁹ per liter	Ref: 4.0-14.0 x 10 ⁹ /L
Hgb 12.5 g/l	Ref: 10.5-13.5 g/dL
Neutrophils 65%	Ref: 31-60%
Lymphocytes 25%	Ref: 37-57%
Monocytes 6%	Ref: 0-6%
IgG 0.3 g/L	Ref: 6.1-14.9 g/L
IgA 0.1 g/L	Ref: 0.2-2.9 g/L
IgM 0.3 g/L	Ref: 0.4-2.1 g/L

X-ray thorax: Clear lungs, but suspected bronchiectasis in the right lung lower lobe, mediastinum with normal width.

Analysis of lymphocyte concentrations was also performed.
What do you think the lymphocyte analysis revealed?

- A Low B lymphocytes, low CD4+ T lymphocytes, low CD8+ T lymphocytes
 - B X** Low B lymphocytes, normal CD4+ T lymphocytes, normal CD8+ T lymphocytes
 - C Normal B lymphocytes, low CD4+ T lymphocytes, low CD8+ T lymphocytes
 - D Normal B lymphocytes, normal CD4+ T lymphocytes, normal CD8+ T lymphocytes
-

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42

A young boy, Tord, 17-years old goes to you his GP. He wants to speak to someone because he says he is very depressed. He is not interested in medication treatment now. He scores 48 on Humøret Ditt [Mood and Feeling Questionnaire] (MFQ). You assess him to be depressed. He is not suicidal. He continues to function well at school and is also active as centre forward on the football team. You map the depth, extent and duration of his depression and his family situation. There is depression in the family; in addition Tord had separation anxiety as a 10-year old in connection with his father's illness. In addition you map his day rhythm, diet, etc. Much of Tord's time awake is spent thinking; on philosophical questions, but mostly about his own life, death and the future. He does not think family life is that nice. When he is not at school, training or eating with his family he is in his room resting on his bed. He sleeps almost every afternoon.

What are the most important elements of a therapy for Tord (together with psychoeducation and psychosocial support)?

- A Increased physical and mental activity. Make an activity plan.
Not sufficient
 - B X** Increased physical and mental activity together with diurnal rhythm regulation; he must not sleep in the afternoon.
Correct answer. Therapy for adolescents with depression must contain both an activating element and a cognitive element. Here, the thinking must be reduced. This will contribute to reducing thinking too.
 - C Family therapy
Could be beneficial, but not the first choice for a 17-year old
 - D The focus must be on the trauma he experienced when his father suddenly became very ill
There is nothing to indicate that this is the prime reason for his problems
-

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43

Over the last few months Janne (14 years old) has become afraid of being infected with HIV. She showers and changes all her clothes when she comes home from school. In addition, she repeatedly washes her hands and so thoroughly that her skin on the back of her hands has become dry and sore. She avoids going to places where there are a lot of people because she is afraid of being infected. When you ask her why she washes so much she says that it started after she accidentally stepped on a condom in a park. Deep down she knows that she washes too much, but she can't stop herself.

What is the most probable explanation of her symptoms?

- A X** Obsessive-compulsive disorder
The vignette describes typical symptoms of a compulsive disorder.
 - B Specific phobia (infection phobia)
Adolescents with specific phobias can also be afraid of being infected with HIV. But the anxiety with such phobias is limited to the presence of the specific phobic object e.g. a public toilet. Neither in phobia do we find the compulsive actions/rituals such as washing to alleviate the anxiety.
 - C Paranoid thoughts and psychoses
Adolescents with paranoid thoughts and psychoses can be afraid of being infected with serious infections such as HIV. But Janne «knows deep down that she washes too much». Somebody with paranoid thoughts and psychosis does not have this insight.
 - D Generalised anxiety disorder
Adolescents with generalised anxiety disorder experience anxiety. But this type of anxiety is not as specific as with compulsive disorders in which there is a fear of something concrete (being infected) and perform compulsive actions (washing hands).
-

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44

In recent years there has been an increase in the number of Unaccompanied Minor Asylum Seekers [Enslige Mindreårige Asylsøkere] (EMA) coming to Norway. How many came to Norway during 2016-2017?

- A 320-5,480
- B 505-753
- C 1,374-3,500
- D X 161-320

Correct answer. Figures from UDI

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45

An 18-year old girl sees her GP with a positive pregnancy test. Based on ultrasound examination, she is pregnant in week 16. The girl is very unhappy and says that she has drunk 3-5 units of alcohol every Saturday as she didn't know she was pregnant.

What damage could the fetus have developed?

- A X Problems with motor function, language, concentration and memory
These problems are typical for the harmful effects of alcohol on brain development in the fetus. In cases of severe alcohol damage, fetal alcohol syndrome (FAS) can develop in addition to these symptoms and includes characteristic facial features and growth retardation.
 - B Only language problems have been proven to be caused by alcohol during fetal development.
Development of all cognitive capacities are sensitive to the effects of alcohol in the fetus and include motor skills impairment, problems with language, concentration and memory .
 - C Characteristic facial features and growth retardation without an effect on the brain.
Brain development is the organ most sensitive to alcohol in the fetus, and can be harmed at lower doses of alcohol depending on sensitivity. At higher doses, the characteristic facial features and growth retardation can occur.
 - D Alcohol does not have a harmful effect on the fetus.
Alcohol has a teratogenic effect on the fetus and there is no lower alcohol limit. Typical problems due to alcohol damage without characteristic facial features and growth retardation include motor skills impairment, problems with language, concentration and memory.
-

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46

What are the core symptoms of ADHD?

- A X Concentration problems, impulsivity and hyperactivity.
Correct answer
 - B Concentration problems and hyperactivity.
The core symptoms are concentration problems, impulsivity and hyperactivity.
 - C Concentration problems, impulsivity, hyperactivity and behavioural problems.
The core symptoms are concentration problems, impulsivity and hyperactivity. Behavioural problems are an additional problem for many with ADHD.
 - D Concentration problems, hyperactivity and behavioural problems.
The core symptoms are concentration problems, impulsivity and hyperactivity. Behavioural problems are an additional problem for many with ADHD.
-

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47

A 7-year old boy attends the GP's office with his mother. He has stomach pains and has not been to school for 4 weeks. He has recently been investigated and the paediatrician has concluded that there is no evidence of a somatic cause for his stomach pains. The mother says that she and the father have recently separated and are in conflict over visiting rights with the boy and his little sister who is 3 years old. The boy has recently started at a new school and does not have any friends where they now live. You assess this to be a psychosomatic problem.

Which model is best suited to systematise the information in the medical history, and can assist in understanding the development of psychosomatic conditions in this patient?

- A** Bronfenbrenner's bioecological model
Bronfenbrenner's model starts with the individual and describes the contextual factors that affect the person at various levels. The model is based on an understanding of mutual interactions between the individual and their environment at different levels. Micro level: family, friends, school, etc. Meso level: interaction between players in the micro level. Exo level: local community. Macro level: values, norms, etc. The model is theoretical and is not used to systematise risk factors.
- B** Erikson's psychosocial theory
Erikson's theory describes human social development in eight phases. Erikson claims that in each phase we face an underlying problem, a problem that is important for development of our identity, our perception of who we are. It is not used for systematising symptoms.
- C** The transactional model of stress and coping [Psykologisk transaksjonsmodell]
The transactional model of stress and coping provides a framework for understanding development as a result of mutual interaction between the child and the environment over time. It is not used to systematise symptoms or risk factors.
- D X** The biopsychosocial model
*Correct answer. The biopsychosocial model systematises biological, psychological and social factors in regard to what could be predisposing, triggering and maintaining factors for the patient's symptoms. In this patient, for example, it could be:
Biological factors: genetic, any previous illness, inactivity
Psychological factors: worry, anxiety
Social factors: loneliness, new school, parents in conflict*

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48

Girl (5 years old) does not talk with other children or adults in her nursery school. At home she talks without problem with her parents and older sister (7 years). She likes to play with her. She also likes to play with the girls in her neighbourhood, but does not talk with them. Apart from this, her parents describe her language as "perfectly normal".

Which diagnostic considerations are most correct?

- A** She has hearing problems that are affecting her speech function.
It is correct that hearing problems can over time affect a child's speech development. However, it is very unusual that she should only hear poorly when together with people other than her family.
- B X** She has a condition called elective mutism.
Correct answer. She has elective mutism, a condition that is characterised by a marked, emotionally-dependent selectivity in regard to speech, such that the child displays her speech skills in some situations, but does not speak in other (definable) situations.
- C** She suffers from a specific expressive speech disorder.
It is correct that not using language is part of the child's problems, but a specific expressive speech disorder would be apparent in all situations, not only in situations where family members are not present such as at school.
- D** She has a condition that is related to autism.
It is correct that children with autism-related conditions exhibit qualitatively-disturbed social interaction. But this does not fit because, in this case, the disturbed social interaction can be turned "on and "off" depending on the girl's situation. In addition, the girl is interested in playing with her friends, but does not dare to talk to them.

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49

Some adolescents with severe behavioural disorder also display a pronounced lack of empathy and can act aggressively by bullying and hurting others. They can be criminal. The literature describes them as having «callous-unemotional (CU)» personality traits. What is the best description of these adolescents?

- A They have impaired cognitive empathy, and difficulty understanding other people's intentions and thoughts.
It is correct that adolescents with severe behavioural disorders can have impaired cognitive function, but this does not include cognitive empathy. People with CU personality traits often understand what other people are thinking, but are emotionally ambivalent and insensitive. One theory involves effects on the amygdala, the brain's most important region for interpreting feelings.
- B They primarily have an increased fear of other people because they have a latent social phobia.
Adolescents with severe behavioural disorders can have a comorbid anxiety or depression disorder. But a «latent social phobia» is not typical for these young people.
- C X** They have primary impaired sensitivity for other people's fear, sadness and pain.
Correct answer. Adolescents with behavioural disorders and CU personality traits display impaired sensitivity to other people's emotions.
- D They have impaired cognitive capability such as the ability to reason verbally.
It is correct that adolescents with severe behavioural disorders can have impaired cognitive function, but this does not include primarily verbal reasoning abilities.

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50

A documented and effective cognitive behavioural therapy for children in the Children and Adolescent Psychiatry services is the programme «Coping Cat [Mestringskatten]» (Kendal et al. 2006). Which patient groups does this intervention target?

- A For children with specific developmental disorders
- B For children with autism spectrum disorders.
- C For children with affective disorders.
- D X** For children with anxiety disorders.
Correct answer. This programme was made for different types of anxiety disorders in children.

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51

You are a GP and a father has made an appointment for his son. Ove is 14 years old. He has previously been a patient at the BUP clinic and has been diagnosed with Asperger's Syndrome; high-functioning autism. Over the last months he has been increasingly depressed. Ove does not have a team group involving different services (ansvarsgruppe). The parents make an appointment for him and his father calls before the appointment to give some information. The father says that Ove cannot take part in conversations with other pupils as is required in secondary school. The adults can no longer be with him in all activities and it has become apparent that he finds socialising very difficult. Recently he broke down completely one evening, crying and said he wanted to kill himself, he feels very lonely and the parents are very upset. He arrives at the office with his father. Ove's appearance corresponds to his age, he just about makes eye contact. During the consultation, the father does most of the talking, but Ove manages to answer concrete questions. His mood appears slightly depressed. He confirms that he often feels sad and is lonely. Today he doesn't have thoughts of suicide. Said he was a little happier at school when another pupil asked if he wanted to play basketball in the recess. How can you, the parents and teachers best support Ove in the present situation?

- A X** You will talk with Ove about what he can do in social situations. His parents will talk with the school about how they can make adjustments for him. A team with responsibility for him will be established in which you and BUP are included.
Correct. With some local adaptations, Ove's situation and mood can improve.
- B You call the headmaster and request that the school works more actively to integrate Ove better in school.
Incorrect. A good proposal, but not sufficient.
- C You suggest antidepressants
Incorrect. Not appropriate in the present situation. Ove is not that severely depressed and the depression has only been present for a short time.
- D You refer Ove to BUP so that a tailored plan can be drawn up for Ove, his family and the school.
Incorrect. He has already been diagnosed. A new referral at the moment is not appropriate.

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52

As the GP, you are following up the medical treatment of a 15-year old boy who has severe Tourette's syndrome. He was started on Risperidone by a specialist two years ago. The medicine has had a good effect on the boy, but he has put on 10 kg and is ashamed that he has become so fat. He comfort eats with sweets because he is not as popular with the girls as before. What is the most probable cause of the weight increase?

- A The weight increase is not due to Risperidone, but the boy's comfort eating. It is very important to provide good advice on diet and regular exercise.
It is incorrect that the weight increase is not due to Risperidone; it is correct that good advice on diet and exercise are very important elements for overweight adolescents, both for medical and psychosocial causes.
- B The weight increase is primarily due to the underlying condition, Tourette's syndrome. In addition the boy is ashamed of his tics and comfort eats. Advice on exercise and diet is important.
It is incorrect that Tourette's syndrome itself results in a weight increase. It is correct that sometimes adolescents in a vulnerable phase of development feel ashamed of their tics and comfort eat.
- C Risperidone can cause a slight weight increase, but not more than 1-4 kg. Therefore advice on diet and exercise are more important than changing medicines that are effective.
It is incorrect that Risperidone only gives a slight weight increase between 1-4 kg. It is correct that advice on diet and exercise is important in cases of overweight.
- D X** The weight increase is due to Risperidone and is a common side effect. The boy should be re-evaluated by a specialist for dose adjustment or switching the medicine. In addition, he can be advised on exercise and diet.
Correct answer. Risperidone is known to give a substantial weight increase as a side effect, and the specialist should reassess the medical treatment.

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53

You are working as resident (junior doctor) on the Breast and Endocrine Surgical Section and are at the Mammary Outpatient Clinic. A previously healthy 57-year old woman found a lump in one of her breasts and investigations revealed that it was cancer. The tumour is about 2.5 cm in size, and metastases have not been found in the axillary lymph nodes. You are to inform her about the diagnosis and in particular the upcoming treatment. Which primary treatment would you recommend to her?

- A Perform breast-conserving surgery
- B X** Breast-conserving surgery and investigate the sentinel lymph node in the axilla
Sentinel lymph node surgery is an important diagnostic intervention and must be performed in all patients with breast cancer. This is important for selection of post-treatment and to avoid local relapse in the armpit
- C Radiotherapy to the breast to destroy the tumour
- D Chemotherapy to remove the tumour and any metastases

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54

You see the patient in the GP's office. This is a 47-year old woman. She is somewhat overweight, has given birth to two children and is otherwise healthy. She says that she has noticed a lump in her left breast. It isn't tender. She has had it for about 2 – 3 weeks. She wonders what it is, whether it could be dangerous? There is nothing to note at visual inspection. At examination there is a probable 2-3 cm diameter lump in the area, not exactly easy to palpate. It is uncertain whether there is an enlarged lymph node in the left axilla. What should the GP do?

- A Attempt to puncture the tumour for fluid
- B Re-evaluate the patient in two weeks to see if the lump has disappeared
- C X** Refer to a Breast Diagnostic Centre/Mammary Outpatient Clinic
Best answer
- D Request mammography at a private X-ray institute

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55

What is the most common finding at vaginal ultrasound examination in women with endometrial cancer?

- A Free fluid in the pelvis
Ascites are more an unfavourable sign of ovarian cancer
 - B X** Increased thickness of the endometrium
Because the tumour originates in the endometrium
 - C Enlarged lymph nodes in the pelvis
Difficult to see on ultrasound
 - D Enlarged uterus
Can also be seen in benign conditions
-

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56

A 30-year old woman comes to see you, her GP, due to pain in her pelvis. You ask whether she has problems with sexual function. She says that she cannot get an orgasm with penetration, only by stimulating the clitoris.

What is the most correct way to answer her?

- A You recommend referring her to a sexologist
This woman does not have a sexual dysfunction because she can only orgasm with clitoral stimulation - this is a normal variant
 - B X** You explain that this is the case for at least half of all women
Most probably, all she needs is reassurance
 - C You ask if she feels more attracted to women than men
 - D You suggest that she try a different sexual partner
-

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57

You are the GP for a couple who have been trying to get pregnant for a year. The man is 42 years old and the woman is 37. The woman has a 10-year old child from a previous relationship. The man has no children. You give general advice on lifestyle in regard to frequency of intercourse and time point, stress, weight, diet, exercise, nicotine, alcohol and any medicine use.

How can you as their GP best help them further?

- A X** Refer to a public fertility clinic at a hospital
Correct answer because the woman is already "old" from a reproductive viewpoint.
 - B Refer the man for a sperm test
Incorrect answer. A sperm test alone is not sufficient and could delay investigations. There could also be a combination of reasons for the infertility. The couple will not get pregnant even if a sperm sample is taken for testing. The woman's age indicates that there is a certain urgency to offer assisted fertilisation.
 - C Refer for investigations and treatment at a private fertility clinic due to the short waiting time
Incorrect answer. You must also inform them there are good and far cheaper options at public clinics. The couple can choose themselves where you are to refer them.
 - D Ask them to come back if they have not succeeded over the next six months
Important elements; but the woman's age of 37 indicates that you should also refer her for investigations and treatment at a Fertility Clinic
-

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58

Which symptoms can we expect in women with severe cell changes (CIN 3) in the cervix?

- A Increased discharge
 - B Pain in the pelvis
 - C X** No symptoms
The point of the screening programme for detection of pre-stages of cervical cancer is that these are asymptomatic
 - D Bleeding after sexual intercourse
-

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59

How would you as a GP confirm an early pregnancy?

- A Measure progesterone in her blood
The latter is correct (both the corpus luteum and placenta produce copious amounts of progesterone during pregnancy), but is not used as a pregnancy test.
 - B Measure oestradiol in her blood
The latter is correct (the placenta produces a lot of oestrogens during pregnancy), but is not used as a pregnancy test.
 - C Refer her for vaginal ultrasound examination
Not necessary unless she has pain or bleeding
 - D X** Determine hCG (human chorionic gonadotropin) in her urine
hCG increases in blood and urine from about 4 weeks of pregnancy, and is the basis of the pregnancy test we use today.
-

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60

What are the most common symptoms of urogenital prolapse?

- A Urine voiding problems
This can also be a symptom of cystocele, but is not the most common and voiding problems can also have other causes
 - B X** Lump in the vaginal opening
This is the most common symptom of prolapse
 - C Painful lump in the vaginal opening
Prolapse is rarely painful
 - D Problems passing stools
This can also be a symptom of rectocele, but is not the most common
-

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61

How high is the lifetime risk of surgery for urogenital prolapse in the Nordic countries?

- A X** 10-20%
Correct answer
 - B 5-10%
 - C 20-30%
 - D <5%
-

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62

What is the most common complication with an intramural myoma with a 5 cm diameter in the uterus during birth?

- A Poor effect of epidural anaesthetic
 - B Uterine rupture
 - C X** Bleeding due to uterine atony
A large intramural myoma can mean that the uterus does not contract well enough after a birth and thereby result in bleeding due to uterine atony.
 - D Cervical tear
-

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63

A 52-year old woman contacts you as her GP due to vaginal bleeding. A gynaecological examination does not reveal any obvious findings at visual inspection or bimanual palpation. What is the most correct action to take next?

- A Start with topical oestrogen for suspected atrophic mucous membranes
This is an important differential diagnosis with any necessary measures; but one must be certain that this is not endometrial cancer
 - B X** Take a histology sample from the endometrium for suspected endometrial cancer
This is generally indicated to confirm that it is not endometrial cancer
 - C Do cervical cytology and HPV test for suspected cervical dysplasia
If changes in the cervix are suspected as the cause of bleeding, she must be referred to a gynaecologist for biopsy.
 - D Start with an oestrogen-progestogen combination drug for suspected anovulation
Only if the cause is atrophic vaginal mucous membranes - and then local oestrogen treatment is prescribed.
-

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64

A woman has an appointment with you as her GP. She is pregnant in week 12 and has already been to an early ultrasound examination in week 9 due to some small bleeds. Then the gynaecologist found a vital intrauterine fetus. She has not had any more bleeding since then. What is the best way to follow her up in this pregnancy?

- A X** You perform the same investigations as for a normal first-time pregnancy check-up
Correct answer, because this is sufficient. She will then be offered a routine US in week 18
 - B You follow her up using beta-HCG in serum
Incorrect, as this will drop/flatten out after week 9 and not provide any extra information
 - C You do a full anaemia investigation
Incorrect, you would first measure her Hb and then decide whether an anaemia investigation is indicated
 - D You refer her for ultrasound check-up with the gynaecologist
There is no indication that the women still has symptoms/bleeding
-

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65

It is recommended to take screening samples for certain infectious diseases in the first part of pregnancy. Which infections/infectious diseases are all pregnant women recommended to be tested for?

- A HIV, Toxoplasmosis, Rubella (if no antibody demonstrated), Syphilis
 - B X** HIV, Rubella (if no antibody demonstrated), Syphilis
According to national guidelines
 - C HIV, Hepatitis A and B, Rubella (if no antibody demonstrated), Toxoplasmosis
 - D HIV, Hepatitis A and B, Toxoplasmosis, Herpes, Chlamydia
-

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66

Certain dietary supplements are recommended in pregnancy. What should be recommended in the first trimester if the woman is healthy?

- A X** Folic acid
According to the national guidelines for care during pregnancy
 - B Vitamin A, D and folic acid
 - C Iron, Vitamin A, D and folic acid
 - D Vitamin D, iron and folic acid
-

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67

If a pregnant woman is diagnosed with pre-eclampsia it is normal to take blood tests for liver enzymes and thrombocytes.

What is the purpose of these tests?

- A To be able to identify undiagnosed coagulation disorders
 - B X** To be able to identify those with the HELLP syndrome
Help syndrome is a feared complication and can be identified using blood tests
 - C To be able to predict the time of delivery
 - D To be able to prepare for a fast birth
-

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68

It is common for pregnant women to have a check-up in gestation week 36.

Which examinations should be performed at this gestational age?

- A Determine the fetal position and refer if necessary to a hospital if in breech position
 - B Determine the position and assess the cervix in regard to estimating when the woman will start to give birth
 - C X** Measure the SFH (symphysis-fundal height), blood pressure and weight, take a urine sample, listen for fetal sounds, determine the position
According to national guidelines for care during pregnancy
 - D Measure blood pressure and take a urine sample
-

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69

Gestational diabetes is a common complication.

Which women should have a oral glucose tolerance test during pregnancy?

- A Women who have had gestational diabetes, who have a BMI above 25, are aged above 25, and women with autoimmune disease
 - B X** Women with a BMI above 25, women with age above 25, women with a previous history of gestational diabetes and who have a first-degree relative with diabetes. Women from endemic areas.
According to the new National guidelines
 - C Women with a BMI above 27 and age above 38, immigrants and women with a previous history of gestational diabetes.
 - D Women with a previous history of gestational diabetes, PCOS, hypothyroidism and BMI above 27
-

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70

What can cross an intact placental barrier?

- A IgM
IgG crosses, but not IgM
 - B X** Parvovirus B19
Yes, this virus will cross and can cause severe anaemia in the fetus
 - C Erythrocytes
Erythrocytes do not cross an intact placental barrier, and fetal blood can only cross to the mother if the placental barrier is damaged
 - D Beta-hemolytic streptococci
Bacteria such as streptococci do not cross. The newborn child can be infected during the birth
-

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71

What is the correct recommendation for pregnant women with the fetus in the breech position?

- A** Caesarian section is safest for the mother and child in breech position, but it is important for the obstetrician to maintain training in delivering breech positions. Therefore mothers are encouraged to have a vaginal breech delivery.
Vaginal breech births are considered safe for both mother and child after week 34 and for a normal size fetus.
 - B** Vaginal breech birth is recommended in Norway regardless of the length of pregnancy
Premature vaginal breech delivery is not recommended
 - C** Vaginal breech delivery is not recommended after gestation week 38; therefore turning the fetus is attempted in week 37
Turning is recommended because there is a lower risk of emergency intervention with the fetus in the head down position. Vacuum extraction is not possible in breech position. Therefore it can be an advantage to turn the fetus to the head down position. Prior to week 37, the fetus often turns spontaneously. After week 39, it has often become too restricted to turn the fetus.
 - D X** Caesarian section is recommended in premature breech birth (from weeks 25 to 34). Prior to week 25, Caesarian sections are avoided for fetal indication.
In the premature fetus the head is relatively larger than the body, and there would therefore be a risk that the head would get stuck after the body has been delivered. Caesarian section is recommended prior to gestation week 34.
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72

The umbilical cord is normally supplied with three blood vessels

- A X** Two arteries that lead blood from the fetus to the placenta and one vein that leads the blood the opposite way
There are two arteries and one vein. Arteries lead blood from the fetus to the placenta
 - B** Two veins that lead blood from the placenta to the fetus and one artery that leads the blood the opposite way
 - C** Two arteries that lead blood from the placenta to the fetus and one vein that leads the blood the opposite way
 - D** Two veins that lead blood from the fetus to the placenta and one artery that leads the blood the opposite way
-

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73

In Norway, an ultrasound examination is offered routinely during pregnancy. This examination is done around gestation week 18. What is the purpose of this examination?

- A** Determine the due date, assess the length of gestation, number of fetuses and measure the nuchal fold
 - B** Determine the due date, assess fetal growth, measure the nuchal fold
 - C** To assess the number of fetuses, the position of the placenta, the volume of amniotic fluid and any chromosome anomaly
 - D X** To assess gestational age, identify multiple fetuses, the position of the placenta and structural anomalies, determine due date
In accordance with the national guidelines
-

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74

Pregnant women occasionally show significant growth of streptococci group B at urine culture even though they do not have symptoms. What would you as the GP do if you received such a culture result?

- A X** Treat with antibiotics if symptoms are present, otherwise note the finding in the "health card for pregnant women" and in the woman's medical records.
In accordance with national guidelines
 - B** Refer the woman to the Pregnancy Outpatient Clinic for further treatment.
 - C** Treat the woman with antibiotics and send a referral to the hospital to ensure that she will be given antibiotics during the birth.
 - D** Treat regardless of whether symptoms are present or not. Note the finding on the "health card for pregnant women" and in the woman's medical records.
-

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75

Infant mortality is divided into categories depending on the age of the child when it dies.
Which term is the most correct if a baby born alive dies during the first week of life?

- A Neonatal mortality
- B Fetal mortality
- C X Perinatal mortality

Perinatal mortality includes deaths around the time of birth and death in the first week of life. "Peri" means around or near and the term "natal" is linked to birth.

- D Infant mortality
-

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76

A 55-year old man has undergone surgery for a testicular tumour. His GP receives a copy of the report from the Pathology Department after the operation. It states that the patient has a seminoma. The medical student who is shadowing in the office has a few questions about the diagnosis.

Which statement is correct?

- A X The tumour cells have clear cytoplasm and distinct cell boundaries

Macroscopically, seminomas are typically very homogeneous. Microscopically there are uniform cells with clear cytoplasm and distinct cell boundaries. The tumour cells are often surrounded by connective tissue with lymphocytes.

- B Histologically there is a mixture of fatty tissue, lung tissue and cartilage
 - C Seminomas are benign tumours and are most common in children
 - D Seminomas are generally macroscopically heterogeneous
-

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77

A 70-year old man has had blood in his urine for a long time. After investigations, he has undergone surgery with removal of his left kidney. A doctor in the Pathology Department has the task of performing macroscopic examination of the surgical specimen. He finds a round, yellowish tumour with individual fibrous streaks. It is 5 cm in size, and well-delimited with a capsule-like membrane peripherally.

What can the doctor conclude from the changes described?

- A The tumour is not malignant nor invasive
- B X The tumour could be malignant

Renal cell carcinomas are often well-delimited and the changes described do not therefore exclude malignancy.

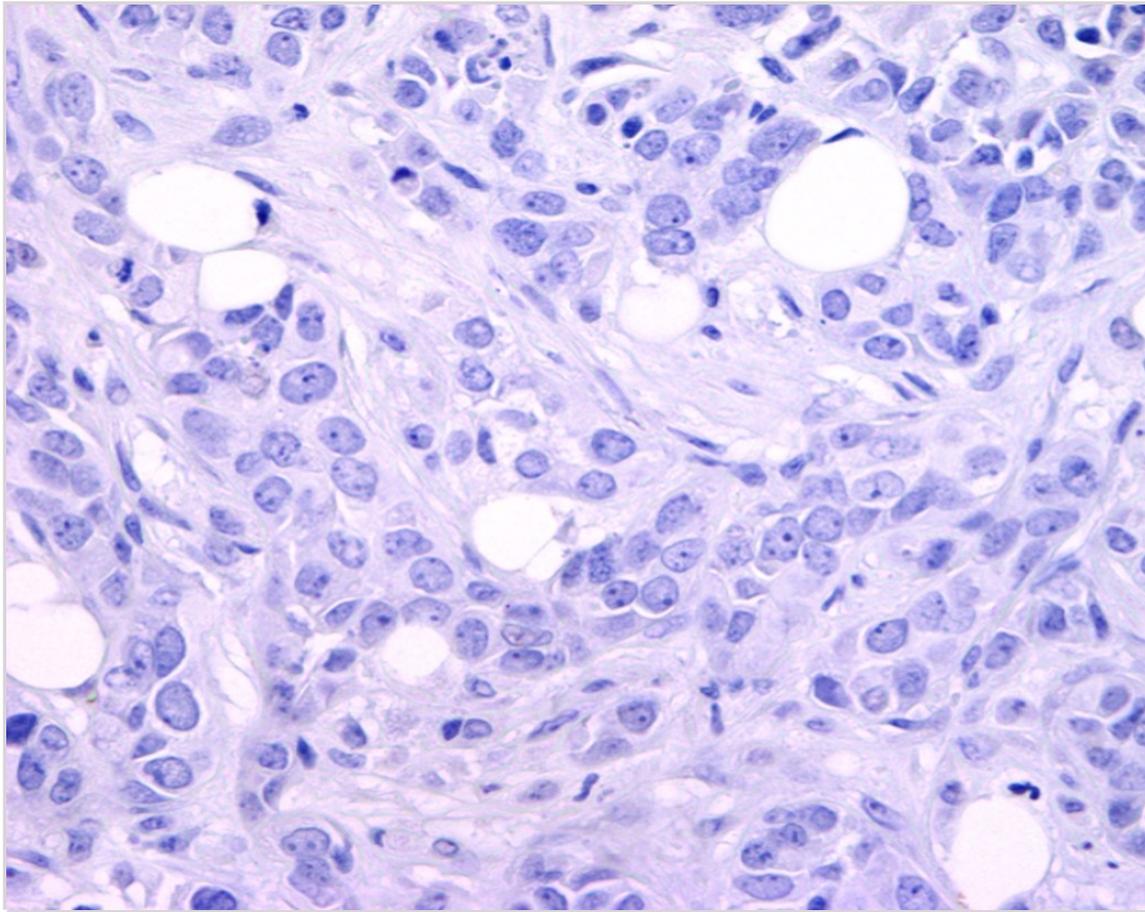
- C The tumour is probably a lipoma
 - D The tumour is most probably a metastasis
-

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78

A 43-year old woman has a tumour in her left breast. A biopsy is taken and examined using immunohistochemistry with antibodies against oestrogen receptors. Below you can see an image of the immunohistochemistry section.

What does the result mean for the patient?



- A The sample is negative which indicates a good effect of trastuzumab
Trastuzumab is the targeted therapy for HER2 positive breast cancer tumours
- B The test is negative and does not contribute to the presumed prognosis
- C X** The sample is negative which indicates a poor effect of tamoxifen
Oestrogen-receptor negative tumours often have a poor prognosis and poor effect of tamoxifen.
- D The sample is negative which indicates that the patient has a good prognosis

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79

Immunohistochemistry (IHC) is a method used in the majority of Pathology Departments.
Which statement about IHC is correct?

- A Using IHC, the protein concentration in tissue can be quantified accurately
- B X** IHC uses antibodies that bind to antigens in the tissue
The method is used to demonstrate proteins in tissue, such as oestrogen receptors in breast cancer.
- C IHC is used to demonstrate antibodies in tissue, primarily IgG
- D IHC is used to determine the number of copies of the HER2 gene

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80

A 70-year old woman has postmenopausal bleeding. She has been investigated including a pipelle biopsy, and when endometrial cancer was diagnosed she underwent surgery. You have a summer job in the Pathology Department and are given the task of performing macroscopic examination of the surgical specimen (hysterectomy with bilateral salpingo-oophorectomy).

What is the most important thing to notice and describe during the macroscopic examination?

- A Whether the tumour tissue bulges into the uterine cavity
- B Whether the Fallopian tubes have different lengths
- C Whether the tumour tissue is brown or grey
- D X** Whether the tumour tissue has grown deep into the myometrium

The extent to which the tumour infiltrates more or less than 50% of the myometrium thickness must always be described macroscopically, even if the assessment in the end is based on microscopic examination. Deep myometrial infiltration often indicates a poorer prognosis. In addition, the length of the Fallopian tubes, the colour of the tumour tissue and whether it bulges into the uterine cavity can also be described, but these are less important.

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81

An 80-year old woman has a tumour in her left breast. A biopsy is taken and immunohistochemical investigation with antibody against Ki67 is performed. The investigation reveals that almost none of the tumour cells (<1%) are positive.

What does this mean for the patient?

- A It indicates that the patient will have little benefit from tamoxifen
- B It excludes that the tumour is an invasive carcinoma
- C X** This indicates a better prognosis than with high Ki67

Ki67 is a proliferation marker that is investigated routinely in breast cancer. High proliferation (high Ki67) often indicates a poor prognosis. High Ki67 can indicate that chemotherapy will have a beneficial effect on the patient, and this marker is also used to determine which patients are to receive chemotherapy.

- D It indicates that the patient will benefit well from chemotherapy

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82

Early in pregnancy a woman has sudden onset of sharp stomach pains and goes to the Emergency Walk-in Clinic. At examination she is pale, has low blood pressure and pain in her right shoulder.

What is the most probable diagnosis that the doctor should consider?

- A Appendicitis
- B X** Ectopic pregnancy

The woman has symptoms of shock due to bleeding and the most natural thing to consider is that this could be an ectopic pregnancy, which is most often located in the Fallopian tube.

- C Intrauterine miscarriage
- D Heart attack

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83

A woman aged 29 comes to the GP's surgery due to 2-3 weeks of tiredness, exhaustion, palpitations and heat/sweating. She has previously been healthy. You measure BP 132/62 and pulse 96. Blood tests reveal TSH <0.01 mIE/L (0.24-4.2) and ft4 27.4 pmol/L (11.6-19.1).

Which supplementary investigations are most important initially to make an aetiological diagnosis and to be able to start treatment?

- A Thyroid scintigraphy
- B Ultrasound of the thyroid
- C X** Measurement of anti-TSH-receptor antibody (TRAS)

In thyrotoxicosis a positive TRAS demonstrates Grave's disease, and further investigation is therefore not necessary. If TRAS is negative, thyroid scintigraphy is necessary. A positive anti-TPO will also support an autoimmune cause, which together with a regular, high uptake on scintigraphy can give the diagnosis TRAS-negative Grave's disease. Ultrasound is not relevant in thyrotoxicosis.

- D Measurement of anti-TPO

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84

An otherwise healthy but overweight woman aged 41 has type 2 diabetes with HbA1c 8.5% (reference range 4.3 - 5.6%) and fasting blood glucose 10-11 mmol/L (reference range in plasma 4.2 - 6.3 mmol/L). She takes Metformin 850 mg x3 and a small dose of a sulfonylurea preparation. She does not take any other medications. What is the treatment goal (i.e. the HbA1c target) in this patient?

- A** The treatment goal for this patient is HbA1c below 6%
Incorrect answer. The treatment goal for most patients is an HbA1c around 7% while in younger and newly-diagnosed patients, who relatively easily achieve their target goal by changing their lifestyle and who use perhaps 1-2 medicines, lower treatment goals may be applicable (for example HbA1c around 6.5%). Source: National guidelines for diabetes 2017 <https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=blodsukkersenkende-behandling-og-behandlingsmal-3295#behandlingsmal-for-hba1c-ved-diabetes-type-2sterk-anbefaling>
- B** The treatment goal for this patient is HbA1c around 6%
Incorrect answer. The treatment goal for most patients is an HbA1c around 7% while in younger and newly-diagnosed patients, who relatively easily achieve their target goal by changing their lifestyle and who use perhaps 1-2 medicines, lower treatment goals may be applicable (for example HbA1c around 6.5%). Source: National guidelines for diabetes 2017 <https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=blodsukkersenkende-behandling-og-behandlingsmal-3295#behandlingsmal-for-hba1c-ved-diabetes-type-2sterk-anbefaling>
- C** The treatment goal for this patient is HbA1c around 8%
Incorrect answer. The treatment goal for most patients is an HbA1c around 7% while in younger and newly-diagnosed patients, who relatively easily achieve their target goal by changing their lifestyle and who use perhaps 1-2 medicines, lower treatment goals may be applicable (for example HbA1c around 6.5%). Source: National guidelines for diabetes 2017 <https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=blodsukkersenkende-behandling-og-behandlingsmal-3295#behandlingsmal-for-hba1c-ved-diabetes-type-2sterk-anbefaling>
- D X** The treatment goal for this patient is HbA1c around 7%
Correct answer. The treatment goal for most patients is an HbA1c around 7% while in younger and newly-diagnosed patients, who relatively easily achieve their target goal by changing their lifestyle and who use perhaps 1-2 medicines, lower treatment goals may be applicable (for example HbA1c around 6.5%). Source: National guidelines for diabetes 2017 <https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=blodsukkersenkende-behandling-og-behandlingsmal-3295#behandlingsmal-for-hba1c-ved-diabetes-type-2sterk-anbefaling>

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85

A 28-year old man has been transported by ambulance to A&E. He has been tired and thirsty for several weeks, and for the last few days he has had increasing shortness of breath. In addition he has been nauseous and had epigastric pain over the last few days. At arrival he has poor general health, is conscious but tired and responds slowly to questions. His respiratory rate is high (28/min). BP 103/52, pulse 102. You measure capillary blood glucose >25 mmol/L (diabetes \geq 11.1). What is the most probable cause of his shortness of breath?

- A** Diabetes complicated with pneumonia
- B** Diabetes complicated with heart failure
- C X** Diabetes with development of ketoacidosis
Blood glucose demonstrates diabetes, because he has also had symptoms compatible with this. Nausea and stomach pain gives suspicion of developing diabetic ketoacidosis, in which the sensation of shortness of breath is due to increased respiration to exhale acid (CO₂), so-called Kussmaul respiration. There is an increased risk of infections and increased thromboembolic risk in cases of untreated diabetes, but with the described symptoms ketoacidosis must be the primary candidate.
- D** Diabetes complicated with pulmonary embolism

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86

A woman (64-years old) has felt increasingly tired and exhausted over the last 1-2 years. She takes almost no regular medications. She goes to her GP who measures BP 115/65 and pulse 58. Informative blood tests reveal TSH 2.9 mIE/L (0.24-4.2) and free T4 8.1 pmol/L (11.6-19.1). Which supplementary investigations are most relevant?

A X MRI pituitary

The tests are compatible with secondary hypothyroidism. TSH is low (TSH in ref. range is too low when FT4 is low). In primary hypothyroidism, TSH is not always clearly elevated. In that case measuring anti-TPO would be indicated, while thyroid scintigraphy and US thyroid are not relevant in hypothyroidism.

B Thyroid scintigraphy

C Ultrasound of the thyroid gland

D Measurement of anti-TPO

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87

A 19-year old man with BMI 20 kg/m² has recently been diagnosed with diabetes with HbA1c 8.7% (reference range 4.3 - 5.6%), blood glucose around 10-11 mmol/L and weight loss of 5 kg. No ketoacidosis with diabetes debut, but requires insulin treatment. He has no first- or second-degree relatives with diabetes. He does not have elevated levels of anti-GAD or other islet cell antigens. Based on the above information which type of diabetes does he most probably have?

A Type 2 diabetes

Incorrect answer. Most patients with type 2 diabetes are overweight, they generally do not require insulin at diabetes debut and there is often type 2 diabetes in close relatives (polygenic inheritance). Negative anti-GAD (or other autoantibodies against islet cell antigens) does not mean that the patient has type 2 diabetes.

B X Type 1 diabetes

Correct answer. Based on the above information (age, BMI, need for insulin treatment) he most probably has type 1 diabetes. Only about 80% of patients with type 1 diabetes have elevated levels of anti-GAD at the time of diagnosis, and the presence of antibodies to the other islet cell antigens is lower. Elevated levels of anti-GAD or for other islet cell antigens are therefore not an absolute criterion for the diagnosis of type 1 diabetes.

C MODY diabetes (Maturity onset diabetes of the young)

Incorrect answer. These are rare forms of diabetes, caused by mutation in a single gene. As a rule, one of the parents has diabetes, and often there is diabetes in two or more generations. MODY diabetes is generally diagnosed before the age of 25, and these patients often do not need insulin at diabetes debut.

<https://www.diabetes.org.uk/diabetes-the-basics/other-types-of-diabetes/mody>

D LADA (latent autoimmune diabetes in adults)

Incorrect answer. LADA is a slowly progressing type of autoimmune diabetes. The diagnosis is normally based on the following criteria: age >35 years, presence of (elevated level) at least one circulating autoantibody to islet cell antigens (most often GAD) and no requirement for insulin in the first month after diagnosis. Source: Pettersen E et al. Diabetes. 2010 Jan;59(1):302-10.

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88

A slim 19-year old man has newly-diagnosed type 1 diabetes with HbA1c 8.2% (reference range 4.3 - 5.6%) and fasting blood glucose 10.1 mmol/L (reference range in plasma 4.2 - 6.3 mmol/L). He does not have ketoacidosis and is in good general health with only mild symptoms of diabetes. After discussion with the endocrinologist you (GP) decide to start him on insulin and he is given an appointment at the Endocrinology Outpatients Clinic within 3 days. What total insulin dose per day would you start with?

- A** Start dose insulin total 3.0-4.0 units/kg/day
Incorrect answer. In diabetes type 1 the necessary day dose is generally 0.5-1 E per kg bodyweight, while the start dose should often be lower. If you start with 3.0- 4.0 units/kg/day in this patient there will be a high risk of hypoglycaemia. See also the comments under A.
- B** Start dose insulin total 1.0- 1.5 units/kg/day
Incorrect answer. In diabetes type 1 the necessary day dose is generally 0.5-1 E per kg bodyweight, while the start dose should often be lower. If you start with 1.0- 1.5 units/kg/day in this patient there will be a high risk of hypoglycaemia. See also the comments under A.
- C X** Start dose insulin total 0.3-0.5 units/kg/day
*The most correct answer. In diabetes type 1 the necessary day dose is generally 0.5-1 E per kg bodyweight, while the start dose should often be lower. In this patient (moderately elevated blood glucose, mild symptoms, no ketoacidosis) 0.3-0.5 units/kg/day will suffice until he has an appointment at the Endocrinology Outpatients Clinic. See also the comments under A.
Source: National guidelines for diabetes 2017
<https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=insulinbehandling-og-behandlingsmal-ved-3240#oppstart-og-valg-av-insulin-ved-diabetes-type-1sterk-anbefaling>*
- D** Start dose insulin total 2.0-3.0 units/kg/day
Incorrect answer. In diabetes type 1 the necessary day dose is generally 0.5-1 E per kg body weight, while the start dose should often be lower. If you start with 2.0-3.0 units/kg/day in this patient, there will be a high risk of hypoglycaemia. When insulin is started in the Outpatients Clinic, as in this case, the main reason is to prevent a further increase in blood glucose and development of ketoacidosis, and it is not necessary to normalise the blood glucose in such a short time. Adjustment of the insulin dose is dealt with in the Endocrinology Outpatients Clinic.
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89

Bone mass is gradually built up. At which age is the maximum bone mass achieved (peak bone mass)?

- A** At 15 years of age
- B X** Between 20 and 30 years
A large part of the bone mass is built up by 20 years of age, but the maximum is achieved between 20 and 30 years of age
- C** Between 15 and 20 years
- D** Between 30 and 35 years
-

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90

As the GP you have a visit from a rep for a pharmaceutical company that markets an incretin mimetic (a GLP analogue). What are the main effects of the medicines in this drug group in regard to blood sugar?

- A** Incretin mimetics (GLP-1 analogues) lower the blood glucose by causing reduced glucose production in the liver; in addition, they increase peripheral glucose uptake in the muscles.
Incorrect. Incretin mimetics (GLP-1 analogues) lower blood glucose by causing increased insulin secretion if the blood glucose is elevated; in addition they reduce the secretion of glucagon. Metformin, on the other hand, causes reduced glucose production in the liver as well as increased peripheral glucose uptake. Source: ADA Guidelines, Diabetes Care Vol 40, suppl 1, January 2017. Felleskatalogen 2017
- B** Incretin mimetics (GLP-1 analogues) lower blood glucose by causing increased insulin secretion regardless of the blood glucose level; in addition they reduce the secretion of glucagon.
Incorrect. Incretin mimetics (GLP-1 analogues) lower blood glucose by causing increased insulin secretion only if the blood glucose is elevated; in addition they reduce the secretion of glucagon. Sulfonylurea preparations on the other hand, increase insulin secretion regardless of the glucose level. Source: ADA Guidelines, Diabetes Care Vol 40, suppl 1, January 2017. Felleskatalogen 2017
- C X** Incretin mimetics (GLP-1 analogues) lower blood glucose by causing increased insulin secretion if the blood glucose is elevated; in addition they reduce the secretion of glucagon.
Correct answer. In addition, this drug group has an effect on the sensation of satiation by delaying gastric emptying. Source: ADA Guidelines, Diabetes Care Vol 40, suppl 1, January 2017
- D** Incretin mimetics (GLP-1 analogues) lower blood glucose by causing increased insulin secretion if the blood glucose is elevated; in addition they increase the secretion of glucagon.
Incorrect. Incretin mimetics (GLP-1 analogues) lower blood glucose by causing increased insulin secretion if the blood glucose is elevated; in addition they reduce the secretion of glucagon. Source: ADA Guidelines, Diabetes Care Vol 40, suppl 1, January 2017
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91

A 56-year old man has recently been diagnosed with type 2 diabetes. You are his GP. You say that the goal with blood glucose lowering treatment is that he will have an HbA1c around 7%. The patient wants to know what this corresponds to in regard to his own self-measured blood glucose. What do you tell him?

- A** HbA1c around 7% corresponds to a self-measured blood glucose before a meal of 3-6 mmol/L and <8 mmol/L postprandially (1.5-2 hours after a meal)
Incorrect answer. HbA1c around 7% corresponds to a self-measured blood glucose before a meal of 4-7 mmol/L and <10 mmol/L postprandially (1.5-2 hours after a meal). Source: National guidelines for diabetes 2017
<https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=insulinbehandling-og-behandlingsmal-ved-3240#behandlingsmal-ved-diabetes-type-1sterk-anbefaling>
- B** HbA1c around 7% corresponds to a self-measured blood glucose before a meal of 5-8 mmol/L and <12 mmol/L postprandially (1.5-2 hours after a meal)
Incorrect answer. HbA1c around 7% corresponds to a self-measured blood glucose before a meal of 4-7 mmol/L and <10 mmol/L postprandially (1.5-2 hours after a meal). Source: National guidelines for diabetes 2017
<https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=insulinbehandling-og-behandlingsmal-ved-3240#behandlingsmal-ved-diabetes-type-1sterk-anbefaling>
- C** HbA1c around 7% corresponds to a self-measured blood glucose before a meal of 6-9 mmol/L and <14 mmol/L postprandially (1.5-2 hours after a meal).
Incorrect answer. HbA1c around 7% corresponds to a self-measured blood glucose before a meal of 4-7 mmol/L and <10 mmol/L postprandially (1.5-2 hours after a meal). Source: National guidelines for diabetes 2017
<https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=insulinbehandling-og-behandlingsmal-ved-3240#behandlingsmal-ved-diabetes-type-1sterk-anbefaling>
- D X** HbA1c around 7% corresponds to a self-measured blood glucose before a meal of 4-7 mmol/L and <10 mmol/L postprandially (1.5-2 hours after a meal)
Correct answer. Source: National guidelines for diabetes 2017
<https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=insulinbehandling-og-behandlingsmal-ved-3240#behandlingsmal-ved-diabetes-type-1sterk-anbefaling>
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92

A 65-year old woman has a radius fracture on the left side after a fall at ground level. She is referred for bone density measurement (DXA) which reveals a T score of -2.6 in the lumbar spine. The patient has previously been healthy.

What is the first choice of treatment for this patient in addition to calcium and vitamin D supplements?

- A Oestrogen/gestagen
- B Intravenous bisphosphonate
- C X** Peroral bisphosphonate
- D Denosumab (RANKL inhibitor)

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93

A 56-year old man was diagnosed with type 2 diabetes about 5 years ago. He is overweight and is being treated with metformin. At check-up one year ago, his blood glucose and blood pressure were found to be satisfactory, and his urine samples have been negative.

At today's check-up he is in good general health, BP 136/83, fasting glucose 9.3 and HbA1c 7.6.

Urine dipstick reveals the following:

Urine test	Ref. range
u-creatinine 4.67 mmol/L	
u-albumin/creatinine ratio 79.8 mg/mmol	0-3 mg/mmol
u-glucose neg	neg
u-albumin +	neg
u-blood 3+	neg
u-leukocytes neg	neg
u-nitrite neg	neg
u-albumin 326 mg/L	0-25

A check of the urine sample confirms the findings.

Which evaluation is most correct?

- A He has moderately increased albumin in his urine (microalbuminuria) and haematuria. Improved glycaemic management would be able to reverse the urine findings.
- B He has severely increased albumin in his urine (macroalbuminuria) and haematuria. Improved blood pressure management would be able to reduce the cardiovascular disease
- C X** He has severely increased albumin in his urine (macroalbuminuria, not microalbuminuria or nephrotic albuminuria) and haematuria. Good BP management would of course be able to reduce the cardiovascular risk, but here it is clearly more important to exclude other disease that causes blood in the urine.

Diabetes changes as a rule never give haematuria; the cause of this must therefore be investigated. By definition severely increased albumin (macroalbuminuria).

- D He has severely increased albuminuria in a nephrotic area and haematuria. The cause must be investigated further.

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94

A 47-year old man attends an emergency appointment at your GP surgery because he has been unwell since yesterday morning. He has always been healthy, but he has not seen a doctor in the last 8 years. He uses no medication, and is a non-smoker. BMI is 32. You find he has a slight dysarthria, is somewhat absent/tired, and when he walks he has a slight limp on the right. His average blood pressure is 240/130 (3 standardised measurements during the consultation). You call the Department of Internal Medicine at the local hospital and discuss the problem with the on-call registrar. Which of the following decisions is most correct given that cerebral CT does not detect bleeding and that the hospital does not normally give thrombolytic therapy for ischaemic stroke?

- A Order a rush cerebral MRI and afterwards see him again in your office to start anti-hypertensive treatment, with frequent check-ups.
- B Admit the patient to start Trandate infusion (combined beta and alpha blocker) to reduce the blood pressure to 160/90 over the next 24 hours
- C Start treatment with Lisinopril 20 mg x 1 (an ACE inhibitor) and hydrochlorothiazide 12.5 mg x1 (low dose thiazide) by mouth and give him an appointment for check-up the next day
- D X** Admit the patient to start Trandate infusion (combined beta and alpha blocker) to reduce the blood pressure to 200/110 over the next 24 hours
The guidelines conclude that during the first day, the blood pressure must not be reduced by more than 15% during the first 24 hours due to the risk of reducing circulation in the affected area. In cases of bleeding, it must be reduced much more. The patient must definitely be admitted for this treatment.

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95

ACE inhibitors and Angiotensin II receptor blockers are used a lot and have various indications. What effect does use of these medications have on the levels of renin and aldosterone in blood?

- A Renin decreases and aldosterone decreases
- B X** Renin increases and aldosterone decreases
Renin increases due to loss of negative feedback from angiotensin II. All also stimulates production of aldosterone in the adrenals so that this will decrease.
- C Renin decreases and aldosterone increases
- D Renin increases and aldosterone increases

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96

Man, 20-years old is admitted after he was found unconscious in the bathroom in his flat. He is suspected of having taken an overdose of a sedative. He has probably lain there for about 24 hours. Creatinine is 350 micromol/L (ref: 60-100) and he is anuric. What is the most probable cause of the renal failure?

- A Infection
- B Drug toxicity
- C X** Rhabdomyolysis
Just about no drugs are so toxic that they would cause damage this quickly. The cause of the renal failure is a toxic effect of myoglobin and hypovolemia/hypotension. Urine retention never gives such damage, and infection cannot be excluded, but here, based on the history, is typical pressure-induced muscle damage (rhabdomyolysis)
- D Urine retention

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97

An elderly man's health has declined over the last year with increasingly poor general health. He goes to his GP who takes a number of blood tests. These give the following results:

Hgb	7.3 g/dl	(13.5 - 17.4)
Creatinine	450 µmol/L	(60 - 120)
Bicarbonate in venous blood	18 mmol/L	(20 - 28)
Potassium in plasma	5.2 mmol/L	(3.3 - 4.3)

Which of these abnormal laboratory results is most important to deal with (i.e what should you do first)?

- A His hyperkalemia should be treated by starting a glucose - insulin infusion
 - B He should start on Natron tablets 500 mg x3 to treat his metabolic acidosis to avoid skeletal damage and increased progression of his kidney disease
 - C X** His anaemia should be corrected, possibly by transfusing 2 units SAG
Anaemia with Hb around 7 gives significant symptoms and an increased risk of cardiac complications. It can easily be treated by a transfusion. There are no objections to transfusion in such an old man who will most probably not receive a transplant. There is no rush with the other options (acidosis) or a need for treatment (hyperkalemia). Creatinine 400 is not a problem in itself, and there are no indications for dialysis
 - D Dialysis should be started to lower the s-creatinine
-

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98

For 15 years, a 75-year old patient has been treated with drugs for high blood pressure. He takes a maximum dose of calcium channel blocker (amlodipine 10 mg x1) and a low dose of thiazide (hydrochlorothiazide 12.5 mg x1). Over the last 6 months his blood pressure has been increasing and is clearly in need of more treatment; his BP now varies around 170/80 to 180/90. During this time, creatinine has increased from 106 to 130 $\mu\text{mol/L}$ (normal 60-105), while he has slightly increased s-potassium 5.1 mmol/l (normal 3.5-4.5) and uric acid 490 mmol/L (normal 150-400). Urine dipstick continues to be completely normal.

What is the most probable cause of his high blood pressure?

- A Primary hyperaldosteronism
 - B Onset of glomerulonephritis
 - C X** Nephrosclerosis or ischaemic kidney disease
Long-term hypertension and slightly increased creatinine fits best with nephrosclerosis. Pheochromocytoma is very rare. Normal u-dipstick indicates strongly against glomerulonephritis. Hyperaldosteronism cannot be excluded completely but is relatively uncommon in the elderly, and the patient does not have increased s-potassium.
 - D Pheochromocytoma
-

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99

How high is the average mortality for all categories of patients with acute dialysis-requiring renal failure?

- A 60-80%
 - B 5-10%
 - C X** 30-50%
Acute dialysis-requiring renal failure has a very high mortality even if we can in part replace the kidney function using dialysis. This is because these patients have high comorbidity, have a severe condition that triggers renal failure, and because the dialysis treatment only replaces about 10% of normal kidney function
 - D 15-30%
-

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100

An elderly man has become frailer over the last year with increasingly poor general health. Now he is nauseous and eats almost nothing. He goes to his GP who takes a number of blood tests. These reveal the following:

Hb 8.5 (ref 13.5-17.4), creatinine 1100 $\mu\text{mol/L}$ (60-120), bicarbonate in venous blood 15 mmol/L (20-28), potassium in plasma 5.8 (3.3-4.3).

What do you expect to find when you analyse total potassium and phosphate in blood?

- A Hypercalcaemia and hypophosphataemia
 - B Hypocalcaemia and hypophosphataemia
 - C X** Hypocalcaemia and hyperphosphataemia
Untreated severe kidney failure is characterised by high phosphate and low calcium. This is due to the kidneys' inability to excrete phosphate. Similarly, it is the reduced production of active vitamin D due to reduced amount of kidney tissue which gives hypocalcaemia. This results in high PTH which contributes to increasing the phosphate values further.
 - D Hypercalcaemia and hyperphosphataemia
-

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101

A 56-year old man was diagnosed with type 2 diabetes about 5 years ago. He is overweight and has been treated with metformin. At check-up one year ago, his blood glucose and blood pressure were found to be satisfactory and his urine sample was negative.

At today's check-up he is in good general health, BP 136/83, fasting glucose 7.3 and HbA1c 6.7.

Urine sample showed the following:

u-creatinine 4.67 mmol/L

u-albumin/creatinine ratio 78.0 mg/mmol (ref. 0-3)

u-glucose neg

u-albumin +

u-blood 3+

u-leukocytes neg

u-nitrite neg

u-albumin 126 mg/l (ref. 0-25)

Check of the urine sample confirms the findings.

Which assessment is the most correct?

- A He has microalbuminuria (moderately increased albumin excretion) and haematuria, and improved glycaemic control will be able to reverse this finding.
- B He has macroalbuminuria (substantially elevated albumin excretion) and haematuria, and better blood pressure control will be able to reduce cardiovascular disease
- C He has nephrotic albuminuria and haematuria, and improved blood pressure control will be able to reduce the cardiovascular disease
- D X** He has microalbuminuria (moderately elevated albumin excretion) and haematuria the cause of which must be investigated

Comment: He has moderately elevated albuminuria/macroalbuminuria; this could be secondary to diabetes. Haematuria is seen more rarely in diabetes and new-onset significant haematuria (3+ on dipstick) at his age should be investigated in regard to bleeding from the urinary tract (cancer). In cases of rapidly increasing albuminuria and concomitant haematuria he should also be assessed by a nephrologist for other glomerular disease (glomerulonephritis)

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102

A 28-year old man has type 1 diabetes and has recently been shown to have moderate albuminuria by his GP. Urinary albumin/creatinine ratio has been between 20–28 mg/mmol (ref. < 3mg/mmol). He has had diabetes for 9 years, in recent years with good blood glucose control. The last HbA1c was measured to be 6.8% (ref. <5.6%). other lab results are in the normal range. He is slim and appears to be in good general health. His BP is 114/70 mmHg.

Which action is most correct?

- A Intensify blood sugar check-ups to reduce the development of microvascular kidney damage
Good glycaemic control has been shown to reduce the development of microvascular complications, but he already has an HbA1c of 6.8, which is satisfactory. The benefit of a further reduction of HbA1c is uncertain and not as well documented as RAAS blockade
- B Refer to a nephrologist as he has onset of kidney damage
He has onset of kidney damage, but current actions are RAAS blockade, not necessarily with referral to a nephrologist (source: National guidelines from the Norwegian Directorate for Health and Social Affairs)
- C No further action is indicated as both blood glucose control and blood pressure are optimal for him
- D X** Start treatment with an ACE inhibitor or angiotensin 2 blocker to reduce the development of microvascular kidney damage
In type 1 diabetes with microalbuminuria/moderately increased albumin excretion there are indications for an ACE inhibitor or angiotensin 2 blocker regardless of the blood pressure (source: National guidelines from the Norwegian Directorate for Health and Social Affairs)

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103

A 65-year old man comes to see you due to increasing problems with micturition over the last couple of years. Now he has to get up as many as 3 times a night and is very tired because of poor quality of sleep. Which of the following symptoms is not common in BPH (benign prostatic hyperplasia)

- A urgency
common
 - B pollakiuria
common
 - C X very thin urine stream
Not common in BPH. Typical in urethral stricture.
 - D hesitancy
common
-

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104

An 82-year old man, who had radiotherapy for prostate cancer 20 years ago, now comes to you at the medical centre due to increasing problems with frequent micturition and dysuria over the last month. Urine dipstick reveals white ++, blood++, nitrite+. What do you do next?

- A Take urine for culture and you will contact the patient when the results are available so that he can get the correct antibiotic straight away.
Not satisfactory. Bladder cancer must be excluded due to the previous radiotherapy and the increased risk of bladder cancer
 - B X Refer the patient for cystoscopy, take urine for culture.
Cystoscopy is the investigation that will demonstrate a tumour in the bladder. CT can be indicated but can be decided after cystoscopy. In urinary tract infection, it is correct in the majority of cases to start treatment before you have the results of urine culture with resistance. The patient's symptoms will be the deciding factor.
 - C Take urine for culture and start immediate antibiotics for urinary tract infection. You will contact the patient if the medicine you have chosen is resistant to the bacteria in question.
Not satisfactory. The patient has had radiotherapy on the pelvis and thus has an increased risk of bladder cancer. With symptoms in the bladder, the patient must therefore be investigated for this.
 - D Refer the patient for CT urinary tract, take urine for culture.
CT is not sufficient to be able to exclude cancer of the bladder.
-

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105

You are the GP for a 70-year old woman who has an appointment because of increasing urgency over the last six months. On a couple of occasions she has not made it to the toilet in time. Urine dipstick reveals 1+ for blood and the subsequent results of bacteriology are negative. At gynaecological examination, she has thin mucous membranes in the vulva that bleed easily. What would you recommend for this patient?

- A You recommend trying anticholinergic agents which will reduce the bladder activity
Anticholinergic agents may reduce the symptoms, but in this case further investigations are indicated.
 - B You recommend that the patient start with vaginal oestrogen suppositories that will strengthen the mucous membranes and reduce the symptoms. You arrange a check-up in six months to see whether the treatment has had an effect.
Can help with alleviating the symptoms, but is not sufficient in this case.
 - C X You refer the patient for cystoscopy
The patient's new-onset problems means that she should be referred for cystoscopy to exclude cancer of the bladder.
 - D You insert a catheter to determine if there is residual urine. If she has good bladder voiding, you recommend anticholinergic agents to reduce the bladder activity.
It is correct that residual urine could be the cause of the patient's problems, but it is important to exclude other causes.
-

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106

A man, 40 years old, comes to the surgery and wants to remove some embarrassing changes on his scrotum that he has had for several years. You examine the patient and find some small varices on the right side. What do you do?

- A Refer the patient to Urology for assessment of coiling of the spermatic vein.
Varices that do not cause problems do not require treatment.
- B You refer for US of the right kidney since the changes are in the right half of the scrotum.
Investigation or treatment is not indicated.
- C X** Your advice is not to do anything since the changes are small and do not cause any problems.
Small varices, unchanged over several years do not require investigation or treatment.
- D Order US of the posterior abdominal wall since varices in the scrotum can be due to a tumour on the posterior abdominal wall e.g. kidney tumour.
Varices that have been unchanged for several years do not need to be investigated for an underlying cause.

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107

When a man has been diagnosed with prostate cancer, the aggressivity of the prostate cancer is critical for further treatment. It can be difficult to decide, and the purpose is to minimise both under- and overtreatment while including the patient in the decision. What is correct on treatment of prostate cancer:

- A X** In cases of demonstrated low risk prostate cancer, active surveillance should be offered to the patient.
Due to the side effects of radical treatment and the very good 10-year prostate cancer specific survival with low risk prostate cancer, active surveillance should be the primary treatment offered. Active surveillance involves continuous follow-up and treatment when the disease progresses.
- B In cases of demonstrated asymptomatic metastatic disease, the first choice should be immediate bilateral orchidectomy to reduce the testosterone level.
Immediate bilateral orchidectomy is only indicated in cases of suspected medulla compression or if patients with metastatic prostate cancer prefer this to an LHRH analogue every 3rd month.
- C Radical treatment of prostate cancer, the purpose of which is to cure, includes neoadjuvant chemotherapy with subsequent radical prostatectomy.
Chemotherapy is not given prior to radical prostatectomy. Chemotherapy can be given in castration-resistant disease or as primary treatment with new-onset metastatic disease in combination with castration treatment.
- D Radical prostatectomy reduces prostate-specific mortality to a greater extent than radical radiotherapy.
These two treatment modalities are considered to be equal until the results of an ongoing prospective randomised study are available.

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108

Which tumour markers are the most relevant to investigate in testicular cancer?

- A HCG ALP
- B CEA AFP HCG
CEA is not a tumour marker in testicular cancer
- C X** AFP HCG LD
These tests are taken routinely when investigating testicular cancer. AFP: alfa fetoprotein, HCG: human chorionic gonadotropin and LD: lactate dehydrogenase. AFP and HCG are markers that are produced by tumours, while LD is seen in more advanced disease with metastases. It is not produced by the tumour. LD can increase when cancer tissue is necrotic.
- D AFP HCG ALP LD
ALP is not a tumour marker

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109

The patient is a 67-year old man taking the medicine/anticoagulant marevan with a previous history of attacks of kidney stones. The patient contacts you (his GP) because of episodes with visible blood in his urine (macroscopic haematuria) over the last few weeks but without pain. You order a stone CT i.e. one-phase CT of the urinary tract without contrast. This CT reveals no stone. What should further investigations for this patient include?

- A You check the patient's urine twice with urine dipsticks, and if both are negative the patient does not require further investigation.
- B You order bleeding parameters and note that the patient is slightly overdosed on marevan. You adjust the marevan dose and check new bleeding parameters in two days.
Macrohaematuria, even if the patient is receiving marevan, must be referred for investigation of cancer in the urinary tract.
- C The patient has most probably spontaneously passed a small kidney stone and further investigations are not necessary.
- D X You refer the patient for 3-phase CT of the urinary tract and cystoscopy.
Macroscopic haematuria must be investigated with cystoscopy and CT of the urinary tract with contrast.

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110

Kari (67 years old) has undergone laparotomy three times, and has had part of her intestines removed due to adhesions and fistulas (Crohn's disease). She has also been admitted several times due to pain caused by small stones in the urinary tract, with spontaneous passage. She has now been diagnosed with a 12 mm concrement distally in the right ureter, about 4 cm from the ureteral ostium. She is afebrile; creatinine 110 micromol/L (normal range 60-100 micromol/L). She has daily moderate pain episodes that are alleviated with paracetamol. Which treatment option is considered to be the best to cure her ureteral stone?

- A Refer her for robotic-assisted laparoscopic removal of the ureteral stone.
- B Refer her for ESWL (Extracorporeal shock wave lithotripsy).
- C Continue with paracetamol as analgesic, and wait 3 weeks in the hope that the stone will spontaneously pass to the bladder
- D X Refer her for ureterorenoscopy with laser lithotripsy of the stone.

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111

A 60-year old man has had gradually increasing micturition problems (LUTS) over the last 5 years. The dominant symptoms include hesitancy, poor stream pressure and long voiding time. Nocturia x 0-1, no urge. Investigations have revealed normal values for creatinine and haemoglobin, serum prostate specific antigen (s-PSA) 2.9 µg/L (< 4.1 µg/L), no residual urine, and ultrasound measured a prostate volume of 25 ml. The prostate has normal consistency at palpation. He is strongly motivated for treatment for his problematic micturition, but does not want surgery. Which non-surgical treatment is most appropriate?

- A Clean intermittent catheterisation (CIC) 2-4 times a day depending on the amount he drinks.
- B X Start with an alpha-blocker, for example tamsulosin (tablet)
Correct answer is alternative B. The patient does not have residual urine, and will therefore not benefit from CIC. 5-alpha reductase inhibitor has little effect on prostates with a volume less than 40 ml. Alpha-blockers, that relax the smooth muscle in the prostate, have a documented effect at prostate volumes less than 40 ml. Antiandrogens are only approved for prostate cancer which this patient is not suspected to have (low PSA, normal findings at palpation).
- C Start with a peroral antiandrogen, for example bicalutamide.
- D Start with 5-alpha reductase inhibitor, for example finasteride (tablet)

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Testen har 111 oppgaver. På utskriftstidspunktet var 0 oppgaver blitt trukket og det var gjort fasitendringer på 0 oppgaver.