2023 - IID - MD4043 - Eksamen 3 Eksamensdato: 2023-12-15

A 62-year-old woman has recently suffered a forearm fracture and is therefore referred for a bone density measurement that shows pronounced osteoporosis of the lumbar spine with a T-score of -3.2 and osteoporosis of the femoral neck and total hip. Normal calcium and vitamin D status. What treatment would you give this patient?

- Α Oestrogen/gestagen
- Hormone treatment should be started just after menopause and before the age of 60 R Teriparatide (PTH analogue)
- Although she has pronounced osteoporosis bisphosphonates should be the primary choice as specified in the Norwegian refund rules. С
- Denosumab (Prolia) Not the first choice for treating osteoporosis. Is indicated for those who are slightly older. **D** X Bisphosphonate
- Correct answer

During the last few years a 40-year-old man has been diagnosed with hypertension and type 2 diabetes and he recently sustained a tibial fracture after a mild trauma. His bone density measurement showed that he had pronounced osteoporosis in his lumbar column, with an average T-score of < -3.0. He is moderately overweight, has a BMI of 30, a round face, a relatively large abdomen with striae, as well as thin arms and legs.

You wonder if he could have autonomous endogenous hypercortisolism. He is not taking any glucocorticoids and his kidney function is normal. Your first step in further diagnostics is:

- Α MRI of the pituitary Incorrect. Imaging diagnostics are only relevant after hypercortisolism has been diagnosed, and non-suppressed ACTH.
- R CT of the adrenals Incorrect. Imaging diagnostics are only relevant after hypercortisolism has been diagnosed, and a CT of the adrenals is then only relevant with suppressed ACTH.
- C X Saliva cortisol late night Correct. This test could easily be taken at home as an initial screening test. The spit sample must be taken at a time when low levels are expected, i.e. during the late evening (just before bedtime).
- D s-cortisol og s-ACTH in a fasting blood test taken during the morning Measuring his cortisol and ACTH levels during the morning would provide relatively little information because it is during the mornings that his levels of these hormones are usually highest.

A 30-year-old woman comes for a check-up for primary adrenal insufficiency that she has had from for a couple of years. She says that she has salt craving and suffers from dizziness and fatigue, with fatigue especially during the afternoons/evenings. She uses cortisone acetate 25 mg every morning and fludrocortisone (Florinef) 0.05 mg every morning. Weight 50 kg. No edema. Blood pressure is 95/60, p: 90. Orthostatic blood pressure measurement shows drop to 85/60, p: 110. The blood tests shows p-Sodium 133 mmol/l (ref. 136-144). What changes in medication would you recommend?

- Α No changes.
- Incorrect, both her cortisone and Florinef doses should be changed.
- Increase her cortisone acetate to 50 mg each morning, no change in Florinef dose B Wrong, her cortisone dose should be divided into 2 or 3 doses/day and Florinef should be increased
- С Increase Florinef to 0.1 mg daily, no change in her cortisone dose Not the most correct. It is correct to increase her Florinef dose, but her cortisone dose should be divided into 2 or 3 doses/day
- D X Her cortisone acetate should be changed to 12.5 mg in the morning and 12.5 mg in the afternoon, and Florinef should be increased from 0.05 to 0.1 mg x 1. Correct. Cortisone acetate should be divided into 2 or 3 doses per day, with the last dose by no later than approx. 18:00 hrs. Due to salt craving the Florinef dose should also be increased.

A woman visits her doctor 5 months after giving birth due to weight loss and palpitations. Hyperthyroidism is diagnosed with free T4 40 pmol/L and TSH <0.01 mIU/l. She has no pain in her thyroid gland.

Which 2 differential diagnoses are most relevant?

- A Postpartum thyroiditis and multinodular goiter Incorrect, multinodular goiter does not normally occur after giving birth. It is most common in the elderly.
- **B X** Graves' disease and postpartum throiditis Correct! After giving birth there is a risk of postpartum tyroiditis and onset or recurrence of Graves' disease. By measuring TRAb and anti-TPO, one can normally be able to distinguish between these conditions.
- **C** Graves' disease and subactute thyreoiditis Incorrect. Graves' disease can reoccur postpartum, but subactute thyroiditis often presents with different symptoms involving neck pain.
- **D** Postpartum thyroiditis and subactute thyroiditis Incorrect, subactute thyroiditis usually presents with pain in the neck

5

A man is referred to the Endocrinology Outpatients Clinic because low testosterone levels were discovered while he was being examined for infertility. His tests showed: testosterone 1 nmol/l (ref. 6.7 - 31-9 nmol/l) and LH 32 IU/L (ref 0.9-8.4). What do you do next?

- A Check the other hormonal axes from the pituitary gland Incorrect, this is not pituitary failure, high LH levels indicate a "healthy" pituitary gland, failure is located at testicular level
- B Commence testosterone supplements Testosterone should be offered, but is it important to clarify the cause first.
- **C X** Order chromosone analysis Correct. This is primary hypogonadism. Clarification is required in respect of Klinefelter syndrome which is a common cause of primary hypogonadism. Most people have 47XXY, mosaicism also occurs.
- **D** Order an MRI of his pituitary gland. Incorrect, this is not a main cause of hypogonadism.

6

Which of these test results is consistent with secondary hyperparathyroidism?

A High calcium, high PTH

- Incorrect. Consistent with primary hyperparathyroidism.
- **B** High calcium, low PTH
- Incorrect. Low PTH levels are not consistent with any types of hyperparathyroidism. **C X** Low calcium, high PTH
- Correct. In secondary hyperparathyroidism, PTH levels increase due to low calcium. The cause of low calcium is often a lack of vitamin D or kidney failure.

D Low calcium, low PTH

Incorrect. Low PTH levels are not consistent with any types of hyperparathyroidism.

A 45-year-old man consults the doctor due to potency problems. He says that he has not felt well for the last couple of years. He is tired, has daily headaches and sweats a lot. Someone in his circle of acquaintances has mentioned that his appearance has changed. He thinks his eyesight is worse than previously, and when he drives a car he is often surprised by cars approaching from the side that he has not noticed.

What is the most probable diagnosis?

- A Prolactinoma
- **B** X Growth hormone-producing pituitary adenoma Correct answer. The symptoms described are typical of acromegaly, and his history of illness gives reason to suspect reduced peripheral vision.
- C Non-functioning pituitary adenoma
- **D** Craniopharyngioma
- E ACTH-producing pituitary adenoma

8

A 58-year-old man works as a bus driver. A year ago, he was diagnosed with type 2 diabetes, but now his blood sugar is too high despite changes in lifestyle habits. He has been told by colleagues that there are some diabetes medications that he cannot use if he is to continue working as a bus driver. You are his GP and you tell him he can't use drugs that can cause too low blood sugar (hypoglycemia). Which medication/class of medication can cause hypoglycaemia?

A SGLT2 inhibitors

BX Sulphonylureas

Correct answer. Sulphonylurea drugs stimulate insulin production independently of glucose levels, and hypoglycaemis is a known, possible side effect.

- **C** Metformin
- **D** GLP-1 analogues

9

An 82-year-old woman is transported to the emergency department by ambulance. She is in poor general condition and has impaired consciousness, GCS 8. She has no known diabetes, but capillary blood glucose has been measured as "high" in the ambulance, i.e. >30 mmol/l. Which two analyses would quickly determine whether or not the patient has diabetic ketoacidosis (DKA) or hyperosmular hyperglycaemic syndrome (HHS)?

- A Bicarbonate (blood gas) and pH (blood gas)
- Not the most correct. Metabolic acidosis is present in diabetic ketoacidosis and this usually results in low pH levels as well as low bicarbonate levels, unless the acidosis is sufficiently minor as to warrant the use of respiratory compensation. In such cases the pH levels could be almost normal. Metabolic acidosis is always present in ketoacidosis, while with HHS metabolic acidosis it may be present if lactic acidosis or severe kidney failure are present at the same time. Without ketone testing it is not possible to definitely distinguish between the two conditions quickly, and one needs to wait for laboratory analyses of the creatinine levels (lactate measured in the blood gas)
- B Glucose (capillary/blood gas) and ketones in the urine Not the most correct. In order to be able to distinguish between the two conditions it is necessary to know if metabolic acidosis is present, and it is then necessary to measure the acid-base status in the blood gas, i.e. bicarbonate or pH levels. There may be traces of urine ketones in HHS as well. One now has the opportunity to test the ketones in the blood, and this is also preferred, rather than urine testing, because it is more specific and measures the ketoacids directly and not just the acetone (not ketonic acid) as is the case with urine testing.
- **C** X Bicarbonate (blood gas) and ketones in the blood (capillary) Correct answer. Metabolic acidosis is characterised by diabetic ketoacidosis and this is found when bicarbonate levels are low and ketones are present in the blood.
- D Bicarbonate (blood gas) and glucose (capillary/blood gas) Not the most correct. High glucose and low bicarbonate levels (metabolic acidosis) will create suspected ketoacidosis, but metabolic acidosis could also be present due to another cause, such as kidney failure and lactic acidosis. One should therefore also measure the ketone levels, preferably the blood ketone levels.

You are the GP for a 52-year old man with newly diagnosed type 2 diabetes. He is otherwise healthy. When should you refer him for an ophthalmology check up?

- A He should be referred to an ophthalmologist 3 years after being diagnosed with type 2 diabetes Incorrect answer.Patients with type 2 diabetes should be referred to an ophthalmologist at the time of diagnosis, because they may already have microvascular complications. Source: National guideines for diabetes 2017 https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=retinopati-og-systematiskoyeundersokelse-2683#hyppighet-av-øyeundersøkelse-ved-diabetessterk-anbefaling
- B X He should be referred to an ophthalmologist when he is diagnosed with type 2 diabetes
 Correct answer. Patients with type 2 diabetes should be referred to an ophthalmologist at the time of diagnosis, because they may already have microvascular complications. Source: National guideines for diabetes 2017 https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=retinopati-og-systematisk-oyeundersokelse-2683#hyppighet-av-øyeundersøkelse-ved-diabetessterk-anbefaling
- C He should be referred to an ophthalmologist 5 years after being diagnosed with type 2 diabetes Incorrect answer. Patients with type 2 diabetes should be referred to an ophthalmologist at the time of diagnosis, because they may already have microvascular complications. Source: National guideines for diabetes 2017 https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=retinopati-og-systematisk-

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D He should be referred to an ophthalmologist 2 years after being diagnosed with type 2 diabetes Incorrect answer. Patients with type 2 diabetes should be referred to an ophthalmologist at the time of diagnosis, because they may already have microvascular complications. Source: National guideines for diabetes 2017 https://helsedirektoratet.no/retningslinjer/diabetes/seksjon?Tittel=retinopati-og-systematisk-

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11

You are on the daily rounds at the breast/endocrine surgery department. Your first patient is a 51-year old woman. She had a total thyroidectomy the day before due to a non-toxic nodular goiter. Uncomplicated surgery and she feels just fine. What is it important to do now?

- A Prescribe levothyroxine treatment for 4 weeks.
- **B X** Prescribe lifelong levothyroxine treatment. Patients who have had their whole thyroid gland surgically removed need lifelong levothyroxine treatment. This is usually started on the first postoperative day.
- **C** Check her thyroid tests now.
- **D** Inform her to check the thyroid status at her GP's office after a week.

12

A 63-year-old woman comes to your GP's office with a lump laterally in her right breast that she discovered three days ago. On examination, you palpate a 2x2cm firm mass in the chest, no skin involvement. In the right axilla, she has an enlarged lymph node. She is previously healthy and feels in good shape. Her mother had cancer mamma in her late 60s. What is the next step now?

A Wait and see. Ask her to return in 14 days' time if the lump has not disappeared by then.

- **B** Palpation-guided cytology at the GP's office.
- **C X** Triple assessment.
- Cancer mamma is suspected in this case, so triple assessment is correct. D Mammography.

A mammography is not enough for investigating suspected cancer mamma.

A 51-year-old woman has had a total thyroidectomy. You are called to the ward the next morning because the patient is complaining about numbness and "tingling" in her fingers, toes and around her mouth. Otherwise there are no significant changes in her status. What is the likely cause of these symptoms?

- A Permanent hypercalcaemia.
- B Cerebrovascular episode.
- C Hyperventilation.
- **D** X Transitory hypocalcaemia.

These are typical symptoms of hypercalcaemia. The postoperative effects of a parathyroidectomy can produce transient post-operative hypocalcaemia (in 5% of cases this develops to become permanent hypocalcaemia).

14

A 63-year-old woman has been diagnosed with an 8mm cancer in her left breast during mammography screening. Otherwise no pathological changes in her breasts, no pathological lymph nodes in the axillae. She has previously been healthy and does not take any medication. Genetic testing is negative. What will the recommended surgical treatment be in this case?

- A Breast-conserving surgery and axillary dissection. Breast-conserving surgery is correct for a small tumour like this. When no metatases are found in the axilla prior to surgery, an axillary dissection is not carried out.
- B Mastectomy and axillary dissection. Both alternatives are incorrect.
- C Mastectomy and sentinal lymph node biopsy. A mastectomy is not recommended for a tumour like this. A sentinal lymph node biopsy is correct.
- **D X** Breast-conserving surgery and sentinal lymph node biopsy. Correct.

15

What is the most common consequence of anovulation in women?

A X Irregular / unpredictable / lack of bleeding

- This is the most frequent consequence as it relates to everyone with anovulation. B Fear of unplanned pregnancy
- *This occurs, but it can be easily clarified by taking a pregnancy test.* **C** Childlessness
- Incorrect answer. Most women can become pregnant by having their eggs stimulated and assisted fertiliation, with the worst case scenario being the use of donor eggs.
- D Osteoporosis Most cases of anovulation are caused by PCOS. These have normal or increased levels of oestradiol - and thus no increased risk of sustaining osteoporosis.

16

A 34-year-old woman is being examined for infertility. She has been trying to become pregnant for 3 years and has intercourse twice a week with her partner who has 2 children from a previous relationship. The patient herself is Gravida 1, an early legal abortion when she was 18 years old. She had a chlamydia infection after the abortion. She suffers from considerable dysmenorrhoea and also slight dyspareunia.

The Fertility Department has wanted to carry out a laparoscopy and finds the following (see picture) (peritoneal endometriosis):

What would be the correct treatment in this case?



Α	Remove the Fallopian tubes
	Dilated and damaged tubes can reduce the options for becoming pregnant, but in this cases there
	is no information about damaged tubes.
В	Administer suppressing hormone treatment
	This treatment is great, but it would not make her pregnant.
-	

- C Flush out the tubes with methylene blue This is a diagnostic method designed to find out whether or not the tubes are open. In some cases the woman can become pregnant spontanesouly immediately afterwards, but not always.
 D X Remove (extirpate) the small blood blisters (peritoneal endometriosis) (blue arrows) The most useful thing in this case would probably be to remove the inflammation to make it easier for her to become pregnant.

A 26-year-old woman contacts you, her GP, because she has been experiencing troublesome vaginal discharge. She is fit and healthy, has a permanent partner and takes contraceptive pills. The discharge has lasted for 6 weeks. Normal urination and defecation. She does not have any stomach pain or any other symptoms.

During a gynaelogical examination you see a thin, greyish discharge in her vagina. Your test shows a pH of >4.5. Application of 1 drop of 10% potassium hydroxide on a bit of the discharge on a microscope slide produces positive "whiff test". Microscopic examination of a saline smear shows over 20% of clue cells. Macroscopic examination of the cervix shows no significant findings. Bimanual palpation of the uterus shows that it has a normal size, moves freely and is not tender when moved. On palpation you cannot find any swelling above the adnexa. What is the most likely diagnosis?

- A Candida
- B Chlamydia
- **C** Endometriosis
- D X Bacterial vaginosis

Complies with 4 out of 4 of Amsel's criteria for bacterial vaginosis

18

A 45-year-old woman visits you, her GP. She has noticed that she has had heavier menstrual bleeding during the last 6 months and has to use both sanitary pads and tampons and the bleeding lasts for a total of 10 days during each cycle. Otherwise her menstruation is regular. She suffers from slight pressure or discomfort in the lower left part of her abdomen and experiences deep, thrusting pain during sexual intercourse.

She wants you to examine her. On bimanual palpation you find a firm swelling in the lower part of her abdomen and it feels as though there is myomatous enlargement of the uterus to up to 3-4 fingers below the umbilicus. Which type of imaging diagnostics would be best for providing a differential diagnosis in this case?

AX MRI of the abdomen/pelvis

- This would provide the best resolution and best diagnostics B Vaginal ultrasound
- This provides fairly good resolution and would probably be good for diagnostic purposes, but is not as good as an MRI of the pelvis/abdomen.
- C Abdominal ultrasound This provides fairly good resolution and would probably be good for diagnostic purposes, but it is not as good as an MRI scan of the pelvis/abdomen
 C Tasser of the abdomen/abbie
- **D** CT scan of the abdomen/pelvis This gives poorer quality imaging than an MRI of the pelvis

19

A 45-year-old woman visits you, her GP, due to irregular and sometimes heavy bleeding during the last six months. She has previously had regular monthly bleeding. She has been following *Livmorhalsprogrammet* (the Norwegian Cervical Cancer Screening Programme) and her last cervix cytology test which was carried out 2 years ago was normal.

You undertake a gynaecological examination which gives normal findings upon inspection of the cervix and palpation of her uterus shows that it has a normal size. What is the most likely cause of the patient's irregular bleeding.

- A Endomethritis Not very likely, no information about any infections.
 B Endometrial cancer Endometrial cancer is relatively rare prior to the menopause, but can occur after the commencement of the menopause (should be excluded).
- C Endometrial polyp This could be a possible diagnosis, but is not the most likely one.
- **D** X Hormonal disturbances This is the most likely diagnosis when taking her age into consideration and the other alternative answers.

What is the most common way in which ovarian cancer spreads?

- Α Haematogenous spread. Remote metastasis is rare (in hematogenous spread) when primary ovarian cancer is diagnosed. В Rare spread.
- Early stage (stage 1) is rarely diagnosed. С Lymphogenous spread.

In some patients it spreads to the lymph nodes at the point of diagnosis, but direct spread is most **D** X Direct spread.

This is definitely the most common way in which ovarian cancer spreads. Spread to the abdominal cavity (peritoneum, visceral peritoneum, uterus/tubes) occurs in approx. 70% of ovarian cancer patients when a diagnosis is made.

21

A 22-year old woman originally from Somalia, and who has lived in Norway for 3 months, contacts you her GP 6 weeks after a vaginal birth at term. She has normal lochia, but feels that she must continually wipe herself without being dry around the genital area. She is afebrile and it does not sting when urinating. At examination, you cannot get a complete overview of her anatomy, but inspect what you think is an episiotomy that is healing well. Urine disptick displays 3+ for blood and 3+ for leukocytes.

What is the most probable diagnosis?

- Endometritis Α
- В Chlamvdia infection
- Tuberculosis of the urinary tract С
- **D** X Fistula from the urinary tract Fistulas occur easily if a woman has been circumcised, which is the case for many women from Somalia.

Synthetic hernia mesh can be used in surgery for pelvic organ prolapse. For which patients is a hernia mesh indicated?

A X In elderly patients with recurrent prolapse

- If a previous prolapse operation has not been succesful, a mesh can be an option B In patients with a connective tissue disorder
- This in itself is not an indication for a net С In elderly, frail patients
- In these patients, ring treatment or a simple operation such as closure of the vagina (colpocleisis) is indicated
- In younger patients in whom the risk of recurrent prolapse is greatest D This is incorrect; mesh treatment can have side effects such as exposure of the net and pain at intercourse.

A 45-year-old married woman visits you, her GP. She is Para 3 and has recently had a legal abortion. She is slightly overweight and smokes 5 cigarettes per day, but is otherwise fit and healthy. If you are going to recommend her a safe contraception, what you rather recommend?

AX Hormonal IUD

This is very safe and does not increase the risk of developing thrombosis, even though she smokes

- B Pessary
- This can be used, but is also less effective for a woman who is still fertile.
- C Condoms

Although she is 45 years old, this type of contraception is not very effective for her since she has recently had a medical abortion and is obviously still fertile.

D Copper IUD

Even though she has recently been pregnant and is obviously ovulating, there will be an increased likelihood of her having heavy menstruation in a few years' time because of a relative oestrogen overload in respect of progesterone from the corpus luteum. A copper IUD might therefore make her menstrual bleeding heavier.

24

What is the most important indication for systemic estrogen treatment during perimenopause?

- A Dry vaginal mucosa and dyspareunia In this case local oestrogen should be chosen
 B Irregular bleedings This is incorrect and a progesterone drug should be chosen instead
- C Prevention of osteoporosis and fractures In this case calcium/vitamin D and bisphosphonates are the first choice
 D X Traublesome bet flueboo
- **D** X Troublesome hot flushes Only troublesome hot flushes are an indication for MHT treatment

25

A 16-year old girl comes to your office asking for advice on contraception. She has had regular periods since the age of 12. About every other month she has such heavy menstrual pains that she has to miss school and stay at home. She has a boyfriend and says they have had sexual intercourse a few times.

What advice would you rather give the girl regarding her choice of contraception?

- A You offer her a contraceptive patch as this gives higher compliance than oral contraceptives Incorrect, a contraceptive patch is not the first choice due to the somewhat higher risk of developing thrombosis compared to the low dose contraceptive pills.
- **B X** You offer her a low-dosed monophasic contraceptive pill Presumably the first choice as this is generally considered to be the least invasive and simplest method.
- C You cannot offer her any advice on contraception since she is < 18 years old, in such cases the parents or a guardian must be present
- Incorrect, in Norway, the patient is responsible for her own health from the age of 16.
 D You offer her a contraceptive injection Incorrect, contraceptive injections contain high-dose progesterone and due to the risk of developing osteoporosis at a later stage, they should not be administered before the age of 18.

Which histological type is most common in cases of cervical cancer?

- A Neuroendocrine carcinoma Extremely rare
- **B X** Squamous cell carcinoma
- Constitutes 80-85% of cases of cervical cancer Adenocarcinoma
- Constitutes 10-15% of cases of cervical cancer D Clear-cell carcinoma Extremely rare

27

A 45-year-old man with rheumatoid arthritis is being treated with rituximab (anti-CD20 antibody) which is affecting his production of immuoglobulin. He is admitted to hospital with a high temperature and an impaired state of general health.

Which of the following bacteria is he most likely to be affected by?

- A Listeria monocytogenes
- B E. coli
- **C** Group A streptococcus
- D X Streptococcus pneumoniae

Patients with hypogammaglobulinemia are at risk of developing recurrent respiratory tract infections (otitis, sinusitis and pneumonia) involving streptoccus pneumoniae and H influenzae. These are encapsulated bacteria where the opsonisation of immunoglobulin is decisive for effective phagocytosis.

28

As a resident doctor in the Department of Internal Medicine, you receive a phone call from a nurse on the ward about an 84-year-old woman who has been admitted with heart failure. She does not have any urinary problems. However, her urine smells bad and the nurse has carried out a urine dipstick test. This shows: leucocytes 0, protein ++, nitrite +. The nurse recommends starting her on trimethoprim for urinary infection.

What is the most correct thing to do in this situation?

- A Immediately start her on oral trimethoprim, after first having sent a urine culture for examinationB X There are no indications for antibiotic treatment or any further testing
- Finding nitrite and protein in a urine strip test could be consistent with asymptomatic bacteriuria, but this should not be treated in this situation and there are therefore no indications for doing a urine culture test when the patient does not have any symptoms.
- C Check the urine dipstick test and if you achieve the same results, start her on oral trimethoprim
- **D** Take a urine culture and wait for the results before making a decision about antibiotic treatment

29

A 65-year-old man with a fluctuating temperature over the last 4 weeks which goes up to 39 °C, night sweats and a 6 kg weight loss, is admitted for assessment. Apart from that he has no symptoms or any other clinical findings. A blood culture test is undertaken upon admittance, an X-ray of his thorax is negative and a urine dipstick test is also negative. His blood tests show: Hb: 7.8 g/dL (Ref .13.4 - 17.0), SR: 70 mm/hour (Ref. \leq 17), CRP: 210 mg/L (Ref. < 5).

Which examination should be ordered first in order to continue examination of this patient?

- A MRI of his spinal cord to look for spondylodiscitis
- B Bone marrow biopsy to look for lymphoma
- **C** PET scan to look for metastases from cancer
- **D** X CT scan of his abdomen to look for intra-abdominal abscess or malignancy A CT scan of the abdomen is the most important examination when starting to investigate temperatures with an unknown cause since intra-abdominal abscesses, liver matastases and colon cancer are frequent underlying causes. An early MRI scan of the spinal column should be carried out only when there is back pain. A lymphoma examination using a bone marrow biopsy would come later. A PET scan would only be relevant when the first line of examination produces negative results.

In the A&E department of a small local hospital you receive a 20-year-old girl who is restless and lethargic. She arrived home from a 2-week holiday in Tanzania 3 weeks ago and has had a fluctuating temperature for 3 days. During the last 24 hours she has become markedly irritable and has slept for much of the time. She has a diarrhoea and a dark, red urine. Pulse 130, respiratory rate 21, blood pressure 120/80 mmHg and a temperature of 38.5°C. She does not have a neck stiffness. The blood tests that were taken prior to admittance are shown in the table below.

Analysis	Answer	Reference area
CRP	21 mg/L	< 4 mg/L
Creatinine	201 µmol/L	45-90 μmol/L
Trombocytes	42 x 10 ⁹ /L	165 - 387 x 10 ⁹ /L
Hemoglobin	10,1 g/dL	11,7 - 15,3 g/dL

What is the most important measure to take first?

- A Give liquids and a blood transfusion since you suspect the development of Dengue hemorrhagic fever
- **B** Administer a platelet transfusion in order to prevent bleeding
- **C X** Administer artesunate or quinine because you suspect malignant malaria Her history of illness and findings are consistent with severe falciparum malaria which develops quickly and has a high mortality rate. Sepsis cannot be excluded, but it is more important to quickly implement effective malaria treatment.
- **D** Ádminister doxycycline since you suspect severe rickettsiosis

31

A 43 year old man is admitted with a serious infection. Investigations reveal a positive HIV test, and his condition is eventually classified as AIDS. Microscopy of an India ink specimen of spinal fluid (1000x magnification) reveals large round cells with very large capsule (see image below). Antigen test of the spinal fluid for the agent in question is also positive.

Which microbiological agent is this?



A Herpes simplex virus

- Too small to be seen at light microsopyBNeisseria meningitidis
- **Bean-shaped diplococci C** Haemophilus influenzae
- Rod bacteria
- **D X** Cryptococcus neoformans There is an increased risk of cryptococcal meningitis with AIDS, India ink specimens are used to demonstrate the large capsule; antigen test is more sensitive than microscopy.

32

A 78-year-old man has a permanent catheter due to urinary retention. He is waiting for prostate surgery. One night he wakes up with a temperature, nausea and vomiting, but he is clear and oriented. He has a temperature of 39.1°C, pulse 85/min, BP 110/75 mmHg, respiratory rate 18. Urine dipstick test +++ for leucocytes, negative for nitrite. What is the most likely diagnosis?

A Cystitis

- B Urosepsis
- **C** Acute prostatitis
- **D** X Upper urinary tract infection

His clinical information is consistent with a urinary infection. The sepsis criteria are not present. General symptoms such as a temperature, nausea and vomiting are consistent with an upper urinary tract infection.

33

A 45-year old man returns from South Africa where he has been on safari. One week after returning he develops a fever (39.5°C), a maculopapulous rash and swollen lymph glands in the groin. He says he had several tick bites, and the doctor finds several lesions with black crusts after probable tick bites on his legs.

Which diagnosis is the most probable?

A Dengue fever

B X Rickettsia infection Rickettsia are gram-negative bacteria that are transferred by tick bites. Tick bites typically give black crusts (eschar). The symptoms are often fever, rash and swollen lymph glands. The disease often develops after trips to Africa and Asia, and particularly in connection with safaris and trips into the countryside.

- **C** Typhoid fever
- D Malaria

A 24-year-old healthy woman with south-east Asian ethnicity is pregnant for the first time in week 12. Her pregnancy is uncomplicated. A blood test gives a B-HbA1c reading of 38 mmol/mol (ref.: 28 - 40 mmol/mol).

How should the woman be followed up?

- A She should have a glucose tolerance test carried out as soon as possible *No, that is not recommended*
- **B X** She should continue to attend her usual pregnancy check-ups

Yes, that is correct, ref. https://www.helsedirektoratet.no/retningslinjer/svangerskapsdiabetes/ dokumenter-svangerskapsdiabetes/Oversiktsalgoritme%20svangerskapsdiabetes.pdf/_/ attachment/inline/46c25cdb-8f70-4a35ae19-5512cc35c6b5:3ea29233db4f37719622a47ac962e82a7b9fea94/Oversiktsalgoritme% 20svangerskapsdiabetes.pdf

C She should be checked more often (approx. every 2nd week), including repeated monitoring of her HbA1c levels

No, that is not recommended

D She should be referred as soon as possible to the Pregnancy Outpatients Clinic

No, that is not recommended

35

Which biochemical analysis is the most suitable for exluding primary hypothyroidism in a patient?

- **AX** Thyroid stimulating hormone (TSH) in serum *Most sensitive, therefore the most suitable*
- **B** Antibodies against thyroid peroxidase (anti-TPO) in serum *Not suitable*
- C Free thyroxin (free T4) in serum Not very sensitive, therefore less suitable
- D Free triiodothyronine (free T3) in serum *Not suitable*

36

Microscopic laboratories use antibiotic sensitivity testing and screening methods in order to detect bacterial resistance mechanisms. One example of such a resistance mechanism is the production of Extended Spectrum Beta-Lactamase (ESBL).

Which results of an antibiotic sensitivity test give one reason to suspect that a bacterium is producing ESBL?

- A Resistance to ampicillin and penecillin in Enterobacterales
- **B** X Resistance to third generation cephalosporins in Enterobacterales ESBL is Extended Spectrum Beta-Lactamase which is produced by a number of gram-negative rods, including Enterobacterales, and resistance to third generation cephalosporins is required in order to suspect ESBL.
- C Resistance to ampicillin and gentamicin in Enterobacterales
- D Resistance to third generation cephalosporins in Staphylococcus aureus

You are the supervisory doctor at a nursing home and you receive a phone call from one of the nurses there. The personnel have observed dark, cloudy urine in the urine catheter bag of an 83-year-old woman who has a permanent catheter. She is not complaining about pain or any other problems. She does not have a temperature. CRP <5. The nurse has done a urine strip test which showed positive results for nitrites and then sent a urine sample taken from the bag for a bacteriological culture test. The bag was last emptied 8 hours before the sample was taken. The test results have arrived and show the following:

Growth of 1000 (10³) CFU/ml Enterococcus faecalis How would you deal with this?

- A Ask the nurse to change the urine catheter and take a new urine sample for a bacteriological culture test
- **B** Ask the nurse to hang up intravenous fluid because the dark colour indicates dehydration **C X** Examine the patient for possible causes of the dark, cloudy urine
- Permanent urine catheters are always colonised by bacteria. Urine is a good growth medium for bacteria and the urine in the urine bag can contain high concentrations of bacteria. It is therefore very difficult to interpret the meaning of these findings. If there are indications for doing a bacteriological culture test on the urine of someone with a permanent urine catheter, the sample should not be taken from the bag (and preferably when the catheter is changed). You have not received any inbformation to warrant microbiological sampling. You should therefore start to investigate what could be the cause of this change in the urine. You can then assess to see whether or not sampling would be warranted. It may be right that the patient needs fluids, but so far you do not have enough information to make this assessment.
- D Commence antibiotic treatment due to significant growth of urinary tract pathogens

38

You are working at a GP's surgery and are visited by a 28-year-old pregnant woman who is attending for her first pregnancy check-up. She used to suffer from frequent urinary tract infections before her pregnancy, so you decide to take a urine sample for a bacteriological culture test for screening of asymptomatic bacteriuria. You receive the following answer two days later: Growth of 100000 (10⁵) CFU/ml Enterococcus faecalis. How would you treat this patient?

- A You ask the patient to contact you if she experiences any symtpoms
- **B** You commence antibiotic treatment for Enterococcus faecalis
- **C X** You ask her for a new urine sample for a bacteriological culture test in two weeks' time See the last comment
- **D** You ask her for a new urine sample for a bacteriological culture test on the same day *Pregnant women with an increased risk of developing urinary infections should preferably be screened for asymptomatic bacteriuria which should be treated if found. Other patient groups should not be treated for asymptomatic bacteriuria. Asymptomatic bacteriuria is assumed to be present if the same bacteria are found in quantities of* $\geq 10^5$ *CFU/ml in two urine samples taken at a 2-weekly interval. She should also contact you if she experiences symptoms of a UTI and this applies regardless of the actual findings.*

You are working at a GP's surgery and receive a visit from a 78-year-old women displaying symptoms of cystitis. The patient takes her own mid-stream urine sample which you send to the laboratory for a bacteriological culture test. You commence treatment with pivmecillinam (Selexid). The next day you receive the following results of the urine test:

Growth of 1000 (10³) CFU/ml Enterobacter cloacae and 100 (10²) Enterococcus faecium How should you interpret these findings?

- A Significant growth of Enterobacter cloacae and Enterococcus faecium
- B Significant growth of Enterobacter cloacae and insignificant growth of Enterococcus faecium
 C X Insignificant growth of Enterobacter cloacae and Enterococcus faecium
- The growth of several types of bacteria indicates a contaminated sample. Both Enterobacter cloacae and Enterococcus faecium are secondary pathogens in the urine. Growth of \geq 1000 (10³) CFU/ml is regarded as being significant growth in a pure cultue of both primary and secondary pathogens. When there is growth of several different microbes in a mid-stream urine sample, then a greater number than CFU/ml (\geq 10⁴) is rquired for both primary and secondary pathogens if the growth is to be regarded as being significant.
- **D** Significant growth of Enterococcus faecium and insignificant growth of Enterobacter cloacae

40

A 64-year-old man with diabetes mellitus type 2, hypertension and heart failure is admitted with dyspnea and increasing lower body oedema. Basal cracking sounds in both lungs. You suspect that the patient has nephrotic syndrome. Which of the following tests it is most important to receive answers to before referring him to a nephrologist?

A X Albumin/creatinine ratio in the urine

- An elevated albumin/creatinine ratio in the urine is a sign of nephrogenic loss of albumin
- **B** s-creatinine
- C s-cholesterol
- D s-albumin

41

When commencing treatment with an angiotensin converting enzyme inhibitor (ACEi), there will be several changes in the hormone levels.

Which changes will occur during the course of a few days following commencement.

A Renin remains unchanged and reduction in aldosterone

- **B X** Increase in renin and reduction in aldosterone ACEi inhibits the formation of Angiotensin2 and thus reduces the production of aldosterone. This means that the negative feedback that Aldosterone has on renin is reduced, and the renin will consequently increase.
- **C** Reduction in renin and increase in aldosterone
- D Reduction in renin and reduction in aldosterone

A 70-year-old man with chronic stage III kidney damage who is taking ACE inhibitors for hypertension. He is admitted to A&E with lethargy, a high temperature and a suspected acute upper respiratory tract infection. He has not had much food and drink. BP 114/72.

His blood tests show relatively unchanged renal function with an eGFR of 35 ml/min, but potassium 6.9 (ref. 3.5-4.4) and moderate acidosis with a pH of 7.26 (ref. 7.15-7.30) and bicarbonates of 17 (ref. 15-20). His EKG shows a sinus rhythm and pointed T waves.

ACE inhibitors are cancelled out.

Which measure is the most important to take first?

AX Glucose and insulin infusion

- Most important to start at once, give fluids while simultaneously giving rapid correction of potassium
- **B** Dialysis
 - No indications for starting dialysis first, unchanged kidney function, not over-hydrated, and would also take too long to establish
- C Acidosis correction with i.v. bicarbonate It is right to correct acidosis in patients with hypercalaemia, but this measure would correct hypercalaemia over a longer period of time and is not suitable for rapid correction of hypercalaemia.
- D Diuretics No indication for this, he is probably dehydrated

43

A 32-year-old woman has previously been more or less fit and healthy and does not take any regular medication, but she has taken some NSAIDs during the past month for a knee injury. One week ago she developed a rash on her back. She thought that this could be a side effect of the NSAIDs and therefore immediately stopped taking them. The rash is now getting better, but at a check-up with her GP one week later, reduced kidney function was diagnosed with creatinine 358 µmol/l (ref. 45-90) and urine strip test: protein 1+, leukocytes 1+ (ref. neg), otherwise neg. What is the likely cause of her reduced kidney function?

- A Rapidly progressive glomerulonephritis in this case one would have expected to see considerable haematuria, possibly proteinuria, and the history of illness is not typical
- B Minimal change nephropathy The GFR is often normal, but generally causes nephrotic syndrome
 C IgA-nephropathy
- In this case one would have expected to see considerable hematuria and possibly proteinuria. Her history of illness is not typical either.
- **D** X Interstitial nephritis Her history of illness involving taking NSAIDs for a few weeks previously, a rash and the relatively minror findings in the urine strip test are typical

44

A 56-year-old woman who was diagnosed with mesangioproliferative glomerulonephritis after a biopsy 10 years ago. All this time she has had microscopic haematuria, +B in her morning urine. During check-ups her kidney function has been normal. Albumin/creatinine ratio 18-22 mg/mmol (<2.5 mg/mmol) measured in 3 different morning samples. BP 150/86. Slightly overweight, BMI 29. Which is the best measure?

A Commence treatment with a calcium antagonist.

- B X Commence treatment with an ACE inhibitor or A2 blocker Best measure with respect to reducing albuminuria
 C Recommend weight reduction
- **D** Bring her back for a check-up in 3 months' time

A 76-year-old man has had progressive chronic kidney disease for several years. He is visiting his GP and is wondering what will decide when he will need to start dialysis. What should his GP provide him with information about?

- Α Dialysis should be delayed until the patient stops producing urine Starting dialysis for patients with CKD should be planned with plenty of time for chosing the modality and preparing access. Acute dialysis in these patients should be avoided.
- Dialysis should be commenced when the eGFR drops to < 15 ml/min/1.73 В
- Dialysis is commenced when s-potassium is > 6 mmol/l Not necessarily. Success if often achieved with medicinal treatment.
- **D** X Dialysis should be delayed until the patient displays symptoms of uraemia, often with a GFR of < 10

Correct answer. The time of dialysis should be assessed individually and will often happen when uraemic symptoms occur, or in cases of severe hypercalaemia which is difficult to treat, acidosis or over-hydration. The patient will usually have a GFR of < 10.

46

An 80-year-old woman who lives at home with her husband visits her GP for a check-up of her hypertension. Her blood pressure medication has been gradually increased with an ACE inhibitor, a calcium antagonist and, after her last appointment, thiazide. She feels in good shape, but is a bit more forgetful than previously. BP 135/84, p 78, no odema.

	Result	Ref. area
Creatinine (µmol/I)	53	45-90
Na (mmol/l)	131	137-245
K (mmol/l)	4.0	3.6-4.6

How should her hyponatremia be treated?

- **A X** Discontinue thiazide and check Na in 1-2 weeks' time Correct answer. Thiazide can cause hyponatremia, reversible. Mild symptoms (forgetfulness) and moderate hyponatremia.
- В Admit her to the hospital for investigation of her hyponatremia and correction
- С Mild hyponatremia, no measures required Since she may have symptoms (cognitive function), an attempt should be made to reverse Fluid restriction and sodium tablets, check Na in 1-2 weeks' time
- D

47

A 75-year-old man is admitted with severe hypertension. His BP is approx. 220/125 from repeated tests at his bedside. He has been ill for several weeks and has now been suffering from dyspnoea for several nights, sometimes with slight pressure over the chest. Auscultation reveals normal bilateral findings. Opthalmoscopy reveals clear signs of changes in the fundus (bleeding and cotton wool spots). His vision has not changed.

What type of treatment should the doctor commence?

- **AX** Alpha and beta blocker infusion (e.g. trandate) and furosemide 20-40 mg x 2-3 i.v. Severe hypertension with possible heart failure and possible unstable angina: the pressure must be lowered considerably and i.v. trandate is effective and good for coronary ischemia. Possibly also slightly over-hydrated, but without pulmonary oedema being present. Therefore diuretics are also required. A nitro drip is probably not necessary since there is no clinical pulmonary oedema. Oral CCB and ACEi would be too slow with uncertain results.
- Loop diuretics (e.g. furosemide 20-40 mg x 2-3) i.v. В
- An oral calcium blocker (e.g. amlodipine 5 mg \dot{x} 1), combined with an oral loop diuretic (e.g. Furix 20 mg x 2)
- D A medium - high dose of an ACE inhibitor (e.g. Lisinopril 10 mg x 1) and a low dose of thiazide (e. g. hydrochlorothiazide 12.5 mg), orally

A 50-year-old woman with chronic kidney failure caused by chronic glomerulonephritis has an eGFR of 42 ml/min (ref. ≥90). Her BP is well controlled, she is taking statins and her cholesterol values are within the desired range.

She is worried that her chronic kidney disease will increase her risk of developing cardiovascular disease in the future.

What is the correct information to provide her with?

- **A X** Chronic kidney disease is associated with an increased risk of developing cardiovascular disease. The occurrence of cardiovascular events is increased, even with good treatment of the traditional risk factors that we know about.
- **B** Her risk of developing cardiovascular disease is eliminated by her good blood pressure and cholesterol lowering treatment.
- **C** Chronic kidney disease does not create an increased risk of developing cardiovascular disease until a later stage, when the GFR falls below 30.
- **D** The risk of developing cardiovascular disease is not considerably increased, provided that she is not over-hydrated.

49

A 58-year-old man with hypertension and reduced kidney function, eGFR 40 (ref. \geq 90) visits his GP's surgery for a check-up. His BP is 145/75 and his u-albumin/creatinine ratio is 98 mg/mmol (ref. < 3). He is overweight with a BMI of 35. He is taking an ACE-hemmer, Lisinopril 5 mg x 1, a calcium blocker, Amlodipine 10 mg, statins and acetylsalicylic acid.

What is the most important measure to take in order to slow down the progression of his kidney disease?

- **A X** Increase his ACE inhibitor dosage as much as possible within an acceptable blood pressure and side effects in order to reduce his albuminuria
- Correct answer. This is the best documented measure. **B** Add an SGLT2 inhibitor
- This drug protects the kidneys, but the RAS blocker dosage needs to be optimised first.
 Switch his ACE inhibitor to an angiotensin 2-blocker in order to more effectively reduce his albuminuria.

ARBs have not been shown to be more effective, but it is important to increase the dose to a maximum tolerated/recommended dose.

D Encourage the patient to reduce his weight to a BMI of < 30 *Important measure, but less effective for kidney disease*

50

Which of the following infectious diseases could cause congenital deformities in the eyes, ears, heart and CNS if the mother is infected during her early pregnancy?

 A HIV Does not cause fetal deformities
 B X Rubella Correct answer
 C Hepatitis B

Does not cause fetal deformities D Zika virus Can cause microcephaly

Performing an ultrasound scan during the third trimester is a routine procedure in Norway. There are many good indications for doing this. Which of the following is an indication for performing an ultrasound during the third trimester?

- Α Review of the fetal anatomy
- В Consider the risk for an acute Caesarian section with transperineal ultrasound
- **C X** Suspected breech position

The position of the foetus should be assessed during week 36 of a pregnancy and the pregnant woman should be referred for an ultrasound scan if a breech position is suspected. Screening of preeclampsia can only be done during the first trimester and not the third trimester. Reviewing the anatomy is done by performing a routine ultrsound scan during the second trimester. A transperineal ultrasound is usually done in connection with the birth.

D Screening for preeclampsia

52

Examination of the fetal heart is an important part of routine ultrasound scans carried out during the second trimester. Some fetuses have heart defects and it is important that these are detected. It is particularly important to detect those heart defects that are dependent on the ductus arteriosus being open, so-called ductus-dependent heart defects. Why?

- These foetuses need to be born at a university hospital so that they can be closely followed up Α after the birth
- R These heart defects are so serious that the parents mostly make a decision to terminate the pregnancy
- These heart defects can be treated intrauterine if they are discovered in time
- **D** X These babies need to be born at the Oslo University Hospital because they will need heart surgery shortly after birth

Babies with duct-dependent heart defects need to be born at the National Hospital because they all require surgery shortly after the birth. Heart surgery on newborn babies is centralised there. Several of these heart defects can be operated on and these babies normally have functioning hearts afterwards and it is therefore not a question about whether or not the heart defect is ductdependent that is important for the parents when making a decision about terminating the pregnancy, but whether or not the child will be healthy after surgery. Intrauterine treatment is not an option.

53

In which part of a pregnancy are the symphysis-fundus (SF) measurements (in terms of cm) equivalent to the number of weeks?

Α 34-40 weeks

The degree of correspondence declines towards the end of the pregnancy R 12-20 weeks

It is difficult to take SF measurements half way through a pregnancy **C X** 20-34 weeks

From 20-34 weeks SF measurements are equivalent to the number of weeks - 2, i.e. about the same as the number of weeks of the length of the pregnancy

8-12 weeks D

The uterus is located in the lesser pelvis and is not palpable from the abdomen

Early onset and severe preeclampsia are associated with

- A Affected blood stream in the arteria arcuata (high PI with a notch) We cannot do a Doppler ultrasound scan of the arteria arcuata. We need to go further out on the main stem of the uterus (arteria uterina on both sides)
- **B X** Incomplete trophoblast invasion of the spiral arteries *Correct answer*
- C Affected blood stream in the vena umbilicalis (high PI with a notch) We do a Doppler of the arteria umbilicalis - not the vena umbilicalis. The bloodstream can be affected in the arteria umbilicalis in cases of severe preeclampsia. The umbilical vein does not have a pulsatile pattern and consequently does not have either a high PI or a notch.
- D Incomplete syncytiotrophoblast invasion of the placenta villi It is not syncytiotrophoblasts that invade - and not the placenta villi

55

Ultrasound scans during birth can be used in order to obtain information about the progress of the birth. Which of the following statements is true?

- A Ultrasound used during birth is the safest method which provides most information about the progress of the birth
- **B** Ultrasound used during birth must always be done before making a decision about whether or not a Caesarian section would be the correct choice when progress is slow during the second stage
- **C** Ultrasound is used during birth in order to estimate the weight of the fetus before doing a vacuum delivery when there is slow progress during the second stage of the birth
- D X Ultrasound can be used during birth in order to reassure the obstretician that a vacuum delivery could be a safe option Studies have shown that ultrasound can be used for reassuring obstreticians that a vacuum

delivery could be a safe option when there is slow progress during the second stage. Ultrasound provides a certain amount of information, but it has not been proven that it is the safest method for obtaining information about progress during a birth. It is not true that one should always use ultrasound before doing a Caesarian section, but this method can provide additional information. Estimating the weight of the fetus is not done during the second stage of a birth.

56

Which blood test(s) is (are) recommended during the first pregnancy check-up?

A X Pregnant women should be offered a blood test for ABO/RhD-typing and blood type antibody screening during the first trimester

According to the National Guidelines from the Norwegian Directorate of Health

- **B** Pregnant women should be offered a toxoplasmosis status test during the first trimester
- **C** No blood tests are necessary during the first trimester
- **D** Pregnant women should be offered a HbA1c test during the first trimester

57

You have delivered of a baby after a normal vaginal birth. After 1 minute you make the following observations: heart rate 110 bpm, no spontaneous respiration, skin colour pale blue, reduced muscle tone, but not completely flacid, no reactions to stimulus. You dry, stimulate and ventilate the baby using a bag and a mask. After 5 minutes you make the following observations: heart rate 120 bpm, slightly strained respiration, skin colour blue at the extremities/pink centrally, reduced muscle tone, but reacts satisfactorily to stimulation.

How should this be assessed?



- A The Apgar score is 3 after 1 minute and 9 after 5 minutes. Birth asphyxia is not suspected. *Incorrect, because the Apgar score is 3-7.*
- **B** The Apgar score is 2 after 1 minute and 6 after 5 minutes. Birth asphyxia is suspected. *Incorrect, because the Apgar score is 3-7.*
- **C X** The Apgar score is 3 after 1 minute and 7 after 5 minutes. Birth asphyxia is not suspected. *Correct. An Apgar score >6 after 5 minutes does not give suspicion of birth asphyxia.* The Apgar approximate and 5 after 5 minutes. Birth apphysia is augusted
- **D** The Apgar score is 4 after 1 minute and 5 after 5 minutes. Birth asphyxia is suspected. *Incorrect, because the Apgar score is 3-7.*

Helle gives birth to her first child and the birth is monitored by a CTG monitor. During the opening phase the monitor shows a fetal heart rate with a basal frequency of 120 beats/minute, a beat variability of 10 beats/minute and several accelerations. How would you describe these CTG results?

AX Normal

- **B** Patolological because there are several accelerations
- **C** Patological because the basal frequency is 120 beats/minute
- D Abnormal because the beat variability is 10 beats/minute

You are a newly-employed doctor in the Maternity Dept. The on-call doctor is busy in the operating theatre. Eva arrives in the early stages of labour with DCDA (dichorionic-diamniotic) twins in week 38. Twin 1 is head down and twin 2 is in the breech position. The pregnancy has been normal, the twins are normal sized and there are no signs of pre-eclampsia. How should the doctor advise Eva?

- A You recommend a Caesarian section because there is a risk for twin collision during delivery *Incorrect, because twin collision can only occur at breech (twin 1) and head (twin 2).*
- B You recommend a Caesarian section because there is a risk for twin-to-twin transfusion during delivery
- Incorrect, because DCDA twins cannot get TTTS
 You recommend a normal vaginal delivery (managed by the midwife without special monitoring) Incorrect, because twin births are high risk births that must be monitored. The midwife can manage the delivery, but the doctor must be present during the bearing down stage.
- D X You recommend a normal vaginal delivery with CTG monitoring and ultrasound Correct

60

A woman in her third pregnancy has had her two previous births by caesarian section. What is she at an increased risk of?

- A Post-term pregnancy
- B Breech posiition
- **C** Premature birth
- **D X** Placenta accreta Increased risk that the trophoblast grows into the section scar resulting in placenta accreta.

61

A young woman attends for an appointment with you, her GP. She gave birth to her 3rd child 2 months ago. She had diet-controlled gestational diabetes, otherwise it was an uncomplicated pregnancy and delivery.

What is the most correct follow-up for this woman?

- A Ask her to come back another day for a p-glucose test *Incorrect. This does not detect any T2D.*
- **B** Send a referral to the Endocrinology Outpatient Clinic at the nearest hospital Incorrect. These patients should not primarily be followed up at the Endocrinology Department.
- C X Ask her to come back for HbA1c in 2 months Correct. This is the recommended procedure to detect T2D in women who have had gestational diabetes.
- Ask her to keep a blood sugar diary and give her an appointment for follow-up in one week Incorrect. A standardised test is needed to detect any TSD.

62

Following a diagnosis of breast cancer, a 50-year-old woman has breast surgery. The final pathology report contains information which provides indications of both the prognosis and the type of treatment that the patient should receive.

Which biomarkers are routinely reported by the pathologist?

- A Oestrogen receptor, progesterone receptor and Ki67
- **B** Ostreogen receptor, progesterone receptor and HER2
- C Oestrogen receptor, androgen receptor, HER2 and Ki67
- **D X** Oestrogen receptor, progesterone receptor, HER2 and Ki67 These four markers are both prognostic and predictive factors in breast cancer

An 8-year-old boy was admitted with stomach pain and petechiae. He gradually developed mixed nephrotic and nephritic features, and there was microscopic haematuria. What is the most likely diagnosis?

- A Membranous nephropathy
- **B** Crescentic glomerulonephritis
- **C** Minimal change disease
- **D** X IgA nephropathy It was most likely that the child had Henoch-Schönlein purpura which in children can cause IgAnephropathy which usually has a good pronosis.

64

About 300 cases of testicular cancer occur in Norway each year. About half of these are seminomas. What is usually seen in microscopic examination of a histology section from a testicle with a seminoma?

A Areas with cystic degeneration, other areas with haemorrhage, and solid areas with atypical tumour cells

This description is consistent with several types of cancer, but most consistent with a nonseminomatous germ cell tumour, choriocarcinoma, but not seminoma.

- **B** Nodules consisting of epithelioid cells, numerous lymphocytes and multinucleated giant cells *This best describes a granulomatous inflammation.*
- C Various types of mature tissue, such as appendages of skin, respiratory epithelium and neural tissue
- This description is most consistent with a teratoma.
 D X Uniform polygonal cells with abundant cytoplasm and central nuclei, lymphocytes and fibrous bands
 Atypical germ cells, lymphocytes and fibrosis are typical findings in a histopathologic image of a seminoma

65

A 38-year-old woman undergoes surgical resection of a tender tumour in her left breast. She has a 12month old child and also says that her mother and aunt both had breast cancer before the age of 50. The images show a hematoxylin-erythrosine-saffron (HES) stained histological section from the resected tumour. Image A: low resolution. Image B: high resolution. Which diagnosis best suits the findings shown in the images?





- **AX** Glandular tissue with lactation changes *Correct answer*
- **B** Metastatis from a malignant melanoma. Incorrect answer. It is true that melanomas can have large, clearly defined nucleoli, but in this case they are an expression of high physiological activity. Furthermore, the images are showing normal gland endings and ductal structures with hyperplasia consistent with lactation changes, not atypia.
- C Ductal carcinoma in situ.
 Incorrect answer. Athough these is a lot of activity in the epithelium involving clearly defined nucleoli in the round cores, there is no atypia. The gland structures have been retained, but extended. The cells are producing a lipid-rich material milk.
- D Infiltrating carcinoma. Incorrect answer. The image shows highly active hyperplastic glandular tissue with lactation changes.

A 31-year-old woman is examined for dysmenorrhea and infertility. A gynaecological examination produces normal findings apart from a small amount of fluid in the rectouterine pouch which is detected by a vaginal ultrasound scan. A diagnostic laparoscopy shows blue-black cysts and plaque on the surface of the right ovary. A tissue sample is taken, and the image of the biopsy can be seen below (hematoxylin and eosin-stained section with 200 X enlargement). What is the most likely diagnosis?



A Ovarian follicles

Incorrect answer: ovarian follicles are covered in uniform granulosa cells which consist of several layers. No surrounding cytogenic stroma. No symptoms.

B X Endometriosis Correct answer. The tissue sample from the endometrial focci shows endometrial glands covered in an epithelium without atypia which is surrounded by cytogenic stroma with fresh and/or old bleeding. Could be asymptomatic, but often has symptoms in the form of dysmenorrhea, dyspareunia, pelvic pain and infertility.

C Adenocarcinoma Incorrect answer. In cases of adenocarcinoma we can see tightly placed glands covered in an atypical epithelium. They are not surrounded by cytogenic stroma and are rare in such a young person.

D Inclusion cysts Incorrect answer: single cysts covered in tube-like epithelium. No cytogenic stroma and not really accompanied by fresh or old bleeding. Do not normally produce symptoms.

67

What is the World Health Organisation's (WHO's) definition of neonatal mortality?

- A Death within the first 10 days after birth among live births.
- **B** X Death within the first 4 weeks after birth among live births.
- C Death within the first week of birth among live births.
- **D** Death within the first 24 hours after birth, plus stillborn babies.

68

What are the four main groups into which ovarian tumours are divided?

- A Epithelial tumours, germ cell tumours, fibromas, metastases
- B Epithelial tumours, metastases, germ cell tumours, granulosa cell tumours
- **C** Sex cord stromal tumours, germ cell tumours, carcinomas, metastases
- **D** X Germ cell tumours, epithelial tumours, sex cord stromal tumours, metastases The correct answer is germ cell tumours, epithalial tumours, sex cord stromal tumours and metastases. Granulosa cell tumours and fibromas are examples of sex cord stromal tumours, and carcinomas are examples of epithelial tumours.

69

A 70-year-old man visits his GP suffering from frequent urination, which sometimes affects his sleep at night. Upon palpation his GP finds a slightly asymmetrical, enlarged prostate. After further investigation the patient undergoes surgery involving a transurethral resection of the prostate. A microscopic description of the prostatic tissue is as follows: the prostatic tissue is predominantly divided into nodules. Inside the nodules there is glandular and stromal hyperplasia. At the edge of two of the tissue samples there are small foci with small, partially confluent glands covered by epithelium with slightly different core sizes. An immunohistological examination shows that there is no myoepithelium surrounding the small glands.

What is the most likely diagnosis/diagnoses?

- A Normal prostatic tissue and benign prostatic hyperplasia.
- **B** X Benign prostatic hyperplasia and adenocarcinoma. Benign prostatic hyperplasia is characterised by nodule-like prostate tissue (nodules) and hyperplasia of both the glands and stroma. Small, infiltrative glands which are not surrounded by myoepithelium indicate adenocarcinoma.
- **C** Glandular atrophy and benign prostatic hyperplasia.
- **D** Normal prostatic tissue and adenocarcinoma.

A 30-year-old woman is being examined for infertility. She has irregular menstruation (oligomenorrhoea) and mentions that she has put on weight, suffers from headaches and has recently noticed secretions from both breast nipples. What diagnosis is most likely?

AX Pituitary adenoma

- Correct answer. Her symptoms could fit with a hormone-secreting adenoma, most probably a prolactin-secreting pituitary adenoma.
- B Adrenal cortex adenoma
 Incorrect answer. A cortisol-producing adrenal cortex adenoma can cause an increase in weight, but would not explain her oligomenorrhea and breast secretions.
 C Pheochromocytoma
- Incorrect. Pheochromocytomas result in increased secretions of the hormones that regulate blood pressure. This can result in headaches, but not in irregular menstruation and secretions from the breasts.
- D Meningioma Incorrect answer. Meningiomas can cause heacaches, but do not result in disrupted hormone levels.

71

You are the on-call pediatrician and receive a phone call from a GP. She says that the parents of a 5year-old boy had contacted her because he had lots of diffuse bruises all over his body, and that these had increased over approx. 2 days. The parents are not aware that he has hurt himself in any way, but they describe the boy as being extremely active both at home and in the kindergarten. You allow the boy to come to the A&E and when examined the boy appears to be healthy. The interplay between the child and his parents is normal. The boy has confluent areas with reddish blue skin changes that do not become paler under pressure and they are most widespread on his arms and legs. He also has some on his trunk and neck. When asked if has banged himself or if "something has happened" the boy replies in denial.

What would you do now?

- **A X** You are uncertain about what this represents and decide to admit him for further investigation with respect to hematology and coagulation. *This problem causes you to suspect an underlying medical condition, so this will need to be*
 - investigated first.
- **B** Since the boy appears to be fit and healthy he can go home, but you make an appointment for a check-up after 2 days for further investigation.
- **C** Since the boy appears to be fit and healthy he can go home while you simultaneously notify the Child Welfare Services about your concerns.
- **D** You are concerned about his condition and suspect child abuse, so you decide to admit the child and then inform the Child Welfare Services and the police.

72

A 3-month-old baby arrives in the children's A&E with bleeding from the oral cavity. Upon examination you find a fresh injury in the upper labial frenulum, but otherwise no signs of injury or sickness. How would you handle this?

- A You allow the child to go home and notify the Child Welfare Services of your concerns.
- **B** You send the child to the ENT Department for suturing of the labial frenulum.
- **C X** You admit the child and order an X-ray of his whole skeleton, a cerebral CT scan and monitoring by an ophthalmologist.
 - It is very important to search for any underlying signs of abuse.
- **D** You allow the child to go home, but make an appointment for a check-up in 1 week's time.

A girl is born by Caesarian section during pregnancy week 32 due to severe preeclampsia in the mother. She cries after the birth, but during the course of the first hour following the birth she develops tachypnoea (increased respiratory rate), intercostal retractions and nasal flaring, and CPAP (continuous positive airway pressure) is applied with 40% oxygen. What is the most likely cause of the girl's respiratory problems?

- A Low blood glucose levels due to inadequate supply of nutrients after the umbilical cord was cut Low blood glucose levels would not generally occur when there are respiratory symptoms
- B Congenital infection and pneumonia with group B strep caused by an immature immune system *This is also a possible diagnosis, but it is not occur nearly as much as RDS* C X Respiratory Distress Syndrome (RDS) due to a lack of surfactant
- This is the most common cause of respiratory distress in premature babies
 Defective reabsorption of pulmonary fluid and "wet lungs" as a result of having a Caesarian section
 Althugh RDS can occur in combination with "wet lungs", this the primary diagnosis for children born close to/at term

74

A 2-year-old girl visits you, her GP, with her parents. They are exhausted and complain about their child always being ill. She coughs both night and day and it sounds like she has a lot of mucous in her chest. She has now been coughing continuously for 6 weeks after she was diagnosed with COVID the prevous month, but she has also had similar periods of coughing previously. She does not have eczema or any allergies. She does not snore and she does has not have any ear infections. What is the most likely diagnosis and correct treatment?

- A X This is probably protracted bacterial bronchitis, but it is difficult to evaluate against asthma and you refer her to a pediatrician for assessment and sampling. Protracted bacterial bronchitis is the most common cause of chronic wet cough in pre-school children (up to 40% of referrals are made to a pediatrician for asthma in pre-school children). Assessment for asthma and other chronic lung diseases is difficult and it is recommend that a pediatrician should undertake the assessment of antibiotics as well as a fine needle aspiration test, something which is difficult to do without training. Asthma is usually accompanied by a dry cough, laboured breathing and often wheezing/whistling sounds and an atopic disposition. Based on the girl's history of illness which involves a wet cough and no upper respiratory tract symptoms, this is a disease of the lower respiratory tract and assessment by the ENT Department is indicated.
- B You refer her to the Ear, Nose and Throat Department with suspected adenoids and chronic rhinitis.
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Asthma is usually accompanied by a dry cough, laboured breathing and often wheezing/whistling sounds and an atopic disposition. Based on the girl's history of illness which involves a wet cough and no upper respiratory tract symptoms, this is a disease of the lower respiratory tract and assessment by the ENT Department is indicated.

- C This is most likely to be non-atopic asthma. You start her on salbutamol (Ventoline).
- **D** This is probably protracted bacterial bronchitis. You take a sample and commence antibiotic treatment.

A 15-month old child has just had chicken pox. She develops a temperature again and has considerable pain in one of her arms. Upon examination at the hospital she is lethargic and pale and her general state of health is poor. The doctor finds several crusty chicken pox rashes on her body and extremities and on her upper left arm is a pale red diffusely demarcated erythema and considerable tenderness on palpation.

What condition do you suspect?

- A Staphylococcal scalded skin syndrom triggered by S aureus Can be painful, but it is a superficial toxic affectation of the skin with erythemia and blisters and it is rare to have such a poor general state of health and a temperature
 B X Neareticing forcities to a poor general state of health and a temperature
- **B X** Necrotising fasciitis triggered by group A strep Necrotising fasciitis with GAS in children occurs after chicken pox and the severe pain and diffuse rash are characteristic symptoms
- C Erysipelas triggered by group A strep Is not as painful and and less tender to palpation, and the rash is often clearly demarcated

76

Which of the following statements about the Hemophilus influenza type b (Hib) vaccination in Norway is correct?

- A The Hib vaccine reduces the occurrence of upper and lower respiratory infections in children
- **B** The Hib vaccine reduces the occurrence of Hib infections in the whole population
- C The Hib vaccine reduces the occurrence of serious influenza infections in children

D X The Hib vaccine reduces the occurrence of invasive Hib infections in children Correct. Hib bacteria may or may not have polysacharide capsules. Encapsulated bacteria are divided into two serotypes (a-f), and are often the cause of systemic (invasive) illnesses, but nonencapsulated bacteria can cause upper respiratory tract infections. Hib vaccines provide immunity against encapculated type b Hib which was the type of bacteria which most commonly used to cause infections in children, e.g. meningitis, sepsis and epiglottitis. Following the introduction of the vaccine these infections in children under the age of 6 have almost disappeared, while we still see such invasive infections in adults, especially the elderly. Respiratory tract infections in children are primarily caused by virus infections, and possibly also non-encapsulated Hib, and these are not affected by the vaccine.

77

A 2-year-old, previously healthy, boy has been following the usual vaccination programme. During the last couple of days he has stayed at home from the kindergarten with a high temperature and a sore throat. In addition to the temperature he now has a diffuse rash with small spots on his body which feels like "sandpaper" when the doctor runs his/her hand over it. What is the most likely diagnosis?

AX Scarlet fever

Correct. This history of illness is typical of scarlet fever. When examined one will also typically see tonsilitis with a yellowish coating (sore throat). A rash with small "sandpaper"-like spots or goosepimple-like palpation findings is very typical of scarlet fever and distinguishes it from more confluent rashes as found in measles and the diffuse rash found in Kawasaki disease which is often concentrated around the genitals. In roseola (the fourth childhood disease) the rash always appears after the temperature has gone and children with erythema infectiosum (the fifth childhood disease) rarely have a high temperature.

- B Erythema infectiosum
- C Kawasaki disease
- **D** Exanthema subitum (roseola)

A boy weighing 3.5 kg is delivered by Caesarian section two weeks before term. The indication for a Caesarian was the mother's anxiety about giving birth. Her pregnancy had been uncomplicated and the boy had Apgar scores of 7, 9 and 9 after 1, 5 and 10 minutes. After the birth the child suffered from moderate respiratory symptoms which are being interpreted as wet lungs or transient tachypnea. What specific features should one observe in the breathing pattern of such a child?

- Inspiratory stridor, wheezing, cyanosis and retractions Α
- R Femoral pulse, heart rate, nasal flaring and colour The first two are not features of the breathing pattern and are not associated with respiratory distress.
- C X Respiratory rate, retractions, grunting and nasal flaring These observations are specifically aimed at respiratory distress during the neonatal period and lectures have been held about them
- D Respiratory rate, retractions, wheezing and cyanosis Breathing problems in newborns are not characterised by wheezing expiration (which is more closely associated with asthma). Cyanosis is not specifically linked to respiratory problems (which is equally important in cases involving things like heart problems or sepsis) and neither is it a feature involved in the breathing pattern.

79

A newborn child with Rhesus-immunisation is going to have a transfusion. The quantity of blood to be replaced is twice the total blood volume. The child weighs 3.5 kg. How much blood do you need to order?

- Α Approx. 140 ml
- Corresponds to 40 ml/kg
- **BX** Approx. 600 ml The calculated blood volume for newborns is approx. 85 ml/kg Approx. 460 ml С
- Corresponds to 65 ml/kg
- D Approx. 350 ml Corresponds to 50 ml/kg

80

A mother visits you at your GP's surgery with her 3-year-old daughter who she suspects has caught chicken pox from her kindergarten. Her daughter has a temperature of 39.1 and a typical rash on her face and body. You confirm the mother's suspicions.

How long should the girl stay at home from the kindergarten?

- **AX** She should stay at home until all the blisters have dried up and no new ones are appearing. Correct. She is infections until all the vesicles have turned into dry scabs and no new ones are appearing (often around 5 days). After that she will no longer be infectious and can go to the kindergarten, even if she still has a lot of dried up scabs on her skin and mucous membrances. Even though chicken pox is not usually a serious disease, it is not a good idea to allow it to spread in a kindergarten where there will often be children with impaired immune systems or having immuosuppressant treatment and for whom a chicken pox infection would be serious.
- B She should stay at home until her temperature goes down, but she can go to the kindergarten with a rash.
- С She should stay at home until her general state of health is good, but the rash does not need to have disappeared
- D She should stay at home until all signs of her chicken pox have disappeared from her skin and mucous membranes.

A 6-year old girl complains that her legs quickly become tired when she attends a pre-school check-up at the health centre. A clinical examination reveals normal findings above her heart and lungs and in the abdomen, but you are unable to find a femoral pulse. A neurological examination reveals normal findings in her legs, including normal muscular strength and reflexes. What should the doctor do?

A Refer the girl to the Neurology Outpatients Clinic for further investigation

- **B** X Refer the girl to the Children's Cardiology Outpatients Clinic for an echocardiography test The key symptom in this case is the absence of a femoral pulse which needs to verified and investigated first before other causes of fatigue in her legs can be considered. Could be an expression of nonductal dependent coarctation.
- **C** Refer the girl to the Children's Outpatients Clinic to be examined for chronic fatigue syndrome
- **D** Refer the girl to a physiotherapist because she needs to excercise in order to improve her fitness.

82

You are to assess whether or not a child has a growth deviation and have the following information: a boy, born at term with a birth length of 50 cm and birth weight of 3500 g. His height was on the 50th percentile for his age until he was 7 years old. He is now 10, and his height lies on the 10th percentile. His skeletal age is 9 years. Information about his parents: his mother is 167 cm and father is 180 cm. Both entered puberty at a normal age.

Which of the explanations of the boy's growth pattern is the most probable?

- A Chromosomal anomaly
- **B** Constitutional delay of growth and puberty Not probable with a skeletal age approximately equal to his chronological age and a father who entered puberty at a normal age.
- **C X** Chronic disease
- **D** Congenital hypopituitarism

83

The GP was contacted by the Community Health Nurse responsible for the Asylum Centre. Mohamad, 18 months old, has just arrived at the centre with his parents from a refugee camp in Somalia. The nurse relates that he was ill with a fever, red eyes and a sore throat for 3-4 days before leaving to come to Norway, but recovered and was afebrile during the journey. The day after arriving at the Asylum Centre he once again had a high fever with a maculopapular rash over large parts of his body. He has not been vaccinated and the nurse is afraid he could have measles. What should the doctor do?

- **AX** Notify the District Medical Officer, take samples from the child and quarantine it for a week *Correct*
- **B** Notify the person in charge at the Asylum Centre, give the child the MMR vaccine and paracetamol
 - The MMR vaccine doesn't help after the outbreak of symptoms
- **C** Notify the authorities, take samples from the child and prescribe a week's course of penicillin *Penicillin has no effect on measles. Primary notification to the District Medical Officer who notifies further to the authorities*
- D Notify the authorities, give the child acyclovir and vaccinate younger siblings The younger siblings would be <9 months and MUST NOT have live vaccines. Acyclovir is not used in cases of measles
- **E** Notify the District Medical Officer, observe the child and vaccinate younger siblings The younger sister would be <9 months and MUST NOT have live vaccines

Hanna is 8 years old and has previously been healthy. She comes to the hospital in an ambulance. Her parents found her in bed, unable to make contact and with generalised clonic seizures which lasted two minutes after they found her. She is a little drowsy when she is admitted, but she has no temperature, no neck stiffness and no focal neurological findings. Her mother tells you that Hanna came to her parents early in the morning a few weeks ago and could not speak for a short while (< 1 minute), but was fully conscious.

minute), but was fully conscious. The EEG a couple of days later shows: Centrotemporal spikes (Rolandic spikes). Which epileptic syndrome is the most probable diagnosis?



- **A X** Benign childhood epilepsy (BECTS)
- *Typical age, EEG pattern and seizure seminology (seizure description)* Juvenile myoclonic epilepsy
- Not a typical age or EEG pattern. No focal components. C Absence seizures
- Not a typical EEG pattern. No focal components.
- D Landau-Kleffner syndrome Not a typical age or EEG pattern. Also serious symptoms in the form of loss of speech function.

A 1-year-old child is diagnosed with anemia with a hemoglobin level of 7.1 g/dl. His parents say that he is not eating much solid food, but is drinking a lot of milk. His birth weight was in the 50th percentile, but when he was examined today his weight was in the 2.5th percentile. The child has pale skin, but his clinical status is otherwise normal.

You have definite ideas about the cause of his anemia. Which of the following blood tests would you requisition in order to confirm your suspicions?

AX Ferritin

Based on the child's age and case history, iron deficiency anemia is suspected. This diagnosis is confirmed by measuring the feritin levels which are usually low in such cases (NB: acute-phase proteins). The MCV may also be low in cases of iron deficiency, but is not a diagnostic measure in itself. Hemoglobin typing is relevant in suspected cases of hemoglobinopathy. These will generally present during the first few years of life. The bilirubin levels will also be elevated in hemolytic anemia and if so, icterus will also occur.

- **B** Hemoglobin typing
- C MCV
- D Bilirubin

86

You are a doctor at the health centre. You examine a boy who is attending for his 6-month check-up. While examining the scrotum, you find a testicle in the scrotum on the left side. On the right side you cannot find a testicle in either the scrotum or the groin. What do you do next?

A Conclude that boy is lacking his right testicle and take no further action.

- **BX** Refer him to a paediatric surgeon/urologist
- Suspected retentio testis that should be assessed by a paediatric surgeon/neurologist
- C Wait for it to descend and give the boy an appointment for follow-up when he is 1 year old

87

A previously healthy 5-year-old boy comes to the A&E after having had a temperature for 3 days. You hear a grade II early systolic low frequency murmur in the mid and lower left sternal border with no radiation. This has not been heard previously at his regular check-ups at the health centre. Clinical examination indicates an upper respiratory tract infection. *What do you do next in regard to the murmur?*

- A X Ask them to see their primary doctor to check the murmur when the child is well again There is an URT infection present that explains the boy's temperature and there is no information that indicates endocarditis or any other type of cardiac disease. The murmur is probably physiological and audible now because he has an acute disease and the heart is working harder.
 B Refer him to a paediatric cardiologist
- C This a murmur that does not require any further follow-up. No appointments are made for a check-up.
- **D** Admit the child for investigation for endocarditis

88

As a specialty registrar, you are working at a GP's office where the first patient of the day is a 3-year old boy. The mother says that he has been down with a number of different respiratory tract infections over the last months and she thinks he is paler than normal. Clinical examination reveals a temperature of 38.4°C and poor general health. You find multiple small glands in his neck, enlarged tonsils and hepatosplenomegaly. Preliminary blood tests at the GP's office are presented in the Table below. What is the most probable diagnosis for this child?

Test:	Result:	Reference range:
CRP	36 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	15.9 x 10^9/L	3.7-14.7 x 10^9/L

AX Acute leukaemia

The patient has been ill over a longer period and has both anaemia and thrombocytopaenia, mild leukocytosis, hepatosplenomegaly and infection. This is a common presentation of acute leukaemia and is the most probable diagnosis (tot. leukocyte count can be low, normal and high in leukaemia. Neutropenia is common). Mononucleosis could be relevant in patients with large tonsils and hepatosplenomegaly, but is normally asymptomatic in children <10 years of age. Mononucleosis does not give such pronounced anaemia or thrombocytopaenia. HUS is characterised by the triad of anaemia, thrombocytopaenia and renal failure. >90% of the cases are associated with E. Coli gastroenteritis and have an acute onset. The patients often have stomach pains and bloody stools. Anaemia develops rapidly and the patient's cardiorespiratory system can be affected. In the current medical history, the patient has been ill for a long time and does not have gastroenteritis symptoms which does not support HUS. Parvovirus B19 is generally asymptomatic, but can give bone marrow suppression. It is rarely as pronounced as in this case. Neither does it cause hepatosplenomegaly.

- B Parvovirus B19
- **C** Hemolytic uremic syndrome
- **D** Infectious mononucleosis

89

A mother brings her 12-month-old boy for a check-up with you at the GP's surgery. They have recently moved here as refugees from a central African country. The boy has been reasonably healthy throughout his life and he is still being fully breastfed and growing fairly well. However, the mother says that he seems to have been a bit pale recently and since he has also had a slight temperature, cough and runny nose during the last few days his hematological status is investigated and the only findings are a low Hb level of 8.8 g/dL (ref. 10.5-13.1). What is the most likely cause of the boy's anaemia?

AX Iron deficiency

Correct. In the absence of other rinformation, iron deficiency is the most common cause of anaemia, regardless of where in the world one comes from. In this case being fully breastfed is a hint because it is necessary to give iron supplements from at least the age of 6 months in order ensure adequate supplies.

- B Malaria
- C Sickle cell disease
- D G6PD deficiency

90

You are working at A&E and a 3-5-year-old boy comes in with clonic seizures. The child has a high temperature and has previously been fit and healthy. Which of the following additional information indicates that this case should be treated as being a complex febrile seizure?

- **A X** Another fit occurred after 4 hours If several fits occur within 24 hours they should then be regarded as being complex febrile seizures.
- B The fit lasted for 5 minutes
 Febrile seizures lasting for longer than 15 minutes should be regarded as being complex
 C The clonic seizures were bilateral
- **C** The clonic seizures were bilateral *If the symptoms are unilateral they should be regarded as being complex febrile seizures*
- **D** None of these

Hydrochlorothiazide, furosemide, spironolactone and amiloride all belong to the group of medicines known as diuretics. Two of these medicines can produce hyperkalemia as a side effect. **Which medicines?**

AX Spironolactone and amiloride

- Both of these are potassium-sparing diuretics. Amiloride is perhaps not well known, but the students should be able to reason their way to the correct answer because the other alternatives contain either furosemide or hydrochlorothiazide (they ought to know that both cause hypokalemia).
- B Hydrochlorothiazide and furosemide Both of these have a tendency to cause hypokalemia
- C Furosemide and spironolactone Furosemide has a tendency to cause hypokalemia
 D Amiloride and hydrochlorothiazide Hydrochlorthiazide has a tendency to cause hypokalemia

92

Which of the diuretics below are particularly relevant for use in patients with hyperaldosteronism?

- **A** Hydrochlorothiazide (a thiazide diuretic)
- **B** Mannitol (an osmotic diuretic)
- **C X** Spironolactone (a potassium-sparing diuretic) Spironolactone is an aldosterone antagonist.
- **D** Furosemide (a loop diuretic)

93

Which of the conditions below constitute an indication for using betablockers?

- A Addison's disease
- B Parkinsonism
- C X Migraine
- Betablockers used as a prophylacticD Raynaud's phenomenon

94

Regular analgesics do not work well for treating neuropathic pain. In such cases one could try pharmacotherapy using tricyclic antidepressants (normally nortripyline or amitriptyline), traditional antiepileptic drugs such as carbamazepine or valproate, or gabapentinoids such as gabapentin or pregabalin. In patients with reduced kidney function there is a need to adjust the dosage of two of the drugs mentioned above because they are eliminated unchanged via the kidneys. Which two drugs are these?

AX Gabapentin and pregabalin

- Correct answer
- **B** Nortriptyline and amitriptyline
- **C** Carbamazepine and valproate
- **D** Carbamazepine and pregabalin

A woman has been fully breastfeeding a 6-week-old child. She needs to take a drug which could potentially affect her child. In order to assess whether or not her drug treatment would be safe for her child, you must calculate the child's theoretical dose, i.e. how much of the drug the child will theoretically ingest.

How do you calculate the theoretical dose?

- A You multiply the amunt of milk that is ingested (approx. 150 ml per kg of body weight per day) by the concentration of the drug in the mother's serum
- Not TD, does not allow for varying degrees of transfer in the mother's milk from serum
 B You divide the amount of milk that is ingested (approx. 150 ml per kg of body weight per day) by the concentration of the drug in the milk
- **C X** You multiply the amount of milk ingested (approx. 150 ml per kg of body weight per day) by the concentration of the drug in the milk
 - Ref. LM-handboka (The National Treatment Guidelines for Norwegian Health Personnel)
- D You measure the serum concentration of the relevant drug in the child's blood and multiply this by the child's blood volume (approx. 500 ml) Not TD

96

A 68-year-old man has mild asthma and uses salbutamol as an inhaler as required, but is otherwise healthy. His blood pressure at his last two check-ups at your GP office has not been satisfactory (170/100 mmHg) and you are considering starting him on drug treatment. Which type of antihypertensive medication should be used with special caution in this patient?

- **A** ACE inhibitor
- No contraindications in the medical history; can be used as the first choice. B Thiazide diuretic
- No contraindications in the medical history; can be used as the first choice. C Calcium channel blocker
- *No contraindications in the medical history; can be used as the first choice.* **D X** Beta-1-receptor antagonist

Betablocker's carry a risk of obstruction and can trigger severe asthma attacks in asthmatics. This also applies to selective beta-1 blockers, although the risk is somewhat less than for nonselective beta-blockers.

97

A young woman is taking isotretinoin for acne. She discontinues the drug, ovulates one week afterwards and becomes pregnant. She visits you in your capacity as intern in general practice during pregnancy week 8.

What is the correct reasoning in this situation?

- A You should advise her to immediately terminate the pregnancy due to a high risk of fetal harm
- **B** She does not need to worry since she stopped taking the drug sufficiently long before ovulation
- C She does not need to worry since isotretinoin is only harmful to the fetus during the third trimester **D X** She should immediately be referred to a specialist in gynaecology and obstetrics for examination

and advice "If a pregnancy occurs following the discontinuation of treatment, there is a residual risk of developing

serious fetal deformities. This risk applies until the drug has been completely elminiated, i.e. one month after treatment has been discontinued» from the SPC (Supplementary Protection Certificate) than what is currently stated. Version 1,12/2005 (legemiddelsbok.no)

Medicines in the group known as phosphodiesterase-5-inhibitors, such as sildenafil, must not be used together with glyceryl trinitrate (nitroglycerin) and other nitrates. What is the reason for this?

- Α This combination can cause renal failure One might consider renal failure to be secondary to an extreme drop in blood pressure but, nonetheless, the drop in blood pressure is the primary effect.
- B This combination can produce a prolonged QT interval with a risk of torsades de pointes arrhythmias
- C X The combination can cause a considerable drop in blood pressure Medicines in both groups act as vasodilators, and if combined produce a very strong vasodilatory effect. I.e., a pharmacodynamic interaction.
- This combination can cause seizures D

99

A woman visits you at your GP surgery. She has recently discovered that she is pregnant and an ultrasound scan has shown that she has been pregnant for around 16 weeks. She takes ibuprofen (an NSAID) fairly regularly for headaches.

What would be the most correct reasoning in this case?

- She can take ibuprofen as before since it has not been shown to cause fetal harm
- В She can take ibuprofen as before because ibuprofen only carries a risk of fetal harm when taken during the first trimester and the critical period is already behind her
- **C X** She should minimze her use of ibuprofen, particularly towards the end of the pregnancy G7.1.14 N | Legemiddelhåndboka (The National Treatment Guidelines for Norwegian Health Personnel) (legemiddelhandboka.no)
- The use of ibuprofen during the first trimester carries a high risk of developing fetal deformities Π and she should be informed about this so that she can consider terminating her pregnancy

100

The combination of non-steroidal anti-inflammatory drugs (NSAIDs) and ACE inhibitors or antiotensin receptor antagonists is associated with a high risk of developing kidney failure.

What is the mechanism behind this interaction?

Reduced angiotensin-2 effects reduces the production of aldosterone. This causes a tendency for Α hyperkalaemia which, in the presence of NSAID treatment, produces renal toxicity

This is not a known mechanism for renal toxicity

R NSAIDs reinforce the blood pressure-lowering effect of ACE inhibitors and angiotension receptor antagonists, which may cause hypotension and trigger prerenal kidney failure

On the contrary, NSAIDs weaken the blood pressure-lowering effect of ACE inhibitors and angiotensin receptor antagonists

C ACE inhibitors and angiotensin receptor antagonists cause an accumulation of bradykinin which. in combination with reduced prostaglandin synthesis in the kidneys with NSAID treatment, reduces renal perfusion and the filtration pressure in the glomeruli

Angiotension receptor antagonists do not cause an accumulation of bradykinin **D X** NSAIDs and ACE inhibitors/angiotensin receptor blockers reduce renal perfusion and filtration pressure in the glomeruli via complementary mechanisms (the inhibition of prostaglandin synthesis and the inhibition of angiotensin-2 effects, respectively) Prostaglandins dilate the afferent arterioles, while angiotensin-2 constricts the efferent arterioles. These mechanisms both contribute towards maintaining the filtration pressure. When both mechanisms are inhibited simultaneously, this results in reduced renal perfusion and filtration pressure.

Young children have immature kidney function compared to older children and adults. How does this affect the half-life of drugs that are mainly eliminated unchanged via the kidneys?

- A X The half-life is longer due to a reduced GFR and reduced tubular secretion Both the GFR and tubular secretion are subject to age-dependent maturity and are generally considered to have reached a more or less normal level by the age of 6-9 months (NB: this applies full-term babies)
- B The half-life is about the same due to a reduced GFR, but increased tubular secretion
- C The half-life is shorter due to increased loss through the glomeruli
- D The half-life is shorter due to increased tubular secretion

102

A patient is taking levothyroxin for primary hypothyroidism and this is well regulated with normal free thyroxin in serum (s-fT4) and thyroid-stimulating hormone in serum (s-TSH). By her own initiative she starts taking calcium supplements because she is worried about developing osteoporosis. She takes both drugs at 0800 hrs. The patient visits you for a routine check-up 8 weeks after having started the calcium treatment to measure her s-fT4 and s-TSH. What will the test results most likely show?

- A Reduced s-fT4 and reduced s-TSH
- B Increased s-fT4 and reduced s-TSH
 C X Reduced s-fT4 and increased s-TSH https://tidsskriftet.no/2002/09/legemidler-i-praksis/medikamenter-og-thyreoideafunksjon Concomitant calcium may decrease levothyroxine uptake in the gut.
- D Increased s-fT4 and increased s-TSH

103

You are called on in order to assess a newborn baby who was delivered by Caesarian section on mothers` indication. GA 36+6. Initially the baby was breathing of its own and was healthy. Subsequently it became lethargic and needed CPAP. An X-ray is requisitioned. The on-call radiologist is busy with a trauma, so you have to assess the image yourself. What condition is most consistent with the X-ray image shown?



- Α Right-sided pneumothorax No hyper-clear areas, but obviously difficult to exclude a small pneumothorax in the images
- *presented.* Wet lungs В
 - Differential diagnosis in babies born by Caesarian section. The relevant image shows no obvious signs of pleural fluid or oedema in the central hilum vessels. С Meconium aspiration
 - No info about discoloured amniotic fluid. No hyperinflation. Would expect asymmetrical coarse, patchy opacities. **D X** RDS
 - - Symmetrical fine-granular patterns.

What imaging test provides the most detailed image (highest signal-to-noise ratio) of the testicles?

- **A X** Ultrasound with high frequency probe The testicles are located close to the surface and thus make it possible to use a high frequency probe. A high frequency probe has reduced penetration, but high resolution. Ultrasound with low frequency probe В
- A low frequency probe has much lower resolution than a high frequency probe
- С MRI
- D CT with contrast and thin section

What condition cannot be clarified when a patient is referred for a micturating cystourethrography (MCUG)?

- A Residual urine The urinary bladder is filled until the child has to urinate. The remaining contrast fluid in the urinary bladder is an indicator of the residual ruine, but it is difficult to estimate the quanity/ volume. An ultrasound scan or a urodynmic test would be more suitable for this.
 B X Transitional stenosis
- This condition is primarily clarified by performing a urography test or an NM renogram scan (in the future dynamic MR urography).
- C Vesicoureteral reflux (VUR)
- **D** Posterior urethral valve

106

You refer a 2-day-old newborn boy for an ultrasound scan of the urinary tract. The radiology report states the following: "Irregular, pronounced wall thickening of the bladder. Dilated ureters. Moderate dilation of the intrarenal collecting systems of both kidneys. R: strong suspicion of ..." What condition does the radiologist suspect?

- A Bilateral transitional stenosis
- **B** X Posterior urethral valves Bilateral hydronephrosis: central obstruction is much more likely than bilateral proximal obstruction. Wall thickening of the bladder is caused by hypertrophic musculature in an attempt to increase the pressure proximal of an obstruction. The least common, but most serious condition in boys (and only boys) is posterior urethral valves.
- C Bilateral distal ureteral stenosis
- D Bilaterale vesicoureteral reflux (VUR)

107

Premature babies born before week 32 are routinely examined using ultrasound of the head after the birth.

What does one primarily want to exclude/demonstrate and for which ultrasound is very suitable?

- A Hypoxic-ischemic encephalopathy
- B Hydrocephalus

C X Brain haemorrhage Premature babies are particularly prone to bleeding in the germinal matrix, because the blood vessels here are highly sensitive to hypoxia and increased blood pressure. Bleeding here can cause development of CP, but this is an umbrella term for disorders of muscle function and cannot be demonstrated using ultrasound. Hydrocephalus is never screened for postnatally, it is generally demonstrated at prenatal US. HIE is a clinical entity after asphyxia.

D Cerebral paresis

For a long time now the PROFO (the Norwegian Organisation for Prostate Cancer Patients) has wanted population-based PSA screening in order to detect prostate cancer during the early stages. Professionals in Norway are now starting to see the way forwards in respect of organising testing in Norway as well - what is the main reason for these measures?

- A The treatment of prostate cancer has now become more gentle and has almost no side effects.
- **B** Randomised studies undertaken in both Europe and the USA have shown a reduction in total mortality in men who were randomised for screening.
- **C X** Prostate cancer mortality is 20% lower in men who are screened and broad screening is on the increase.

Broad screening means that the percentage of men who check their PSA levels outside an organised programme is on the increase. This means that the tests are often conducted erroneously, something which has been proven to not result in a reduction in prostate cancer-specific mortality. However, with population-based screning there are problems associated with over-diagnostics and over-treatment. The Norwegian Urological Association is looking at the possibility of organising testing under regional projects.

D The PSA test has been developed and can now provide more definite information about the likelihood of contracting prostate cancer.

109

A 30-year-old woman visits her GP because she has been experiencing a burning sensation during urination. A urine strip test shows 3+ blood and 3+ white and positive nitrites. The patient is afebrile. What should the GP do in this case?

- A Arrange for a prescription for 3 days of antiobiotic treatment and referral for a cystoscopy. *Cystoscopy is not indicated at this stage.*
- **B X** Arrange for a prescription for 3 days of antibiotic treatment and a check-up of her urine after a couple of weeks.

This is enough for a younger patient. A further urine sample can be taken in order to check the microhematuria.

- **C** Arrange for a prescription for one week of antibiotic treatment and an ultrasound scan of the urinary tract due to microhematuria. *Taking antiobiotics for one week is a rather long time for an uncomplicated UTI. Ultrasound is not indicated at this stage.*
- **D** Take blood samples for infection parameters. Send the urine for a culture test and if necessary arrange for a prescription for 3-5 days of antiotiotic treatment if a bacterial strain is diagnosed. *In some UTIs in younger women a urine culture and laboratory investigation are not required.*

110

A 40-year-old previously healthy woman, who has recently returned from spending one week in Spain, visits A&E with intense pain in her left iliac fossa. She has had the pain for 2 days, but Voltaren and Paracet are no longer working. She has a temperature of 38.2 and is feeling lethargic and awful. Lab:

CRP 50 (ref. < 5 mg/L) Leucocytes 18 (ref. 4.1 - 9.8 x 10⁹/L) Creatinine 164 (ref. 45 - 90 µmol/L) Urine strip test: ery 3+, leukocytes 3+, pos. nitrite, neg. albumin og neg. glukose (ref. neg) What would be the correct treatment for this patient?

- A Suspected acute pyelonephritis, send urine for a culture test and give the patient a prescription for antibiotics, pivmecillnam 400 gm x 4.
- **B** X Order an urgent ultrasound of the urinary tract in order to exclude hydronephrosis and admit the patient for intravenous antibiotics. Intense pain in the left iliac fossa and a positive urine strip test indicate obstructive kidney stones. With signs of infection it is important to exclude hydronephrosis (a CT scan is a worse alternative due to the high creatinine levels) and it is necessary to relieve the kidney.
- **C** Suspected actue diverticulitis, and because of the location of her pain, order a CT scan of her abdomen and an assessment from the on-call surgeon.
- **D** Order a CT scan of the abdomen because this is not clear and admit patient to an infection isolation room.

An 80-year-old man with moderate urination problems experiences urinary retention. 800 ml of clear urine is extracted. What strategy would it be best to adopt next?

- A Permanent catheter for one week, check his residual urine when the catheter has been removed Due to his previously moderate problems and 800 ml in the bladder, it would be enough to insert a catheter for 1-2 days before trying to remove it in order to see if his urinary flow returns to how it was before.
- **B X** Insertion of a permanent catheter which is removed after 1-2 days The retention volume is not great. In this case one can expect urination to normalise again.
- C Permanent catheter and referral to a urotherapist for CIC (clean intermittent catheterisation) within 1 week
- In this case one can see if urination commences spontaneously
- **D** Insertion of a permanent catheter, take blood samples, including a PSA and refer to a urologist A PSA would be affected by urinary retention and could provide false elevated values and should not be taken in an acute situation

112

A 75-year-old, previously healthy, man visits his GP because he is experiencing increasing problems in the form of lethargy, back pain, poor pressure when urinating and urinary incontinence. During the past week he has had problems with emptying his bladder. In your capacity as his GP you ask for a urine sample and the patient empties approx. 2 dl of cloudy urine. He feels that he is not quite empty and when you scan his bladder you discover that he has 12 dl of residual urine. What is the most likely diagnosis?

A X Overflow incontinence

The patient's problems are typical of what we call overflow incontinence. The bladder is so full that the sphincter muscle sometimes gives way.

- B Urge incontinence *is a condition where it is difficult to hold it due to a very strong need to urinate. This is not the case here.*
- C Detrusor incontinence Doesn't exist
- D Stress incontinence Stress incontinence in men is found after radical surgery for prostate cancer, or any other type of surgery that weakens the sphincter muscle. This is not the case here.

113

A 45-year-old man visits the GP's surgery with a painful and swollen left half of his scrotum. This condition has become progressively worse over a period of 2-3 days. It is painful and on palpation the space between the testicle and the epididymis has disappeared. Which tests would help you to be able to make a diagnosis?

A X Leucocytosis and leucocytes in the urine

- With epididyitis one often has elevated quantities of leucocytes in the blood and/or urine B Beta-HCG and AFP
- It is only relevant to carry out tumour marker tests when a tumour has been detected in a testicle **C** PSA
- It is relevant to undertake a PSA test if prostate cancer is suspected D Uric acid
 - Not relevant

How is microhematuria defined on a urine test strip?

- A As a minimum of 3+ on the urine test strip on 3 samples taken at intervals of 1 month between each test A minimum of 2+ is correct
- **B** As a minimum of 1+ on the urine test strip on 3 samples taken at intervals of 1 month between each test
 - Not defined as microhematuria
- C As a minimum of 4+ on the urine test strip on 3 samples taken at intervals of 1 month between each test The minimum is 2+
- **D** X As a minimum of 2+ on the urine test strip on 3 samples taken at intervals of 1 month between each test

At least 2+ is required in order to say whether or not someone has microhematuria in accordance with the definition

115

An otherwise healthy 36-year-old man has delivered a urine sample to his GP in connection with needing a medical certificate for his pilot's licence. The urine strip test shows 1+ for blood. In your capacity as a GP what should you do next?

- A Do another urine test in 4 weeks' time Not necessary since 1+ is not defined as being microhematuria
 B Refer the patient for a cytoscopy and a CT scan of the urinary tract
- Not indicated **C X** No further measures The patient does not have microhematuria or urinary tract symptoms and any further investigation is therefore not indicated. A patient has microhematuria when a urine test shows at least 2+ on the test strip.
- **D** Refer the patient for a cytoscopy Not indicated when the patient does not have microhematuria

116

You have a patient who is suffering from pain and you suspect that his diagnosis could be kidney stones. What findings in the urine are most consistent with kidney stones?

- **AX** Microhematuria
- Microhematuria can be found in 90% of patients with stones in the urinary tract B Alkaline urine pH
- **C** Significant bacteruriuria
- Can occur in connection with stone diseases, but not as frequent as microhematuria
 D Erythrocyte casts (cylinders) in urinary sediment Not associated with kidney stones

117

Urination problems can be divided into storage symptoms and emptying symptoms. Which term is an emptying symptom?

AX Hesitation

Hesitation means difficulty in starting to urinate and is often caused by an obstruction in the prostate/urethra and is associated with the actual emptying. Nocturia

- B Nocturia means that the bladder has to be emplied during the night, i.e. a storage symptom
 C Urgency
- Urgency means an urgent need to urinate and is linked to the bladder's storage capacity
 D Pollakiuria

Pollakiuria or frequent urination is an expression of when the bladder does not contain very much urine, i.e. a storage problem

Testen har 117 oppgaver. På utskriftstidspunktet var 0 oppgaver blitt trukket og det var gjort fasitendringer på 0 oppgaver.