2019 - IID - MD4043 - eksamen 2 Eksamensdato: 2019-08-14

A previously healthy 55-year-old woman. Para 0. Menopause at age 48 years. Has used HRT (hormone replacement therapy) since the menopause; no postmenopausal bleeding. Over the last two months has noticed increasing pressure in her abdomen and frequent urination urge as well as problems with bowel emptying. Two years ago she had a gynaecological examination with cervical cytology screening which was normal. Her mother and an aunt (mother's sister) both underwent surgery for breast cancer in their fifties. A cousin (daughter of her mother's brother) was diagnosed with breast cancer at the age of 46 years. At gynaecological examination you palpate a large pelvic mass that is not very mobile.

What is the most probable diagnosis?

- A Sigmoid diverticulitis
- This can manifest as a pelvic mass, but there is no information about an infection in the medical history.
- B Uterine sarcoma Uterine sarcomas can be large and give a sensation of pressure in the pelvis but, taking her family medical history into account, ovarian cancer is more probable.
- **C** Rectal cancer Based on her medical history and the family history, it is more probable that this is an ovarian cancer rather than a primary rectal cancer.
- **DX** Ovarian cancer

The family medical history indicates a BRCA mutation, with an increased risk of breast and ovarian cancer. Her medical history is also typical of ovarian cancer - relatively rapid onset of symptoms (2-month history) with advanced cancer (growth penetrating the rectum), and few early symptoms.

2

The purpose of the Norwegian Cervical Cancer Screening Programme is to prevent cervical cancer by offering a screening test taken from the uterine cervix. What are the current recommendations from the Norwegian Cancer Registry?

- A X Cervical cytology every 3rd year for the age group 25-33 years and primary HPV test for the age group 25-69 years New guidelines from July 2018.
- **B** Cervical cytology every 3rd year for the age group 25-69 years and HPV test in addition if cytology is abnormal
- Previous guidelines
- C Cervical cytology every 3rd year for the age group 25-69 years
 Old guidelines.
- **D** Primary HPV test every 5th year for the age group 25-69 years Primary HPV testing is not recommended for the youngest age group 25-33 years.

3

A 44-year old woman has given birth to four children. She had slight problems with urinary incontinence during her last two pregnancies. This has gradually got worse over the last two years and means that she can no longer exercise. What is the most important action you can do as her GP?

A Refer for a CT urinary tract scan

- Not indicated for this problem
- B Refer for cystoscopy
- *This is not indicated as a first line of investigation* **C** Take a urine dipstick
- Unlikely to provide useful information as the problems have existed for several years.
- **D** X Perform a gynaecological examination This is always useful as a first line investigation to palpate the pelvic floor muscles, detect tumours, prolapse, etc. that can be treated.

A 45-year old woman attends your surgery in the countryside where you work as an intern. The nearest hospital is a 3-hour drive away. She complains that she no longer desires to have sex with her husband. This has become a problem in their marriage. What is the most correct course of action?

- A Recommend topical oestrogen treatment *This does not improve libido.*
- **B** Explain that this is common for her age group and that the nearest sexologist is too far away to refer her for this
- See comment for the correct answer
 C Recommend a intrauterine hormonal device and a transdermal oestrogen patch Oestrogen and progestin do not generally improve libido.
- D X Refer her to a sexologist; recommend that her husband also attends
 There is a good probability that sexual function will improve with the correct measures as well as the quality of life for the couple.

5

You suspect that a 23-year-old woman, who currently does not want children, has PCOS. You requisition TSH, prolactin and 17-OH progesterone. In addition to these tests, which combination of hormone tests will be the most useful in clarifying the diagnosis?

- AX Testosterone, SHBG and DHEAS Testosterone and SHBG together will help you evaluate biologically active testosterone. DHEAS provides information about androgen production in the adrenals, which can be elevated in PCOS.
- **B** Testosterone, oestrogen and FSH Oestrogen is almost always normal in women with PCOS. You will not get any particular information from FSH if the problem is PCOS.
- C Testosterone, progesterone and LH LH is too non-specific. Progesterone gives no information on PCOS.
 D Testosterone, oestrogen and progesterone
- D Testosterone, oestrogen and progesterone Progesterone gives no information on PCOS. Oestrogen is nearly always normal in women with PCOS.

6

A 25-year-old woman has attacks of migraine that often start with vision disturbances. What type of contraceptive would be most suitable for her?

- A Transdermal contraception (patch) (Evra®)
- This is a product that also contains oestrogen and is contraindicated in migraine with aura. B Mini-pill (Conludag®) Can be used, but probably the effectiveness is too low (only effects conviced muccus and mu
- Can be used, but probably the effectiveness is too low (only affects cervical mucous and must be taken reliably every 24 hours) for a young, presumably fertile, woman
- **C X** Progestin-only contraceptive pill containing desogestrel (among others Cerazette®) Cerazette contains only progestin, causes anovulation (definitely safe), and is not contraindicated for women with migraine with aura.
- **D** Low dose combined oral contraceptive pill (oestrogen and progestogen) Even though it is a "low dose" oestrogen this is contraindicated in migraine with aura.

A young couple (both 27-years-old) come to see their GP because of an unfulfilled wish for a baby. The woman had an early miscarriage just about a year ago. Over the last couple of years the woman has gained almost 10 kg weight, and her BMI is now 30 kg/m². She says that she rarely has menstrual periods (3-4 times a year).

What should be your first action to help this couple?

- Α You suspect that she has PCOS (polycystic ovary syndrome), and prescribe Metformin tablets Incorrect answer. Before this happens, she must at least be investigated for insulin resistance/
- *pre-diabetes.* You refer her to the gynaecologist for ovulation stimulation R This is not the first action, but could be relevant later. The man's sperm quality should be examined before the woman is prescribed ovulation-stimulating drugs.
- CX You give both her and her husband dietary and lifestyle advice and give her an appointment to check her weight etc. in 3-4 months Correct answer. This is the first and most sensible treatment advice in this case. Because she became pregnant a relatively short time ago, there is a reasonable chance of a spontaneous pregnancy if she can manage to reduce her weight.
- You assess the couple as psychosocially and medically suitable for assisted reproduction therapy D and refer them to the fertility clinic Not the first option in this case. But they should have a follow-up appointment with you so that you can refer them if a spontaneous pregnancy does not occur within 6-12 months.

8

A 32-year old woman has been very bothered by urinary incontinence after she gave birth to her second child 4 months ago. She is still breastfeeding and her periods have not yet returned. She is not using any contraception, and may want more children. She leaks urine several times a day when she is exercising, when she plays with the oldest child and when she coughs or sneezes. The GP writes a reimbursable prescription for incontinence pads.

Which action is the most correct for the doctor to recommend now?

- Give her a prescription for topical oestrogens and anticholinergic drugs Α Anticholinergic drugs will not have an effect on the symptoms she describes (stress urinary incontinence), but are effective against urge incontinence
- В Refer her for surgery because she has such a large leakage meaning she will have to have surgery anyway

Too early to consider this while she is breastfeeding and or amenorrheic. Anyway, she should not undergo surgery until she does not want any more children.

- С Refer her for electrostimulation of the pelvic floor muscles Not adequate for the symptoms she describes (stress incontinence); is effective against urge incontinence
- **D** X Encourage her to do pelvic floor exercises and prescribe topical oestrogens Correct. Topical oestrogens can improve urine leakage in breastfeeding, amenorrheic women. Pelvic floor exercise is effective against stress urinary incontinence.

A 45-year-old woman attends your surgery as her GP because of irregular and, at times, heavy periods over the last six months. Prior to this, she has had regular monthly periods. She has followed the Norwegian Cervical Cancer Screening Programme, her last cytology test was taken 2 years ago and was reported to be normal. You perform a gynaecological examination and then find normal conditions at inspection of the cervix. You palpate a normally-sized uterus. You take an endometrial biopsy (Pipelle®) and histology reveals non-atypical endometrial hyperplasia. What is the first-line treatment for this type of patient?

A X Progestin intrauterine contraceptive device

- This is the first-line teatment for endometrial hyperplasia. The progestin acts locally and most often has a rapid effect giving a reduction in bleeding.
- **B** Curettage (abrasio) of the uterine cavity This is not a treatment, but a diagnostic method used if representative material cannot be obtained with the pipelle.
- C Cyclical oral progestins This is the alternative to the progestin intrauterine device if the patient does not want to have this inserted.
- D Combined hormonal treatment (progestin + oestrogen) This will probably increase the bleeding because the oestrogen can stimulate her hyperplasia further.

10

A 37-year-old woman sees you as her GP. She is gravida 0, but now wants to have children. The patient underwent laparoscopic left-sided oophorectomy 5 years ago due to a 10 cm endometriosis cyst. Extensive endometriosis changes were found at the same time in the lesser pelvis. She has taken a combined contraceptive pill since the operation. A check-up with the gynaecologist 2 years ago revealed a 3 cm probable endometriosis cyst corresponding to the right ovary. She is asking for advice to get pregnant.

What is the most correct advice you can give?

- A You tell the patient to stop taking the pill, and instead give her a progestin (e.g. Visanne® (dienogest)) and NSAIDs with a follow-up appointment in 6 months *Progestins inhibit the woman's own cycle and delays the possibility to become pregnant; incorrect answer*
- **B** You give the woman medical treatment with an ovulation inducing agent Hormonal therapy to stimulate ovulation is used in cases of PCOS. It is not indicated as fertility treatment for endometriosis; incorrect answer.
- **C** You tell the patient to stop taking the pill and try to get pregnant spontaneously over the next 12 months, before referring for fertility investigation and treatment, if necessary *The woman is already 37-years old. It is probable that she has reduced ovarian capacity and endometriosis-related infertilty. She has already had one ovary removed, probably has an endometrioma in the remaining ovary, and extensive endometriosis changes have previously been observed in the lesser pelvis. In this case, you can expect worsening of her endometriosis and perhaps growth of the endometrioma if she discontinues the contraceptive pill. The patient should be referred for fertility investigation and treatment.*
- **D** X You refer the woman and her husband for fertility investigation and treatment The woman's expected reduced ovarian capacity, her age and her known extensive endometriosis means that she should be referred immediately.

11

A number of standard blood tests are taken at the first antenatal care check-up. One of these is screening for rubella antibodies.

You get the following results for one of your pregnant patients: IgM negative, IgG negative. What is the most correct course of action?

AX Recommend rubella vaccination in the postpartum period Correct; vaccination should be done of the mother immediately after delivery

- B Recommend prophylactic treatment with aciclovir
- C Recommend rubella vaccination as soon as possible
- **D** Recommend early ultrasound of the fetus

You are the GP substitute. You are monitoring the antenatal care check-ups of a woman who is pregnant for the first time. In gestation week 32, you measure a long SFH (symphysis-fundus hight). You refer her for ultrasound fetometry and are told the fetus has an estimated growth deviation of +25%. You perform a glucose tolerance test, with 75 g glucose orally. The results are: Fasting glucose: 5.2 mmol/L After 2 hours: 11.5 mmol/L What is the most correct way to manage this situation?

A Refer to the Obstretrics Department to assess the delivery methodB X Refer to a Specialist Department to start diabetes treatment

The patient has diabetes and must be referred to a Specialist Department to start diabetes treatment

- C Provide dietary and lifestyle guidance and training in measuring blood glucose
- D Start treatment with metformin

13

The patient is gravida 1, para 0, and is now pregnant in week 37. She has been for check-ups in the primary healthcare services and, so far, the pregnancy has been normal. Over the last few days she has felt less fetal movements, and today she has not felt any fetal kicking. Examination at the hospital concludes "no fetal heart beat". What is the most important risk factor for intrauterine fetal death?

- A Knot on the umbilical cord
- **BX** Growth restriction
 - Growth restriction resulting from placental failure is the most common cause of IUFD (intrauterine fetal death)
- **c** Congenital malformations
- **D** Rhesus immunisation

14

Woman in her 30s is gravida 1, para 0, and previously healthy. She is now admitted to the Obstetrics Ward with suspected preeclampsia in gestational week 30. Her GP had measured a blood pressure of 178/110 and found proteinuria 2+ with urine dipsticks. Repeated measurements gave an average blood pressure of 182/124, and proteinuria 3+ using urine dipsticks. The on-duty doctor decided that the blood pressure ought to be reduced using drugs. Which drug should the doctor preferably choose initially?

A Enalapril (ACE inhibitor)

ACE inhibitors are contraindicated in pregnant women in all three trimesters. Use in the 1st trimester increases the risk of malformations. In the 2nd and 3rd trimesters, the risk of renal dysplasia, growth restriction and fetal death increases. Even though proteinuria otherwise is an indication for the use of ACE inhibitors, this does not apply during pregnancy. http://legemiddelhandboka.no/Legemidler/63166/?ids=63169#i63169

- **B** X Labetalol (alpha-1-beta receptor antagonist) Labetalol is the first-line treatment for hypertension in pregnancy, as it has been used for a long time in pregnant women in the 2nd and 3rd trimester without any documented harmful effects. http://legemiddelhandboka.no/Legemidler/62177 http://legeforeningen.no/Fagmed/Norsk-gynekologisk-forening/Veiledere/Veileder-ifodselshjelp-2014/Hypertensive-svangerskapskomplikasjoner-og-eklampsi/
- C Candesartan (angiotensin II receptor antagonist) Angioteinsin II receptor antagonists are contraindicated in pregnancy because animal studies have shown that they cause damage similar to that of ACE inhibitors. http://legemiddelhandboka.no/Generelle/63680
- D Spironolactone (aldosterone antagonist) Spironolactone is not recommended for use in pregnancy due to endocrine adverse effects, particularly the risk of antiandrogenic effects on the fetus. http://legemiddelhandboka.no/Legemidler/61300

15 What is a blastocyst?

- A The same as the yolk sac
- B Fertilised egg cell before
- **B** Fertilised egg cell before it has divided for the first time *Incorrect answer*
- **C X** Early embryo differentiated into an inner cell mass surrounded by a cavity and bordered by the trophoblast cells

The blastocyst is differentiated into an inner cell mass which subsequently forms the embryo and is surrounded by a ring of cells called the trophoblast. This takes place 4-5 days after fertilisation at the same time as implantation into the endometrium.

D Undifferentiated cell mass (2-3 days after fertilisation), also called morula The morula is comprised of undifferentiated cells (2-3 dager after fertilisation). The next stage is differentiation into the trophoblast and an inner cell mass.

16

Monochorionic, diamniotic (MCDA) twin pregnancy only has one placenta and therefore there is an increased risk of serious complications.

Which kind(s) of serious complication(s) may occur in a MCDA pregnancy (which of the following statements is correct)?

- A Different intrauterine growth cannot happen in MCDA pregnancies because these twins share the same placenta and will therefore always be approximately the same size. This is a common complication, and the twins must be delivered when one of them is in danger. If one of the twins dies in a MCDA pregnancy, there is a high risk that the other twin will also die or suffer neurological damage.
- **B** The Twin anemia-polycythemia sequence (anaemia in the one twin, polycythemia in the other). But this is just another name for the Twin-twin transfusion syndrome and is not a separate condition.

Incorrect answer. It is a variant of the twin-twin transfusion syndrome with a normal volume of amniotic fluid; it is considered to be a separate condition with an atypical form of transfusion which results in a large Hb difference between the twins without oligo/polyhydramnion sequence. This is a rare, but serious complication that is due to one of the twins bleeding over into the other. This occurs in the third trimester and is treated by delivering the twins.

C The Twin-twin transfusion syndrome. It is the only serious complication that is specific for this type of pregnancy.

It occurs in about 15% of MCDA twin pregnancies. It normally occurs in the middle of the second trimester, and can be treated by cauterizing blood vessels in the placenta using a laser. But it is not the only serious complication of a MCDA pregnancy.

D X The Twin-twin transfusion syndrome, the Twin anemia-polycythemia sequence (anaemia in the one twin, polycythemia in the other), and different intrauterine growth are three distinct complications, all of which are associated with MCDA pregnancies. *Correct answer, MCDA twin pregnancies have an increased risk of all of these three complications.*

17

Which operative delivery method is the most common in Norway?

- A Manual rotation
- Performed very rarely (fetus in the occiput posterior position on the pelvic floor)B Forceps
- about 1% of all births
- C Vacuum about 8-10% of all births
- **D**X Caesarian section
- about 17% of all births

What is the relationship between the alcohol percent in the mother and the alcohol percent in the placenta, in the fetus or a newborn breastfeeding baby?

- **A** Alcohol does not cross the placental barrier.
- Alcohol crosses the placenta freely
- **B** Alcohol is concentrated in the placenta.
- Alcohol is not concentrated
- **C X** The alcohol concentration in the fetus can be higher than or the same as in the mother. Alcohol crosses the placenta freely, and the fetus therefore has the same promille as the mother. Alcohol can be metabolised more slowly in the fetus than in the mother and consequently the fetus can have a higher alcohol concentration than the mother.
- D Neonates wil have the same alcohol percent as the alcohol percent in the breast milk. Breastmilk has almost the same concentration of alcohol as the mother's blood, but the baby will nevertheless get only a little alcohol by drinking breastmilk, in contrast to the fetus that gets the alcohol through the blood.

19

Which infectious disease are pregnant women more predisposed to than non-pregnant women?

- AX Malaria
- B Syphilis
- C Borrelia
- D Rubella

20

What is the most common cause of heavy bleeding that occurs 3 weeks after a vaginal delivery?

- A Undetected cervical tear
- Rare condition, gives serious, heavy bleeding immediately after delivery.B Atonic uterus
- Incorrect, atonic uterus occurs immediately after delivery and is a very heavy and serious acute haemorrhage.
- **C X** Retained products of conception
- Correct. Relatively common, it causes prolonged bleeding.
 D Thrombocytopenia Uncommon condition

21

A 5-year-old boy attends the GP surgery together with his mother. His mother says that she is having problems getting the boy to sleep well, he is very active, highly resistant to transitions, he will only wear one specific pair of trousers, he easily gets into conflicts with other children and is clumsy. You suspect a neuropsychiatric disorder. What characterises this type of disorder?

- A Normal cognitive development, transient difficulties, known genetic predisposition Neuropsychiatric disorders are characterised by impaired cognitive development (motor, language, sensitivity..), and there is a genetic predisposition with family clusters. Comorbid conditions are common.
- **B X** Impaired cognitive development, genetic predisposition, often comorbid conditions Neuropsychiatric disorders are characterised by impaired cognitive development(motor, language, sensitivity..), and there is a genetic predisposition with family clusters. Comorbid conditions are commmon.
- **C** Normal cognitive development, genetic predisposition, rarely comorbidity *Neuropsychiatric disorders are characterised by impaired cognitive development (motor, language, sensitivity..), and there is a genetic predisposition with family clusters. Comorbid conditions are commmon.*
- **D** Impaired cognitive development, known biological cause, often comorbid conditions Neuropsychiatric disorders are characterised by impaired cognitive development (motor, language, sensitivity..), and there is a genetic predisposition with family clusters. Comorbid conditions are common.

You are a doctor in general practice. A girl (14 years old) and her mother have an emergency appointment. The girl has previously been healthy, compliant and hard-working at school. The last six months she has been more irritable, will not eat dinner with the family, and her mother hears her exercising in her room in the evenings. The mother has not seen that the girl has vomited, but is concerned about a serious illness because of weight loss. The girl had menarche around 12 years of age, but has not had periods for the last 3 months. The patient herself says she is healthy, and that there is no danger if she loses weight as she has thick thighs. At examination you find: Height 160cm, weight 36 kg (BMI 14, 2 kg below the 2.5 percentile) BP 90/70, pulse 55, blood glucose 5, Hb 13. Apart from emaciation, she appears to be in good general health. What is the most probable diagnosis?

AX Anorexia nervosa

The girl meets all the criteria for anorexia nervosa: severely underweight, disturbed body perception, resists taking sufficient nutrition in spite of being underweight, and has secondary amenorrhea. There is no information suggesting that she vomits, eats too much or has episodes of binge eating, which would indicate bulimia nervosa.

- B Atypical anorexia nervosa The girl meets all the criteria for anorexia nervosa: seriously underweight, disturbed body perception, resists taking sufficient nutrition in spite of being underweight, and has secondary amenorrhea. There is no information suggesting that she vomits, eats too much or has episodes of binge eating, which would indicate bulimia nervosa.
- **C** Atypical bulimia nervosa The girl meets all the criteria for anorexia nervosa: seriously underweight, disturbed body perception, resists taking sufficient nutrition in spite of being underweight, and has secondary amenorrhea. There is no information suggesting that she vomits, eats too much or has episodes of binge eating, which would indicate bulimia nervosa.

D Bulimia nervosa The girl meets all the criteria for anorexia nervosa: seriously underweight, disturbed body perception, resists taking sufficient nutrition in spite of being underweight, and has secondary amenorrhea. There is no information suggesting that she vomits, eats too much or has episodes of binge eating, which would indicate bulimia nervosa.

23

For some time, a 16-year-old girl has had problems functioning at school, she is absent a lot and describes periods with depressive symptoms. Clinically she does not appear depressed. She has also had episodes of self-harming over time. In addition, she, her parents and the school describe mood swings occurring over many years, and social problems with very intense friendships which she breaks off completely in respons to conflicts. Is consideration of the diagnosis personality disorder relevant?

A X It is relevant to consider investigation for personality disorder, and this must be viewed against a broad differential diagnostic evaluation.

This statement is the most correct as it includes broad differential diagnostics
 B It is relevant to consider investigation for personality disorder because the problems have existed over a period of time.
 This statement is not wrong, but only covers a part of what must be done because we must

- always investigate differential diagnoses when assessing personality disorders
 C It is not relevant to consider a diagnosis of a personality disorder because the problems have only existed for a couple of years.
 It is also incorrect to say that it is not relevant to consider this diagnosis because the problems have only existed for a couple of years.
- It is not relevant to consider diagnosing or diagnose personality disorder in adolescents younger than 18.

Personality disorders can be diagnosed before the age of 18.

A 10-year-old girl attends your GP surgery together with her father. The last 3 weeks she has complained of headache every day. She won't go to school in the morning, and is tired in the afternoons. The days she can stay at home, she is fine. The headache normally passes after 5-10 minutes. She has previously been healthy with normal development. Her parents are separated, described as a good cooperation. Her little sister aged 5 has recently been diagnosed with diabetes mellitus type I. Her best friend moved to another school 3 months ago, and she has had problems fitting in socially since this. What is the most probable diagnosis?

A Diabetes mellitus type I

Symptoms of diabetes: Increased urination and thirst, possibly secondary enuresis. Weight loss, lack of energy, vomiting, stomach pain and gradual reduction in general health. Dehydration, Kussmaul respiration, acetone smell, confusion, low blood pressure/rapid pulse are seen in diabetic ketoacidosis.

A genetic predisposition could be suspected, but there is no other evidence for diabetes in the vignette.

B Migraine

Migraine in children: The symptoms are often acute attacks starting during the course of 2-15 minutes. For some chidren, onset occurs while sleeping and they wake up with the headache. Attacks in children can last 30 minutes, but generally last 3–4 hours, and sometimes as long as a couple of days. Often they describe the pain as located at the front with a pounding/throbbing character. About 1/3 have one-sided pain, but most common is pain on both sides. About half are sensitive to light/noise. Migraine attacks often give strong pain and children often want to lie still, perhaps in a dark rooom, during the attacks. Very many loose their appetite. Some are nauseous and/or vomit. Many become dizzy. The symptoms are often worse if they are active. Small children often withdraw from activities/play. Sleeping after an attack often relieves the pain. The girl has short periods with a mild headache and does not meet the criteria.

C X Tension headache

Headache is common in children. Recurring headaches occur in about 1/20 children of pre-school age and increases with school age. At 12–14 years of age, about 1/5 children and adolescents have recurring headaches. Chronic daily headache is defined as a headache occurring more than 15 days per month and occurs in about 0.5% of children and adolescents. For the most part, these have migraine and/or tension headache (tension type headache, TTH). The pain associated with tension headaches is often more moderate than the pain with migraine. It occurs less acutely, and generally occurs a little later in the day. Children often manage to continue with activities even if they don't feel too well. They often maintain their appetite. The headache is often described as an equally distributed pressing sensation, and located more diffusely inside the head or possibly as a band around the head. The headache can often last a long time and stretch over one or several days.

She has a mild-to-moderate headache and several potential psychological stress factors: divorce, her friend has moved, a little sister who is chronically ill.

D Depression

Symptoms of depression: Low mood, lack of energy, lack of interest and ability to enjoy oneself, decreased concentration, easily tired and increased tiredness, disturbed sleep, decreased appetite, decreased self-esteem and self-confidence, feelings of guilt and worthlessness. Somatic (melancholy form) symptoms can also occur, such as loss of interest and enjoyment, waking up several hours earlier in the morning than normal, depression that is strongest in the morning, pronounced psychomotor delay, restlessness, loss of appetite, loss of weight and loss of libido. There is no evidence of of depression in the vignette.

Over the last year, a 17-year-old girl has increasingly stayed at home from school, stopped doing activities that she previously enjoyed, and avoided social contact with friends. The last two months she has only been at home and mostly stayed in her room. Her parents describe her as depressed, apathetic and they feel that she appears to see and hear things that aren't there. Which statement is the most correct?

A The schooling situation should be better adapted for the girl and she should be helped to return to school

The symptoms described could apply to both a severe depressive episode with psychotic symptoms and a psychotic disorder with both positive and negative symptoms. In this case one should investigate regarding a psychotic disorder to ensure the correct treatment.

- **B** The girl appears severely depressed and should be investigated for bipolar disorder The symptoms described could apply to both a severe depressive episode with psychotic symptoms and a psychotic disorder with both positive and negative symptoms. In this case one should investigate regarding a psychotic disorder to ensure the correct treatment.
- **C** The girl appears severely depressed and one should recommend starting with SSRI The symptoms described could apply to both a severe depressive episode with psychotic symptoms and a psychotic disorder with both positive and negative symptoms. In this case one should investigate regarding a psychotic disorder to ensure the correct treatment.
- **D** X The girl has possible positive and negative psychotic symptoms and should be investigated for a psychotic disorder The symptoms described could apply to both a severe depressive episode with psychotic symptoms and a psychotic disorder with both positive and negative symptoms. In this case one should investigate regarding a psychotic disorder to ensure the correct treatment.

26

Beatrice 17 years old has come to the GP surgery. She lives with her mother, father and two younger brothers. Since 10th grade in secondary school she has had a low mood and struggled with negative thoughts about herself. She did however get her 10th grade approved and has started at upper secondary school studying the subjects she wanted. She is enjoying school. She has a boyfriend and started taking the contraceptive pill in the spring of 10th grade, and uses a combination pill. She was prescribed this because of very strong period pain as well as wanting a contraceptive. She attends with her mother. She doesn't understand why she is so depressed. Her mood is low, everything feels difficult, nothing makes her happy and she has repeating negative thoughts. She does not have suicidal thoughts. She is somatically healthy and you do not find anything wrong after a physical examination. Blood tests taken for depression are normal. What is the first thing you must do?

- A Refer her to the nearest BUP clinic It is too early to do this. Her depression is not considered to be so serious/or result in such low functioning that you should do this now.
- **B X** Provide psychoeducation about risk factors for depression Correct. Some women become extremely depressed by contraceptive pills, in particular the combination pill which contains both oestrogen and progesterone. It is important to map and reduce risk factors, and this can be sufficient treatment for mild depression.
- C Help her change her behaviour by using cognitive behaviour therapy *It is important to first provide good psychoeducation, and to reduce risk factors.*
 D Start with drug treatment to be available for counselling
- It is important to first provide good psychoeducation, and to reduce risk factors. The description indicates a mild depression, and in these cases treatment with drugs is not indicated.

As a GP you meet a 15-year-old boy. He has severe behavioural problems (Conduct disorder). His mother says that as a 6-year old he hit other children, terrorized their cat so much they had to give it away, and set fire to the neighbour's rubbish. Aged 13 he stole a car. He is now accused of selling drugs.

What is the prognosis in regard to his mental health, education and social situation as an adult?

- A He has the poorest prognosis because causing fire is a sign of severe conduct disorder It is correct that lighting fires is a serious symptom of conduct disorder, but research shows that the onset and duration are the most important factors for the prognosis (See also Bevilacqua et al., 2018. Conduct problems trajectories and psychosocial outcomes: a systematic review and meta-analysis. Eur Child Adolesc Psychiatry 27:1239-12-1260)
- **B X** He has the poorest prognosis because his problems debuted early in childhood and have persisted *Correct answer.*
- C He has the poorest prognosis because terrorizing the cat indicates a lack of empathy, so-called 'callous unemotional'
 It is correct that terrorizing animals is an indication of lack of empathy and a sign of severe conduct disorder, but research has shown that onset and duration are the most important factors for the prognosis
- D He has the poorest prognosis because he has severe conduct disorder as a teenager It is correct that severe conduct disorder in adolescence gives a poor prognosis, but the prognosis is worst for those with onset in early childhood and persistent conduct disorder.

A girl aged 17 attends your GP surgery. She has attacks that occur just about every week. These attacks can last 5-20 minutes and are accompanied by loss of memory. During attacks she is does not react to contact, is remote, does not fall, but sometimes other people have observed that she has cramps in her arms. She has been thoroughly examined by a neurologist, and there is no evidence for a neurological disease. You know that she has had a turbulent childhood with an alcoholic mother and violent father. She moved into a foster home when she was 8, was raped by an older boy who was a neighbour when she was 14, and at times has been the object of serious bullying at school. She now lives in a bedsit, attends upper secondary school and works Saturdays in a bakery. Most attacks occur when she is at school, for example during exams or presentations. What is the most probable diagnosis?

A Personality disorder

Personality disorders (PD) include a number of conditions and behavioural patterns that are persistent and appear to express the individual's typical lifestyle and way of relating to themself and to others. Some of these conditions and behavioural patterns appear early in the individual's development as a result of constitutional factors and social experiences, while others are acquired later in life. They represent extreme or significant deviations from how an average individual in a given culture senses, thinks, feels and, in particular, relates to others. Such behavioural patterns are generally stable and include many behavioural and psychological functions. They are often, but not always, associated with varying degrees of subjective discomfort and deficient social skills. The patient's attacks cannot be explained by a PD.

BX Dissociative disorder

Dissociative (conversion) disorders are defined as "a partial or complete loss of the normal integration between memories of the past, awareness of identity and immediate sensations, and control of body movements" (ICD-10). This group of disorders are primarily comprised of two main groups; one group with conditions in which psychological symptoms dominate ("psychoform dissociation") in the form of amnesia, fugue or stupor, and a group of conditions in which somatic symptoms dominate ("somatoform dissociation"; i.e. conversion conditions). The most common conversion symptoms are cramp-like attacks, paralysis, disturbed coordination, walk and balance, tunnel vision, blindness or loss of taste, voice, or sensation in the skin. There does not need to be any indication of somatic disorder because somatic investigations cannot confirm an organic basis for the patient's complaints. There must be a clear basis for a psychogenic causal relationship; such as stressful event (stressful life events, unresolvable or unbearable problems or disturbed relationships with others) or traumas, deprivation, separation, neglect, family violence or emotional/physical/sexual abuse). The conversion symptoms often debut suddenly and have a varied course together with changing and unexpected symptoms that are not related. A dissociative (conversion) disorder therefore appears when the child is subject to such great emotional and painful stressors that they cannot be coped with at an integrated and conscious level. The patient has experienced traumatic events but does not connect them to their symptoms (lack of integration). The attacks come in stressful situations in which she has to perform, and a neurological cause of the attacks has been excluded.

 C Post traumatic stress disorder (PTSD) The patient has experienced traumatic events (stressors), but there is no information regarding re-experiencing, avoidance behaviour or increased physiological reactions.
 D Epilepsy

Epilepsy has been excluded as the neurologist has concluded that there is no evidence for a neurological disease

You are a GP, and one day a woman and her 4-year-old son come to your office. She says that she and her son have been living in a Crisis Centre for 2 weeks after her husband had been violent towards her. She says that the boy was asleep in his room during the violent episodes, and probably heard nothing. You notice that the boy appears uneasy, his mood switches from being angry and commanding to his mother to sorry and wanting help from her with the toys. The mother's attempts to help increases his anger and frustration, and she cannot help him regulate this effectively. Is the child's behaviour alarming? Why or why not?

- A No, the child appears to have normal reactions for his age, and the mother is convinced that he has not seen any violence towards her. The family situation is a risk factor for the child's development. The observations of the child's swinging emotions, his controlling behaviour and the mother's problems with good emotional regulation can be an indication of disorganised attachment. In addition, it can also indicate that the boy is traumatised as a witness to or a direct victim of violence, but we do not know this, and not from his behaviour either.
- **B** X Yes, rapid emotional changes in the child, his commands to his mother and the mother's problems regulating his feelings can indicate a disorganised attachment. The family situation is a risk factor for the child's development. The observations of the child's swinging emotions, his controlling behaviour and the mother's problems with good emotional regulation can be an indication of disorganised attachment. In addition, it can also indicate that the boy is traumatised as a witness to or a direct victim of violence, but we do not know this, and not from his behaviour either.
- **C** It is impossible to draw any conclusions based on these observations. Before you can make an assessment, you must have more information and see the mother and son together on several occasions.

The family situation is a risk factor for the child's development. The observations of the child's swinging emotions, his controlling behaviour and the mother's problems with good emotional regulation can be an indication of disorganised attachment. In addition, it can also indicate that the boy is traumatised as a witness to or a direct victim of violence, but we do not know this, and not from his behaviour either.

D Yes, the boys aggressive behaviour indicates that he has witnessed the violence towards his mother, and can also indicate that he too has been the victim of violence from his father. The family situation is a risk factor for the child's development. The observations of the child's swinging emotions, his controlling behaviour and the mother's problems with good emotional regulation can be an indication of disorganised attachment. In addition, it can also indicate that the boy is traumatised as a witness to or a direct victim of violence, but we do not know this, and not from his behaviour either.

30

A mother attends your GP surgery with her 5-year-old son. She is very concerned about her son's situation in the nursery school. She experiences him as a very clever, smart boy; she mentions that he knows more about outer space than she does, and that he has already taught himself to read. She says that he functions well at home, he is a very good boy, involved doing his own things and requires little activation by his parents. She says that as a family they like to have their routines, and rarely have visitors in their home. She says he can become very difficult when they have to go out, because he is busy with his activity. Moreover, the nursery school have notified concerns about a lot of anger and conflicts if he doesn't get to do what he wants, and he doesn't play with the other children. The boy reads a book while the mother is talking. He doesn't take part in the conversation, and does not make eye contact. He suddenly talks loudly about the mini planet Pluto. Which diagnosis would you want to investigate further?

- A Attachment disorder The vignette describes typical symptoms of autism spectrum disorder including special interests, large social problems, no visible empathy and rigidity
- B Separation anxiety The vignette describes typical symptoms of autism spectrum disorder including special interests, large social problems, no visible empathy and rigidity
- C X Autism spectrum disorder *The vignette describes typical symptoms of autism spectrum disorder including special interests, large social problems, no visible empathy and rigidity*
 D Behavioural disorder
- The vignette describes typical symptoms of autism spectrum disorder including special interests, large social problems, no visible empathy and rigidity

Muhammed is 8 years old and previously healthy. He attends Paediatrics Outpatients with his mother and father. He has been referred by their GP who has taken general blood tests including tests for coeliac disease, stool culture/PCR, lactose gene test, and Calprotectin in faeces all of which are normal. The family are from Irak, they speak good Norwegian and are happy to be in Norway. The father and 4 siblings are healthy. The mother has a sensitive stomach and has been treated for a stomach ulcer. Since the 1st grade, Muhammed has had recurring stomach pains in the lower abdomen during the day, generally after dinner; but he also has to run to the toilet during dinner. The stomach pains often improve after defaecation. He has a lot of flatulence and his parents says that it has a strong smell. He doesn't go to the toilet at school and his mother says that his bowel movements are loose and explosive with several movements a day, even though he himself says a little embarrased that they are 'normal'. At examination you find he has good general health and normal weight. Abdominal sounds are lively. He has palpation tenderness in the left fossa, no definite masses. What do you do?

- Refer the boy for gastroscopy or urea breath test for Helicobacter pylori diagnosis.
- Refer him for gastro- and colonoscopy for inflammatory gastrointestinal disease. В
- С No action as you consider the boy's problems to be non-specific. Ask the parents to contact the GP again if they get worse.
- D X Start treatment for suspected chronic constipation with pseudodiarrhea Srong suspicion of chronic constipation with pseudodiarrhea. One should try to pinpoint the medical history a little more and consider rectal examination for fecal impaction in the rectum. There are probably indications for starting constipation treatment in this patient, in whom the most common conditions that cause diarrhoea have already been excluded.

32

At the routine newborn assessment of a baby the day after birth, you find a systolic murmur without radiation. There is a normal-sized liver and normal inguinal pulse. The child has normal oxygen saturation at routine screening using pulsoxymetry. The child otherwise appears to be healthy and return home is planned for the next day.

What is your next step in regard to the murmur?

- **AX** Check the murmur the next day and wait with a referral to a Paediatric Cardiologist Systolic murmurs that are detected at neonatal examination without any supplementary findings to indicate cardiac disease, are scheduled for new auscultation and referred only if the murmur continues to be present.
- Further follow-up is not necessary as pulsoxymetry screening is normal B
- Refer to Paedatric Cardiology Outpatients for follow-up in the coming days. Refer to the Paediatric Cardiologist for check-up the same day С
- D

33

You work as a doctor at the Child and Mother Clinic. Little Peter and his mother attend for a routine 6week check-up. He is eating well, and putting on weight nicely, and appears happy and satisfied. His examination is normal apart from yellow skin and sclera. His mother says that he was even more yellow in the first week after birth. What is the correct action in this situation?

- AX Call the nearest Paediatric Department for control blood tests the same day Jaundice lasting more than the first two weeks is pathological and must always be investigated as an emergency
- В Instruct the mother to expose Peter to as much sunlight as possible
- С Agree with the mother that she will contact you again if Peter becomes apathetic and will not eat
- D Send a written referral to the nearest Paediatric Outpatients
- Ε Instruct the mother to replace two meals a day with breastmilk substitute

Vaccination against mumps is recommended by WHO for children in all countries. Why?

- A Because mumps in pregnant women in the first trimester can result in malformation of the fetus *German measles (rubella) in particular can cause fetal harm in the first trimester*
- **B** Because unvaccinated children have an increased risk of pneumonia in the post mumps phase Measles in particular can cause an increased risk of pneumonia
- **C** Because mumps can cause acute paralysis in children during epidemics *It is polio that causes paralysis*
- **D** X Because mumps is an unpleasant viral infection that can result in male infertility *Correct answer*

35

A 15-year old boy comes to your surgery. From his records you find that he had food allergy (egg and melk) as an infant, and infection-induced asthma as a small child. Last time you saw him was when he was 3 years old. For the last two years, the boy has had a runny nose and itchy eyes in the summer, has problems breathing when exercising and particularly when he plays football on grass. Spirometry reveals a reversible airflow obstruction compatible with asthma, based on an FEV1 increase of more than 12% after ventolin. You also take a skin prick test against pollen, grass and mugwort which reveals a 7 mm reaction to grass.

What is the correct diagnosis and the correct treatment?

*SLIT= sublingual immunotherapy

- A The boy has exercise-induced asthma. He should take asthma medicines (beta-2 agonist) at exercise during the summer months.
- **B** X The boy has asthma triggered by grass allergy. He should take antihistamines in addition to asthma medication during the summer months, and SLIT with Grazax (Phleum pratense) daily for at least 3 years should be considered. Sublingual immunotherapy is effective in grass allergy, particularly for asthma that is triggered by grass allergy. Treatment time is at least 3 years, and the medicine must be taken daily. It is important that he continues taking the asthma medicine while he is exposed to the trigger that maintains the inflammation of the lungs.
- **C** The boy has asthma, but the results of the prick test do not indicate grass allergy. He should start asthma medicines and use antihistamines during the grass season, but SLIT is not indicated.
- **D** The boy has asthma triggered by grass allergy. He should take asthma medicine and then he doesn't need allergy medicine.

36

A 15-year-old boy had egg allergy and asthma as a child. He has not used medication for the last 10 years. In the summer he found it increasingly difficult to breathe and was admitted with an acute attack of asthma. He is attending for diagnostic investigation before discharge. What is the conclusion based on this spirometry?



Flowvo	olun	n-prepo	st				
		Pred	Pre	%(Pre/Pred)	Post	%(Post/Pred)	%Endr(Post/Pre)
VC MAX	L	4.41	4.26	96	4.34	98	2
FVC	L	4.44	4.26	96	4.34	98	2
FEV1	L	3.67	2,71	74	3.30	90	22
FEV1%N	%	83.50	63.71	76	76.03	91	19
IC F	L	2.83	2.20	78	2.67	94	21
PEF	L/s	7.41	6.19	84	7.14	96	15
MMEF	LIS	4.11	1.76	43	2.70	66	54
MEF50	L/s	4.53	1.97	44	3.07	68	56
Substan	s			-	Ventoline		
Dose					0.4mg		
Nivådato	,		18.09.18		18.09.18		
Nivatid	12.2		12:08		13:05		

- A Spirometry demonstrates airflow obstruction compatible with asthma because all the measurements of lung function increase after ventoline inhalation. The definition of reversible airflow obstruction compatible with asthma is at least a 12% increase in FEV1 after inhalation of beta-2 agonist (here: ventoline)
- **B X** Spirometry demonstrates a reversible airflow obstruction compatible with asthma with a 22% increase in FEV1 after ventoline The definition of reversible airflow obstruction compatible with asthma is at least a 12% increase in FEV1 after inhalation of beta-2 agonist (here: ventoline)
- **C** The spirometry result is uncertain in regard to an asthma diagnosis as the lung function is originally as high as 96% (FVC)
- **D** The spirometry result is uncertain in regard to an asthma diagnosis as there is only a 2% increase in lung capacity (FVC)

You see a 4-month old boy at the Medical Practice. He has loose stools, and a dry itchy rash in his face, on his arms and on his chest. His father has asthma, his older brother has pollen allergy. He is solely breast-fed, and his mother has no dietary restrictions.

You perform a prick test with the following results: Histamine: 4 mm, egg protein: 5.5 mm, milk: 7.5 mm.

What is the correct diagnosis and action?

- A The diagnosis is not definite until we have tested for specific IgE in serum. Await these results therefore before making a conclusion. Incorrect. The prick test is the test that can show whether there is an allergic reaction to a specific substance. IgE shows that a person is sensitive. IgE will be a supplement, in particular for monitoring levels over time when re-introducing foodstuffs. Initiatives with milk-protein-free breastmilk substitute should be started as soon as the prick test results are available.
- **B** The child has egg and milk allergy. The mother must stop eating milk and eggs and the child should be given an appointment for follow-up in 1 month. Yes, the child has milk and egg allergy. This necessitates introduction of milk-protein-free milk substitute, and follow-up with a specialist to ensure correct nutrition and monitoring of allergies that often develop over time.
- **C X** The child has milk and egg allergy. The child is referred to a specialist and the parents are informed about dietary restrictions regarding egg and milk for the mother. This is correct. Milk and egg proteins pass into breast milk and cause an allergic reaction in the child - in this case in the form of atopic eczema. The child should be followed by a specialist to ensure satisfactory nutrition and growth, and to monitor allergic disease that changes over time.
- **D** The prick test is negative and the atopic eczema is not due to allergy. Incorrect. It is a positive prick test greater than 3 mm in diameter. Prick tests have good specificity in regard to allergic reactions.

38 The fifth disease in childhood (erythema infectiosum) is triggered by:

AX Parvovirus B19

This is the agent that causes the fifth disease (erythema infectiosum).

- B Echovirus
- C Rubella virus
- **D** Human herpes virus type 6

You have just started specialisation (LIS1) in surgery at a local hospital. A 6-month-old boy is admitted with strong stomach pain that comes in waves. When he has an attack, he cries unconsolably and pulls his legs up to his stomach. He appears lethargic and weak. His nappy contains bloody, mucous-rich stools that are similar to redcurrant jelly. He has been started on i.v. fluids. What is the next correct step?

- A You suspect inflammatory gastrointestinal disease and send the child home with a referal to the paediatrician for elective investigations
 B X You suspect invagination and refer him for ultrasound of the abdomen
- **B X** You suspect invagination and refer him for ultrasound of the abdomen *Clinical suspicion of invagination; the diagnosis is made using ultrasound*
- C You suspect gastroenteritis and ask the on-duty paediatrican to take over further treatment of the patient

40

You are the on-call doctor. A 3-week-old boy is brought in by his parents. Over the last day the boy has vomited frequently. This is projectile vomiting which is milk-coloured. After vomiting the boy is immediately hungry again. He does not appear to be in pain. What is the correct action?

- **A** You suspect constipation and recommend Microlax
- B You suspect gastroenteritis; you send him home and recommend copious fluid intake
- **C X** You suspect pyloric stenosis and refer him to the nearest Surgical Department *Classic presenting history for pyloric stenosis*

41

A five-and-a-half-year-old girl who would normally weigh about 20 kg is admitted with diarrhoea and vomiting which has lasted a couple of days. At admission she is lethargic, slightly pale and her parents can't get her to drink very much. She has urinated less than normal, and has slightly sunken eyes. Capillary refill time is about 3 seconds. Her weight at admission is 19 kilos; clinically the fiindings are compatible with about 5% dehydration.

If you want to replace the lost fluids and in addition give necessary maintenance fluid over 24 hours, how much fluid will you give her in total?

- A 3,500 ml
- **B** 3,000 ml
- **C X** 2,500 ml
- Maintenance fluid requirement 1,500 ml + loss 1,000 ml
- **D** 2,000 ml

42

An intellectual developmental impairment/cognitive function impairment is most often due to injury/ change in the immature brain. In which time period do we most often find the cause?

A Postnatal 5-10%
B Unknown time point
C X Prenatal 30-80%
D Perinatal 10-40%

43

Having a few hypopigmented areas on the skin is normal, but the presence of many on a patient could be associated with a specific syndrome. Which of the following syndromes is the patient most likely to have?



- A Neurofibromatosis Type 2 Not a typical skin symptom; can have café au lait spots
 B X Tuberous sclerosis About 90% of patients with tuberous sclerosis have hypomelanotic/hypopigmented macules
 C Sturge-Weber
- Often have port-wine stains D Neurofibromatosis Type 1 Has café au lait spots

The parents of a 4-year-old boy are concerned because he falls more often than before. When he gets up from the floor, he looks like the picture below. He has normal reflexes in his extremities. Which of the four following investigations would you perform first?



- A EEG
- Not applicable, the images show signs of muscular weakness MRI brain
- Not applicable, the images show signs of muscular weakness C Neurography
- Not applicable, the images show signs of muscular weakness **D X** Blood tests with CK (creatine kinase) This is an important investigation when there are signs of muscular weakness

A 16-week-old boy has a fever and strained respiration with a fast rate, retractions and wheezing/ prolonged exhalation. His general health is moderately affected and he is admitted to the hospital where they find normal oxygen saturation. Which treatment would you recommend?

- **A** A course of prednisolone
- Has not been demonstrated to improve the course of acute bronchiolitis
 B X Saline inhalation Saline inhalation has been shown to be just as effective as adrenaline inhalation in cases of bronchiolitis
- **C** Inhalation with a beta-2 agonist
- Not the first-line treatment in children with bronchiolitis D A course of phenoxymethylpenicillin
- Most probably has a viral infection (wheezing, etc.)

The teacher of a 10-year-old boy calls you (you are his GP). You have recently referred him to BUP because of suspected ADHD. The boy has got into a fight and hit another boy in the class. The teacher tells the boy that he will have to speak to his parents about this. The boy then started to cry and asked him not to do that. He is supposed to have said that he was afraid his father "would beat him".

The teacher asks for advice on how to deal with this situation.

A You recommend that the teacher contacts the boy's parents and informs them about his difficult behaviour.

This is incorrect. The father could punish the boy because of what he said to the teacher, and the parents could also instruct him to give a different explanation.

- **B X** You recommend that the teacher contacts the Child Protection Services the same day. Here there is grave concern that the child is being abused.
- **C** You say you will give the boy an appointment for a consultation in 3 weeks. *This is insufficient.*
- **D** You tell the teacher that he must remind BUP about the referral. *This is a totally inadequate way to deal with the matter.*

47

A 2-week old boy, born at term with an uncomplicated delivery and postnatal stay, has gradually slept more and eaten less over the last few days. On the day of admission, his condition worsens acutely, with pronounced floppiness and poorer skin colour. In the Emergency Ward, the doctor finds a hypotonic patient with low blood pressure, very rapid heart beat and poor peripheral circulation. He has no fever, and the doctor hears no murmurs over the heart, and normal breath sounds over the lungs. ECG reveals sinus rhythm, rate 230/min (reference 110-160), with pointed T-waves Blood tests reveal the following:

CRP <5 mg/L</th>(Ref: <5 mg/L)</th>Leukocytes 12 x 10^9 /L(Ref: 6-18 x 10^9 /L)Hb 17 g/dL(Ref: 13.5 - 21.4 g/dL)pH 7.22(Ref: 7.35 - 7.4)pCO₂ 4.1 kPa(Ref: 4.5 - 6.0 kPa)BE -15 mmol/L(Ref: +/- 3mmol/L)stand. HCO₃ 17 mmol/L(Ref: 137 - 145 mmo/L)K 8.4 mmol/L(Ref: 3.6 - 4.6 mmol/L)

Which diagnosis can best explain the hyperkalemia in this patient?

- A Decompensated left-sided cardiac failure with tachycardia and acidosis-related hyperkalemia Such pronounced acidosis-related hyperkalemia and pronounced hyponatremia is not seen in heart failure in this age group.
- **B** Septic shock with hypovolemia, tachycardia and acidosis-related hyperkalemia due to group B streptococci
- Sepsis highly improbable due to absence of fever and negative CRP
- C Severe hypovolemia due to to poor food intake, false K values due to difficulty taking blood samples
- Poor food intake does not give such severe hypovolemia and electrolyte imbalance
 D X Congenital lack of adrenal enzymes with severe hypotension, salt loss and K retention in the kidneys
 Pronounced deviation in K and Na and secondary hypovolemia, hypotension, and tachycardia are due to a congenital lack of enzymes for corticosteroids

48

In your job as a GP, you see a 3-year-old girl in your surgery. The parents say that they think she has become paler over the last 2 months. She is otherwise in good form, and has normal natural functions. She has previously been healthy with normal growth and development; she takes no medication. At clinical examination she is pale, with normal throat, heart/lungs/abdomen. No glandular swellings. Afebrile.

Blood tests give the following results:

Test	Value	Ref. range
Hb	6.8 g/dL	10.5-13.1 g/dL
MCV	52 fL	75-87 fL
МСН	16 pg	23.9-34.1 pg
Tot. leukocytes	5.0 x 10 ⁹ /L	3.7-14.7 x 10 ⁹ /L
Granulocytes	2.9 x 10 ⁹ /L	1.7-7.1 x 10 ⁹ /L
Thrombocytes	290 x 10 ⁹ /L	228-435 x 10 ⁹ /L
CRP	<5 mg/L	< 5 mg/L
Creatinine	30 µmol/L	23-37 µmol/L
Bilirubin	10 µmol/L	<16 µmol/L

What is the most probable diagnosis?

A Acute leukaemia

An isolated microcytic hypochromic anaemi can be seen. Acute leukaemia gives a normocytic normochromic anaemia (unless there is concomitant leukaemia and iron deficiency). Normal granulocytes and thrombocytes as well as the lack of other clinical signs of leukaemia strongly indicate that this is not leukaemia.

- **B** Haemolytic uraemic syndrome As a rule this is preceded by gastroenteritt with often, but not always, bloody diarrhoea. HUS causes an acute haemolytic anaemia (normocytic/normochromic). Normal creatinine and bilirubin indicate this is not HUS.
- **C X** Iron deficiency anaemia Correct answer. Here, one would have measured ferritin (NB! Outsde the acute phase). Ferritin would be low (<20) which would confirm the suspicion. Preferably also TIBC and reticulocytes. Next, it is very important to find the cause of the iron deficiency (Coeliac disease? Blood loss through the intestines (e.g. IBD, Meckel, tumour)? Diet? Bleeding tendency (girls in puberty: menstrual history)). Treatment: iron supplements. NB! Compliance. Follow-up is important (monitor Hb/Ferritin)
- D Infection-induced anaemia She has no obvious signs of infection; highly improbable

49

At the Medical Centre where you work as a GP, you see a 4-year-old girl with her father. He says that she has been pale and very listless for some time. At clinical examination you find she has a temperature of 38.1 and poor general health. At organ examination of the abdomen, you palpate a mass in the upper right quadrant. You take informative blood tests which are presented below. You suspect that the child has an underlying blood disease. Which disease is the most probable?

Test:	Result:	Reference range:
CRP	15 mg/L	<5 mg/L
Hb	8.3 g/dL	10.5-13.1 g/dL
Thrombocytes	126 x 10 ⁹ /L	228-435 x 10 ⁹ /L
Leukocytes	82.5 x 10 ⁹ /L	3.7-14.7 x 10^9/L

AX Acute lymphoblastic leukaemia

Acute lymphoblastic leukaemia constitutes 85% of the cases of leukaemia in children, while acute myelogenic leukaemia constitutes about 15%. Chronic lymphatic leukaemia does not occur in children, and chronic myelogenic leukaemia is very rare. The correct answer is therefore acute lymphatic leukaemia.

- **B** Ácute myeloid leukaemia
- C Chronic myeloid leukaemia
- D Chronic lymphoblastic leukaemia

You are a GP, and a 5-year-old child that has been unwell collapses in the waiting room. You go to the child and find the child unconscious and not breathing normally, and diagnose cardiac arrest. You make sure the airways are open and give five effective rescue breaths and start CPR with which rhythm?

A 10:2
 B X 15:2
 This is the correct rhythm in line with the current algorithm for cardiac arrest in children.
 C 3:1
 D 30:2

51

A 48-year-old man is admitted with strong, intermittent flank pain. CT of the urinary tract reveals an 8 mm concrement in the left ureter just distally where the vessels cross over, and moderate hydronephrosis. The patient is afebrile with stable circulation. The following day he continues to have pain but no fever.

What is the best treatment?

- A Percutaneous nephrolithotomy (PCNL)
- B X Ureterorenoscopy with stone removal Ureteral stones ≤ 5mm will most probably pass spontaneously. The patient continues to be in pain after admission and, based on the size of the stone and the clinical information, there is an indication for treatment. Taking into account the location of the stone, URS is the best treatment.
 C Acute left nephrostomy insertion
- C Acute left nephrostomy insertion.D Extracorporeal shockwave (ESWL)

52

In the Emergency Dept you see a 71-year old man who is admitted with acute urine retention of almost 1,000 mL. He has had problems with LUTS (lower urinary tract symptoms) for a long time. His heart and lungs are healthy, and he takes no regular medication. Blood tests on admission reveal normal results for creatinine, electrolytes and haemoglobin. PSA is elevated at 8.5 mcg/mL (reference range PSA <3.8 mcg/mL).

How should this patient be managed further?

- **AX** Relieve with a permanent catheter and check PSA after about 4 weeks
- Relieve with a permanent catheter and check PSA after about 4 weeks. Acute urine retention can result in a rise in PSA, and PSA in serum has a half-life of several days to several weeks. High PSA values in connection with urine retention should be checked after a few weeks.
- **B** The patient should be investigated as soon as possible for prostate cancer using ultrasound/ biopsy
- **C** The patient should be investigated for LUTS using a bladder diary and flow measurements
- D The patient should have cystoscopy as soon as possible to exclude uretral restriction

53

The majority of kidney injuries are blunt traumas that cause haematomas, lacerations and, in serious cases, injury to the collecting duct system and calyces. Most kidney injuries can be treated conservatively. Which care level should be offered to patients with kidney injury grade 3-5?

A Continuous monitoring on a ward at the nearest treating hospital.

- **B** X A hospital with access to radiological embolisation of the bleed source. In high grade kidney injuries (3-5) it should be ensured that the patient's functioning kidney tissue is saved as far as possible, and the patient should therefore be monitored closely in a hospital that can perform selective embolisation of segmental arteries.
- C Conservative treatment in a hospital with access to blood transfusion and 24-hour on-call surgeon.
- **D** Continuous monitoring in an intensive care ward with trauma expertise.

The physiology of normal erection requires a functioning parasympathetic nerve system and a functioning neurovascular bundle that surrounds the prostate gland. Which compound is important for conversion to cGMP and smooth muscle relaxation in the penile sponge-like tissues?

- A Arginine
- B Acetylcholine
- **C** Oxygen
- **DX** Nitric oxide

Endothelial cells produce NO that converts GTP to 5GMP and gives cGMP.

55

A previously healthy 35-year-old patient comes to the Emergency Dept at 03.30. When you see the patient, CT has demonstrated an obstructing 1 cm stone in the ureteropelvic transition of the left kidney with moderate hydronephrosis. The pain comes in waves and is intense; he is lethargic and very tired as he has been awake all night with the pain in his flank. CRP is 150 (norm.: <5), leukocytes 17 (norm.: 4.1-9.8 x 10^{9} /L), creatinine 180 (norm.: 60-105 µmol/L), and he has a temperature of 39 degrees. His circulation and respiration are stable. What do you do?

AX Take a urine sample for culture, start on antibiotics and plan to perform a nephrostomy on the left side as emergency care.

This is probably urosepsis with an acute need for relief with a nephrostomy. It is important to also start early and at the same time with a course of antibiotics, and to obtain urine for culture prior to starting sepsis treatment.

- **B** Contact the on-call doctor in the Intensive Care Dept. and recommend that the patient is given i.v. antibiotics and is monitored there.
- C Register the patient for surgery and then contact the on-call Urologist.
- **D** Register the patient for insertion of a JJ stent on the left side.

56

A 25-year-old man comes to the GP surgery where you have just started as the substitute after specialty training. He has severe pain in his scrotum which started an hour ago. The pain started suddenly when he went to turn over in the sofa. He has had a similar episode before, but then the pain disappeared quickly by itself. The scrotum is not red or swollen and he does not have a fever. What is your first course of action?

- **A X** Order ultrasound of the scrotum as emergency help and call the on-call surgeon. The presenting history strongly indicates torsion of the testis which should be clarified within 4 hours, and the on-duty team should be contacted. This is an investigation that must be performed by experienced personnel. An infection appears less likely.
- **B** Check using urine dipsticks, infection parameters and palpate the testicles.
- There is no indication that this is an infection
 Order ultrasound of the scrotum and ask the patient to come back for a check-up the same day as the ultrasound.
- Ultrasound must be ordered as emergency help within 4 hours. D Perform ultrasound at the GP surgery.
- This is an investigation that must be performed by experienced personnel.

57

You are the District Medical Officer and see a 52-year-old patient who has increasing swelling of the left testicle over the last weeks. He has managed the pain well using Paracetamol. No fever, heat or redness.

Urine dipsticks are negative. What do you do?

- A Start on antibiotics after taking a urine sample for Uricult.
- **B X** Send him for ultrasound of the testis within one to two weeks at the nearest Radiology Dept. No significant pain or signs of infection; most probably a hydrocele or spermatocele. A low risk of a tumour and therefore no rush for an ultrasound examination.
- **C** Send him with a helicopter to the nearest hospital with a suspected testicular torsion.
- D Make an appointment for the next day at your office for further investigations.

A young girl aged 17 comes back to your GP surgery. For the last year she has had one boyfriend. During the year she has had 3 appointments for cystitis that has been effectively treated with a 3-day course of Selexid. She has now come as an emergency appointment and the cystitis is back. She wants a more thorough investigation. What do you do?

- A X You explain that many young women get recurring infections when they are sexually active and that this will normally pass by itself over time. You send a sample for bacteriology culture. You prescribe a 3-day course of Selexid.
 Since the treatment has been effective with just short courses, it is a good idea to continue with this approach. You have, of course, given good advice before.
 B Because this is the patient's 4th visit, you refer her for urological investigation with cystoscopy
- B Because this is the patient's 4th visit, you refer her for urological investigation with cystoscopy and urodynamic tests.
 Young women often have a period with cystitis when starting to be sexually active. This is treated with short courses of antibiotics and good advice on hygiene, and generally passes by itself. Further investigation only if it persists for several years, or if the treatment does not work.
 C You give a new 3-day course of Selexid, and refer for cystoscopy.
- Cystoscopy is not indicated in this case.
 D You explain that many young women get recurring infections when they are sexually active and that this will normally pass by itself over time. You send a sample for bacteriology culture and
- that this will normally pass by itself over time. You send a sample for bacteriology culture and refer her for cystoscopy because the problems have been going on for so long. *Cystocopy is not indicated. In this patient group, cystoscopy generally never finds anything wrong.*

59

To confirm a diagnosis of prostatic cancer, it is necessary to take biopsies via the rectum. This is performed under a local anaesthetic in the Urology Outpatients Clinic. Which statement about this procedure is correct?

- A Two to three ultrasound-guided tissue samples are taken from the area where the suspected tumour was palpated at rectal palpation.
 - Ultrasound guided biopsy is performed systematically as many tumours cannot be palpated.
- **B X** Targeted biopsies taken using MRI findings give more significant and fewer insignificant tumours. New prospective study with targeted biospies shows that it is possible to reduce the number of insignificant cancers, but it also increases the significant cancers.
- **C** Normally 20 systematic biopsies are taken using ultrasound to ensure that the entire prostate is carefully examined.
- D The procedure is mostly performed as day surgery under spinal anaesthetic with transperineal access to avoid infections. Transperineal access gives a reduction in infections but is normally used in patients with a closed rectum or where there is a high risk of infection.

60

A 78-year old man has had increasing micturition problems in the form of poor pressure and feels that his bladder does not empty completely. There is no nocturia or pollakisuria. He has had insulindependent diabetes mellitus for 35 years. PSA 3.6 ng/mL (normal range men >69 years: 0-6.5 ng/mL, creatinine 175 micromol/L (60-100 micromol/L).

Which of the following investigative procedures is the best for the first part of investigations?

- A Urethracystoscopy, uroflowmetry and DRE of the prostate Uroflowmetry provides a lot of information on the cause of poor pressure and is important in the investigations.
- **B** X Urethracystoscopy, uroflowmetry, and ultrasound of the urinary tract Uroflowmetry provides a good deal of information on the cause of micturition problems, and is an essential part of the investigations. Ultrasound of the kidneys is important because of the elevated creatinine. Wish to exclude a postrenal cause.
- C Urethracystoscopy, DRE and ultrasound of the urinary tract
 The pressure flow is important for finding the cause and must be included in the investigations
 D Urethracystoscopy, 3-phase CT of the urinary tract and digital rectal examination (DRE) of the

prostate Cystoscopy and DRE provide important information about the urinary tract but CT is not relevant in this investigation. Moreover, creatinine levels are elevated.

Kåre Hansen (48 years of age) comes to the doctor's office for a consultation because the health nurse at his company has registered that he has high blood pressure. He is healthy, but feels somewhat stressed because the company he works for is having financial problems. He uses no medication, is a non-smoker, BMI 27. You measure his blood pressure at 155/92 average, based on 3 standardized measurements during the course of the consultation. You do a standard work-up and find, among other things, the following: Hb 15.8 g/dL (ref: 13.5-17.5)

Fasting glucose 6.3mmol/L (ref: 3.5 -5.7) HDL cholesterol 0.9 mmol/L (ref: 0.80 - 1.90) Creatinine 68 umol/L, (ref: 50-100) Urine dipstick negative.

Which of the following actions is the most correct?

- Start treatment with Lisinopril 10mg x 1 (ACE inhibitor)
- **B X** Follow-up appointment in 3-6 weeks, and start with Norvax 5mg x 1 (calcium blocker), if necessary

There is no evidence of severe hypertension with organ damage, so there is absolutely no indication to start treatment today. To make the diagnosis of hypertension, several consultations are required at which high BP is demonstrated. Calcium blockers can be a good first-line treatment for this patient.

- Start treatment with Selozoc 100mg x 1 (beta blocker) С
- D No antihypertensive treatment now, but follow-up in 6 months

62

Kristian (74 years of age) is admitted with high fever and suspected pneumonia after lying sick at home for 4 days. He has been treated with penicillin tablets the past two days but has not improved. The patient has no known previous illnesses, is not on regular medication, had normal blood tests when he visited his GP 6 months ago. In the acute admissions ward, treatment is started with Rocephalin 2gr x1 iv (3rd generation cephalosporin). The next morning, the blood tests show: Hb (g/dL) 16.9 (ref: 13.5-17.5) Leukocytes (x10⁹/L) 13 (ref: 3.5-10) Thrombocytes (x10⁹/L) 230 (ref: 150-350) CRP (mg/L) 169 (ref: <5)

Na (mmol/L) 149 (ref: 136-145) K (mmol/L) 4.1 (ref: 3.5-4.8)

Creatinine (micromol/L) 180 (ref: 50-100)

His general condition has not improved, and urine production is falling to 20mL/hour.

Which of the following recommendations for investigations and treatment is most correct when also trying to avoid unnecessary investigations?

- Order 3-4 litres NaCl 0.9% i.v. during the next 24 hours Δ
- Order ultrasound of the urinary tract, kidney biopsy, and switch to a different antibiotic that is less В toxic to kidney
- С Order urine microscopy, u-Na, u-osmolarity, and switch to a different antibiotic that is less toxic to kidneys
- D Order ultrasound of the urinary tract, and prescribe 3-4 litres of Ringer's acetate i.v. during the next 24 hours
- **EX** Order ultrasound of the urinary tract, urine microscopy, u-Na, u-osmolarity, and order 3-4 litres of Ringer's acetate i.v. over the next 24 hours. It is always important in acute renal failure in older men to exclude postrenal blockage. This is most probably a prerenal or acute tubular necrosis; to differentiate between these two it can be useful to have the results for u-Na and u-osmolarity. Regardless, it will be correct to try to administer i.v fluids as suggested here; if the cause is prerenal there may be a need for additional volumes

Astrid (37) receives chronic peritoneal dialysis (PD) treatment for kidney failure. 4 times a day she introduces 2 litres dialysis fluid into her abdomen, and after 4 hours she empties it out before repeating the process.

How does PD treatment work?

- A Waste products diffuse across the peritoneal membrane to equalise the concentration differences and are thereafter removed from the body when the dialysis fluid is withdrawn.
- **B** Waste products form complexes with the glucose molecules in the dialysis fluid and are removed when the dialysis fluid is withdrawn.
- **C X** Waste products diffuse across the peritoneal membrane due to concentration differences and, in addition, waste products are pulled through the membrane when the fluid is withdrawn because of the high glucose concentration in the dialysis fluid Most of them have a certain ultrafiltration functionality so that some of the waste products are removed in this way. Therefore this is the most correct answer.
- **D** Waste products are withdrawn from the abdomen when the PD fluid is emptied after 4 hours

64

What is the most important cause of anaemia in chronic kidney disease stage 4 (eGFR 15-29 mL/ min)?

- A Iron deficiency due to decreased absorption from the intestines
- **B X** Lack of production of erythropoiesis stimulating hormone Decreased iron absorption is never a relevant cause. Decreased survival time and increased bleeding tendency can be significant causes in dialysis-requiring renal failure, but even so lack of EPO production is the most important cause.
- C Iron deficiency due to bleeding tendency
 D Decreased survival time of erythrocytes

65

An 82-year-old woman has chronic obstructive pulmonary disease (COPD), diabetes mellitus type 2 and end stage renal disease (ESRD).

She lives together with her husband who has dementia, and manages the home with help from the home care services.

She is overweight (body mass index BMI >35) and the tavel time to the nearest dialysis centre is 2 hours each way.

Both she and her family are strongly motivated for dialysis treatment. Which treatment option would be best for her?

- A Haemodialysis (HD)
- Would be a poor choice because of the long distances
- **B** Haemodialysis (HD) at the hospital because peritoneal dialysis (PD) is contraindicated in diabetes mellitus.
 - PD is not contraindicated in diabetes mellitus
- C Home haemodialysis (HHD) Not an option as she would not be able to assimilate the training that is necessary
 D X Peritoneal dialysis (PD)
- Would probably be the best option for her because of the long distances E Conservative treatment (no dialysis)
 - She is strongly motivated for dialysis and there are no contraindications

A 70-year-old man had a renal transplant 10 years ago. Uses Sandimmun (Cyclosporin A), CellCept (Mycophenolate) and Prednisolone as immunosuppressants. He has slightly reduced function of the transplanted kidney (creatinine 130 umol/L). He lives a long way from the hospital and sees his GP due to severe pain and swelling at the front of his left foot. Tried paracetamol without effect. The GP suspects gout.

What would be the best treatment the GP can give?

A Allupurinol

Should not be used during acute attacks

B X Temporary increase in prednisolone

- Most effective for the pain and duration of symptoms and with the least side effects C Colchicine
- Should not be used due to the risk of interaction with the immunosuppressant.
 NSAID (non-steroidal anti-inflammatory drug) Should not be used, there is a risk of exacerbation of the transplant function

67

A 52-year-old man contacts you because he has developed swelling in both legs, right up to the knees, and he has put on 5 kilos. Blood pressure is 135/80 mmHg, s-creatinine is 79 micromol/L (60-105). Urine dipstick shows: Blood: Neg. Albumin: ++++. Leukocytes: Negative. Glucose: Negative. What is the most likely diagnosis?

- A Nephritic syndrome The patient has normal kidney function and normal blood pressure which do not indicate nephritic syndrome.
- **B** Heart failure
- No clinical evidence for heart failure.C Deep vein thrombosis (DVT)
- Bilateral oedema makes DVT less likely. Albuminuria is not a sign of DVT. D X Nephrotic syndrome
 - Significant proteinuria, normal kidney function and oedema indicate nephrotic syndrome.

68

Karl (42 years old) has polycystic kidney disease and eventually received a transplant last year after having haemodialysis for 4 years (a lot of HLA antibodies). Renal function is average with s-creatinine around 180 μ mol/L. He arrives at the Minor Injuries Clinic in a taxi because of acute pain at the top of his stomach/low down in his chest. Blood tests reveal the following: Hb 11.5 g/dL (ref. 13.4-17.0 g/dL), s-creatinine 195 μ mol/L (ref. 60-105 μ mol/L), s-troponin 75 ng/L (ref. <14 ng/L). What is the most probable diagnosis?

- A Uremic pericarditis.
- **B** Bleeding in a cyst in the retained kidney.
- **C** Rupture of a cyst in the retained kidney.
- **DX** Acute heart attack.

A 55-year old man with chronic renal failure due to polycystic kidney disease attends for a check-up with you at the health centre. He is well and is working full-time. On 3 different occasions you have measured a BP of 160/100; 150/90; and 153/97. **Lab**: Creatinine 120 μ mol/L (60-105 μ mol/L), eGFR 58 mL/min/1.73m² (>60 mL/min/1.73m²), Albumin 41 g/L (36-45 g/L), potassium 4.3 mmol/L (3.5-4.4 mmol/L). Urine test strip: +blood, ++

albumin, albumin/creatinine ratio 53 mg/mmol (<3 mg/mmol). How should you treat this patient?

- **A X** You give him an angiotensin-receptor blocker and an appointment for follow-up in 10 days. Documented effect on reduction of albuminuria and improved kidney survival. Good antihypertensive treatment.
- **B** You give him a calcium blocker and an appointment for follow-up in 10 days. *No documented effect on albuminuria.*
- **C** You give him a thiazide diuretic and an appointment for follow-up in 10 days. *No documented effect on reduction of albuminuria.*
- **D** You give him a combination medicine with a calcium blocker and an angiotensin-receptor blocker and an appointment for follow-up in 10 days. There is no need to start combination treatment with such modest hypertension. In particular, not when starting with the highest dose of calcium antagonist.

70

What is meant by renal function?

- **AX** Renal function is the quantity of plasma in mL that is filtered in the kidneys per minute Renal function is defined as the quantity of plasma in mL that is filtered in the kidneys per minute
- **B** Renal function is the quantity of plasma in mL that is filtered by each glomerulus per minute
- **C** Renal function is the quantity of urine in mL that appears in the bladder per minute
- **D** Renal function is the quantity of blood in mL that perfuses the kidneys per minute

71

A 59-year old man who is overweight and has a history of hypertension has a standard peroral glucose load (82.5 g glucose monohydrate) with the following results for p-glucose:

- Fasting sample (baseline sample): 7.9 mmol/L
- Sample 2 h after glucose intake: 10.8 mmol/L
- The reference range for p-glucose in fasting samples is 4.2-6.3 mmol/L.

Which condition is most compatible with this finding?

- A Neither diabetes mellitus nor impaired glucose tolerance
- **BX** Diabetes mellitus
- *p-glucose* >7 *in a fasting sample*C Impaired fasting glucose (IFG)
- Impaired identify glacose (in C) no, in this condition glucose in a fasting sample ranges from 6.1 to 6.9 mmol/L
 Impaired glucose tolerance
 - not when the glucose in the fasting sample is so high

Man, 58 years of age, with type 2 diabetes, works as a bus driver. He had a small cardiac infarction 2 years ago. He follows the dietary advice about limiting intake of carbohydrates, and is physically active 3 days a week. He uses Metformin tabl, total 2 times a day. Nonetheless his diabetes is not adequately regulated, with HbA1c 75 mmol/mol (corresponds to 9%), and as his GP you consider there may be a need for an additional antidiabetic drug.

Which of the following medicines are least beneficial and should therefore not be given to this patient?

Α DDP4 inhibitor

DPP4 inhibitors in addition to metformin will not result in hypoglycemia and can therefore be used. DPP4 inhibitors are less effective, and addition of this alone will normally not be expected to achieve his treatment goal when HbA1c is so far above it.

- В SGLT2 inhibitor With a history of cardiac disease, a GLP1 analogue or SGLT2 inhibitor is the first choice (Norwegian National Guidelines, updated 2018).
- С GLP1 analogue With a history of cardiac disease, a GLP1 analogue or SGLT2 inhibitor is the first choice (Norwegian National Guidelines, updated 2018). D X Sulfonylurea

He cannot hold a bus driver's licence if he uses a medicine that can cause hypoglycemia. Sulfonylurea gives a risk of hypoglycemia, and therefore cannot be used unless he changes his profession. Moreover, sulfonylurea is less beneficial to use in patients with a history of heart disease.

73

A 30-year-old woman goes to her GP because of increasing tiredness, diarrhoea and weight loss over the last few months. She feels her skin color is darker than usual at this time of year (Nov). Her GP measures a low blood pressure. What is the most probable diagnosis?

- hypothyroidism Δ
- В diabetes type 1
- С coeliac disease
- **D** X primary adrenal failure (Addison's disease)

tiredness, weight loss, diarrhoea, hypotension and increased pigmentation are typical. The latter is due to lack of cortisol which results in increased formation of proopiomelanocortin and thus also ACTH and MSH, melanocyte stimulating hormone

74

A previously healthy 55-year-old man has been diagnosed with hypercalcemia. Other blood tests show low PTH; 25(OH) vítamin D is satisfactory while 1,25 vitamin D (active vitamin D) is elevated. He feels healthy.

Which of these conditions can explain the blood test results?

renal failure

- **BX** sarcoidosis
 - Increased formation of 1,25 vit D in the granulomas results in hypercalcemia
- С myelomatosis
- D primary hyperparathyroidism

A 57-year-old man has hyperthyroidism with free thyroxine (FT4) 26.2 pmol/L (reference range 11.6-19.1 pmol/L) and thyroid stimulating hormone (TSH) <0.01 mIE/L (ref. 0.24-3.78 mIE/L). Thyrotropin receptor antibody (TSH receptor antibody) is 1.0 (ref. <1.5 IU/L). There is no goitre or nodules at palpation of the gland. Scintigraphy reveals strong uptake in the lower left pole and no uptake in the remaining part of the gland. He has angina pectoris. What treatment would you recommend?

- A Surgery and non-selective beta-blocker Not the most correct answer. This patient has a toxic adenoma in the left thyroid gand and radioactive iodine therapy (RAI) is the first-line treatment for toxic adenoma.
- B X Radioactive iodine and non-selective beta-blocker Radioactive iodine and non-selective beta-blocker Correct answer. This patient has a toxic adenoma in the left thyroid gland and for toxic adenoma the first-line treatment is radioactive iodine therapy (RAI). The radioisotope accumulates in the nodule(s) in the thyroid gland which results in destruction of the adenoma/nodules over 6 to 18 weeks, while the rest of the gland is little affected and can resume its function. Therefore most patients with toxic adenoma become euthyrotic after RAI. The patient should in addition receive a non-selective beta-blocker because RAI causes inflammation with leakage of thyroxine and a short-term increase in thyroxine levels, which can cause exacerbation of angina pectoris.
- **C** Radioactive iodine and steroids (prednisolone) Incorrect. In toxic adenoma, radioactive iodine therapy is the first-line treatment. This patient does not have autoimmune hyperthyroidism (Graves' disease) where there is a risk of endocrine ophthalmopathy or exacerbation of endocrine ophthalmopathy after radioactive iodine therapy, and should not have steroids in connection with radioactive iodine therapy.
- D Thyrostatics and non-selective beta-blocker Not the most correct answer. Thyrostatics reduce the production of thyroid hormones but do not cause remission, i.e. as a rule, the patients relapse after discontinuing treatment with thyrostatics. Thyrostatics are often used as pre-treatment prior to radioactive iodine in patients with pronounced hyperthyroidism, but this patient only has slightly elevated FT4 and does not require thyrostatic treatment. In patients who for whatever reason cannot be treated with radioactive iodine, long-term treatment with low dose thyrostatics may nonetheless be necessary. Kilde: http://legemiddelhandboka.no/Terapi/5217

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R

A 32-year-old woman has free thyroxine (FT4) 29.2 pmol/L (reference range 11.6-19.1 pmol/L) and thyroid stimulating hormone (TSH) <0.01 mIE/L (ref. 0.24-3.78 mIE/L). Thyrotropin receptor antibody (TSH receptor antibody) is 3.9 (ref. <1.5 IU/L). She is pregnant in week 20. She has a little heat intolerance, otherwise few symptoms. How would you treat her?

AX Thyrostatics

Correct. In Europe, thyrostatics (carbimazole, propylthiouracil) are normally the first-line treatment for autoimmune hyperthyroidism (Graves' disease), as in this patient. Because she is pregnant, the lowest effective dose of thyrostatics must be used.

Thyrostatics and beta-blocker Not correct. In Europe, thyrostatics (carbimazole, propylthiouracil) are normally the first-line treatment for autoimmune hyperthyroidism (Graves' disease), as in this patient. Because she is pregnant, the lowest effective dose of thyrostatics must be used. Beta-blockers reduce perfusion of the placenta and can cause fetal death, premature birth and intrauterine growth restriction. Beta-blockers must only be used during pregnancy when the benefits outweigh the risk to the fetus, and should not be used for this woman who has few symptoms and moderately elevated FT4.

http://legemiddelhandboka.no/Terapi/5217

C Radioactive iodine

Not correct. In Europe, thyrostatics (carbimazole, propylthiouracil) are normally the first-line treatment for autoimmune hyperthyroidism (Graves' disease), as in this patient. Radioactive iodine is contraindicated in pregnancy. Radioactive iodine therapy can result in congenital malformations and can destroy the fetus' thryoid gland.

D Thyrostatics and levothyroxine Incorrect answer. In Europe, thyrostatics (carbimazole, propylthiouracil) are normally the first-line treatment for autoimmune hyperthyroidism (Graves' disease), but in pregnant women, the lowest effective dose of thyrostatics must be used, and combination with levothyroxine must be avoided as this requires a higher dose of thyrostatics

A man aged 39 has had type 1 diabetes for 21 years, and has diabetic retinopathy. He is being treated for hypertension. He smokes 10 cigarettes/day. His father had cardiovascular disease in his 50s. The patient's HbA1c is 8.0% (64 mmol/mol; ref 28-40). Fasting s-cholesterol 5.3 mmol/L (ref. 3.3-6.9), LDL cholesterol 3.1 mmol/L (ref. 1.5-5.1). HDL cholesterol 1.19 mmol/L (ref. 1.00-2.70), triglycerides 1.09 mmol/L (ref. 0.45-2.60).

Should this patient start cholesterol-lowering treatment now, or should he wait?

A He doesn't need cholesterol-lowering treatment now, but it should be started when total scholesterol >6.9 mmol/L.

Incorrect answer. The National Guidelines for Diabetes Treatment 2018 states the following: It is recommended to give statin treatment to all people with diabetes aged 40-80 without known cardiovascular disease (primary prevention) if LDL cholesterol exceeds 2.5 mmol/L or when the combined risk is high. Statin treatment should also be considered for patients <40 years of age with a very high risk, for example in the event of microvascular complications or for people from South Asia.

(Students are expected to be familiar with the fact that reference range and intervention limits are not the same.)

- **B** He does not need cholesterol-lowering treatment now, but should start if he gets angina pectoris. Incorrect answer. The National Guidelines for Diabetes Treatment 2018 states the following: It is recommended to give statin treatment to all people with diabetes aged 40-80 without known cardiovascular disease (primary prevention) if LDL cholesterol exceeds 2.5 mmol/L or when the combined risk is high. Statin treatment should also be considered for patients <40 years of age with a very high risk, for example in the event of microvascular complications or for people from South Asia.
- **C X** He should start with cholesterol-lowering treatment. Correct answer. The National Guidelines for Diabetes Treatment 2018 states the following: It is recommended to give statin treatment to all people with diabetes aged 40-80 without known cardiovascular disease (primary prevention) if LDL cholesterol exceeds 2.5 mmol/L or when the combined risk is high. Statin treatment should also be considered for patients <40 years of age with a very high risk, for example in the event of microvascular complications or for people from South Asia.

https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=legemidler-til-forebyggingav-2682#kolesterolsenkende-behandling-som-primærforebygging-ved-diabetes-type-1-og-2sterkanbefaling

D He doesn't need cholesterol-lowering treatment now, but it should be started when HbA1c >8.5% (69 mmol/mol).

Incorrect answer. The National Guidelines for Diabetes Treatment 2018 states the following: It is recommended to give statin treatment to all people with diabetes aged 40-80 without known cardiovascular disease (primary prevention) if LDL cholesterol exceeds 2.5 mmol/L or when the combined risk is high. Statin treatment should also be considered for patients <40 years of age with a very high risk, for example in the event of microvascular complications or for people from South Asia. HBA1c levels are not important for this assessment.

You are the GP for a 73-year-old man who has had type 2 diabetes for 8 years. He has reduced renal function with eGFR 36 ml/min/1.73 m². What is the target HbA1c for this patient?

A X HbA1c between 53-64 mmol/mol (7.0-8.0%)

Correct. The treatment goal for most patients is an HbA1c around 53 mmol/mol (7%), but in patients with long disease duration, significant comorbidity (particularly reduced kidney function, eGFR <45 ml/min/1.73 m²) and a risk of hypoglycemia, an HbA1c between 53-64 mmol/mol (7.0-8.0%) is recommended.

- В HbA1c about 48 mmol/mol (6.5%) Not correct. The treatment goal for most patients is an HbA1c around 53 mmol/mol (7%), but in patients with long disease duration, significant comorbidity (particularly reduced kidney function, eGFR <45 ml/min/1.73 m²) and a risk of hypoglycemia, an HbA1c between 53-64 mmol/mol (7.0-8.0%) is recommended. Source: National Guidelines for Diabetes 2018 https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=blodsukkersenkendebehandling-og-behandlingsmal-3295#behandlingsmål-for-hba1c-ved-diabetes-type-2sterkanbefalinghttps://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=blodsukkersenkendebehandling-og-behandlingsmal-3295#behandlingsmål-for-hba1c-ved-diabetes-type-2sterkanbefaling С HbA1c around 53 mmol/mol (7%) The treatment goal for most patients is an HbA1c around 53 mmol/mol (7%), but in patients with long disease duration, significant comorbidity (particularly reduced kidney function, eGFR <45 ml/ min/1.73 m²) and a risk of hypoglycemia, an HbA1c between 53-64 mmol/mol (7.0-8.0%) is
- recommended.
 D HbA1c between 64-75 mmol/mol (8.0-9.0%) Incorrect. The treatment goal for most patients is an HbA1c around 53 mmol/mol (7%), but in patients with long disease duration, significant comorbidity (particularly reduced kidney function, eGFR <45 ml/min/1.73 m²) and a risk of hypoglycemia, an HbA1c between 53-64 mmol/mol (7.0-8.0%) is recommended.

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A 49-year-old woman has pituitary failure after surgery for a pituitary adenoma. She is substituted with cortisone, growth hormone and thyroxine, taking Levaxin (levothyroxine) 100 microg daily. Medication-fasting tests taken at 3 months after starting with Levaxin (analysed using two different methods) show free thyroxine (FT4) 14.2 and 14.7 pmol/L (reference range 11.6-19.1 pmol/L) and thyroid stimulating hormone (TSH) 0.10-0.12 mIE/L (ref. 0.24-3.78 mIE/L). She feels well.

What coud be the explanation for the very low TSH when FT4 is within the reference range?

- AX She has secondary hypothyroidism Correct. She has secondary or central hypothyroidism resulting from pituitary failure, and that is the reason her TSH is low. In central hypothyroidism, TSH cannot be used to monitor the Levaxin dose, instead the level of FT4 must be used. http://legemiddelhandboka.no/Terapi/5217
- **B** She is overdosed with Levaxin Incorrect. She has secondary or central hypothyroidism resulting from pituitary failure, and that is the reason her TSH is low. In central hypothyroidism, TSH cannot be used to monitor the Levaxin dose, instead the level of FT4 must be used, and in the medication-fasting sample her FT4 is in the reference range.
- **C** Interfering antibodies give a false normal FT4 Incorrect. She has secondary or central hypothyroidism resulting from pituitary failure, and that is the reason her TSH is low. In central hypothyroidism, TSH cannot be used to monitor the Levaxin dose, instead the level of FT4 must be used, and in the medication-fasting sample her FT4 is in the reference range. The samples have been analysed using two different methods and give almost the same result. There is therefore no reason to believe that interfering antibodies have given a false normal FT4.
- D Interfering antibodies give a false low TSH Incorrect. She has secondary or central hypothyroidism resulting from pituitary failure, and that is the reason her TSH is low. In central hypothyroidism, TSH cannot be used to monitor the Levaxin dose, instead the level of FT4 must be used, and in the medication-fasting sample her FT4 is in the reference range. The samples have been analysed using two different methods and give almost the same result. There is therefore no reason to believe that interfering antibodies have given a false low TSH.

A woman aged 66 sees her GP because of skeletal pain and redused general health. She had a vertebral fracture 1 year ago, and osteoporosis was diagnosed by bone density measurement. After this she started on treatment with Alendronate, once a week tablet, and Calcigran forte. She is now referred for X-ray of the spinal column which reveals three new compression fractures without known trauma. Bone density measurement shows a T-score of -4.1 SD in the lumbar column, -3.5 in the femural neck and -2.5 in total hip. Bone density has decreased since the last measurement. Blood samples show significantly elevated calcium, suppressed PTH, satisfactory level of 25(OH) vitamin D, normal kidney function.

What diagnosis do you suspect?

AX myelomatosis

Typical with multiple fractures associated with very little trauma, pronounced hypercalcemia and suppressed PTH

- **B** secondary hyperparathyroidism Can be due to vit D and/or calcium deficiency. These patients have low calcium and/or vit D and high PTH due to feedback mechanisms, as well as a consequence of renal failure due to lack of synthesis of active vit D. There is a compensatory increase in PTH to stimulate conversion of 25hydroxy vit D to 1.25. These patients also have an increased risk of osteoporosis
- **C** sarcoidosis These patients can have hypercalcemia due to production of active vit D in the granulomas. PTH will be suppressed. Slightly increased risk of osteoporosis
- primary hyperparathyroidism
 In primary hyperparathyroidism, the hypercalcemia is due to a PTH-producing adenoma/ hyperplasia in the parathyroid glands. Both calcium and PTH are elevated. Osteoporosis is a common complication, but is not generally so pronounced

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A 54-year-old man has been referred to a outpatient clinic at the hospital due to a demonstrated testosterone deficiency. Supplementary blood tests shows prolactin 18,700 mIE/l (ref. 61-314), and MRI pituitary reveals a large adenoma that reaches to and lifts the optic chiasma. **What treatment should primarily be chosen?**

AX Treatment with a dopamine agonist

He has a macroprolactinoma. Dopamine inhibits the prolactin-producing cells; drugs with a dopamine effect (dopamine agonists) are highly effective in inhibiting prolactin production and cause cell death in prolactinomas, which results in regression of the adenoma and normalisation of the hormone level.

- **B** Treatment with a somatostatin analogue Somatostatin analogues will have some effect, but are much more expensive and more difficult to administer (injection) than a dopamine agonist (tablets); they are primarily used for acromegaly.
- **C** Treatment with a dopamine antagonist Dopamine inhibits the prolactin-producing cells. Therefore a drug with a dopamine effect is given not an antagonist.
- **D** Pituitary surgery In the vast majority of prolactinomas, surgery is unnecessary as drug treatment is extremely effective.

A 58-year-old woman had been diagnosed with breast cancer in her left breast. Because the tumour is not locally advanced, it is decided to remove it with a curative objective. She is scheduled for surgery that involves breast conservation and sentinel node diagnostics. Why should we perform sentinel node diagnostics in this patient?

- A Axilla dissection must be performed at surgery for breast cancer, and spread to the sentinel lymph node(s) provides a lot of information about the future prognosis. Incorrect answer. Axilla dissection is relevant in cases of confirmed metastases in the axilla. Sentinel node diagnostics is the procedure used to clarify whether there are metastases in the lymph nodes in the axilla (if this has not already been demonstrated using ultrasound and fine needle biopsy at the time of diagnosis).
- B If there is spread to the sentinel lymph node(s), breast-conserving surgery is not sufficient. Then the entire breast must be removed.
 Incorrect answer. Breast and axilla are in principle two independent 'rooms' in regard to choice of type of surgery. The status in the axilla does not determine whether breast-conserving surgery or mastectomy should be performed.
- **C X** If one finds metastases to the sentinal lymph node(s), an axilla dissection should be performed. Correct answer. If 3 or more sentinel nodes have metastases, axilla dissection must be performed. Growth of metastases outside the lymph nodes (perinodal growth) also gives indication for axilla dissection. Metastases in 1 or 2 sentinel lymph nodes without perinodal growth is not usually an indication for further surgery, but rather radiotherapy of the axilla.
- D If metastases are found in the sentinel lymph node(s), the patient should have a non-curative (palliative) objective for further treatment Incorrect answer. Even if the patient has metastases to the lymph nodes, the treatment can have a curative objective. The prognosis can still be good.

83

You are the GP for a 64-year-old female patient who attends with a palpable tumour on the neck. It is a single tumour at the front of the throat, about 2 cm in diameter; apart from that you do not palpate any enlarged lymph nodes. You suspect that the tumour is located in the thyroid. Blood tests reveal an apparently normal thyroid function. You wish to characterise the tumour in more detail. Which imaging method will be most appropriate to refer the patient to?

A CT

Primarily ultrasound should be used, preferably in combination with FNAC. CT can be useful e.g. to evaluate extent/penetration or for detecting lymph node metastases in diagnosed cancer. CT is used to determine the extent of the goitre when the gland extends into the thorax.

B MRI

Primarily ultrasound should be used, preferably in combination with FNAC. MRI can be useful e.g. in diagnosed malignancy to evaluate distribution or for detecting lymph node metastases.

- C X-ray
 - Not applicable here.

D X Ultrasound

This is the primary investigation that can be combined with FNAC, if necessary. Ultrasound can determine the presence of more than one tumour, can characterise the tumour, and can determine the presence of metastases in the lymph nodes in the neck, among other. Source: https://www.uptodate.com/contents/diagnostic-approach-to-and-treatment-of-thyroid-nodules?source=search_result&search=thyroid%20tumor&selectedTitle=1~150#H1584452

A 48-year-old woman sees you in the GP surgery. She has found a lump in her right breast. After taking the history you examine her and find it necessary to refer her for further investigations. The patient wants to know which investigations she will have. What do you explain to her?

- You will refer her to the Breast Diagnostics Centre. First, she will have a mammography, MRI and Α ultrasound of both breasts and axilla, and a tissue sample will be taken from the lump and perhaps lymph nodes. Further management depends on the results of these investigations.
- *Incorrect. MRI is never used in primary investigations, but may be appropriate later.* You will refer her to the Breast Diagnostics Centre. First, she will be examined by a surgeon and R then she will be referred for mammography and ultrasound of both breasts and axilla. After this, a tissue sample will be taken from the lump and perhaps lymph nodes. Further management depends on the findings from these examinations. Not completely correct. The GP is responsible for the clinical examination, and the patient therefore goes directly for radiological investigation after the referral.
- С You will refer her to the Breast Diagnostics Centre. First, she will have a mammography and MRI of both breasts. After this, she will probably have ultrasound of both breasts and axilla, and a tissue sample will be taken from the lump and perhaps lymph nodes. Then she will have a PET to decide on further management. Incorrect. MRI is never used in primary investigations, but may be appropriate later. PET is not used.
- **D** X You will refer her to the Breast Diagnostics Centre. First, she will have a mammography of both breasts. After this, she will probably have ultrasound of both breasts and axilla, and a tissue sample will be taken from the lump and perhaps lymph nodes. Further management depends on the findings from these examinations.

Correct answer. This is the standard management throughout the country.

85

You have the evening on-duty shift in the Surgical Dept, and are called to evaluate a 36-year old woman who underwent thyroidectomy earlier that day. She was operated for a papillary thyroid carcinoma originating in the left lobe of the thyroid. The carcinoma was 4.5 cm in diameter, and a total thyroidectomy was performed. The woman is stting leaning forward in the bed; she is pale and gasping for breath. You observe a bluish swelling in the midline of her throat, jugular and intercostal retractions and the onset of peripheral cyanosis. Her breathing is deep and laboured with a rate of about 30 per min, and you hear harsh inspiratory stridor. Scope reveals a pulse of 152. The nurse states that the woman has had a normal postoperative course until 10 minutes ago. Then she began to feel unwell and her breathing has gradually become more laboured.

How should you manage this patient?

- The woman shoud be transferred to the operating theatre for laryngoscopy with cordopexy and Δ complete arytenoidectomy as treatment for probable bilateral vocal cord paralysis. Incorrect answer. Bilateral vocal cord paralysis would already be suspected at extubation. Swelling of the throat is not part of the picture of vocal cord paralysis.
- **B** X The woman should be immediatley transferred to the operating theatre for evacuation of a probable postoperative haematoma. In very acute cases, one must open the sutures there and then.

Correct answer. This is a life-threatening situation. Acute swelling on the throat and difficulty breathing after throat surgery must be managed promptly. If there is time she should go to the operating theatre for intubation and reoperation. This patient is so poorly that you should open immediately and then transfer her for surgery. The haematoma is compressing the trachea, and the patient is about to suffocate.

- С The woman should be transferred to Intensive Care for treatment of probable sepsis with antibiotics and fluids. Incorrect answer. The rapid progression with pronounced respiratory distress and swelling on the throat does not indicate that sepsis is the most probable cause.
- The woman should be transferred to the Medical Dept. for treatment of a probable hypercalcemic D crisis after damage to the parathyroid gland. Incorrect answer. Completely destroyed parathyroid glands would result in a lack of PTH. PTH mobilises calcium from bone to blood. Lack of PTH production would therefore not cause a hypercalcemic crisis, but hypocalcemia. The symptoms are paresthesia and possibly cramps, but not difficulty breathing or swelling of the throat as here.

A 70-year old woman has been diagnosed with a tumour in the right kidney. It is decided to take a biopsy of this.

Which imaging modality is most frequently used as guidance?

Α MRI

- **BX** Ultrasound
- Ē D CT
- X-ray

87

You suspect an aortic arch anomaly corresponding to a the right-sided aortic arch in a newborn baby. An X-ray of the thorax is taken.

Would you expect to be able to locate the aortic arch on the thoracic X-ray?

Yes, as one can in adults.

B X No, the thymus fills the upper mediastinum. Until the teenage years, the thymus is present projecting over the major vessels which means that they are not visible on X-ray in childhood. As the thymus gradually decreases in size with age, it becomes possible to see the major vessels in the thorax by X-ray.

No, it is too small. С

D Yes, it can be seen on X-ray a short time after birth.

88

A 26-year old man comes to the Walk-in Emergency Clinic because of pain in his scrotum. The pain has appeared slowly over 2-3 days, but has increased over the last 24 hours. Clinical examination reveals obvious redness and swelling, as well as pain at palpation of the testicles. CRP 80 (normal <5). Results of the imaging investigation are shown below.

What is the most probable diagnosis?





- Torsion of the testis
- Spermatocele Testicular tumour
- A Torsion of the B Spermatocel C Testicular tur D X Epidydimitis

The total incidence of congenital malformations is not known, but it is estimated that about 3-5% of all newborns have one or more malformations associated with various organ systems. The most common are neurological, cardiovascular and urogenital. In many cases the malformation/anomaly is detected by prenatal diagnostics. Below you can see an X-ray from which the neonatologist wishes to confirm a clinically suspected anomaly. What does the X-ray show?



- Bilateral cervical ribs Α
- **BX** Oesophageal atresia with fistula

- C D Omphalocele
- Congenital diaphragm hernia

The nasogastric probe coils in the upper oesophagus and there is air in the stomach/intestines which indicates the presence of a tracheoesophageal fistula. A well-defined diaphragm dome excludes a hernia. The abdomen is not presented so any omphalocele is not well evalauted (NB! In large omphaloceles parts of the liver can lie in the omphalocele sac, but in the picture here, there is a normal and clear liver contour subdiaphragmatically). Cervical ribs; must be able to count 13 ribs; in the picture only 11 can be seen bilaterally; the 12th rib is probably not well ossified (yet).

You are working as LIS2 (resident/doctor) in the Endocrinology Dept. A 25-year-old woman who has been to see you previously walks into the office. Clinical work-up and blood tests indicate that the patient has hyperthyroidism. At the previous appointment you sent the patient for measurement of thyroid uptake to differentiate between possible causes of the patient's hyperthyroidism. The results of the investigation are described as 'homogeneous, high activity uptake in a slightly enlarged thyroid gland'.

gland'. Which diagnosis do you give the patient?

A Toxic multinodular goitre

Reason: In toxic multinodular goitre there is non-homogeneous, high activity uptake in a (slightly) enlarged thyroid gland. In this patient there was homogenous activity uptake in the thyroid. Subacute thyroiditis

- **B** Subacute thyroiditis Reason: In subacute thyroiditis there is typically no, or very low, activity uptake in the thyroid gland.
- C Toxic adenoma Reason: In toxic adenoma there is focally increased activity in an area of the thyroid with complete or partial suppression of other glandular tissue.
 D X Graves' disease
 - Reason: In Graves' disease there is typically homogeneous, high activity uptake in a slightly enlarged thyroid gland.

91

A 39-year old man goes to the Walk-in Centre in his home municipality in the evening with strong pain that comes in waves in his left flank. He cannot sit or lie at ease. Is nauseous during the pain attacks. No fever. Lab: CRP <5 mg/L. Urine dipstick: Blood ++, leukocytes 0, glucose 0. It is about 110 km to the nearest hospital. You suspect a urinary tract concrement, and treat him first with analgesics and antiphlogistics. Which imaging diagnostics do you order?

- A No imaging diagnostics are necessary.
- B Ultrasound of the kidneys and X-ray of the urinary tract the next day.
- **C X** Stone CT in 2-3 weeks. Most stone attacks can be treated without fast imaging diagnostics. It is normal to do low-dose stone CT without i.v. contrast after a few weeks to see whether there are residual concrements that might require treatment.
- **D** 3-phase CT the same evening.

92

After routine investigations, a 32-year-old man has been diagnosed with a probably malignant tumour in his right testis. Investigation of metastases is required before making a final decision on which treatment to use. What would be the best choice of imaging diagnostics from the options below?

A Skeletal scintigraphy.

- B Ultrasound scrotum and abdomen.
- **C** MRI pelvis and spine.
- **D** X CT thorax and abdomen.

Testicular cancer metastasises typically to the retroperitoneal lymph nodes in the upper abdomen, and/or to the lungs. CT thorax and abdomen cover these alternatives best. Skeletal scintigraphy will only be able to demonstrate skeletal metastases, which are of little relevance here. MRI pelvis and spine is used for prostatic cancer. Ultrasound scrotum has already been performed in connection with the primary diagnostics and is not included in investigation of metastases.

Urinary tract infections (UTI) are very common in childhood. Several imaging diagnostic modalities can be used to investigate them. Ultrasound is generally the first choice at/after the first febrile UTI/ pyelonephritis and with recurrent non-febrile UTIs. Which statement on investigating UTI with ultrasound is correct?

AX Ultrasound is an adequate modality for detecting predisposing causes of infections in an acute clinical situation.

In acute UTI (febrile or recurring non-febrile), ultrasound is an adequate modality to demonstrate or exclude predisposing factors. Later, investigations can be supplemented with MCUG or nuclear medicine investigations to exclude other more specific conditions (reflux, renal scarring, etc.). Using ultrasound, in many cases an underlying cause is not found, and particularly in pyelonephritis where no changes are seen in 80% of the cases. In these cases CT has greater sensitivity for demonstrating changes (and are easier to interpret).

- Using ultrasound one can find changes in the kidneys and/or bladder in about 80% of the cases. В
- С Ultrasound is unfortunately too operator-dependent and necessitates the use of other modalities for investigation of underlying malformations.
- Ultrasound has greater sensitivity for demonstration of pyelonephritis changes and its D complications than CT.

94

A 55-year old woman has a 3 cm diameter tumour in her left breast. It is removed surgically and the image shows a hematoxylin-erythrosine-saffron (HES) stained histology section from the tumour (x600).



Which diagnosis best fits the findings in the image?

 A Fibroadenoma Incorrect answer. A fibroadenoma is a well-delineated, benign tumour that is comprised of a stromal component and an epithelial component. The stromal component is dominant.
 B Ductal carcinoma in situ (DCIS) Incorrect answer. The image shows a group of atypical epithelial cells that are growing (infiltrating) between the collagen fibres in the stroma. This means that the atypical cells have broken through the basal membrane (BM). An intact BM is a prerequisite for making a diagnosis of DCIS.
 C X Infiltrating carcinoma Correct answer.
 D Lobular carcinoma in situ (LCIS) Incorrect answer. The image shows a group of atypical epithelial cells that are growing (infiltrating) between the collagen fibres in the stroma. This means that the atypical cells have

(infiltrating) between the collagen fibres in the stroma. This means that the atypical cells have broken through the basal membrane (BM). An intact BM is a prerequisite for making a diagnosis of LCIS.

95

A 43-year old woman has a tumour in her left breast. A biospy from the tumour is sent for immunohistochmemical investigation for antibody against HER2. Below you can see an image of the immunohistochemical section, which reveals an overexpression of the HER2 protein in the cell membrane of the tumour cells.



What significance does it have for the patient that the tumour overexpresses the HER2 protein?

- **A** It means that there is a HER2 mutation
- **B** It means that the tumour is a metastasis
- **C** It means that the tumour is invasive
- **D** X It indicates that trastuzumab will have a good effect About 15% of breast cancer tumours are HER2 positive. HER2 positivity (i.e. that the tumour is amplified for the HER2 gene or overexpresses the HER2 protein) indicates a poor prognosis without treatment, and that the tumour will respond to trastuzumab treatment (targeted therapy). HER2 positivity also indicates that the patient will benefit from chemotherapy.

96

A 34-year-old woman visits her GP with the following symptoms and findings: Loss of vision (particularly peripheral vision), high blood pressure, high blood glucose and increased amounts of subcutaneous fatty tissue on her back and neck. It is supected that her symptoms can be caused by a tumour.

Which is the most probable diagnosis?

- A Pheochromocytoma Pheochromocytoma can cause changes in blood pressure, but cannot explain the other symptoms
- B Glioblastoma
- Glioblastoma can affect the visual field, but cannot give the other symptoms C X Pituitary adenoma
- An ACTH-producing pituitary adenoma can affect the visual field due to local pressure on the optic chiasma and can give the other symptoms due to increased production of cortisol in the adrenal cortex
- D Meningioma Meningioma can affect the visual field, but cannot give the other symptoms

97

A 26-year-old woman has an enlarged thyroid. Previously, it was slightly larger than it is now and it was tender. She is tired and has noticed that her hair has become thinner. Because of its size it was removed surgically. The histopathology report on the specimen from surgery describes: 'Thyroid with fibrosis and lymphocyte infiltration. Remnants of follicular structures without colloid can be seen. These structures are covered by a simple layer epithelium with large, round nuclei and eosinophil-rich cytoplasm, best compatible with oncocytic metaplasia.» What is the most probable diagnosis?

- A Hyperthyrodism In hyperthyroidism we would see large, expanded follicles with rich activity at the interface
- between the colloid and follicular epithelum B Lymphoma
 - In autoimmune thyroiditis there is significant lymphocyte infiltration into the tissue, often with formation of germinal centres. Lymphoma can arise here, but the description does not match lymphoma.
- C Lateral neck cyst Lateral neck cysts do not arise in the thyroid
- **DX** Autoimmune thyroiditis

Correct answer. The thyroid follicles are destroyed by lymphocyte infiltration and fibrosis. The few remaining follicles often convert to metaplasia to survive, but they are not functional. Also known as Hashimoto's disease and lymphocytic thyroiditis

98

A 65-year-old woman sees a doctor for postmenopausal bleeding. A pipelle sample is taken and the woman later undergoes surgery. Below is a histology image from the uterus (HES, 100X magnification).



What is the diagnosis?

AX Adenocarcinoma

- The epithelium contains atypia, which excludes alternatives A and B. Tumour tissue has infiltrated between areas of smooth muscle in the myometrium. Infiltrating growth excludes alternatives A, B and C.
- **B** Complex hyperplasia with atypia
- **C** Complex hyperplasia without atypia
- **D** Adenomyosis

99

A 35-year old man underwent surgery for a testicular tumour. You are his GP and receive a copy of the results from the Pathology Dept. after the surgery. It states that he has a germ cell tumour. The patient now has an appointment with you and has several questions about the diagnosis. **Which statement is correct?**

- A Benign tumours in the testicles are called germ cell tumours
- B Testicular lymphomas are classified as germ cell tumours
 C X A retained testicle predisposes for germ cell tumours
 There are several sub-groups of germ cell tumuors, for example seminomas, teratomas, embryonal carcinomas.
- **D** There is only one type of germ cell tumour (teratoma)

100

A 65-year-old man has been shown to have elevated PSA (prostate-specific antigen) at a routine check-up with his GP. His GP refers him for investigations at the Urology Dept. where several biopsies are taken from the prostate. The images show histopathology specimens from the prostate biopsies (HES, 100x og 400x).



What is the most probable diagnosis?

- A Normal prostate *This material contains neither normal glandular structures nor fibromuscular stroma.* B X Adenocarcinoma *There are few or no glandular structures. The epithelial cells are growing in patches/infiltrating between narrow stretches of connective tissue containing blood vessels. The cells are atypical, with somewhat enlarged nuclei, small, defined nuceloli and relatively little cytoplasm.* C Hyperplasia
- Hyperplace
 Hyperplace
 Here there are few or no glandular structures at all. The epithelial cells are growing and infiltrating between narrow stretches of connective tissue containing blood vessels. The cells are atypical, with somewhat enlarged nuclei, small, defined nuceloli and relatively little cytoplasm.
 D Granulomatous inflammation
- There are no granulomas or areas with inflammatory cell infiltration in this material, only a few dispersed lymphocytes

101

Tubular, interstitial and glomerular injury in the kidneys can give varying histopathological manifestations, and the reason for these changes occurring can vary. **Which statement is correct?**

- **A** In nephritic syndrome there is most often podocyte injury
- **B** Diabetes mellitus glomerulopathy is a primary glomerulopathy
- **C** Most injuries to the tubules and interstitium are caused by trauma
- **D** X Most glomerular injury is immunologically-mediated The correct answer is 'Most glomerular injury is immunologically-mediated'. Most injuries to the tubules and interstitium are due to toxic or infectious agents. Diabetes mellitus nephropathy is an example of secondary glomerulopathy. Nephritic syndrome is most often due to membrane injury, while nephrotic syndrome is strongly associated with injury to the podocyte.

102

When evaluating the significance of bacterial findings in a urine culture sample, quantification of the findings is important.

In which case should a low bacterial count be considered significant?

- **A** When the sample is from a child.
- **B** X When the sample has been taken using a single-use catheter.
- **C** When the sample is from a patient with a urinary tract concrement.
- **D** When the sample is from a patient with symptoms from the upper urinary tract.

103

You suspect that a patient with a permanent urinary tract catheter is developing an upper urinary tract infection.

Which sampling method will give the best material for urine culture from this patient?

- A Disinfecting the catheter opening with alcohol before taking the sample
- BX Removing the catheter and taking a sample with a new catheter
- **C** Closing the catheter 2-4 hours before taking the sample
- **D** Flushing the catheter with saline before taking the sample
- **E** Aspiration of urine through the catheter wall

Finding several strains of bacteria in a urine sample can be a sign of contamination during sampling. With which sampling method is this type of contamination most often seen?

- **A X** When the sample taken is a bag sample
- Frequently contaminated
 B When the sample is taken percutaneously Contamination is uncommon with suprapubic aspiration
 C When the sample is taken as a midstream sample
- C When the sample is taken as a midstream sample Generally provides a good sample when taken correctly
 D When the sample is taken from men with prostatism
- This condition does not incur a greater risk of contamination when taking urine samples

105

Which statement about bacterial vaginosis is correct?

- A The condition is a sexually transmitted disease *It is not a sexually transmitted disease*
- **B X** The condition requires treatment if discovered incidentally That is correct because the condition (dysbiosis) is associated with upper pelvic infections
- C The condition can only be diagnosed using a microscope The diagnosis can be made with 3 of the 4 Amsel criteria - only for one of these is a microscope necessary.

D The condition is not associated with infections in the upper reproductive organs The condition is associated with infections after gynaecological interventions and upper pelvic infections related, or unrelated, to sexually transmitted diseases

106

Patients with lymphoma and chronic inflammation disorders often use rituximab (anti-CD20 antibody). Which immune system defect in particular do we see in these patients?

- A X Low plasma levels of immunoglobulins (particularly IgG) called hypogammaglobulinemia *Rituximab removes CD20-positive B-cells and could therefore result in low IgG levels* B Reduced number of CD4 lymphocytes
- C Decreased complement functionality with low plasma levels of C3 and C4
- **D** Neutropenia

107

A man aged 75 years is admitted to the Medical Department with BP 85/50 mmHg, pulse 120 beats/ min and fever (39°C). Urine dipstick shows 3+ for blood and 3+ for leukocytes. He has previously had urinary tract stones on several occasions; therefore he now has a new ultrasound of the urinary tract performed. This reveals significant hydronephrosis in the right renal pelvis. Which treatment should this patient receive first of all?

- A X Ampicillin + gentamicin i.v. and referral for insertion of a nephrostomy catheter The patient has urosepsis which is treated with a combination of ampicillin and gentamicin i.v. to cover enterococci and gram-negative rod bacteria, respectively. In patients with urosepsis there is an immediate need for drainage of the infection focus and relief of the kidney, therefore nephrostomy on the same day.
- **B** Ampicillin + gentamicin i.v. and referral for stone fragmentation (ESWL, Extracorporeal shock wave lithotripsi)
- C Mecillinam i.v. and referral for insertion of a nephrostomy catheter
- D Mecillinam i.v. and referral for stone fragmentation (ESWL, Extracorporeal shock wave lithotripsi)

Patients with diseases such as rheumatoid arthritis and Crohn's disease often use tumour necrosis factor inhibitors (e.g. etanercept (Enbrel®), adalimumab (Humira®), infliksimab (Remicade®)) as immunosuppressive therapy.

Which infections are these patients particularly susceptible to?

- A Recurring respiratory tract infections with encapsulated bacteria (pneumococci and Hemophilus influenza)
- **B** Serious skin infections with staphylococci
- C Sepsis with extracellular bacteria such as gram-positive cocci (e.g. streptococci and staphylococci) and gram-negative rod bacteria (e.g. E. coli and Klebsiella)
- **D** X Opportunistic infections with intracellular microbes such as tuberculosis and fungi *TNF-blockers inhibit specifically the defence against intracellular microbes such as mycobacteria and fungi (e.g. Pneumocystis). In particular, there has been an increased risk of tuberculosis*

109

A 30-year-old woman has been on holiday in Thailand. Five days after returning home she has a high fever (40°C), severe headache, particularly retro-orbitally, with intense muscle and joint pain. Over the last 24 hours a general maculopapulous rash has appeared. She says she was bitten several times by mosquitos in the middle of the day when she was out shopping in the city. What is the most likely diagnosis?

- A Typhoid fever
- **B** Malaria
- **C** Rickettsiosis
- **D** X Dengue fever

Tourists who on their return home have a fever, rash and severe joint and retro-orbital pain have symptoms typical of Dengue fever. The disease is transferred by the Aedes aegypti mosquito which bites during daytime in urban areas

110

Which of the following statements is correct in regard to side effects from ACE inhibitors and angiotensin receptor antagonists (ARB)?

- **A** ARB more often causes hyperkalemia than ACE inhibitors
- **B** ACE inhibitors more often cause increased creatinine levels than ARB
- **C X** ACE inhibitors more often cause a cough than ARB Here there is a difference between the groups because ACE inhibitors also block breakdown of inflammatory mediators such as bradykinin.
- D ARB more frequently causes orthostatism than ACE inhibitors

111

You are the GP for a normal weight, 63-year-old woman who smokes, and who has recently been investigated for high blood pressure. You have diagnosed moderate essential hypertension and found indication for antihypertensive treatment based on her total cardiovascular risk profile. Otherwise quite healthy, she has for many years had episodes of AV nodal reentry tachycardia which at times can be problematic. This has not previously been treated prophylactically. It is now time to select the antihypertensive drug.

Which class of antihypertensive drug could be particularly beneficial in this case?

- A Angiotensin receptor blockers
- B Alpha blockers
- **C** Thiazide diuretics
- D X Beta blockers

Prophylactic effect on AV nodal reentry tachycardia, supplementary indication.

A patient uses levothyroxine for hypothyroidism. The patient has developed iron deficiency after major surgery and requires peroral iron supplements. An interaction search reveals that there is an interaction between levothyroxine and perorally administered iron. What is the mechanism behind this interaction?

- A Levothyroxine inhibits the metabolism of iron
- **B X** Iron and levothyroxine form insoluble complexes in the digestive tract ref. Felleskatalogen text: Levaxin
- **C** Levothyroxine induces the metabolism of iron
- **D** Iron increases the excretion of levothyroxine in the kidneys

113

Bisphosphonates are used in the treatment of osteoporosis. What is the most important mechanism of action for this group of drugs?

- A Bisphosphonates inhibit excretion of calcium from the kidneys
- **B** Bisphosphonates increase the absorption of calcium from the digestive tract
- C Bisphosphonates are embedded in the bone matrix and stimulate the osteoblasts
- **D** X Bisphosphonates are embedded in the bone matrix and inhibit the osteoclasts *Ref. Norwegian Formulary: bisphosphonates. Aminobisphosphonates are taken up by the osteoclasts and inhibit the enzyme farnesyl pyrophosphate synthetase, a key enzyme in mevalonate metabolism (5, 6). This results in non-prenylation of small signal proteins (Rho, Ras), which results in reduced functional capacity of the osteoclasts and apoptosis (5, 6). Syvertsen Tidsskriftet 2011*

114

A 30-year-old woman sees you at the general practice surgery to get a prescription for contraception. She has given birth to two children. Previously she has been healthy apart from having migraine with aura.

Which of the following contraceptives is the most correct for this patient?

- A NuvaRing contraceptive ring Fellekatalogen text: contraind: Previous migraine with aura.
- **B** Evra contraceptive patches
- from Felleskatalogen text: contraind: Previous migraine with focal neurological symptoms.
 C Loette contraceptive pills Felleskatalogen text:
- Contraindications:... migraine with focal neurological symptoms in the medical history, **D X** Cerazette contraceptive pills Not contraindicated according to the SPC. Use of contraception containing oestrogen in women with migraine with aura is associated with an increased risk of cerebral stroke.

115

Medications that are used in the treatment of diabetes type 2 can affect body weight. Which of the following drug groups have the greatest tendency to increase body weight?

AX Insulins

Insulin works by increasing the transport of glucose into the cells. Here the glucose is converted into fat (unless the energy consumption balances energy intake). Thus, the body weight can increase.

- B Dipeptidyl peptidase-4 inhibitors (DPP-4 inhibitors) such as sitagliptin
- C Sodium-glucose cotransporter-2 inhibitor (SGLT2 inhibitors) such as empagliflozin
 D Sulfonylurea preparations such as glimepiride
 Can also increase the insulin concentration in plasma, but in that case by release of em
- Can also increase the insulin concentration in plasma, but in that case by release of endogenous insulin, and this effect is not as strong as that for exogenous insulin.

A 74-year-old man with diabetes type 2, elevated blood pressure and hypercholesterolaemia, is being treated with the following drugs:

- Metformin (a biguanide derivate, for diabetes)
- Empagliflozin (a sodium-glucose cotransporter-2 inhibitor (SGLT2 inhibitor), for diabetes)
- Valsartan (an angiotensin II receptor antagonist, for high blood pressure)
- Atorvastatin (a statin, for elevated cholesterol)

The patient is now to have urography with intravenous contrast.

Which medication must be discontinued in connection with this investigation?

- A Valsartan
- **B** Atorvastatin
- C X Metformin

Radiology contrast fluids (containing iodine) are excreted via the kidneys. There they will interact with metformin (which is excreted unmetabolised via the kidneys) with a risk of impaired kidney function and lactacidosis, which is a very dangerous condition

D Empagliflozin

117

A number of drugs can increase the QT interval on ECG and trigger a special form of ventricular tachycardia, torsades de pointes. This arrhythmia can progress to ventricular fibrillation and result in death. Of the opioids commonly used in Norway, one is particularly associated with long QT interval as a side effect.

Which opioid is it?

- A Buprenorphine
- **B** Codeine
- **C** Tramadol
- D X Methadone

It is known that methadone in high doses i.e. above about 100 mg/day, can increase the QT interval and thus increase the risk of ventricular arrhythmias of the type torsades de pointes. It is less certain if doses below 100 mg/day are associated with a significantly increased prolongation of the QT interval. Buprenorphine appears to be a safe alternative to methadone in patients undergoing drug-assisted rehabilitation (LAR). Buprenorphine should therefore be chosen rather than methadone for such patients who have a prolonged QT interval with methadone or who are known to have a pre-exisitng prolonged QT interval.

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A woman is pregnant in the first trimester. She develops a bacterial cystitis and requires a course of antibiotics.

Which medication is the first-line treatment?

- A Trimethoprim
- *Trimethoprim is contraindicated in the first trimester ref. Norwegian Formulary handbook "cystitis"* **B** Erythromycin
- C X Pivmecillinam *First-line ref. Norwegian Formulary handbook and AB guide* D Nitrofurantoin
 - Nitrofurantion is contraindicated in the first trimester ref. Norwegian Formulary handbook "cystitis"

Dutasteride and finasteride are both inhibitors of testosterone 5-alpha reductase and are used to treat benign prostatic hyperplasia.

What is the mechanism of action of these medicines?

- They inhibit conversion of testosterone to the inactive dihydrotestosterone in prostatic tissue Α **B** X They inhibit the conversion of testosterone to the more active dihydrotestosterone in prostatic tissue
- Correct ref. Norwegian Formulary handbook They act as antagonists at the testosterone receptor in prostatic tissue No affinity with the androgen receptor. С
- *ref. Norwegian Formulary handbook* They inhibit the conversion of testosterone to the more active androstenedione in prostatic tissue D

Testen har 119 oppgaver. På utskriftstidspunktet var 0 oppgaver blitt trukket og det var gjort fasitendringer på 0 oppgaver.