

2023 - IID - MD4043 - Eksamen 1
Eksamensdato: 2023-05-24

1

Transposition of the great vessels presents with cyanosis in newborns. What other heart defects also present with cyanosis in newborns?

- A Critical aortic stenosis and atrial septal defect
- B X** Tetralogy of Fallot and critical pulmonary stenosis
Both conditions cause cyanosis in newborns
- C Critical aortic stenosis and patent ductus arteriosus
- D Tetralogy of Fallot and atrioventricular septal defect

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2

After the first year of his life a 3-year-old boy has had several middle ear infections, pneumonia twice and a sinus infection once. He has coped with the usual vaccinations and was not particularly ill when he had chicken pox. He has always had small tonsils. The following tests are performed in the Pediatric Outpatients Clinic:

Leucocytes	12.5 x 10 ⁹ per liter	(4.0-14.0 x 10 ⁹ /L)
Hgb	12.5 g/l	(10.5-13.5 g/dL)
Trc	321 x 10 ⁹ per liter	(150-400 x 10 ⁹ /L)
Neutrophils	60%	(31-60%)
Lymphocytes	25%	(37-57%)
Monocytes	14%	(0-6%)
Eosinophils	1%	(1-4%)
IgG	0.5 g/L	(6.1-14.9 g/L)
IgA	0.1 g/L	(0.2-2.9 g/L)
IgM	0.3 g/L	(0.4-2.1 g/L)

Chest x-ray: Clear lungs, suspected bronchiectasis in the lower lobe of the right lung, normal width of the mediastinum.

An analysis was also undertaken of the lymphocyte concentrations.

What do you think the lymphocyte analysis showed?

- A Normal B-lymphocytes, normal CD4+ and normal CD8+ T-lymphocytes
With frequent probable bacterial respiratory tract infections and low immunoglobulin values one would be more likely to expect low rather than normal B-lymphocyte values.
- B X** Low B-lymphocytes, normal CD4+ and normal CD8+ T-lymphocytes
He has had several probable bacterial respiratory tract infections, but has coped normally with a systemic virus infection. This and the test results indicate that hypogammaglobulinemia is suspected where there are low B-lymphocytes, but normal T-lymphocyte values (both CD4 and CD8).
- C Normal B-lymphocytes, low CD4+ and low CD8+ T-lymphocytes
This would be seen in SCID (severe combined immunodeficiency) - low values of both B and T-lymphocytes.
- D Low B-lymphocytes, low CD4+ and low CD8+ T-lymphocytes
He has several probable bacterial respiratory tract infections, but he has coped normally with a systemic virus infection and does not have any other signs of T-cell malfunction. This and the test results indicate that hypogammaglobulinemia is suspected, e.g. Bruton's disease, where there are low B-lymphocytes, but normal T-lymphocyte values (both CD4 and CD8). Monocytosis is often secondary in such a condition.

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3

A 7-month old girl who was previously healthy and not disposed towards atopic disorders arrives in the emergency department. She has a temperature, nasal congestion and is short of breath, and during the past day she has become lethargic and is refusing to nurse.

When examined at the hospital she is pale and has a respiratory rate of 65/minute with subcostal and intercostal retractions. Capillary refill time < 2 seconds and pulse 140/minute. Oxygen saturation 90%. Over the lungs, there are crackles bilaterally and prolonged expiration.

Blood test results:

Blood test	Result	Ref. range
CRP	43 mg/L	< 5 mg/L
Hb	10.8 g/dL	10.8 – 13.5 g/dL
Leucocytes	7.8 x 10 ⁹	4.0 – 20.0 x 10 ⁹ /L
pH	7.30	7.35 – 7.45
pCO ₂	5.0	4.5 – 6.0
BE	-6	-3 - +3

She is given fluids and oxygen.

What other types of treatment should she have?

- A X** Saline nasal drops, saline inhalation
Her history of illness is typical for acute bronchiolitis (without risk factors for asthma/atopic disorders). This is the recommended treatment.
- B** Oral penicillin, saline inhalation
- C** Oral prednisolone and saline inhalation
- D** Saline nasal drops, inhalation of a beta-2 agonist

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4

You are contacted by a public health nurse who would like you to conduct a somatic examination of a 6-year-old boy who has attended a health chat in connection with starting school. He mentioned something about not not being happy at home and that his "mum spent a lot of time in bed" and that his dad could get angry.

When you examine the boy you see that he is overweight and has dirty clothing. The boy appears to be downcast and you find a lot of plaque on his teeth and a few teeth that have obviously been attacked by caries. Otherwise he has normal skin and organ status.

Wha should you do now?

- A** You refer the boy to BUP (the child and adolescent psychiatric outpatients clinic) and ask them to consider sending a report of concern
- B** You refer the boy to the dentist for a caries assessment.
- C X** You send a report of concern to the child welfare services and take the boy back for a check-up.
In this case there is reason to believe that the boy is suffering from a serious lack of care.
- D** You ask for a meeting with the parents in order to discuss the situation with them

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5

You have a 2-year-old girl in your office who has come to be examined because she is suffering from constipation. She has been out of sorts and has had a poor appetite during the past month. Sluggish, hard stools approx. every third day. When you examine her she is in a good state of general health, afebrile, normal findings over the heart and lungs, normal in the pharynx, no glandular tumours. Her abdomen is slightly asymmetrical with the right side being slightly more swollen. You palpate a swelling in the upper right quadrant that is difficult to define, but does not feel like the liver. A urine dipstick test shows 4+ for blood. You suspect a tumour. What type of tumour is most likely?

- A Neuroblastoma
 - *The location of the tumour and the patient's age might fit, but hematuria is not a consequence of these.*
 - B Lymphoma
 - *This is an important differential diagnosis and cannot be excluded, but it does not cause hematuria. Often manifests as enlarged glands or glandular packets, but can also be localised tumour masses.*
 - C X Wilms' tumour
 - *Most likely. Often found as a hard swelling in the stomach or flank. Can become quite large before it is recognised. Can initially be confused with obstipation. A quick ultrasound scan is required for suspected tumours. Persistent macroscopic hematuria in children requires a rapid ultrasound examination.*
 - D Rhabdomyosarcoma
 - *Rare, but can occur in the urinary tract and cause hematuria. Rhabdomyosarcoma in the urinary tract is much less common than Wilms' tumour.*
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6

A 38-year-old woman due to give birth for the third time is admitted for a planned caesarian section during week 38 of her pregnancy because she has had two previous caesarian sections. A girl is born who starts screaming immediately after the birth. The pediatrician is called when the baby is 20 minutes old because she is having breathing difficulties. An examination shows a respiratory rate of 80/minute, pronounced pressing respiration and subcostal retractions. Oxygen saturation on the right side is 94%.

What sort of additional examinations should be carried out first in order to find the cause of the respiratory problems?

- A Chest x-ray, echocardiogram and bilirubin blood test
 - *Blood gas is needed in order to assess the severity of the respiratory problems. An echocardiogram is not relevant here.*
 - B X Chest x-ray, blood gas and infection status blood tests
 - *Important to rule out infection and pneumothorax at an early stage. This would also provide some indications about the possibility of wet lungs.*
 - C Echocardiogram, electrocardiogram and pro-BNP blood test
 - *Congenital heart disease or heart failure do not manifest with breathing difficulties at such an early stage*
 - D Spinal puncture, cerebral ultrasound and echocardiogram
 - *Spinal puncture might be relevant, but the risk of infection is small due to the elective c-section. Cerebral ultrasound and echocardiogram are not relevant here.*
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7

The on-duty pediatrician is called to the delivery room because of a difficult birth involving stuck shoulders (shoulder dystocia). When the pediatrician arrives in the delivery room the baby has just been born and has been laid down on the asphyxia table. The baby is atonic and is not breathing on its own. The midwife standing next to the baby reports that she cannot hear any heart sounds on auscultation.

What measure(s) should be carried out first?

- A X** Commence bag-mask ventilation
Correct according to the algorithm
 - B** Stimulate and undertake a further assessment after 1 minute
Essential to start ventilation immediately
 - C** Administer 100% oxygen using a mask
This is wrong. Ventilation is absolutely necessary and 100% O2 could be directly harmful.
 - D** Commence bag-mask ventilation and heart compressions
Heart compressions should not be commenced until effective ventilation has been established
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8

A 2-year-old girl visits you, her GP, with her father. She had atopic eczema and a milk allergy when she was an infant and she still has eczema. Her father suffers from asthma himself and wonders if the girl could also have asthma. She has suffered from long-term respiratory tract infections with shortness of breath and after each infection she has had a persistent cough at night. She usually doesn't get rid of her breathing problems before the next infection occurs. She was admitted with rhinovirus bronchiolitis when she was 8 months old.

What is the most likely diagnosis and correct measure(s)?

- A** This is probably protracted bacterial bronchitis, but it is hard to assess this with asthma and you refer her to a pediatrician for assessment and for samples to be taken.
 - B** This is probably protracted bacterial bronchitis. You take a sample and start antibiotic treatment.
 - C** This sounds like asthma and I am prescribing a ventolin aerosol with a chamber that they can use when required.
 - D X** This sounds like asthma and I am referring her to a pediatrician because she has a disposition to develop atopic eczema and using steroid inhalers on a regular basis or when required needs to be assessed.
Asthma is often accompanied by a dry cough, shortness of breath and often there are wheezing/whistling sounds and a disposition to atopic eczema. Based on the history of illness and the almost continuous symptoms which appear to have been triggered/worsened by a virus, it is likely that the child would benefit from inhaled steroids and being assessed by a pediatrician in order to identify any allergies and atopic eczema and to see if this would be the correct treatment. Children under the age of 5 who suffer from obstructive episodes, but who are quite healthy in between such episodes, and who are not disposed to atopic eczema, can try relieving their symptoms with ventoline as required, without taking inhaled steroids.
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9

A 3-month-old boy. The mother contacts you, her GP. Normal pregnancy and birth in week 39. No neonatal complications. Breastfeeding exclusively and good height and weight developments. Social and smiles and babbles. The mother is contacting you, her GP, because he has had several bowel movements containing fresh blood and mucous in his nappy as well as daily vomiting. He screams a lot. They have interpreted this as being colic and have started seeing a chiropractor for treatment. Upon examination there are normal findings over the heart, lungs and abdomen. Dry skin, but no eczema.

What is the correct assessment and measure?

- A Refer the child to a pediatrician for further investigation with suspected IBD
- B Presumably conditioned in reflux. Try treating for 2 weeks with an oral PPH (proton pump inhibitor) before further assessment
- C X** Milk protein allergy. The mother should try a milk-free diet before coming for a check-up in 2 weeks' time for further assessment.
Faeces containing blood or mucous will always require more precise investigation. The most common cause at this age is a cows' milk allergy, but you need to be sure that the symptoms have disappeared after the mother has cut out milk if you wish to alleviate your concerns about this. If the symptoms disappear with a milk-free diet on the part of the mother, the diagnosis should be verified with a cows' milk provocation (reintroduction of the mother's milk) or by a more detailed investigation by a pediatrician.
- D Reassure the mother. Sporadic vomiting and variable faeces which sometimes contains blood and mucous are common in breastfed infants.

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10

You are a doctor at a health care centre and a child visits you for the 6-month-old check-up. You think that the child looks rather pale. Upon examination you find pale conjunctiva and splenomegaly. The parents are healthy and say that their child has been healthy up until the last few weeks. The birth was normal and the child has developed normally up until now. The child was fed on formula milk and has developed in accordance with the growth chart. You suspect anemia and this is confirmed by an Hb level of 6.7 g/dl (ref. 10.5-13.1 g/dL).

On the basis of the child's age and the history and findings, what type of anemia do you suspect?

- A Iron deficiency anemia
- B X** Hemoglobinopathy
When there is anemia and splenomegaly at the age of 6 months you should suspect hemoglobinopathy (beta thalassemia major) or sickle cell anemia. The symptoms appear in these children at the age of 6 months when the switch to adult hemoglobin (HbA) has occurred. HbF does not contain beta-hemoglobin and these children are therefore healthy after birth. Iron deficiency anemia often occurs in slightly older children and this does not fit in with a case history of good growth development and good nutrition, and nor does splenomegaly. Spherocytosis causes hemolytic anemia (icterus) and the symptoms are often present at birth/before the age of 6 months. Spherocytosis can cause splenomegaly, but there is an absence of icterus which, along with the age, rules this out. Physiologic nadir does not cause such Hb levels as low as the 6 range.
- C Hereditary spherocytosis
- D Physiologic nadir

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11

How long is immunity expected to last after 3 doses of tetanus vaccine in the child vaccination programme?

- A 1-2 year
- B 3-5 years
- C X** 10 years or more

Correct. The effectiveness after 3 doses of a pure tetanus toxoid, starts to decline after 10 years or more, and it is thus one of the most effective of the killed vaccines in the child vaccination programme, far more effective than the whooping cough vaccine (duration 3-5 years). Booster vaccines are administered in Class 2 (at the age of 7) and again in Class 10 (at the age of 15-16) and these thus ensure good immunity throughout one's childhood and well up into young adulthood (25-26 years or more). Booster doses should be given when cleaning unclean wounds in adults if one does not definitely know that a booster dose has been given during the past 10 years. Lifelong immunity is only seen after the MMR (live) vaccine in the child vaccination programme.

- D Lifelong

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12

You are a doctor at a health centre and MMR vaccines are planned for three 15-month-old children today. Ida's mother has said that they do not want their daughter to have the vaccine. Tiril is very snotty and is coughing, but her general state of health is good and she does not have a temperature. Siri has recently been diagnosed with juvenile arthritis and is taking immunosuppressive medication, and her mother has been told that live vaccination should be postponed. Which of the 3 should receive the MMR vaccine today?

- A X** Tiril receives the vaccine because a cold without a temperature is not a contraindication, while Ida and Siri have contraindications.

Correct. Tiri can have the vaccine since a cold without a temperature is not a contraindication. If she had a temperature, vaccination should be postponed until the temperature returned to normal. The child vaccination programme is voluntary and requires parental consent so Ida does not receive the vaccine. The MMR vaccine is a live vaccine and Siri should therefore not receive it today, in line with the advice provided by her juvenile arthritis doctor.

- B Tiril and Siri receive the vaccine because a cold without a temperature is not a contraindication and the MMR vaccine is a killed vaccine.
- C Ida, Tiril and Siri all receive the vaccine because vaccination is compulsory and there are no contraindications
- D None of them receive the vaccine since Tiril has a cold, Siri should not have live vaccines and Ida does not have parental consent

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13

A 3-year-old boy, previously healthy, has followed the ordinary vaccination programme. During the past week he has developed a severe red rash on his cheeks and today his mother discovered a pink rash on his back, neck and stretching side of the arms and thighs. The rash forms a lacy pattern. His general state of health is good and he does not have a temperature. Several of the children in the kindergarten have had similar rashes. Which infectious agent is most likely?

- A Herpes virus type 6
- B Coxsackievirus
- C Gruppe A streptococcus
- D X** Human parvovirus B19

Correct. Human parvovirus B19 is the cause of erythema infectiosum or the 5th childhood disease which typically appears as described with a rash on the face (slapped cheek), a garland-shaped, lacelike reticular patterned rash that creeps down the the stretching side of the arms, sometimes also the torso and thighs. It can come and go over the course of days or weeks, while the general state of health is always good and there is a low temperature or no temperature at all. The coxsackie virus is the cause of another benign disease in children, hand, foot and mouth disease, which breaks out in a rash on the palms, soles of the feet and mouth. The herpes type 6 virus is the most frequent cause of erythema subitum or the 4th childhood disease, while group A streptococcus can cause scarlet fever.

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14

Children with Covid-19 are rarely seriously ill. However, in an increasing number of countries we have seen an increase in the number of cases of a rare inflammatory syndrome which manifests with a temperature and other symptoms 4-6 weeks after having had Covid-19. What are the most important symptoms of this Covid-19-associated syndrome in children, in addition to a temperature.

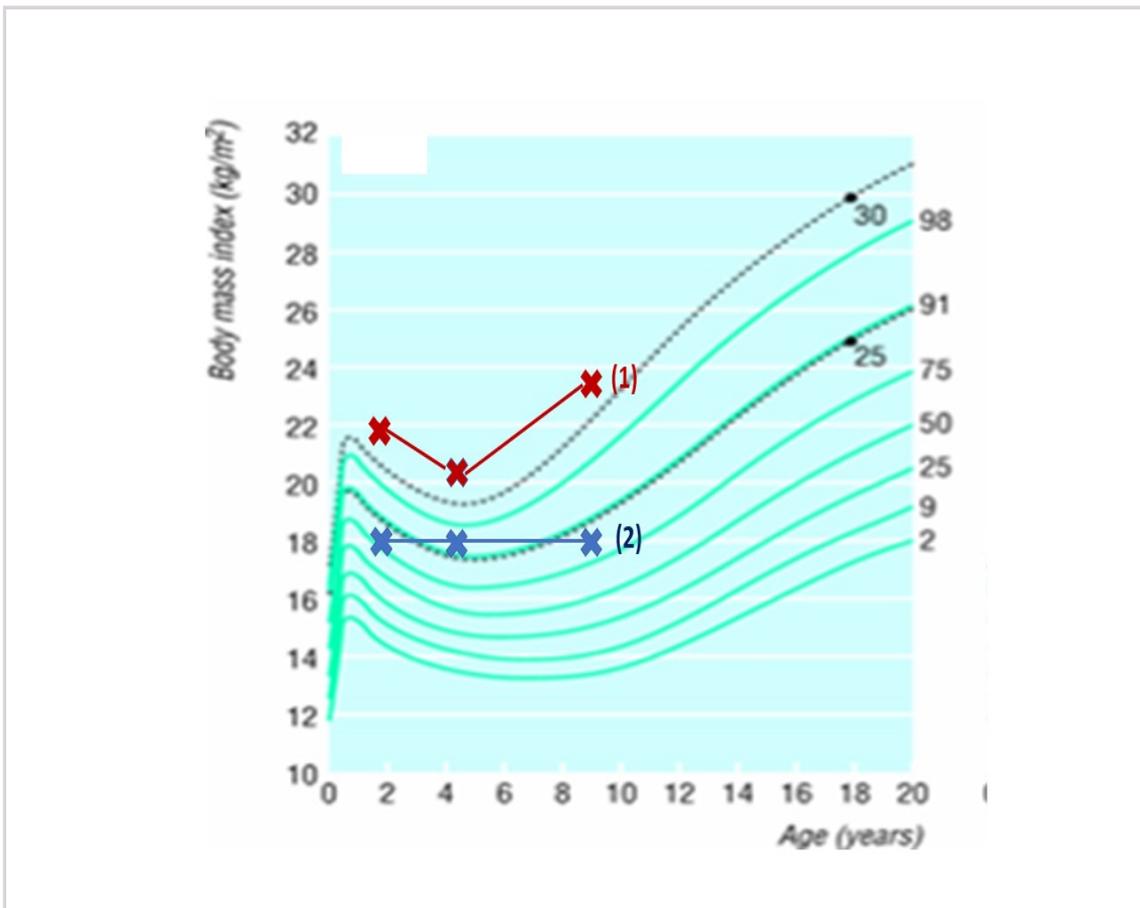
- A Cough, stomach pains and pneumonia
- B Stomach pains, a rash and arthritis
- C CNS affectation, hepatosplenomegaly and nephritis
- D X Mucus-, cardiac and gastrointestinal affectations

CORRECT. Kawasaki-like syndrome with mucocutaneous symptoms and cardiac affectations are the most typical symptoms of this post-infectious inflammatory syndrome, called MIS-C (multi-inflammatory syndrome in children associated with Covid-19). However, unlike Kawasaki, gastrointestinal symptoms are also being seen more frequently. Coughing and possible pneumonia are seen in Covid infections, but not during the post-infectious conditions. CNS affectations can be seen, but hepatosplenomegaly and nephritis in particular are not typical of MIS-C.

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15

You work at a health centre and are assessing the weight development of some third grade pupils from the age of 2. The attached form for the body mass index (BMI) is used when charting normal weight, overweight and obesity. Which statement about the two development lines (lines 1 and 2) are most correct?



- A** Development line 1 indicates that the child has been overweight since the age of 2 and has remained at the same level up until third grade.
- B X** Development line 2 indicates that the child's weight was normal at the age of 2, overweight at the age of 4 and normal in third grade.
The attached graph shows iso-BMI graphs for children, i.e. age and gender-adjusted categories for normal weight (BMI < iso-BMI 25), overweight (iso-BMI 30 < BMI ≥ iso-BMI 25) and obesity (BMI ≥ iso-BMI 30)
- C** Development line 2 indicates that the child's weight status has remained stable from the age of 2 and until third grade.
- D** Development line 1 indicates that the child was obese at the age of 2, was much slimmer at the age of 4, but then developed much more pronounced obesity in third grade.
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16

You are a doctor in a children's clinic and a 3-year-old boy comes in who has been unwilling to stand up for around a week, has limped the few times he has wanted to walk, has complained mainly about his left leg, but has also mentioned his right leg and on a couple of occasions has pointed to his back as also being painful, and has otherwise clung to his mother and has wanted to be carried. He has otherwise been reasonably healthy previously, but recently he has been a bit listless and pale, has suffered from a number of upper respiratory tract infections this autumn and is still a bit snotty. CRP 11 at the primary care emergency room, only subfebrile. Upon clinical examination the boy is difficult, whiny and avoids examination, and he indicates general pain when examined, particularly in the knees and hips. On palpation you find no definite tenderness, limitation of movement or visible swelling or redness over the joints.

Which is the most sensible one of the following actions?

- A** Wait and then arrange for a further check-up and assessment in 1-2 weeks' time
- B** Carry out an ultrasound scan of his hips and knees today and wait with further investigations if normal, paracetamol if required
- C** Try NSAIDs for a week before follow-up and possibly further investigation
- D X** Investigate his hematological status today before making any decisions about his future treatment
Listless, pale, impaired general state of health, has been ill quite a lot recently and LEG PAIN that cannot be explained in a child of this age - in this case leukemia needs to be considered and it is very sensible to check his hematological status which would nevertheless help with an assessment of any inflammation/infections in his joints.
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17

Ursula is a previously healthy 9-year-old girl who stopped wearing nappies at the age of 3. During the last few years she has had a tendency to wet herself during the daytime, but also sometimes at night. During the same period she has had two bouts of cystitis which required antibiotics. She does not suffer from constipation. Her parents are desperate about this situation and have booked an appointment for their GP to examine her.

As her GP you take plenty of time to chat to Ursula. It turns out that she often holds herself and very rarely goes to the toilet when she is at school. A clinical examination reveals nothing abnormal, apart from the fact that her knickers smell of urine. Normal urine dipstick test.

What measures should you implement first?

- A** Reduce the intake of fluids during the evenings, commence Minirin nasal spray (antidiuretic hormone), check-up in one months' time

It is often best to treat daytime incontinence first, because this could also help to improve the secondary nighttime enuresis

- B** Cultivate the urine sample, book an ultrasound scan of the urinary tract, refer for examination by the second line service (the Children's Department)

Urinary tract infections are often secondary to daytime incontinence and it is not initially necessary to investigate them any further

- C** Advice about avoiding drinking during the evenings, commence preventative antibiotics for 4 weeks, check-up in one months' time

It is often best to treat the daytime incontinence first because this could reduce the risk of getting cystitis

- D X** Advice about urinating at least every third hour + when required during the daytime, enough to drink, mainly during the daytime, check-up in one months' time

Better habits involving adequate fluid intake and regular emptying of the bladder are often successful

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18

Karl (8 years old) has always wet the bed at night. He also has a tendency to wet himself during the daytime. His mother is very concerned and takes him to the local doctor. At clinical examination, the doctor finds normal conditions apart from suspected constipation.

What is the most correct way to handle this situation by the doctor?

- A X** Motivate the boy to take a laxative for a period of time and to go to the toilet regularly every day.
B Recommend that he drinks little in the evening, and start alarm mat treatment administered by the public health nurse.
C Reassure the parents by saying that this will disappear with time and that they can await the situation.
D Referral of the boy to ultrasonography of the urinary tract and to the Paediatric Dept. for further investigations and treatment.

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19

10-year old boy, previously healthy. Over the last 8 days has developed a temperature, listlessness and a worsening cough without expectoration. Examination by the doctor shows him to be pale, listless but not seriously debilitated. T_p 38.5, respiratory rate 28/minute. Normal BP and pulse. A few crackling sounds are heard over both lungs basally over the back. No attenuation on percussion. CRP 50 mg/L (ref: <5 mg/L).

Which microbe do you think has most probably caused the infection?

- A** Streptococcus pneumoniae
Pneumococci normally cause a more acute sickness history and higher CRP increase than in this case
B X Mycoplasma pneumoniae
His age, the long sickness history and the clinical findings with relatively low CRP values indicate a mycoplasma infection
C Respiratory syncytial virus
A pure viral infection with a sickness history as described is not so common in this age group

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20

You work as a specializing doctor in the reception unit of the children's clinic which also has a regional child cancer department. You have received a 3-year-old boy who is pale, has quite a lot of petechiae and has had a moderate fluctuating temperature during the last 2 weeks. His blood tests show Hb 7.3 g/dL (10.5 - 13.1 g/dL), thrombocytes $34 \times 10^9/L$ (228 - 435 $\times 10^9/L$), leucocytes $130 \times 10^9/L$ (3.7 - 14.7 $\times 10^9/L$), granulocytes $0.5 \times 10^9/L$ (1.7 - 7.1 $\times 10^9/L$) and CRP 40 mg/L (< 5 mg/L). Suspected blast cells have been seen in the peripheral blood smear.

You suspect acute leukemia. The children's oncologist in charge has said that bone marrow tests under anaesthetic are being planned for the following day.

Which test is it absolutely necessary to carry out before the anaesthetic is administered the next day?

- A CT scan of the thorax
 - *To be done after an X-ray of the thorax, but this is not the first choice. Normally not necessary if the X-ray of the thorax does not show a mediastinal tumour.*
- B MRI of the thorax and abdomen
 - *Normally completely unnecessary in cases of newly discovered acute leukemia*
- C X Chest x-ray
 - *Must always be done before administering an anaesthetic in such a case in order to look for mediastinal tumours. If a large mediastinal tumour is detected, then a CT scan of the thorax is also required before administering an anaesthetic in order to map the respiratory tract, any constrictions of the trachea (upper mediastinal syndrome) and any constrictions of the superior vena cava. Such patients must be monitored and the anaesthetist should always be consulted.*
- D Ultrasound scan of the abdomen
 - *An ultrasound scan of the abdomen should always be performed when acute leucemia is discovered, but it is not an absolute requirement before administering an anaesthetic..*

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21

Ectopic pregnancy should be suspected when

- A The pregnant woman is not showing any symptoms of being pregnant
 - *This is very individual. Some women show very clear symptoms of pregnancy, even in cases of spontaneous abortion, but decreasing symptoms of pregnancy early on during the pregnancy could be symptoms of abortion relating to either an interuterine or ectopic pregnancy.*
- B The pregnant woman has spent a long time becoming pregnant
 - *It is true that tubal factors could be the reason why the woman has not succeeded in becoming pregnant, but this alone does not provide adequate reason for suspecting ectopic pregnancy. In such cases we would at least need to have a positive pregnancy test, something that we do not know in this case.*
- C X The pregnant woman attends due to pain and bleeding during the first trimester
 - *This is the most typical debut of symptoms of ectopic pregnancy*
- D The pregnant woman attends due to pain during the 2nd trimester
 - *This is not typical. An ectopic pregnancy produces symptoms already in the first trimester (typically week 7)*

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22

What is the most common histological type of cervical cancer

- A Neuroendocrine
- B Carcinosarcoma
- C Adenocarcinoma
- D X Squamous epithelial carcinoma
 - *Definitely the most common type*

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23

What are typical symptoms of ovarian cancer?

- A X** Rapidly developing diffuse abdominal symptoms, distended abdomen, pelvic pressure, urinary tract symptoms
- B** Postmenopausal bleeding, dysuria and dyspareunia
Ovarian cancer rarely produces symptoms of bleeding
- C** Acute onset abdominal pain as a differential diagnosis of "acute abdominal pain"
- D** A long history of diffuse abdominal symptoms and obstipation lasting for several months

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24

A 62-year-old woman visits the doctor's surgery in order to have a routine gynecological examination involving cervix cytology. She has no abdominal symptoms. When examining her vulva you see a brownish discolouration of the labium minus on the right side, see the photo below. What is the most correct thing to do?



- A** Prescribe Aldara and make an appointment for a check-up in 4-6 weeks' time

Local treatment of: exterior genital and perianal warts (condylomata acuminata). Less superficial basal cell carcinoma (sBCC). Clinically characteristic, non-hyperkeratotic, non-hypertrophic actinic keratosis (AK) on the face and scalp, hence, no treatment of malignant melanoma

- B** Order an MRI of the abdomen/pelvis within 2 weeks
It is possible that the patient will need to have an MRI of her pelvis, but the most urgent course of action is to obtain an assessment from a specialist who will then order imaging
- C** Perform a punch biopsy and submit it for an urgent histological examination
Important to perform local radical excision of the tumour. A punch biopsy must be avoided.
- D X** Refer to a gynecologist in the clinical pathway of vulvar cancer

The finding is of a suspected malignant melanoma

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25

You are a GP and a 26-year-old woman visits you with vulvar itching. She is taking contraceptive pills. She says that she has thick, lumpy discharge. What is the most correct thing to do in this case?

- A X** You examine her gynecologically, take a vaginal fungal culture test and prescribe antimycotics
If there are no reasons for making another differential diagnosis, it is a good idea to treat empirically, after having carried out a vaginal fungal culture test
- B** You examine her and perform a punch biopsy from the vulva in order to exclude a skin disease
Unless there are visible changes a biopsy is not indicated. If there are visible changes, and based on her history, you should rather send some vaginal secretions for a fungal culture test
- C** You ask the patient to do a self-test for chlamydia and start treatment if the test is positive
This alternative is definitely wrong because a clinical examination is recommended when there are symptoms that could be consistent with STI. You should also do a fungal culture test when such symptoms are presented.
- D** You prescribe local antimycotics and encourages her to contact you again if her symptoms do not improve after a few days
You should first examine her and take a fungal culture test in order to avoid over-treatment
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26

A 42-year-old woman visits you due to vulvar itching. She is taking contraceptive pills and has regular, but heavy bleeding. When you examine her you find whitish areas around the clitoris and labia minora. What is the most correct thing for you to do in your capacity as a GP?

- A X** Ensure that a biopsy of the vulva is taken
A diagnosis of lichen sclerosus should be confirmed by performing a punch biopsy, and skin cancer needs to be excluded. Long-term treatment with a strong local cortisone preparation should be prescribed on a blue prescription (refundable). An annual examination is necessary.
- B** Recommend switching from contraceptive pills to a hormonal coil
See the answers under A, B, C
- C** Recommend local antimycotic treatment
Yes, it could be candida vaginitis, but you first need to exclude lichen sclerosus and preferably confirm candida with either microscopy or a culture.
- D** Prescribe a mild local cortisone preparation
1. A diagnosis of lichen sclerosus which should be treated with a local cortisone preparation is probably correct, but this needs to be confirmed by performing a punch biopsy, which can be done either by a dermatologist or a gynecologist, because this is a chronic condition which requires long-term treatment that should be started by a specialist (blue prescription). 2. It involves a risk of approx. 5% of developing cancer in the vulva. 3. A group of strong cortisone preparations should be chosen.
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27

What is the gold standard for treating stress incontinence in women?

- A** Sacral nerve stimulation
Primarily used in treating urge incontinence
- B X** Tension-free vaginal tape (TVT) surgery
Gold standard
- C** Botox injections into the bladder
Used in treating therapy resistant detrusor overactivity/urge incontinence
- D** Anterior colporrhaphy
Primarily used for bladder prolapse
-

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28

You are a stand-in GP. A 16-year old girl visits you. She is suffering from migraine with aura. She also has ADHD and forgets things easily. She has not yet had intercourse, but has a boyfriend and would like to have effective birth control measures. What would be your first choice for this patient?

- A X** Contraceptive implant
This is not contraindicated for migraines with aura. It is the least invasive and has the fewest (serious) side effects.
 - B** Mini pill
For ineffective birth control for her
 - C** Contraceptive injection
Contraceptive injections have more side effects than contraceptive implants (weight increase, possible bone mass problems) and injections are also required every third month
 - D** "Small" hormonal intrauterine device (Kyleena or Jaydess)
This is not the first choice for a virgin
-

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29

A 40-year-old woman comes to you in general practice. She has given birth to 3 children. She has now developed heavy, but regular menstrual bleeding. She wants an effective contraceptive. She has previously used contraceptive pills, and has been very satisfied with them. She smokes a couple of cigarettes a day. The patient has a body mass index of 24. Blood pressure is 120/70. What type of contraception would you rather recommend for this patient?

- A X** Hormonal intrauterine device (Mirena)
This would be the best form for her. The patient will receive the lowest systemic progestogen dose (and thus minimum side effects) and a higher local progestogen dose in the uterus - the target organ for the progestogen. Menstrual bleeding will most probably decrease in strength even though her periods may be irregular for a time.
 - B** Combined contraceptive pills
She is over 35 and smokes, a fact which means that combined contraceptive pills are not recommended even if continuous use could give less bleeding and it would be an effective contraceptive.
http://www.who.int/reproductivehealth/publications/family_planning/wheel_v4_2010_EN.swf
 - C** Progestogen implant (contraceptive rod)
This would also be a good alternative. However, it could cause more progestogen side effects in the form of irregular bleeding, mood swings and weight increase, etc. than a hormonal spiral.
 - D** Sterilization using Essure (hysteroscopically)
Not such a good alternative as her bleeding will remain severe.
-

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30

A young couple (22-23 years of age) have actively been trying to become pregnant for 1 month. Intercourse frequency is 2-3 times a week. The chance of a successful outcome is not more than 25-30% for this couple.

What is the most probable cause for the success rate not being higher?

- A X** Natural fertility is not higher than this for couples in their early twenties
Correct answer, the incidence of genetic deviation in the egg, sperm and embryo is so high that natural fertility will not be higher than this in couples in their early twenties.
 - B** The man has very reduced sperm quality
 - C** The couple have a problem with premature ejaculation
 - D** At examination both are testing positive for chlamydia. The woman may therefore have damaged Fallopian tubes
-

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31

Why does the menopause occur in women?

- A X** The number of primordial follicles in the ovaries decreases sharply.
Correct answer; the store of eggs is emptied at menopause.
 - B** The production of oestradiol in women drops too much.
Incorrect answer; it is a consequence not a cause of the menopause.
 - C** The hormonal interaction between the hypothalamus and the pituitary ceases.
Incorrect answer; it is a consequence not a cause of the menopause.
 - D** The production of progesterone drops too much.
Incorrect answer; it is a consequence not a cause of the menopause.
-

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32

As part of the investigation being conducted on a 48-year-old woman for increased vaginal bleeding, a hysteroscopy has been carried out and an endometrial biopsy has been performed at the same time. The histological examination of the endometrial biopsy shows simple atypical endometrial hyperplasia. What is the most correct thing to do next?

- A** Start her on estradiol vaginal tablets
 - B** Make arrangements for a check-up with a transvaginal ultrasound scan and a fluid sonogram in 6 months' time
 - C X** Start cyclic progestogen treatment
Endometrial hyperplasia is a premalignant condition that can develop into endometrial cancer that is developed as a result of unilateral oestrogen stimulation. Cyclic progestogen treatment would maintain a thin endometrium. A hysterectomy is not the first choice in this case, but it might be relevant if the patient's endometrium does not return to normal after the progestogen treatment. The patient does not have cancer. A check-up in 6 months' time would not constitute adequate treatment.
 - D** Refer her for a hysterectomy at the University Hospital's Department of Gynecological Oncology
-

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33

You are the GP for a 28-year-old woman who pays you a visit. She gave birth 3 weeks ago and she is exclusively breastfeeding her baby. During the last 3 days she has developed a red, painful breast. When you examine her you find that the breast is red and tender without any signs of fluctuance. Temperature 38.5 °C. She has tried to empty the breast completely without success. What do you do?

- A X** You write a prescription for Dicloxacillin for 10 days and instruct her to continue breastfeeding
It is correct to use Dicloxacillin because mastitis is usually caused by penicillin-resistant microbes. Breastfeeding can continue.
 - B** You write a prescription for Dicloxacillin for 10 days and instruct her to stop breastfeeding temporarily
The woman should continue breastfeeding, even if she is taking antibiotics for mastitis, provided that there is no pus in the milk (can be checked on a cotton wool pad).
 - C** You refer the woman for an ultrasound scan at the breast/surgical endocrinology department.
No clinical suspicion of an abscess. Try antibiotics first.
 - D** You refer the woman to the maternity department for intravenous antibiotic treatment
Behandles i primærhelstjenesten med per oral antibiotika i første omgang
-

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34

What is the incidence of spontaneous twins?

A X 1 in 80 pregnancies

The incidence of spontaneous twins is 1 in 80 pregnancies or 1.3%. 1 in 80² is the incidence for spontaneous twins.

B 1 in 80² pregnancies

C 2 in 80 pregnancies

D 2 in 80² pregnancies

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35

A woman in gestational week 28 is due to give birth for the second time. She has previously been generally fit and healthy and her pregnancy has been normal so far. Pre-pregnant BMI 26. An HbA1c test taken during her first pregnancy check-up was 37 mmol/l (normal). A glucose tolerance test was taken recently and she is now attending for the results, which show the following fasting values: 5.5 (ref. gestational diabetes: 5.3 - 6.9 mmol/l) and 2-hour value 7.5 (ref. gestational diabetes: 9.0 - 11.0 mmol/l). What is most important now to tell this pregnant woman?

A You tell her that you will take a new HbA1c blood test. It is a good idea to have more information about her blood glucose levels over the course of the last few weeks. You also make arrangements for another glucose tolerance test to be carried out during the following week.

B You tell her that you will refer her to the obstetric outpatients clinic, asking if she is in the process of developing gestational diabetes.

C You reassure her. You tell her that since the fasting value is only borderline increased, it being fairly unlikely that she has developed gestational diabetes. You offer to follow-up her pregnancy more closely.

D X You provide her with dietary advice and inform her that she has gestational diabetes. You teach her how to monitor her blood glucose levels.

Correct in accordance with the Norwegian Directorate of Health's national guidelines.

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36

You are a stand-in GP on a remote island and a 35-year-old woman who is pregnant in week 22 asks for your advice about her genital herpes simplex diagnosis. She received this diagnosis 3 weeks ago from the GP for whom you are standing in, and she has recovered from this now. However, she is worried that her partner has been unfaithful and about complications in her pregnancy. What would be the most correct things to say to her in this situation?

A That she would most probably have to have a caesarian section due to the risk of infecting the foetus

A caesarian section is indicated in primary outbreaks of herpes infections around the time of birth

B That she has most probably caught the infection from her partner. If she has frequent outbreaks, we would need to consider preventative antiviral treatment during her pregnancy.

This is not necessarily correct. The virus can lie latent for a long time and can strike when the immune system is impaired, e.g. in pregnancy.

C That she could get rid of the virus with antiviral treatment

Antiviral treatment can reduce viral outbreaks, but the virus will remain in the affected nerve endings throughout one's life

D X That herpes simplex is a sexually transmitted disease, although the time of catching the infection is uncertain. If she has frequent outbreaks we would need to consider preventative antiviral treatment during her pregnancy.

This is correct. The incubation time may vary, but the first outbreak can take a long time to develop after one has actually been infected with the virus. The virus can lie latent for a long time and can strike when the immune system is impaired, e.g. in pregnancy.

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37

You are a GP and receive a visit from a 29-year-old pregnant woman who is due to give birth for the first time. She would like foetal diagnostic testing to be carried out using non-invasive prenatal testing (NIPT). She asks you for advice. You say that she must make her own decision about this, but that you can provide her with a bit of background information. What is the most correct advice to give her?

- A X** Her age-related risk for trisomy 21 is approx. 1:1000. If her routine ultrasound scan in week 12 has normal findings, the risk for trisomy would be halved.
At the age of 29 the age-related risk for trisomy 21 is approx. 1:1000. Normal findings in her ultrasound scan in week 12 would halve the risk because ultrasound scans can detect approx. 50% of all fetuses with trisomy 21 due to nuchal translucency (NT)
- B** Her age-related risk for trisomy 21 is approx. 1:100. Normal findings during her routine ultrasound scan in week 12 would not change this risk.
- C** Her age-related risk for trisomy 21 is approx. 1:1000. Normal findings during her routine ultrasound scan in week 12 would not change this risk.
- D** Her age-related risk for trisomy 21 is approx. 1:100. If her routine ultrasound scan in week 12 has normal findings, this risk for trisomy would be halved.
Her age-related risk for trisomy 21 at the age of 29 is approx. 1:1000. At the age of 38 this figure would be approx. 1:100.
-

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38

Testing for asymptomatic bacteriuria is

- A X** recommended as part of the general screening programme during the first trimester
Testing for asymptomatic bacteriuria is part of the recommended pregnancy care screening programme. However, this should only be treated if significant growth is found. Any growth of GBS in the urine shall be entered on the patient's health card and antibiotic treatment should be recommended during the birth.
- B** only recommended for women with recurrent urinary tract infections
- C** not recommended because it is very rare in Norway
- D** only recommended for women with gestational diabetes
-

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39

Blood samples for ABO-/RhD-typing are recommended for all pregnant women. What should preferably be done if a woman is RhD negative and is carrying an RhD positive foetus?

- A** In such cases this is written in the patient's antenatal health card so that she can receive anti-D prophylactics if a blood sample taken from the umbilical cord after birth confirms an RhD positive newborn
RhD negative women are also offered anti-D prophylactics after birth if a blood sample taken from the umbilical cord confirms that the foetus is RhD positive, but week 28 is more important
- B** In such cases it is unnecessary to undertake any measures
- C X** In such cases routine anti-D prophylactics should be offered in week 28
RhD negative women are offered routine anti-D prophylactics during pregnancy in order to prevent the development of antibodies which could cause anaemia in the foetus.
- D** In such cases this is written in the patient's antenatal health card so that one can consider giving her anti-D prophylactics if she suffers any traumas to the stomach
In addition to offering routine anti-D prophylactics one could consider giving prophylactics in the event of any significant traumas to the stomach during the pregnancy.
-

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40

Women who have previously had preeclampsia or given birth to a growth restricted fetus should receive extra follow-up during their next pregnancy. Which ultrasound examination is important for this group?

- A X** Doppler ultrasound scan of the uterine artery during gestational week 24
A Doppler ultrasound scan of the uterine artery during gestational week 24 can tell us about the placenta function and is the correct answer in this case.
- B** Ultrasound scan with an assessment of the placental location during gestational week 32
Placental location during week 32 is only performed in cases of placenta previa
- C** Ultrasound scan with measuring growth every other week from week 18 to 36.
Measuring growth should be carried out every other week, but only for foetuses with diagnosed growth restriction.
- D** Ultrasound scan during the first trimester which includes measuring nuchal translucency
Ultrasound scan during the first trimester which includes measuring nuchal translucency in order to undertake a risk assessment in respect foetal trisomy

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41

You are a GP. The patient is a 34 years old, pregnant for the first time and in gestational week 12 after her last menstrual period. She has previously been generally fit and healthy and does not take any regular medication. Her pre-pregnancy BMI is 35. Good general state of health, no headaches. You take her blood pressure 3 times, with the following results: 150/95, 158/97, and 165/95, respectively. Urine dipstick test: protein 1+ (not morning urine). What is the correct thing to do in this case?

- A X** You put her on 24-hour blood pressure monitoring. You ask her to return the following day for the results to be read. You then consider referral to the obstetric outpatients clinic.
The correct thing in this case would be to refer her to the specialist health service if it turns out that the patient actually has high blood pressure. 24-hour blood pressure monitoring would give the answer to this. It is important to use the correct size sleeve, especially when obesity problems are being addressed. We do not diagnose pre-eclampsia before gestational week 20. The specialist health service would like to follow her up with an early ultrasound scan and start her on Albyl E. 25% of patients with essential hypertension will develop pre-eclampsia during the course of their pregnancies. It is therefore important to commence preventative treatment in the form of Albyl E.
- B** You reassure her. You say that it is normal to have elevated blood pressure during the early stages of pregnancy. Based on physiological changes during pregnancy a woman's blood pressure will gradually drop once she enters the second trimester.
- C** You recommend that she should have her blood pressure checked again in one week's time
- D** You tell the patient that she has developed preeclampsia. You refer her to the obstetric outpatients clinic and ask for an assessment during the course of the day or the following day.

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42

Ida (29 years old) is pregnant for the first time. She has checked out various websites for pregnant women and is feeling very confused by all the information she finds. She has a BMI of 35 and wonders if it is correct that she has an increased risk for many of the complications of pregnancy. Which of the complications below is Ida at increased risk of getting based on her BMI?

- A** Anaemia
Incorrect
- B** Breech delivery
No known risk as such.
- C X** Early spontaneous miscarriage
Correct answer. There is a significantly increased risk of spontaneous miscarriage in obese women.
- D** Precipitate labour
Not correct, more likely to be a long labour.

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43

Which treatment is the most effective in preventing postpartum bleeding?

- A Early clamping of the umbilical cord when the child is born
Early clamping of the umbilical cord does not adequately prevent postpartum bleeding and is no longer a part of treatment during the third stage.
- B Oxytocin receptor antagonist (Tractocile®) when the child is born
Atosiban inhibits contractions and thus increases the risk of uterine atony and postpartum bleeding.
- C X** Oxytocin receptor agonist (Syntocinon®) when the child is born
This is an important part of the treatment during the third stage and is administered routinely to all women giving birth in order to prevent postpartum bleeding.
- D Planned cesarean section
Cesarean section increases the risk of postpartum bleeding.

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44

Which 4 examination methods are most useful when diagnosing diseases in the thyroid and parathyroid

- A Clinical examination, blood tests, MRI and fine-needle aspiration
The standard tests that are used are clinical examination, blood tests, ultrasound scans and fine needle aspiration. Together they usually provide enough information for drawing up a good plan for treatment and follow-up. An ultrasound scan carried out by a trained operator is very useful. Sometimes these can be supplemented with a CT, MRI or PET scan.
- B Clinical examination, blood tests, CT scan and core needle biopsy
The standard tests that are used are clinical examination, blood tests, ultrasound scans and fine needle aspiration. Together they usually provide enough information for drawing up a good plan for treatment and follow-up. An ultrasound scan carried out by a trained operator is very useful. Sometimes these can be supplemented with a CT, MRI or PET scan.
- C Clinical examination, blood tests, PET scan and core needle biopsy
The standard tests that are used are clinical examination, blood tests, ultrasound scans and fine needle aspiration. Together they usually provide enough information for drawing up a good plan for treatment and follow-up. An ultrasound scan carried out by a trained operator is very useful. Sometimes these can be supplemented with a CT, MRI or PET scan.

- D X** Clinical examination, blood tests, ultrasound and fine-needle aspiration

Correct answer. These are the standard tests that are used. Together they usually provide enough information for drawing up a good plan for treatment and follow-up. An ultrasound scan carried out by a trained operator is very useful. Sometimes these can be supplemented with a CT, MRI or PET scan.

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45

You are working as a GP and now have a 75-year-old man in your office. His wife discovered a lump on his neck two weeks ago. The lump has grown in size since then. The patient has developed a hoarse voice during the past week. He has recently been short of breath, particularly when he lies flat in bed. Upon examination you palpate a firm, fixated swelling corresponding to the right thyroid gland. Otherwise no findings. What do you do now?

- A Refer him to the chest/surgical endocrine clinic for an examination of nodules in the thyroid gland
In this case cancer is suspected and a patient pathway for cancer is therefore the correct type of referral
- B Refer him to the ear, nose and throat (ENT) outpatient clinic
The ear, nose and throat clinic does not treat thyroid cancer
- C X** Referral to the chest/surgical endocrine clinic for a patient pathway for thyroid cancer
In this case there are several alarming symptoms (rapidly growing tumour, hoarseness, a firm/fixated tumour) which call for a patient pathway for cancer.
- D Order thyroid hormone tests and arrange for a check-up in one weeks' time
Wrong!

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46

Triple diagnostics is a term that is used for diagnosing tumours in the breast. Triple diagnostics consists of:

- A X** Clinical examination + mammogram/ultrasound + cytology/biopsy.
This is the right combination.
 - B** Clinical examination + PET scan + biopsy
 - C** Case history + MRI of the breast + biopsy
 - D** Case history + mammogram/ultrasound + diagnostic excision.
-

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47

A 28-year-old woman who is breastfeeding has developed a tender, red swelling in her breast during the last three days. You palpate a 3x3 cm swelling laterally in the breast. Leucocytes: 17 (normal 4-10) and CRP: 150 (normal <5). What is the likely diagnosis?

- A X** Abscess.
Correct answer.
 - B** Inflammatory breast cancer.
Based on this clinical picture for a woman who is breastfeeding, inflammatory cancer is not the most likely diagnosis. Underlying malignancy must be excluded if abscess treatment fails to produce results.
 - C** Galactocele.
This does not give elevated infection parameters.
 - D** Fibroadenoma.
Fibroadenomas grow slowly and do not give a clinical picture of infection.
-

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48

A 43-year-old man is referred from the Department of Endocrinology to you in the Endocrine surgery outpatient clinic. At the Department of Endocrinology, he has been diagnosed with primary hyperparathyroidism. Parathyroid scintigraphy confirms a parathyroid adenoma caudal in the right thyroid lobe. You undertake an ultrasound scan which confirms the location of the adenoma. Which surgical technique is most suitable in this case?

- A X** Minimally invasive surgery under general anaesthesia.
Correct.
 - B** Right-sided hemithyroidectomy.
Wrong.
 - C** Full neck exploration.
This is not necessary when the location of the adenoma is known.
 - D** Minimally invasive surgery under local anaesthesia
This surgery is not performed under local anaesthesia.
-

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49

A 50-year-old man is admitted with stomach pain and a CT scan is taken of his abdomen which by chance shows a large 5 cm adrenal tumour. It is heterogenous and hypervascular with a high density. It is decided that this should be surgically removed.

Which tests should you receive an answer to before you give the go-ahead for surgery?

A X Metanephrines

Correct. This could easily be a pheochromocytoma and one should have the results of a metanephrine test before operating. Patients with pheochromocytomas should be treated in advance with alphablockers before the operations in order to prevent a hypertensive crisis.

B ACTH and cortisol

Not the most correct answer. It may be a good idea to check ACTH and cortisol, especially when there are symptoms of hyperkortisolism, but due to the radiological appearance of this tumour it should nevertheless be surgically removed because hypervascular and heterogenous tumours may be malign. It is not entirely necessary to have the results of the ACTH and cortisol tests first, but this is recommended. If a cortisol-producing tumour is removed, one could expect there to be a temporary need for post-operative cortisone supplements.

C Aldosterone and renin.

The results of aldosterone or renin tests are not required before one operates. Measuring the renin and aldosterone levels would only be indicated if hypertension was also present at the same time.

D There is no need for any tests. The tumour must be removed anyway.

Wrong. The appearance means that there is reason to suspect a pheochromocytoma and one should carry out a metanephrine test. If a pheochromocytoma is present it is important that the patient is pretreated with alphablockers before the operation.

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50

A 40-year-old woman visits you, her GP, because she is suffering from fatigue and has low energy levels. Tests are taken which show free T4 levels of 15 pmol/l (ref. 12.2-19.6) and a TSH level of 4.7 mIU/L (ref. 0.5-4). Anti-TPO levels are normal. What would you do?

A Start on a low dose of levothyroxin (Levaxin), e.g. 25 mcg x1

Wrong. These differences in her metabolic tests are just minor ones and it would be correct to simply check the results. It is doubtful that there is any need to administer treatment until her TSH levels are >8-10. Positive anti-TPO levels indicating autoimmune genesis may strengthen the treatment indications.

B Requisition an ultrasound scan of the thyroid as part of any further investigations

Wrong. An ultrasound scan is not relevant when diagnosing hypothyreosis.

C Start on a full dose of levothyroxin (Levaxin), 1.6 mcg per kilo of body weight.

Wrong. It is not right to start taking Levaxin in this case.

D X Repeat the tests after 3-4 weeks

Correct. One possible explanation could be that she habitually lies above the reference range. Another explanation could be analytical and biological variations (in this case there is a biological variation of 20%) and there is a high likelihood that the test will be normal next time.

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51

A 50-year-old man is diagnosed with severe hypertension with a blood pressure of 180/100. He is not taking any regular medication. His aldosterone level is 240 pmol/l his renin level is 4 mIU/L, giving an aldosterone-renin ratio of 60 (normal <35). His tests are repeated with more or less similar findings. What would you have done next?

- A Adrenal venous sampling
Wrong. This might be relevant with a view to looking for lateralisation if surgery is indicated, but you should first do a saline suppression test in order to verify your suspicion of primary hyperaldosteronism
- B No need for any further investigation, but direct start-up with spironolactone.
Wrong. It may be relevant for some patients (older, pronounced comorbidity) to refrain from carrying out any further investigations, but he is relatively "young", so in this case it would be correct to perform a saline suppression test. If this test confirms hyperaldosteronism, an adrenal venous sampling is performed to evaluate if aldosterone is secreted from one or from both adrenal glands. Spironolactone is the treatment of bilateral disease.
- C CT scan of the adrenals
Wrong. CT scan findings would only give the correct side location in approx. 60% of cases
- D X Saline infusion test
Correct. Infusion of 2 litres of saline solution will normally suppress aldosterone via the renin-angiotensin-aldosterone system. On the other hand, in cases of primary hyperaldosteronism which is suspected here, one would not achieve aldosterone suppression with an intravenous saline infusion.

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52

A patient is diagnosed with hypercortisolism with typical clinical findings and confirmed biochemical hypercortisolism. No detectable ACTH <0.1 pmol/l (ref. <10.2 pmol/L). What would be the next step to take when investigating this patient?

- A Sinus petrosus sampling
Wrong. This is most relevant when one is unsure about where the high ACTH level originates (pituitary or ectopic production).
- B CT scan of the whole body
Wrong. Ectopic Cushing's syndrome is ACTH-dependent and often causes very high ACTH levels (well above the normal range)
- C X CT scan of the adrenals
Correct. Due to his low ACTH levels, this is ACTH independent hypercortisolism. A CT scan of the adrenals to look for adrenal adenoma or carcinoma is the next step in the investigation.
- D MRI of the pituitary gland
Wrong. In pituitary Cushing's disease the ACTH levels are high or high in the normal range.

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53

A 71-year-old woman has had type 2 diabetes for 8 years. No cardiovascular disease, BMI 24.1 kg/m². She is taking Metformin 1 g x 2 and NPH insulin (Insulatard/Humulin) 18 U x 2. She attends the GP's surgery for a diabetes check-up.

Her HbA1c level is 63 mmol/mol (ref. 28-40). She monitors her blood glucose levels 3 times each day. During the past week she has had fasting glucose levels of 8-9 mmol/l, glucose before supper 9-10 mmol/l and before bedtime 12-15 mmol/l. You think that her HbA1c and blood glucose levels are too high and therefore want to adjust her insulin treatment. What do you do?

- A** You add fast-acting insulin and instruct her to inject 4 units when her blood glucose level is >10 mmol/l
Incorrect. In type 2 diabetes there are not usually any indications for taking fast-acting insulin. In this case her fasting glucose levels are also too high, and you need to start by increasing her doses of NPH insulin. Fast-acting insulin is only required if the patient's blood glucose levels are in the desired range before meals, but increase too much after meals despite adjusting one's diet by reducing one's intake of fast-acting carbohydrates. If fast-acting insulin is commenced in such a situation, the insulin should be administered before meals and not just when the blood glucose levels are measured as being high.
- B** You switch from NPH-insulin to a long-acting insulin analogue - dosage 36 U x 1 (morning)
Incorrect. In this case the problem is that her blood glucose levels are generally high and thus her doses of NPH-insulin should be increased first. In type 2 diabetes a refund is only given for long-acting insulin analogs if there are problems with hypoglycaemia despite optimal treatment with NPH-insulin x 2. Because patients with type 2 diabetes produce their own insulin, hypoglycaemic episodes are less common and it is usually not a problem that NPH-insulin is absorbed less evenly than long-acting analogs.
- C** You add fast-acting insulin and instruct her to inject 4 U before all meals.
Incorrect. In type 2 diabetes there are not usually any indications for taking fast-acting insulin. In this case her fasting glucose levels are also too high, and you need to start by increasing her doses of NPH insulin. Fast-acting insulin is only required if the patient's blood glucose levels are in the desired range before meals, but increase too much after meals despite adjusting one's diet by reducing one's intake of fast-acting carbohydrates. If fast-acting insulin is commenced in such a situation, the insulin should be administered before meals.
- D X** You increase her doses of NPH-insulin to 20 U x 2 and instruct her to increase them even more if her blood glucose levels before meals remain at >8 mmol/l.
Correct. Her blood glucose levels are higher than desired both before breakfast and before supper, and it is therefore necessary to increase both her morning and evening doses of insulin. Her dose of NPH-insulin should be adjusted in accordance with her blood glucose readings before meals during the past few days, with the evening dose being increased if her levels before breakfast are high and the morning dose being increased if her levels before supper are high.

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54

What is the most common cause of hypocalcaemia?

- A** Drug-induced
- B** Hypoparathyroidism
- C X** Vitamin D deficiency
Vitamin D deficiency is very common all over the world. The most important function of vitamin D is to increase the absorption of calcium in the intestines. With vitamin D deficiency the PTH secretion increases to ensure increased production of active vitamin D in the kidneys. Bone reabsorption also increases and calcium is released in order to maintain concentrations in the blood. However, if vitamin D continues to be deficient, the compensatory mechanisms are unable to maintain calcium levels.
- D** Hypomagnesaemia

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55

A 20-year-old previously healthy man is admitted as an emergency case. He lives alone and was found by his work colleagues after he failed to turn up for work. The colleague who spoke to the ambulance personnel said that they had been worried about his weight loss and had noticed that he was always thirsty after starting his apprenticeship a few weeks ago. He was somnolent upon admittance.

His blood ketone test level is 6 mmol/l (normal <0.6 mmol/l, ketoacidosis >3.0 mmol/l). His arterial blood gas test showed a glucose level of 37 mmol/l (ref. 4-6.3), bicarbonate 2.7 mmol/l (21-27), pH 7.02 (7.38-7.46) and Na 124 mmol/l (137-145). You conclude that he has severe ketoacidosis and commence treatment in accordance with the procedures.

Which statement about treatment and follow-up of diabetic ketoacidosis is correct?

- A One should stop the insulin infusions if the potassium levels are too low
Wrong. As long as the potassium level is < 3.6 mmol/L only 1 unit of insulin is given per hour, in parallel with potassium infusions, 10-20 mmol/time. Do not discontinue because insulin inhibits the ketogenesis.
- B One should ensure that sodium levels are not corrected too quickly
Wrong. One should look at glucose-corrected sodium (measured s-sodium + [(measured glucose - 5.6) / 5.6] x 2.4) and effective osmolality (2 x s-sodium + s-glucose).
- C X One should ensure that effective osmolality is not corrected too quickly
Correct. It is the change in effective osmolality that is of importance for the risk of cerebral oedema. Effective osmolality should not be reduced by more than 10 mosmol during the the first 15 hours after the commencement of treatment. After that, the effective osmolality can be reduced by 3 mosmol/hour.
- D The aim should be to correct glucose levels to the normal range within 12 hours
Wrong. When the blood glucose level drops to 14 mmol/L, liquid infusions (NaCl 9 mg/ml or Ringer's lactate solution) are switched to glucose 50 mg/ml approx. 100 ml/hour so that the b-glucose is maintained at around 10-12 mmol/L until the metabolic acidosis has been corrected (bicarbonate > 20 mmol/L, pH > 7.3 og anion gap < 12). This is to maintain the supply of insulin which stops ketogenesis.

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56

A 82-year-old woman comes for an osteoporosis check-up. She has been treated with Alendronate and Calcigran forte 1000mg/800IE for almost 10 years. Her bone density test gives a T-score of -3.0 i the lumbar column, -2.7 in the femoral neck and -2.3 in total hip. She has not had any fractures during the last five years.

Which treatment would you now give this patient in addition to Calcigran forte for her osteoporosis?

- A Teriparatide (PTH-analog)
See comment A
- B Continue taking Alendronate
Taking a break is recommended after ten years of taking biphosphonates
- C X Denosumab (Prolia)
Since the patient has been taking Alendronate for approx. 10 years there are grounds for discontinuing it. She has not had any fractures recently and there are thus no indications for osteoanabolic treatment. Denosumab is a good alternative which can be administered by her GP and which can successfully protect against fractures.
- D Intravenous zoledronic acid
She has already been on biphosphonate treatment for ten years

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57

A 57-year-old woman has had an MRI of her head as part of her tinnitus investigation. A large pituitary adenoma is found, which is reaching up to and lifting the optic chiasm and also growing into the left sinus cavernosus. Supplementary blood tests show a prolactin level of 19 400 mIU/l (ref. 63 - 533). A visual field test shows mild bilateral visual field defects. Which treatment should primarily be chosen?

A X Treatment with a dopamine agonist

Correct answer. With a pituitary adenoma and very high prolactin levels, she has a macroprolactinoma. Dopamine inhibits the prolactin-producing cells and medication with a dopamine effect (a dopamine agonist) is very effective in inhibiting prolactin production and inducing cell death in prolactinomas, leading to shrinkage of the adenoma and normalisation of the hormone levels. This usually occurs quite rapid. In practically all prolactinoma cases, surgery is therefore unnecessary, even if a visual field defect is present.

B Pituitary surgery within 1-2 weeks

Wrong. Prolactinomas are treated with a dopamine agonist. In prolactinomas, pituitary surgery is mainly relevant only for patients who cannot take any of the available dopamine agonists due to side effects or because for dopamine agonist resistance (very rare).

C Pituitary surgery before post-operative radiation treatment

Wrong. Pituitary surgery for prolactinomas is mainly relevant for patients who cannot use any of the available dopamine agonists due to side effects or dopamine agonist resistance (very rare). Radiation treatment of prolactinomas is relevant in even fewer cases; only for patients who have undergone surgery (in accordance with the above mentioned criteria) and who have an inoperable residual tumour with problematic tumour growth.

D Treatment with a dopamine antagonist

Wrong. Dopamine inhibits prolactin-producing cells and drugs which produce a dopamine effect (dopamine agonists) are very effective in inhibiting prolactin production and killing cells in prolactinomas.

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58

Which statement is correct in respect of late-onset diabetic complications?

A If a diabetes patient manages to switch from poor blood glucose control (e.g. HbA1c 90 mmol/mol) to good blood glucose control (e.g. 50 mmol/mol) within a very short time, this will reduce the risk of late-onset diabetic complications.

In the long term, good glucose regulation will result in fewer late-onset complications, but to quick improvement of very poor average blood glucose to achieve good average levels, as in this case, there is a high risk of developing retinopathy and painful neuropathy.

B Strict blood glucose control is compulsory for everyone with diabetes, regardless of whether or not this results in more hypoglycaemic episodes

Studies have shown that there is excess mortality in older patients with comorbidity who have frequent or severe hypoglycaemic episodes. The Directorate of Health's guidelines contain advice about the aims for specific patient groups.

Severe hypoglycaemia is also an important cause of death in young people with insulin-dependent diabetes

C X Some people are more susceptible to developing late-onset diabetic complications and will develop complications even when blood glucose levels are reasonably well controlled, but for most diabetics it is correct that the lower the average blood glucose and HbA1c levels, the lower the risk of late-onset complications.

Correct answer

D Patients with diabetes whose blood glucose levels are reasonably well controlled will not develop any late-onset complications

Wrong. The average glucose levels at which patients will develop late-onset complications is an individual matter. Some patients develop complications even when they have mild to moderately poor glucose control. For most diabetics it is correct to say that the lower the average glucose and HbA1c levels, the lower their risk for developing late-onset complications.

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59

A 30-year-old woman has been on holiday in Thailand. 5 days after returning home, she gets a high temperature (40 °C), severe headache, especially retro-orbitally, and has intense muscle and joint pain. During the past day she has developed a maculopapular rash on her torso. She says she got several mosquito bites at midday while she was on a shopping spree in town. She has drunk sterile water and not eaten any salad or unwashed vegetables. She has had the flu vaccine. What is the most likely diagnosis?

A Typhoid fever

B X Dengue fever

Retro-orbital pain and intense muscle and joint pain is typical of Dengue fever. One is infected by this disease after being bitten by the aedes mosquito which usually bites during the daytime in urban areas. Her rash is atypical for malaria. Also, malaria is transmitted by the anopheles mosquito which bites during the evenings and at nighttime in bushy areas. Rickettsiosis is transmitted primarily after being bitten by ticks or mites. Typhoid fever is transmitted after ingesting contaminated food and drinks.

C Malaria

D Rickettsiosis

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60

Many sepsis patients suffer from impaired consciousness. This is also an important criterion in the definition of sepsis (SOFA score).

What is the most common physiological explanation behind this symptom in sepsis patients?

A Impaired temperature centre in the hypothalamus when a high temperature

B Side effect of noradrenalin

C X Reduced blood flow in the brain

The most important pathophysiological change in cases of sepsis is vasodilation followed by a drop in blood pressure and reduced blood flow in the brain

D Inflammation in the brain with encephalitis

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61

A 65-year-old man is admitted with the following: BP 80/50, pulse 125, respiratory rate 35. You discover that he has a swollen, red knee joint and you think that it could be the focus of the infection. Which type of antibiotic treatment would you initiate for this patient?

A Penicillin i.v. + gentamicin i.v.

B X Cloxacillin i.v. + gentamicin i.v.

According to the national guidelines, betalactam antibiotics (penicillin, cloxacillin and ampicillin) plus gentamicin are the recommended treatment for sepsis. If bacterial arthritis are suspected, Staphylococcus aureus (of which 70% are penicillin-resistant) are so common that we switch penicillin with cloxacillin which is a penicillinase-stable betalactam. Ampicillin is a aminopenicillin that is used primarily when infections involving gram-negative rods are suspected.

C Ampicillin i.v. + gentamicin i.v.

D Penicillin i.v. + ciprofloxacin i.v.

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62

Basic infection control precautions are a set of key concepts in respect of infection control. Basic infection control precautions are defined as a set of precautions to prevent the spread of infections in health institutions.

Which statement is the most correct about basic infection control precautions?

A X Basic infection control precautions should be used for all patients at all times

That is why they are called basic.

B Basic infection control precautions should primarily be used when there is contact with bodily fluids

C Basic infection control precautions are primarily used for patients with MRSA or other resistant microbes

D Basic infection control precautions should be used by nurses in their daily activities with patients

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63

A 39-year-old healthy woman with a BMI of 32 kg/m² is in week 12 of her first pregnancy, which has been uncomplicated. A blood test showed an HbA1c level of 56 mmol/mol. How should the woman be followed up?

Reference range for HbA1c: 28 - 40 mmol/mol

- A X** She should be referred immediately to the relevant specialist
Yes, this is in accordance with the recommendations
<https://www.helsedirektoratet.no/retningslinjer/svangerskapsdiabetes/diagnostikk-og-tiltak-for-a-finne-uoppdaget-diabetes-og-svangerskapsdiabetes#det-foreslas-at-hba1c-tas-ved-forste-svangerskapskonsultasjon-for-a-oppdage-udiagnostisert-diabeteshyperglykemi-praktisk>
- B** She should be checked more frequently by her GP (approx. every 2nd week), including monitoring her HbA1c levels
No, this is not recommended
- C** A glucose tolerance test should be carried out
This is not recommended
- D** She should attend the usual pregnancy check-ups
This is not recommended
-

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64

A 53-year-old overweight woman with south-east-Asian ethnic origins and a suspected high clinical risk of developing diabetes mellitus (DM) has a blood test showing a HbA1c level of 55 mmol/mol. What is the recommended follow-up for this patient?

Reference range for HbA1c: 28 - 40 mmol/mol.

- A** A glucose tolerance test should be carried out as soon as possible in order to clarify if the patient has DM.
No, that is not recommended
- B** Annual HbA1c tests should be carried out due to her elevated risk of developing DM.
No, that is not recommended
- C** Fasting blood glucose levels should be measured as soon as possible in order to clarify if the patient has DM.
No, that is not recommended
- D X** Another HbA1c test should be carried out as soon as possible in order to clarify if this patient has DM.
Yes, this is in line with the recommendations, ref. <https://www.helsedirektoratet.no/retningslinjer/diabetes/diagnostikk-av-diabetes-risikovurdering-og-oppfolging-av-personer-med-hoy-risiko-for-a-utvikle-diabetes#risikovurdering-og-pavisning-av-diabetes-praktisk>
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65

You are the on-call doctor in a department of medicine. You receive a call from a nurse on the ward about a patient who has been administered intravenous ampicillin and gentamicin for suspected pyelonephritis. The patient is improving after commencing treatment, but the nurse informs you that they have received the results of the bacteriological culture taken of his urine sample:

Growth of 100000 (10^5) CFU/ml *Escherichia coli*

Sensitive to gentamicin, piperacillin-tazobactam and meropenem

Resistant to ampicillin, cefotaxime and ceftazidime

How should you interpret these findings, and what consequences do they have for treating the patient?

- A Significant bacterial growth with a resistance profile consistent with MRSA bacteria. You want to continue gentamicin and initiate infection control measures.
- B Significant bacterial growth with a resistance profile consistent with ESBL-producing bacteria. You want to change the treatment to meropenem and initiate infection control measures.
- C Non-significant bacterial growth with a resistance profile consistent with ESBL-producing bacteria. You want to continue ampicillin and gentamicin and do not initiate any infection control measures.
- D X** Significant bacterial growth with a resistance profile consistent with ESBL-producing bacteria. You wish to continue gentamicin and start infection control measures.

When there is resistance to cefotaxime and ceftazidime (third generation cephalosporins) in cases of Escherichia coli one should suspect that the bacteria are ESBL-producing bacteria. Infection control measures should be initiated while waiting for final confirmation. Ampicillin is not indicated in the treatment of this infection due to resistant microbes. Gentamicin is good for the treatment of urinary tract infections and ESBL-producing microbes could be sensitive to gentamicin. Meropenem should be avoided when there are other alternatives.

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66

You are working in a GP's office and receive a 78-year-old woman displaying symptoms of a lower urinary tract infection. The patient takes her own mid-stream urine test which you send to the laboratory for a bacteriological culture. You commence treatment with pivmecillinam (Selexid). The next day you receive the following results from the urine test:

Growth of 1000 (10^3) CFU/ml *Enterobacter cloacae* and 100 (10^2) *Enterococcus faecium*

You call the patient who tells you that she no longer has any pain when urinating, but that she may possibly still have slightly more frequent urination

How should you continue to treat this patient?

- A X** Continue with the existing treatment since the patient is showing good clinical effects
*The growth of two microbes indicates contamination of the sample and the growth should be at least 10000 (10^4) CFU/ml in order to be assessed as being significant. Intestinal flora, skin flora and genital flora are common in mid-stream urine tests, mainly due to suboptimal sampling. One should be careful about allowing such test results to govern one's choice of antibiotics. Treatment should not be stopped since a clinical diagnosis has been made and a contaminated urine sample does not provide grounds for retracting this diagnosis. If the patient responds clinically to the treatment it is likely that the correct antibiotics have been chosen and it is not usually necessary to do another urine test during the ongoing treatment. If the patient does not get better during treatment, it would be most sensible to request another urine test after having instructed the patient about carrying out proper urine sampling.
There are no breakpoints for Enterococcus faecium and neither nitrofurantoin nor trimetoprim, but both drugs could work. There are no breakpoints for Enterobacter cloacae and nitrofurantoin, but the drug might possibly work. The point of this question is not to know this, but to be aware of the fact that the test results should not govern the treatment.*
- B Stop treatment since the growth of two microbes indicates a contaminated sample
- C Change her treatment to nitrofurantoin which could work on both bacteria
- D Change her treatment to trimetoprim which could work on both bacteria

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67

You are working in a GP's office and receive a 32-year-old man who moved from Kenya to Norway 16 months ago. He says that he has been suffering from blood in his urine for some time. Otherwise he has no symptoms. You remember from your medical studies that *Schistosoma haematobium* could cause hematuria and that the parasite is found in Kenya.

How should you instruct this patient in taking a urine sample for analysing *Schistosoma haematobium*?

- A The sample should be taken in the evening (after 2000 hrs). Collect approx. 20 ml of the middle part of the flow of urine in the test tube.
- B The sample should be taken in the morning (first urination of the day). Collect approx. 10 ml of the middle part of the flow of urine in the test tube.
- C The sample should be taken in the middle of the day (between 1000 and 1400 hrs). Collect approx. 10 ml of the middle part of the flow of urine in the test tube.
- D X** The sample should be taken in the middle of the day (between 10.00 and 14.00 hrs). Collect approx. 20 ml of the end of the flow of urine in the test tube.

The sample should be taken in the middle of the day because that is when the excretion of eggs is highest. One should avoid the start of the flow of urine and collect the end part of the flow. A sample consisting of at least 10-20 ml should be taken.

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68

In your capacity as a GP you are contacted by a public health nurse about one of your elderly patients who is suffering from frequent urinary tract infections. During the past 12 months she has had several courses of antibiotics for suspected lower urinary tract infections, but her symptoms always return shortly after completing each treatment. During the same period several urine samples have been taken for bacteriological culture. You go through the old test results and see that there are two microbes which keep appearing:

Staphylococcus epidermidis og *Candida albicans*

How would you best interpret this growth, and how should it affect your assessment of any further treatment?

- A The urine samples have only shown secondary pathogenic microbes. You will therefore consider optimisation of the sampling method, including using a disposable catheter, and other causes of the symptoms.
- B The urine samples have only shown secondary pathogenic microbes. You will therefore consider treating these due to the recurrent symptoms.
- C The urine samples have only shown doubtful pathogenic microbes. You will therefore consider treating these due to the recurrent symptoms.
- D X** The urine tests have only shown doubtful pathogenic microbes. You will therefore consider optimisation of the sampling method, including using a disposable catheter, and other causes of the symptoms.

Staphylococcus epidermidis and Candida albicans are doubtful uropathogens that can contaminate a urine sample with skin or genital flora and should not normally be treated. In a few cases involving foreign bodies in the urinary tract emphasis could be placed on these findings. One should first be certain that one has done whatever one can in order to ensure the best possible sampling. It may be relevant to use a disposable catheter in such cases. One should also consider other causes of the complaint, including vaginitis and an oestrogen deficiency.

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69

A 36-year-old woman with known primary hypertension contacts you, her GP, because she has recently become pregnant. She is taking a low dose of an angiotensin-2 antagonist. BP 135/85 mmHg. What is the correct thing to do?

- A Discontinue her antihypertensive treatment and monitor her BP
Not advisable because her blood pressure could be expected to rise further
- B Continue with no changes in her treatment
- C X** Replace her angiotensin 2-antagonist with labetalol (Trandate) and possibly a calcium antagonist
ACE-inhibitor and angiotensin 2-blockers are contraindicated in pregnancy
- D Increase her dose of her angiotensin-2 antagonist to the maximum dose
Correct answer because these drugs are safe to use during pregnancy and breastfeeding
ACE-inhibitor and angiotensin 2-blockers are contraindicated in pregnancy

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70

When defining chronic kidney disease one wants to both specify the degree of reduced kidney function and the degree of risk of progression to severe/dialysis-dependent kidney failure. Which of the following proposals is most suitable for defining chronic kidney disease in patients in general practice?

- A GFR measured as plasma clearance of radioactive-labelled EDTA
- B Serum-creatinine and urine dipstick test measured twice at 3 monthly intervals
- C X** Estimated GFR and albumin/creatinine ratio in spot urine measured twice at 3 monthly intervals
Measured GFR with the help of EDTA is too expensive/complicated. Only s-creatinine does not give adequate assessment of renal function. A urine dipstick test does not provide adequate assessment of those patients with moderately elevated albuminuria levels
- D Serum-creatinine measured twice at 3-monthly intervals

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71

A 40-year-old woman attends the renal outpatients clinic for a check-up. She has been diagnosed with glomerulonephritis after a kidney biopsy. She is being treated with an ACE-inhibitor due to high blood pressure and in order to reduce proteinuria. Her progress has been slow. At her last check-up she had the following results: creatinine 300 µmol/L (ref. 45 - 90), eGFR 19 ml/min (ref. ≥90), potassium 5.0 mmol/L (ref. 3.6-4.6). She says that she is slightly more tired than previously, but is doing a full-time job. What measures would now be best?

- A Consider starting dialysis
No indications for starting acute kidney dialysis. Few symptoms and acceptable hypercalemia.
- B X** Start looking into having a kidney transplant
It is correct to start looking for a kidney transplant at this stage. There are greater chances for avoiding dialysis and greater chances for finding a live donor.
- C Refer her for dialysis; AV (arteriovenous) fistula or PD (peritoneal dialysis) catheter
It is too early and a kidney transplant should be tried before she needs to go on dialysis
- D Continue the same treatment and re-assess her case when her eGFR is 15 ml/min
This would reduce her options for a kidney transplant before requiring dialysis

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72

A 42-year-old woman has been referred for a kidney biopsy due to appearance of nephrotic syndrome with substantial oedema. Her biopsy shows normal findings on light microscopy, but electronmicroscopy reveals flattened podocytes. What is the most likely diagnosis?

- A Hypertensive nephropathy
Typical changes are sclerosis and arterial hyalinosis
- B IgA neuropathy

In this case the typical findings are expanded mesangial matrix and high cell density. Immunohistochemistry shows IgA deposits.

- C X Minimal change nephropathy

Correct answer. Light microscopy findings are typically normal, but electronmicroscopy reveals damage to the podocytes, that are barriers for albumin/protein

- D Membranous nephropathy

Light microscopy often reveals thickened glomerular capillary loops

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73

An 83-year-old man is diagnosed with hypertension (average of 165/89 at several consultations). He has previously been mainly fit and healthy and lives at home with his spouse. No regular medication. Normal findings in his blood and urine samples. Which measure is the most correct?

- A No indications for starting antihypertensive treatment because the overall cardiovascular risks are not particularly high.
 - B X Start treatment with low-dose thiazide, eg. Moduretic mite 1 tbl x1.
In an otherwise healthy person just over the age of 80, there are clear indications for starting low-dose treatment. Low-dose thiazide is a good choice. Many elderly patients have salt-sensitive hypertension, but a calcium blocker or an RAAS blocker could also have been used. However, betablockers are not a first choice, unless clear heart indications are present.
 - C No indications for starting antihypertensive treatment due to the fact that he is over 80 years old.
 - D Start treatment with a moderate dose beta blocker, e.g. Metoprolol 100 mg x1.
-

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74

A 70-year-old man had a small myocardial infarction 6 year ago. He has not had angina pectoris afterwards, but during the past year he has started to have mild dyspnoea on exertion and also experiences considerable pain and stiffness in his calves when he walks for 300 metres. He smokes 5 cigarettes per day and has a body mass index (BMI) of 27.5. He is not currently taking any medication. He has not had a medical check-up during the past 4 years. He is now seeking help for his complaints and after the consultation you have the following information:

Hb 13.5 g/dl (ref: 13.5 - 17.4);

s-cholesterol 5.7 mmol/l (ref: 4.4 - 8.6);

s-glucose 6.3 mmol/l (ref: 3.5-5.5);

s-creatinine 220 µmol/l (ref: 60 - 120);

Urine dipstick: Erythrocytes neg, leucocytes neg, albumin 3+;

His blood pressure is 170/82. You are thinking about starting treatment with Lisinopril 20 mg x1 (an ACE inhibitor) and discuss the problem with a colleague.

What should your colleague advise you to do?

- A X** The patient should start taking Lisinopril 10 mg x1 and his s-potassium and s-creatinine levels should be measured after 1 week
The patient has substantially reduced kidney function, high BP and severe increased albuminuria. There are thus strong indications for administering an ACE inhibitor in order to reduce his BP and proteinuria. The patient may have both claudication and kidney arterial stenosis and a CCB would thus be OK, but this is not certain. Also, ACE inhibitors are not contraindicated in RAS, but the patient's s-creatinine and potassium levels would need to be checked as stated here.
- B** Possible renal artery stenosis and severe kidney failure are strong contraindications for using ACE inhibitors so the patient should instead start taking Norvasc 10 mg x1 (a calcium channel blocker)
- C** The patient should start taking Selo-Zok 100mg x1 (a betablocker) and Furix 20mg x2 (a loop diuretic) due to his previous heart attack and in order to reduce his blood pressure
- D** The patient probably needs to start dialysis over the course of the next month so he should be referred to a nephrologist who can provide urgent help in respect of preparing the commencement of dialysis

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75

A 71-year-old man has chronic stage 4 kidney disease, probably caused by hypertension. During the last couple of years his Hb levels have gradually dropped. The following results were obtained at his last check-up: low Hb 10.2 dl (ref. range 13.4-17.0). He has no symptoms and his hemofec test was negative. Upon examination the following values were obtained:

	Result:	Ref. range
Hb (g/dl)	9.7	13.4-17.0
MCH (pg)	27.9	27.1-32.6
MCV (fl)	83	81-95
Iron (µmol/l)	12	9-34
Transferrin saturation	15	15-57
Ferritin (µg/l)	80	20-167

What would be the correct measures to start with?

- A** Admit him for a transfusion
A transfusion is rarely required at this level. No symptoms of anemia have been specified.
- B X** Start oral iron supplements

Correct. The patient has normochromic, normocytic anemia with no suspected deficiencies. His anemia has developed gradually and he has no symptoms. The image gives cause to suspect renal anemia in stage 4 chronic kidney disease. However, he has a relatively low ferritin level (should be > 100, preferably > 200) and his iron stores need replenishing before he can make use of EPO, and iron supplements in this scenario would often result in an increase in HB levels.

- C** Start erythropoietin
See the comments under the correct answer
- D** Refer him for a gastroscopy, possibly supplemented with a colonoscopy if no focus for bleeding is found
Would have been correct if he had had an iron deficiency

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76

A 68-year-old previously healthy man is admitted with melena. He has had black faeces during the last few days and has felt unwell. BP on admittance 80/55, p 110.

Lab tests on admittance: Hb 7.3 g/dl (ref. range 13.4-17.0), creatinine 450 µmol/l (ref. range 60-105), eGFR 8 (ref. range ≥90)

A gastroscopy shows an ulcer that is treated and he is given a blood transfusion.

At his check-up 2 weeks later his creatinine level is µmol/l, eGFR 12

What is the most likely cause of his kidney damage?

- A** Acute tubulointerstitial nephritis
Less likely due to his case history and such major improvements do not normally occur without medical treatment (steroids) for two weeks
- B** Membranous nephropathy
Less likely due to his case history and such major improvements in kidney function do not normally occur without immunosuppressive treatment
- C X** Acute tubular necrosis
Correct answer. Hypotension in connection with such pronounced acute anemia for a few days has resulted in ischemic tubular necrosis with an extended impairment of kidney function
- D** ANCA vasculitis

Less likely due to his case history and such major improvements in kidney function do not normally occur without immunosuppressive treatment

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77

Angiotensin Converting Enzyme inhibitors (ACE inhibitors) have many different effects in various types of tissue, but their effects on the kidneys are central. What is their mechanism of action on the kidneys?

- A X** ACE inhibitors dilate the efferent arterioles in particular, causing a reduction in intraglomerular pressure while the blood flow through the kidneys is kept relatively constant
This is correct, while all the other alternatives are directly wrong
- B** ACE inhibitors dilate the afferent and efferent arterioles so that the patient has reduced hyperfiltration and a better prognosis
- C** ACE inhibitors can cause acute damage to the kidneys because they reduce the supply of oxygen to the deeper parts of the medulla
- D** ACE inhibitors constrict the afferent arterioles in particular, causing a reduction in intraglomerular pressure while reducing the flow of blood through the kidneys

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78

An 82-year-old woman with COPD, moderately overweight, type 2 diabetes mellitus and end-stage kidney failure with an eGFR of 10 ml/min.

Her nearest dialysis centre is a 2-hour journey each way.

Both she and her family want dialysis treatment.

What type of treatment would be best for her?

- A Home hemodialysis (HHD)
Not relevant due demanding training
 - B Conservative treatment (no dialysis)
A strong desire for dialysis and no absolute contraindications support offering her dialysis
 - C Hemodialysis (HD) at the hospital because PD is contraindicated in cases of diabetes mellitus type 2
PD is not contraindicates in cases of diabetes mellitus
 - D X Peritoneal dialysis (PD)
PD would probably give her the best quality of life based on her overall situation involving a long journey and no absolute contraindications
-

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79

Various pathological processes can affect the glomeruli and produce different clinical pictures.

What is typical for nephritic syndrome?

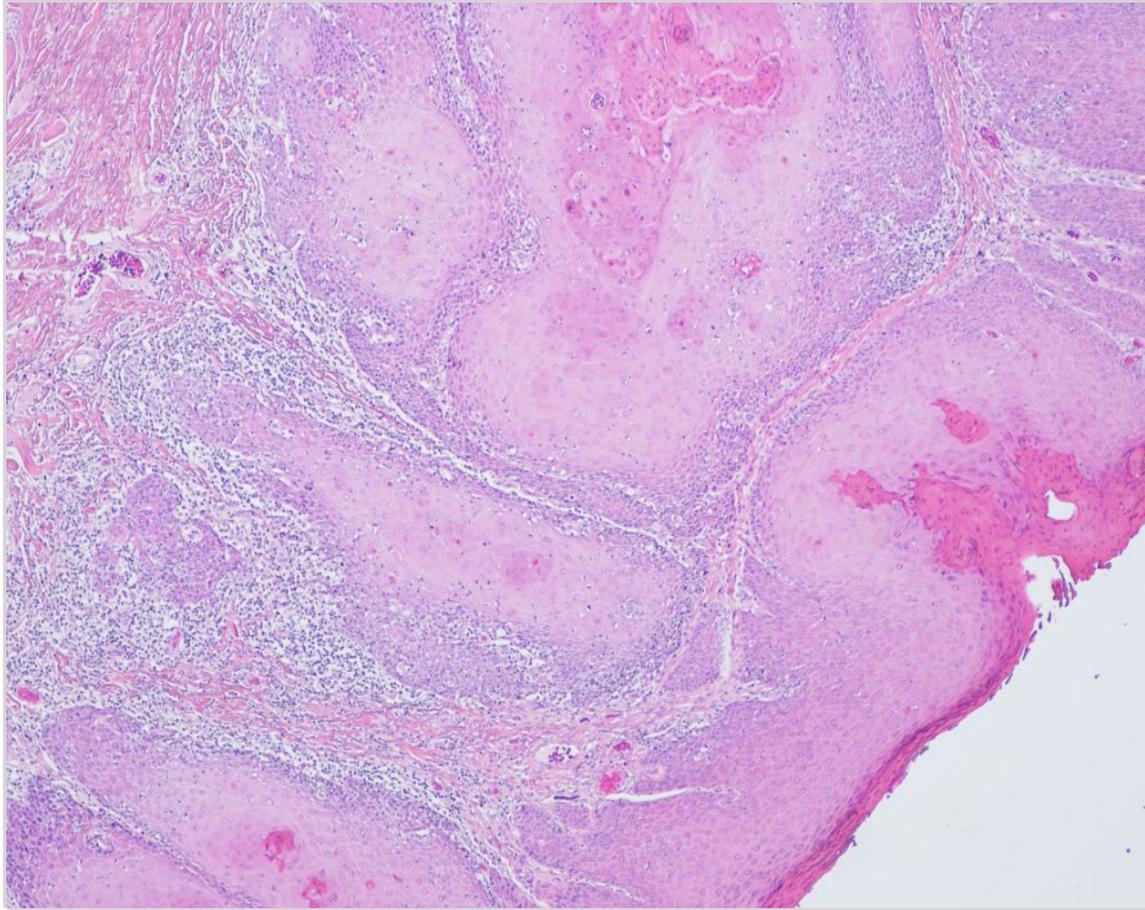
- A Diffuse thickened glomerular basement membrane
Typical examples of this include glomerulonephritis which causes varying degrees of nephrotic syndrome
 - B X Proliferative and inflammatory glomerular affectation
The most common causes of nephritic syndrome are immunologically mediated glomerular damage characterised by proliferative changes and leucocyte infiltration
 - C Focal and segmental glomerulosclerosis
This condition often causes nephrotic syndrome
 - D Damage to the podocytes' pedicels
This is typical in minimal change glomerulopathy which causes nephrotic syndrome
-

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80

A 69-year-old woman has suffered from lichen sclerosus for 15 years. She now has a sore on her left labia majora that will not heal. The area with changes is surgically removed. Below is a picture taken from the resected tissue (hematoxylin and eosin stained section which has been magnified 40 X).

What is the most likely diagnosis?



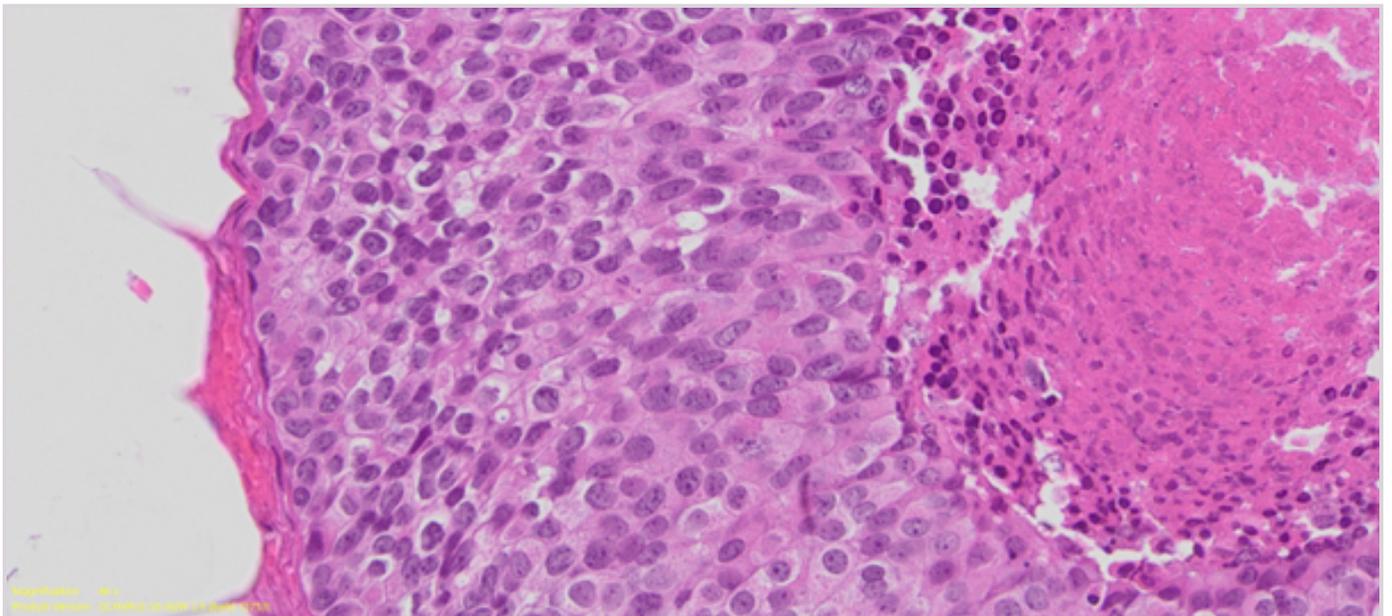
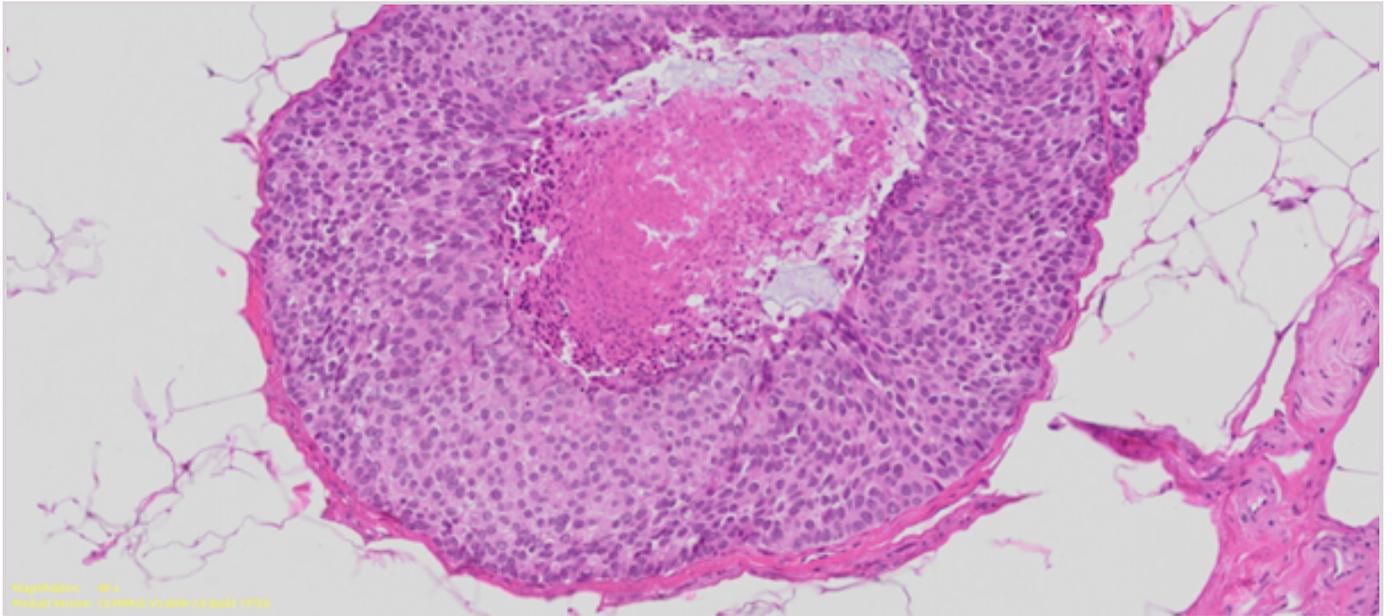
- A** Adenocarcinoma
Wrong answer. Adenocarcinomas are usually build up from gland-like structures. Here one can see atypical plate epithelia which form islands and flakes with clear central keratinisation.
- B** Lichen sclerosus and condyloma
Wrong answer. In condyloma the epithelium is thickened, but these changes form exophytic lesions built up from stomal stalks covered by a slightly atypical epithelium and often accompanied by virus changes. One should have so-called flat condylomas, but these do not infiltrate the stroma as in this case.
- C X** Plate epithelial carcinoma
Correct answer. An irregular, atypical thickened plate epithelium where the cells are infiltraing the stromal tissue and forming irregular delimited islands surrounded by inflammatory changes.
- D** Plate epithelial hyperplasia and reactive epithelial cell changes
Wrong answer. The plate epithelium can be thickened by reactive changes, but in this case the cellular changes have gone beyond what can be regarded as being reactive changes and the atypical epithelium is infiltrating the underlying stroma where unclear delimited islands can be seen with surrounding stromal reaction.

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81

A 60-year-old woman underwent surgery after calcifications were seen on a mammogram. Part of her breast was removed. Below are two photos with different magnification taken from the same breast lesion.

What is the diagnosis?

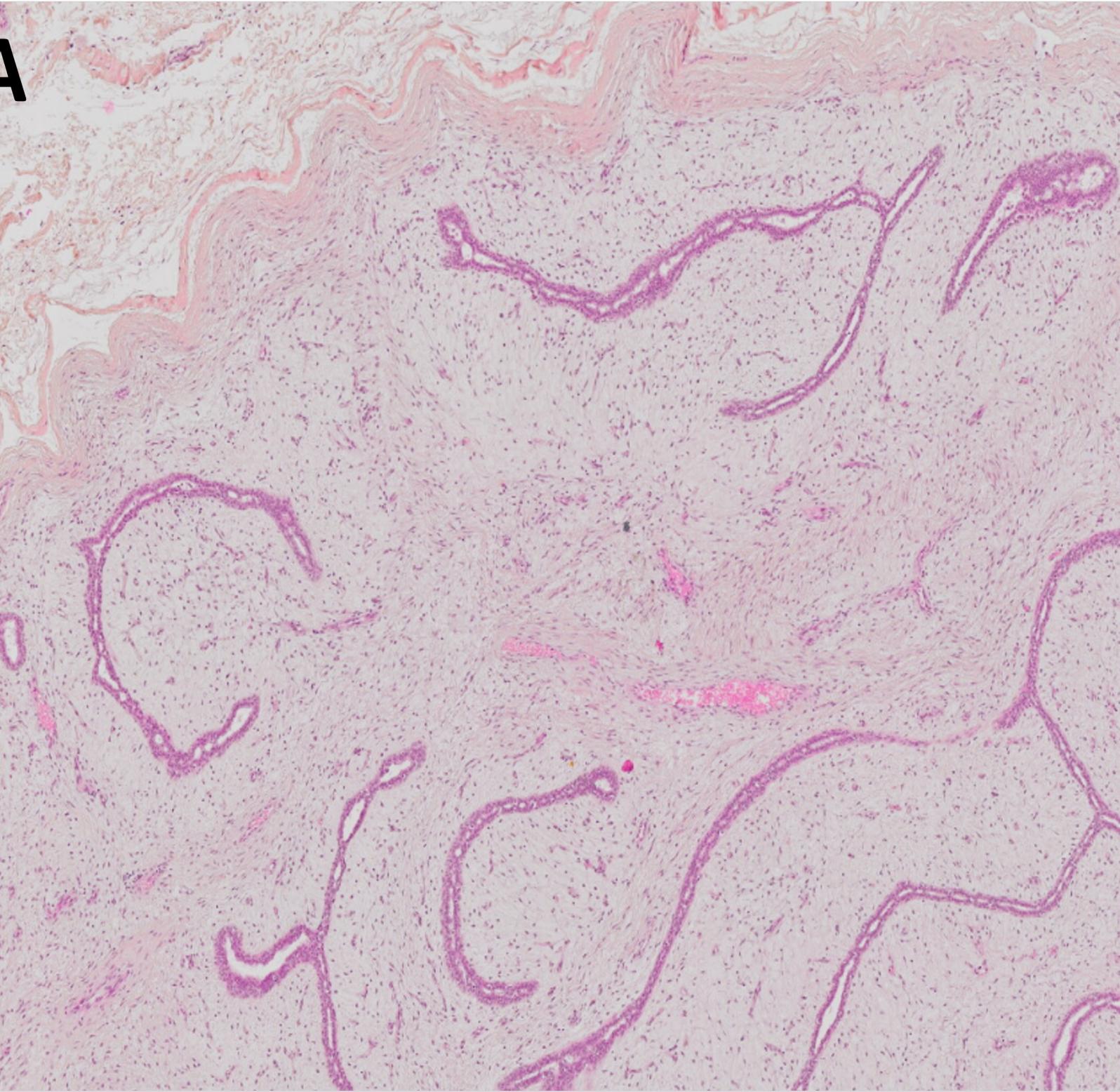


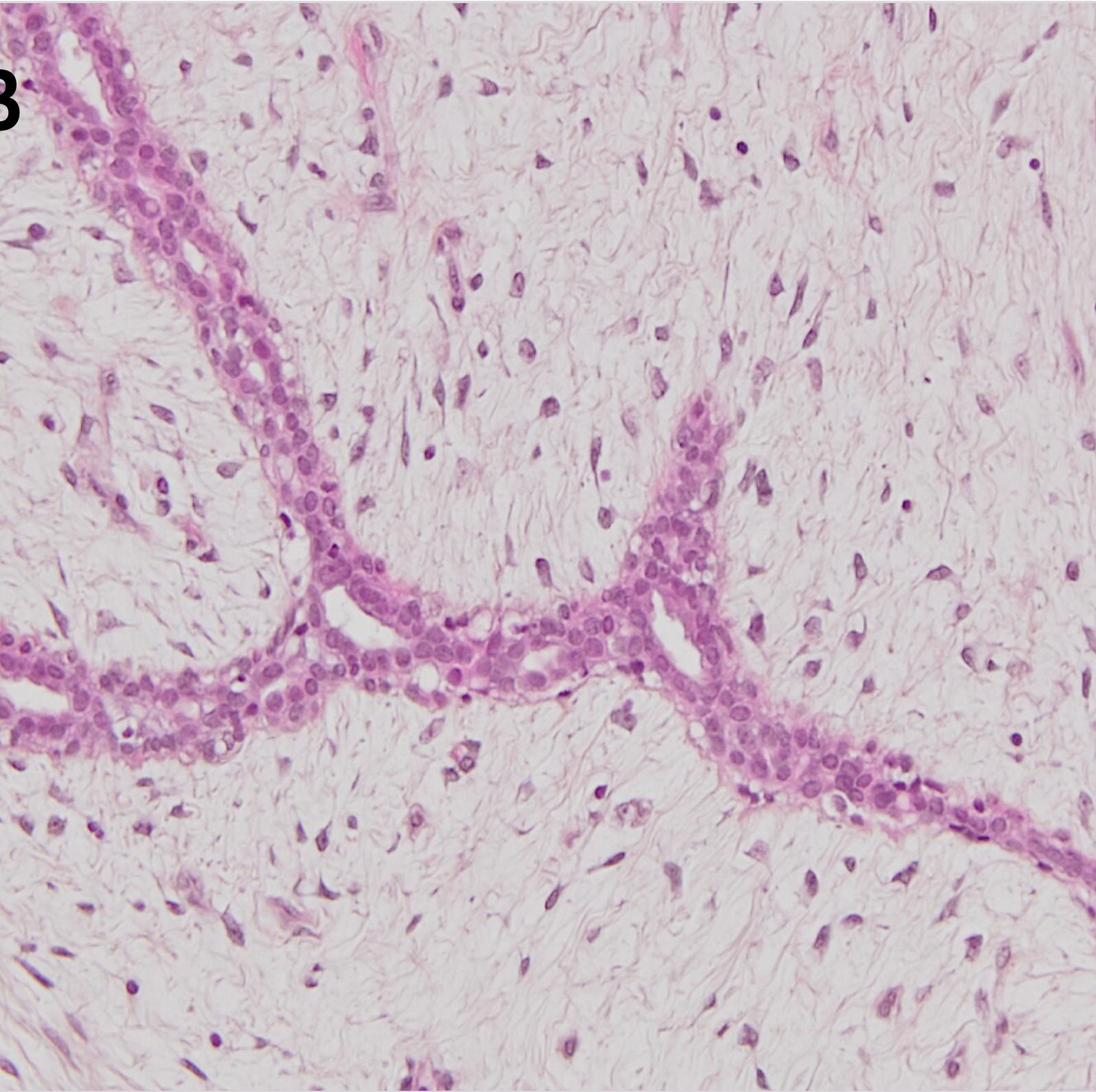
- A Infiltrating ductal carcinoma
- B X** Ductal carcinoma *in situ*
The presence of myoepithelial cells means that the lesion is consistent with an in situ lesion, not an infiltrating carcinoma
- C Mucinous carcinoma
- D Infiltrating lobular carcinoma

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82

A 34-year-old woman has a 3 cm diameter tumour in her left breast. It is surgically removed and the pictures show a hematoxylin-erythrosine-saffron (HES) stained histological section from the tumour. Photo A: low magnification. Photo B: high magnification. Which diagnosis best fits the findings shown on the photos?





- A** Ductal carcinoma in situ (DCIS)
Wrong answer. In DCIS we see the proliferation of atypical epithelial cells in the ducts without them having broken through the basement membrane (BM).
- B** Infiltrating carcinoma
Wrong answer. Here we cannot see any signs of infiltrating growth. Photo A shows the edge of the tumour and it is even without any signs of infiltration of the adjacent tissue.
- C X** Fibroadenoma
Correct answer. A fibroadenoma is a well-delimited, benign tumour which consists of a stromal component and an epithelial component. The stromal component is dominant.
- D** Lobular carcinoma in situ (LCIS)
Wrong answer. In LCIS we see the proliferation of atypical, but fairly homogenous epithelial cells in the end pieces of the glands without them having broken through the basement membrane.
-

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83
What characterises serous borderline ovarian tumours?

- A** The cyst contents are often mucilaginous.
- B** There are small foci with infiltrative growth.
- C** The cells contain copious light cytoplasm.
- D X** The epithelium is atypical.
A serous borderline tumour is a serous cystadenoma with an atypical epithelium. The cyst contents of a serous tumour are often diluted in water and do not contain mucous. Infiltrative growth is not a characteristic of borderline tumours. The epithelium in mucous cystadenomas has copious light cytoplasm.
-

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84
A 68-year-old man was referred for an examination due to hematuria and nagging pain in his back. Several biopsies were taken from changes in his bladder mucosa. The photos are from a histopathological section of the biopsy taken from the bladder mucosa (hematoxylin-erythrosine-saffron (HES), A x200; B x100).
What do the photos show?

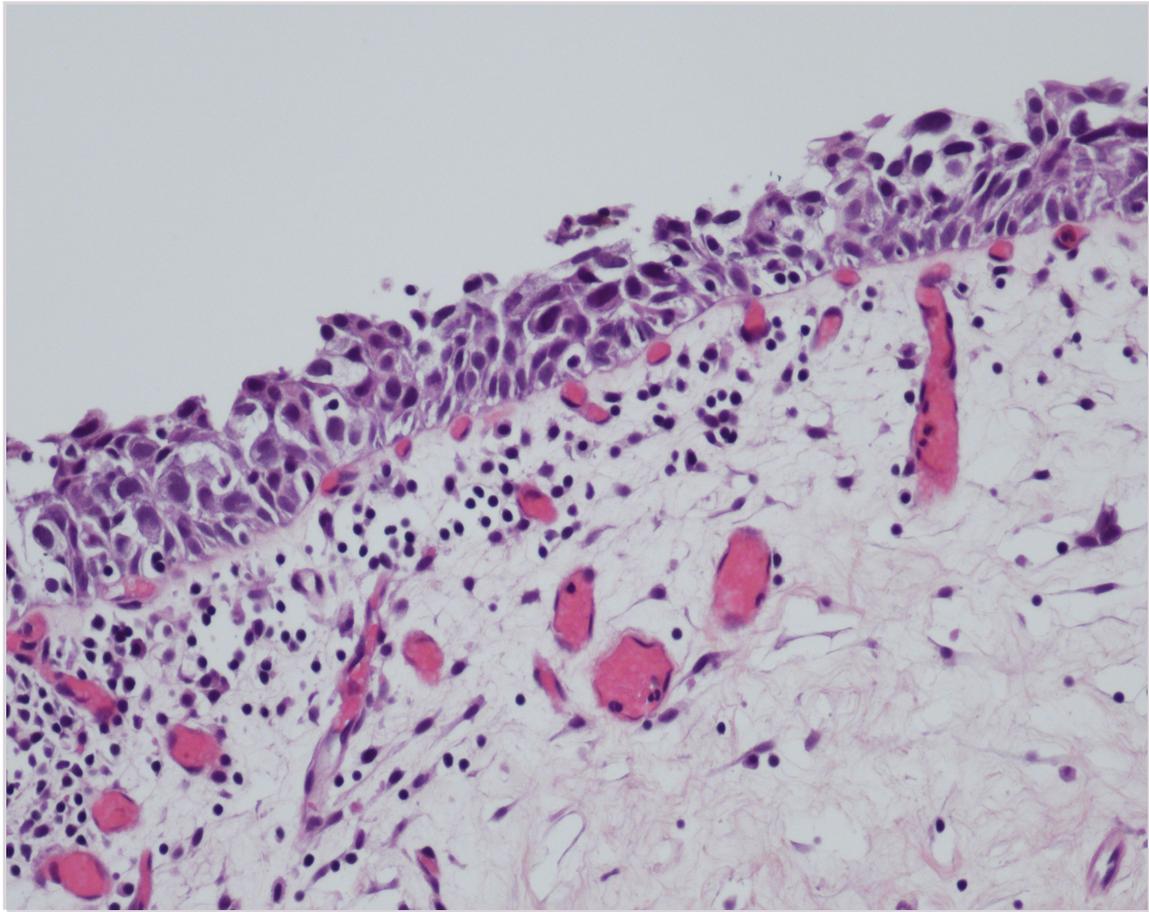


Photo A

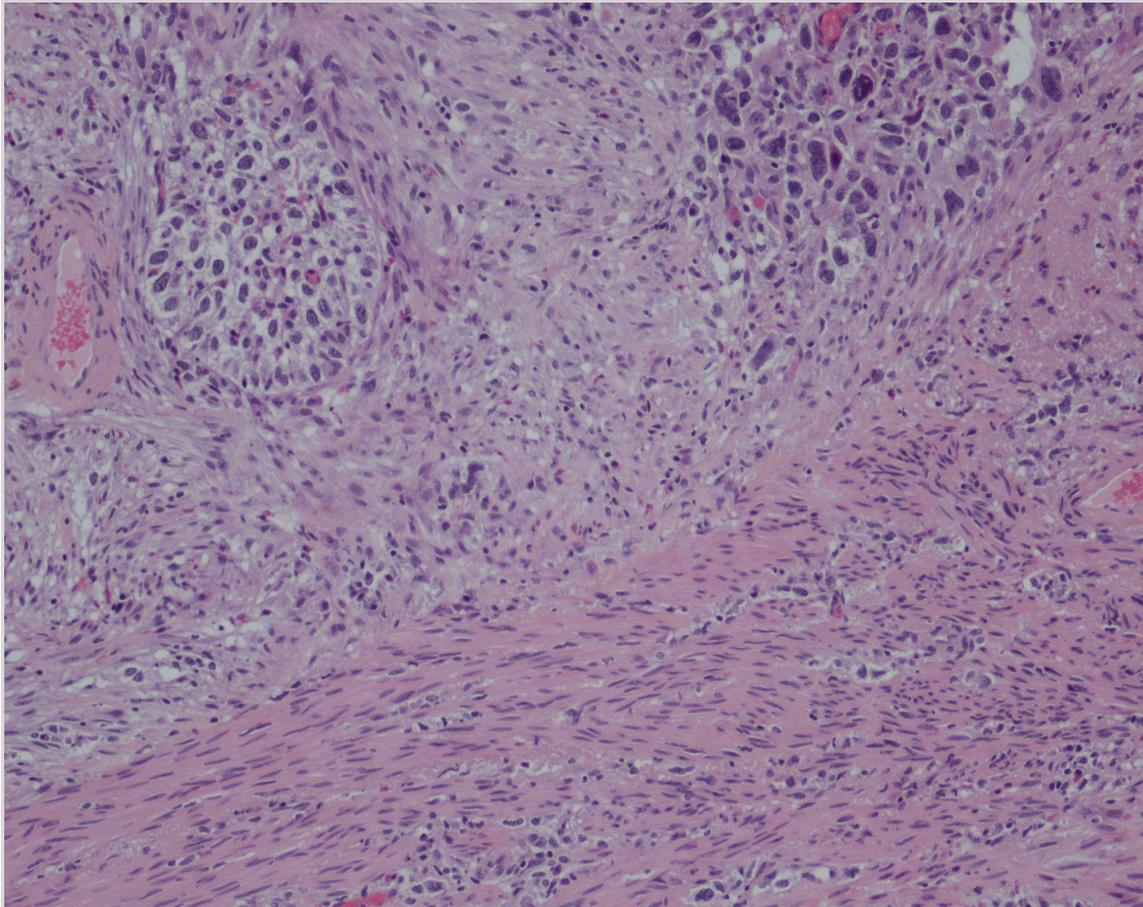


Photo B

- A** Biopsies from the urinary bladder with granulomatous inflammation.
C: Wrong answer. The lymphocytes are tumour-associated. In photo B there is an oval group of cells, but it does not consist of epithelial cells. They are atypical urothelial cells.
- B X** Biopsies from the urinary bladder with carcinoma in situ and poorly differentiated infiltrating urothelial carcinoma.
Correct answer. Photo A shows atypical urothelial epithelia without any signs of breakthrough of the basement membrane. Photo B shows infiltration deep in the bladder wall and bladder wall musculature with a high grade malignant urothelial carcinoma.
- C** Biopsies from the urinary bladder with chronic inflammation and reactive changes.
Wrong answer. The lymphocytes in photo A are tumour-associated and not an expression of chronic inflammation.
- D** Biopsies from the urinary bladder with papillary urothelial neoplasm of low malignant potential (PUNLMP).
Wrong answer. This tumour is not papillary. There are definite signs of malignancy.

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85

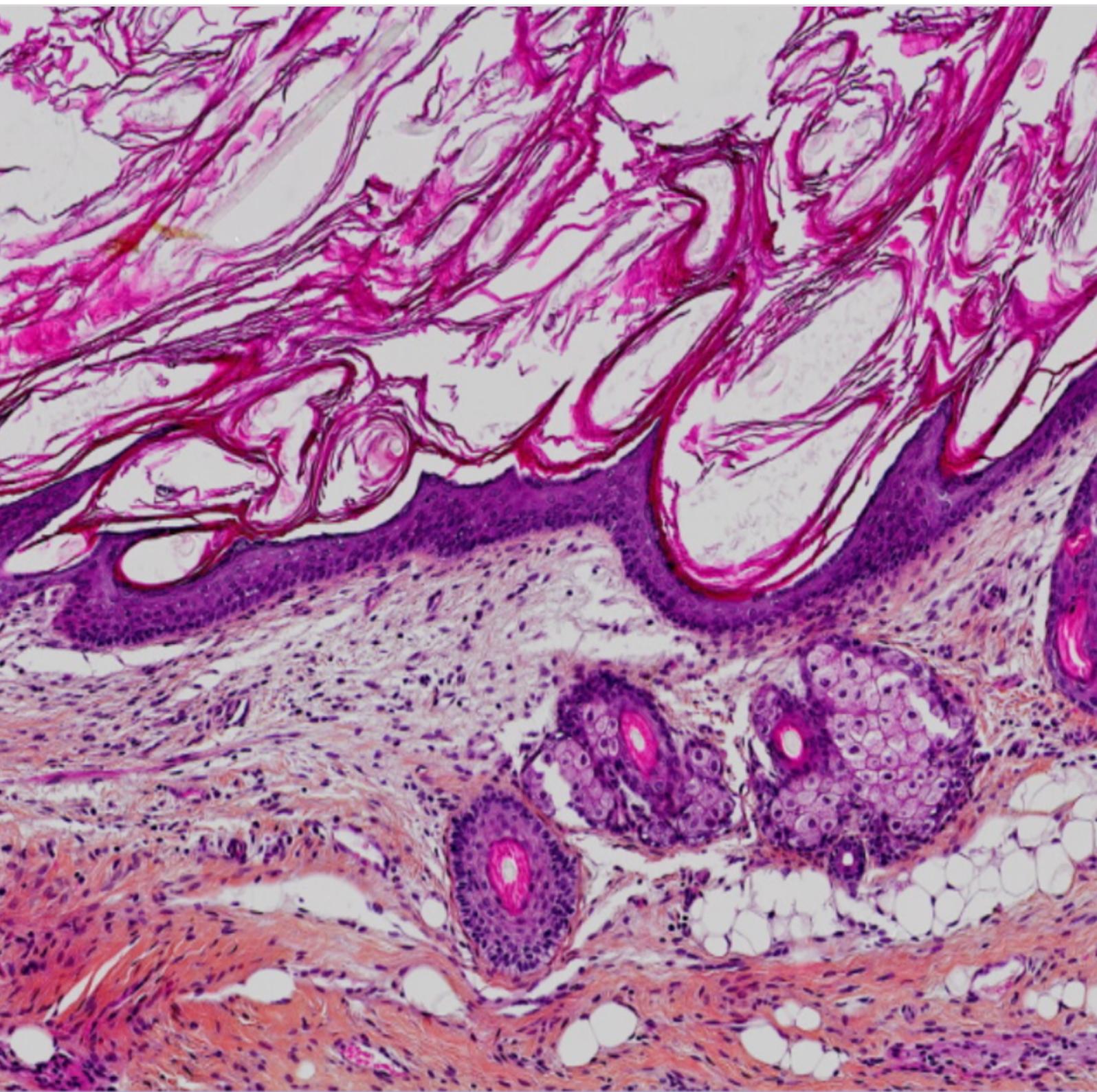
What does agenesis mean, in the context of organs and tissues?

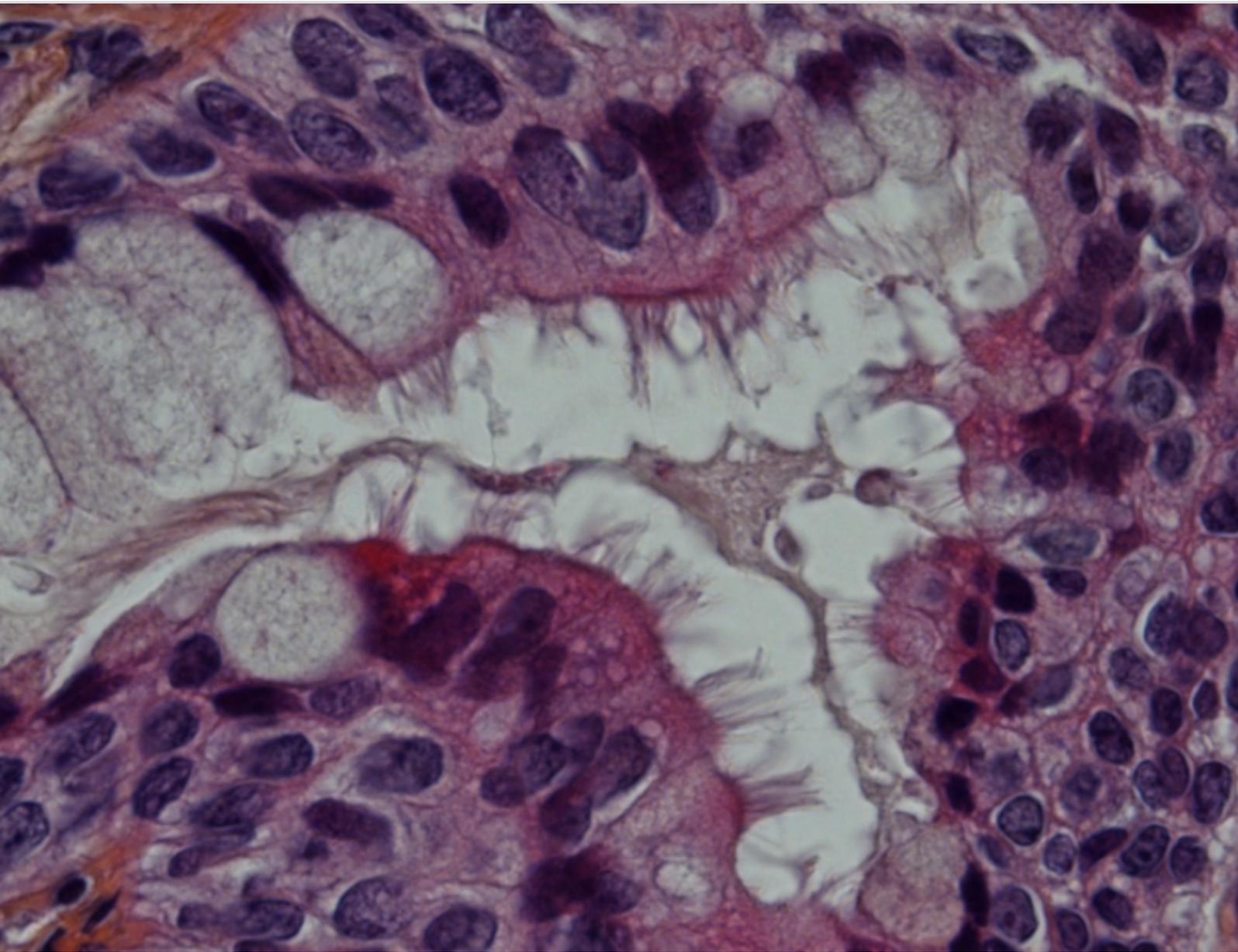
- A** The organ lacks an opening.
B X The organ is missing.
C Normal appearance of cells/tissue in an abnormal location.
D A reduced number of cells, leading to a smaller organ.

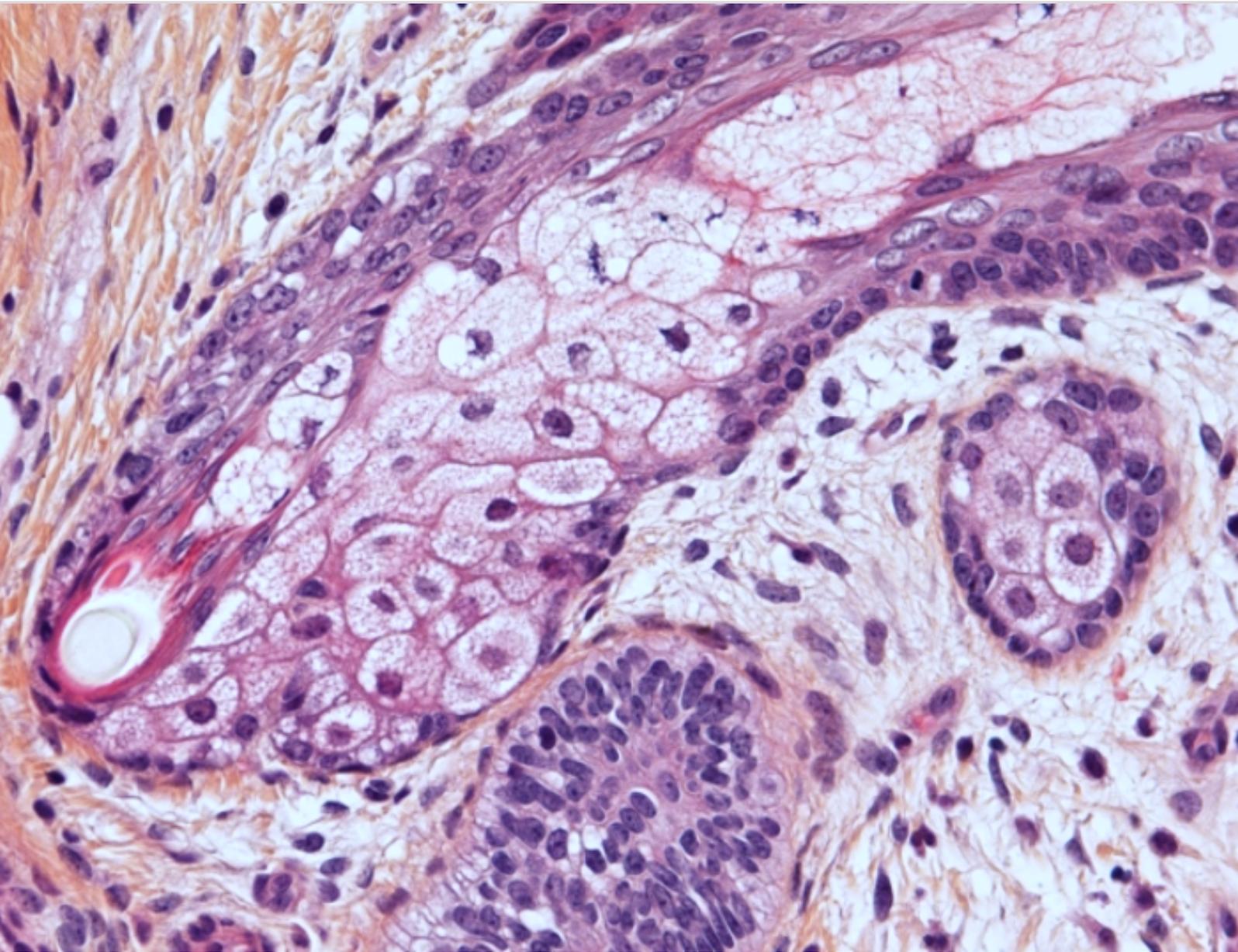
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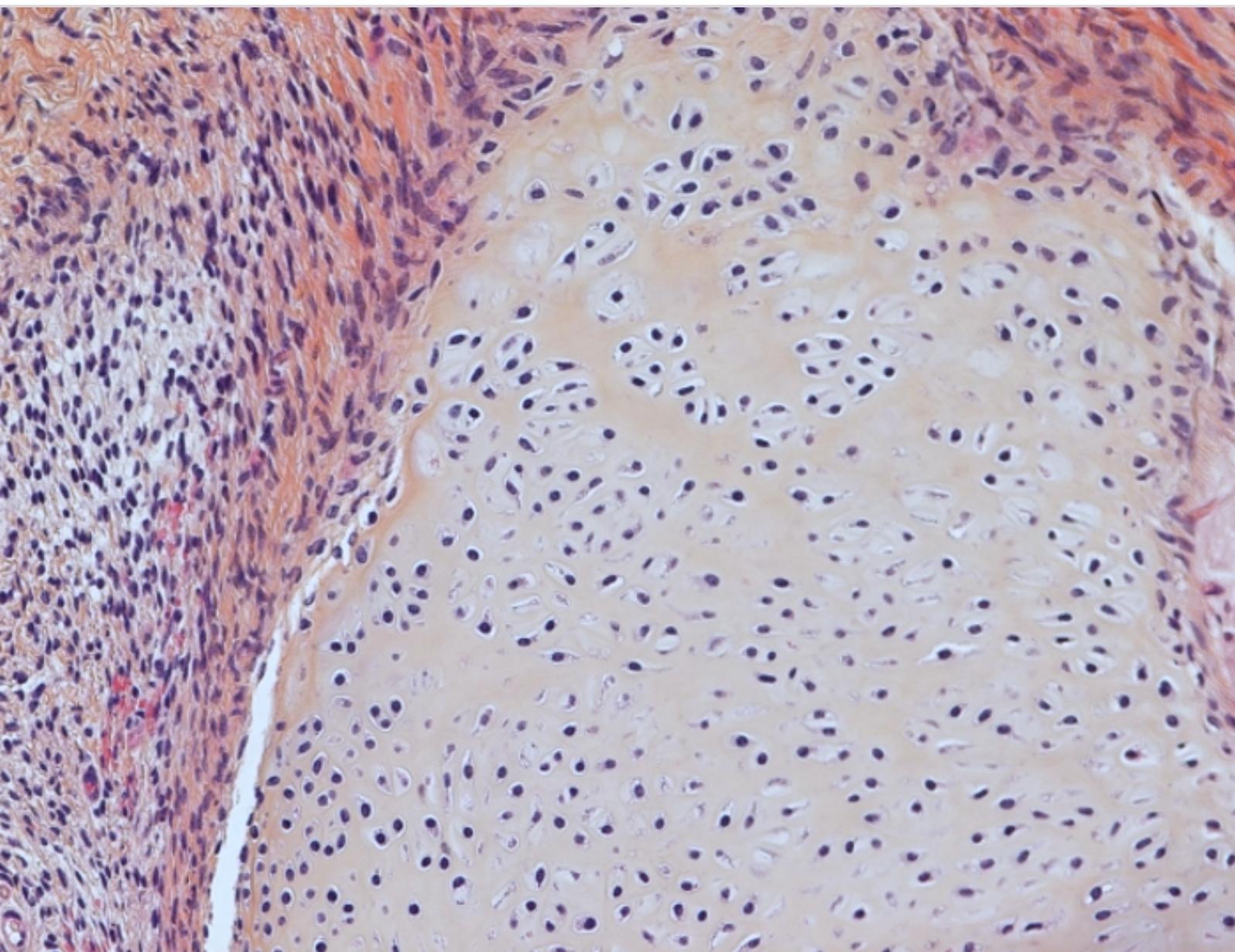
86

A 35-year-old man undergoes an operation for a testicular tumour. The photos show histopathological sections from the tumour (hematoxylin-erythrosine-saffron (HES) stain). What is the diagnosis?









- A** Seminoma
Wrong answer. With seminomas we expect to see atypical cells, fibrous bands and lymphocytes
- B** Normal testis
Wrong answer. All the photos show tissue with a normal appearance (cartilage, bronchial mucosa, skin adnexal structures, epidermis), but none of the tissue types are normally present in the testes.
- C X** Malignant teratoma
Correct answer
- D** Benign teratoma
Wrong answer. Very few testicular teratomas are benign. Even if we do not see atypical cells here, we know that the tumour has the potential to metastasise.

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87

A patient undergoes an operation for breast cancer and the results from the pathology department show a histological grade 3 cancerous tumour.

What determines the histological grade of the tumour?

- A X** Mitoses, share of tubular structures and pleomorphy
Histological grading includes mitosis numbers, pleomorphy and the share of tubular structures in the tumour
 - B** Tumour size, lymph node status and mitoses
 - C** Tubular structures, oestrogen receptor and Ki67.
 - D** Human epidermal growth factor receptor 2 (HER2), mitoses and pleomorphy
-

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88

A patient with heart failure is treated with an ACE inhibitor.
How does this affect the electrolyte balance?

- A** Tendency to hypernatremia and hypercalemia
 - B** Tendency to hypernatremia and hypokalemia
 - C X** Tendency to hyponatremia and hypercalemia
Inhibition of the RAAS results in reduced aldosterone production, which increases sodium excretion and potassium retention.
 - D** Tendency to hyponatremia and hypokalemia
-

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89

A woman visits you as her GP. She has recently discovered that she is pregnant, and an ultrasound scan has shown that she is in her 16th week of pregnancy. She is taking enalapril for hypertension. What would be the correct reasoning in this situation?

- A** She can continue enalapril since ACE inhibitors only increase the risk of foetal harm during the first trimester and that critical period has now passed
 - B** She can continue enalapril up until the 3rd trimester since ACE inhibitors only increase the risk of foetal harm in the 3rd trimester
 - C X** She should switch to another antihypertensive as soon as possible, since ACE inhibitors increase the risk of foetal harm during the 2nd and 3rd trimesters
*G7.1.1 A | The Norwegian Pharmaceuticals Handbook (legemiddelhandboka.no)
The use of ACE inhibitors is contraindicated during the second and third trimesters of pregnancy (see items 4.3 and 4.4).*
 - D** She can continue enalapril since there is no documentation showing ACE inhibitors to cause greater risk of foetal harm than any other antihypertensives
-

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90

An 82-year-old man is admitted to hospital with pneumonia. He has COPD, diabetes mellitus type 2, hypertension and hypercholesterolemia and his medication includes the following:

Atorvastatin 40 mg, one tablet per day (cholesterol-lowering drug, statin)

Candesartan 4 mg, one tablet per day (angiotensin-II-receptor agonist)

Acetylsalicylic acid 75 mg, one tablet per day (platelet inhibitor)

Metformin 850 mg, one tablet twice daily (antihyperglycemic drug)

On admittance his blood pressure is 140/80 mmHg. His kidney function is severely impaired with an estimated glomerular filtration rate of 25 ml/min.

One of the patient's drugs is contraindicated when the GFR is so low and should be discontinued until his kidney function has improved. Which one?

- A Acetylsalicylic acid
Low doses of acetylsalicylic acid do not have an adverse effect on kidney function
 - B Atorvastatin
 - C Candesartan
In principle it is a good idea to administer an AT-II antagonist in patients with diabetes mellitus type II, regardless of their kidney function, provided that the dose is adjusted (and in this case the dose is low)
 - D X Metformin
Metformin is contraindicated when the (e)GFR is below 30 ml/min
-

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91

A 19-year-old woman is seeking isotretinoin treatment for severe acne. What information should you provide her with?

- A She needs to use effective contraception (at least one and preferably two complementary methods) 1 month prior to commencement, during the whole treatment and 6 months after completing the treatment.
 - B X She needs to use effective contraception (at least one and preferably two complementary methods) 1 month prior to commencement, during the whole treatment and 1 month after completing the treatment.
Ref. the text contained in FK (the Norwegian Pharmaceutical Product Compendium) about Isotretinoin
 - C She needs to use effective contraception (at least one and preferably two complementary methods) during the whole treatment and 1 month after completing the treatment.
 - D She needs to use effective contraception (at least one and preferably two complementary methods) during the whole treatment.
-

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92

A patient is taking levothyroxine for hypothyreosis. The patient develops an iron deficiency and needs to take oral iron supplements. A drug interaction search shows that an interaction is present between orally administered iron and levothyroxine.

What is the mechanism behind this interaction?

- A Iron increases the excretion of levothyroxine in the kidneys
 - B Levothyroxine induces the metabolism of iron
 - C X Iron and levothyroxine form insoluble complexes in the digestive tract
Ref. the text contained in FK (the Norwegian Pharmaceutical Product Compendium) about levaxin.
 - D Levothyroxine inhibits the metabolism of iron
-

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93

A 79-year-old man with previous coronary heart disease and rapid atrial fibrillation is admitted with subacute-onset dyspnea and suspected heart failure. When examined in A&E he has crackling sounds over his lungs, ankle oedema and a heart rate of 42 beats per minute. An ECG shows a 3rd degree AV block. He is taking the following medication: enalapril (an ACE inhibitor), metoprolol (a beta blocker), amlodipine (a calcium antagonist) and digoxin (a digitalis glycoside).

Which combination of medicines is most likely to be causing the patient's condition?

- A Amlodipine and metoprolol
Metoprolol, yes. Amlodipine is a vessel-specific calcium antagonist and has little effect on heart rate and conduction.
- B Digoxin and enalapril
Digoxin, yes. Enalapril is an ACE inhibitor which does not affect heart frequency and conduction.
- C Enalapril and amlodipine
No
- D X Metoprolol and digoxin
Both metoprolol and digoxin reduce the heart rate and the conduction velocity in the heart's conduction system and can cause bradycardia and AV block, but via different mechanisms of action. They can thus cause a pharmacodynamic interaction which increases the risk of developing these side effects. In this case heart failure is secondary to these effects on the heart.

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94

Which of the diuretics shown below would be among the first hand drugs when treating essential hypertension?

- A X Hydrochlorothiazide (a thiazide diuretic)
Thiazides are the only types of diuretics that are first hand drugs for reducing blood pressure
- B Mannitol (an osmotic diuretic)
- C Spironolactone (a calcium-sparing diuretic)
- D Furosemide (a loop diuretic)

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95

Young children have immature kidney function in relation to older children and adults. This affects the half-life of drugs which are largely excreted unchanged via the kidneys. In what way?

- A The half-life decreases due to reduced GFR and reduced tubular secretion
- B The half-life decreases due to increased loss through the glomeruli
- C X The half-life increases due to reduced GFR and reduced tubular secretion

Both GFR and tubular secretion are subject to age-dependent maturation and are generally regarded as being at a normal level by the age of 6-9 months (NB: this applies to full-term babies). Until this occurs drugs that are mainly eliminated by renal excretion will have an extended half-life (Source: Chapter G9 of the National Treatment Guidelines for Health Personnel on Children and Pharmaceuticals).

- D The half-life increases due to increased loss through the glomeruli

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96

Due to a complex of medical conditions, a pregnant woman has been taking lamotrigine, prednisolone, oxycodone and paracetamol during the last part of her pregnancy. There are no complications during birth, but during the child's first day of life it becomes irritable, refuses to nurse and cries loudly. Which drug most likely caused these symptoms in the child?

A Prednisolone

B Lamotrigine

C Paracetamol

Not "most likely"

D X Oxycodone

Oxycodone is an opioid which can cross the placenta and result in a tolerance development in the foetus of physical dependency. After birth the child will no longer receive oxycodone via its mother and this would correspond to the sudden discontinuation of oxycodone. This can result in postnatal symptoms of abstinence. Abstinence from opioids in newborns often manifests as an inability to adapt, increased irritability and crying, as well as problems with nutrition/breastfeeding.

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97

Propylthiouracil is used for treating hyperthyreosis.

What is the most important mechanism of action of this drug?

A Inhibits the uptake of iodine in the intestines and increases the elimination of iodine in the kidneys

B Eliminates the effects of T_4 and T_3 by blocking thyroid hormone receptors in the peripheral tissues

C X Inhibits the synthesis of thyroid hormones and the conversion of T_4 to T_3 in the peripheral tissues

Ref. The National Treatment Guidelines for Health Personnel

L3.6.2 Thionamide thyrostatics | National Treatment Guidelines for Health Personnel

(legemiddelhandboka.no)

D Inhibits the synthesis of T_4 by inhibiting the release of thyroid-stimulating hormone (TSH)

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98

Some drugs can damage or inhibit the kidneys when used.

Which antibiotic is particularly associated with this?

A Mecillinam (a beta-lactam)

B Imipenem (a carbapenem)

C X Gentamicin (an aminoglycoside)

Aminoglycosides are a group of antibiotics that most often cause acute tubular necrosis. Kidney damage is observed in 10-20% of users and this applies in particular to neomycin and gentamicin. The other antibiotics in this question are not known to be particularly nephrotoxic on their own.

D Erythromycin (a macrolide)

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99

Calcium blockers have varying degrees of cardiovascular selectivity. Most of the drugs on the market primarily affect the vasculature. One drug affects both the heart and the blood vessels. Which one?

A Verapamil

B X Diltiazem

Correct answer

C Nifedipine

D Amlodipine

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100

A 22 year-old woman is admitted with a clinically certain diagnose of upper urinary tract infection on her right side. Her case history shows that she had been ill for 2 days before admssion. Good clinical and biochemical response to intravenous antibiotics. During her hospital stay she had a small dip in kidney function with temporarily slightly reduced estimatet GFR, which is now normal again. You want the patient to have a radiological check-up before discharge due to the temporary reduction in kidney function - which type of imaging do you refer her for?

- A "Stone CT scan" without contrast agent
No indications for carrying out a CT scan based on the information specified
- B Ordinary CT scan of the abdomen/pelvis with contrast agent
No indications for carrying out a CT scan based on the information specified
- C X** Ultrasound scan of the kidneys and urinary tract
This rules out hydronephrosis and the formation of a kidney abscess (although based on her short history of illness there is a low risk of the latter). Could show anomalies that increase the risk of an upper UTI, even though the pre-test likelihood is low. Due to the low pre-test likelihood it would be preferable to avoid subjecting the patient to radiation by carrying out a CT scan.
- D MRI of the kidneys and urinary tract
No indications for carrying out an MRI

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101

Ultrasound and MRI scans of the head are often used for clarifying different illnesses and conditions in newborns.

Which of the following conditions does not require further tests with MRI imaging of the head.

- A Birth asphyxia
An ultrasound scan of the head is used initially for gaining an idea of "fluid space" and excludes other differential diagnoses. This needs to be investigated further with an MRI of the head, including diffusion sequences.
- B Damage incurred to the head (child abuse)
*An ultrasound scan should not be used for this assessment. Much too user and patient-dependent.
In such cases a CT scan of the head is used for all children who are < 1 år and an MRI of the head + total columna on days 2-5 if damage is found either clinically or on a CT scan. (Guidelines on the work of the health and welfare services relating to violence in close relationships).*
- C X** Cerebral hemorrhage in premature babies
An ultrasound scan is a "good enough" modality for identifying, grading and checking most cerebral hemorrhages in premature babies. When there is bleeding in areas where one would "not expect" bleeding (e.g. the cerebellum or peripherally in the brain paranchyma) an MRI of the head should be carried out in order to clarify this.
- D Recurrent neonatal cramps
There are many reasons for cramping (Chap. 9.1 of the Newborn Guidelines). Most babies have an MRI of the head in order to find the cause. An ultrasound scan is not good enough for assessing the parenchyma.

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102

When investigating suspected prostate cancer with an MRI, a diffusion-weighted MRI sequence is carried out. What is the purpose of this sequence when assessing possible prostate cancer?

- A High signal on both the DWI sequence (b-series) and the ADC map show the most malignant areas
High signal on both the DWI sequence (b-series) and ACD means T2 shine through and is not diffusion restriction
- B Diffusion-weighted imaging is the most sensitive and specific for metastatic prostate cancer
- C X** The degree of diffusion restriction is correlated with the degree of malignity
Diffusion restriction (high signal on DWI [b-series] and a corresponding low signal on the ADC map) are correlated with the degree of malignancy. Used in order to help urologists perform more targetted biopsies.
- D The diffusion sequence gives the best anatomical imaging of tumours
Diffusion-weighted MRI is based on a relatively small amount of signals and gives a much more inferior anatomical image than, for example, T1 and T2 weighted sequences.

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103

The parents of a 7-month-old girl visit you in your capacity as a health centre doctor due to their concerns about her uneven head shape. You examine the child. Apart from a long, narrow head shape your examination (incl. neurological status) shows normal findings. The parents have been Googling a lot and are very worried about a condition called "craniosynostosis" and ask for a "computed tomography" of her head. You choose to refer the child to the neonatal outpatients clinic. At the same time you refer her to the radiology department.

What imaging modality do you refer the child for?

A X-ray of the head

Can show if the suture lines are open or closed. Should not be used as a routine test, but can be used if the results of an ultrasound scan of the head are not clear.

B MRI of the head

In order to identify the intracerebral conditions if necessary, e.g. if an ultrasound scan of the head produces different findings. Suboptimal imaging of the bone structure and suture lines (compare with CT scan)

C CT scan of the head

Provides better information than an ordinary X-ray, but involves a higher dose of radiation. Should not be used unless craniosynostosis is STRONGLY suspected. In most cases a neurosurgeon with specialist expertise will refer a patient for such a test (preferably pre-operatively).

D X Ultrasound scan of the head

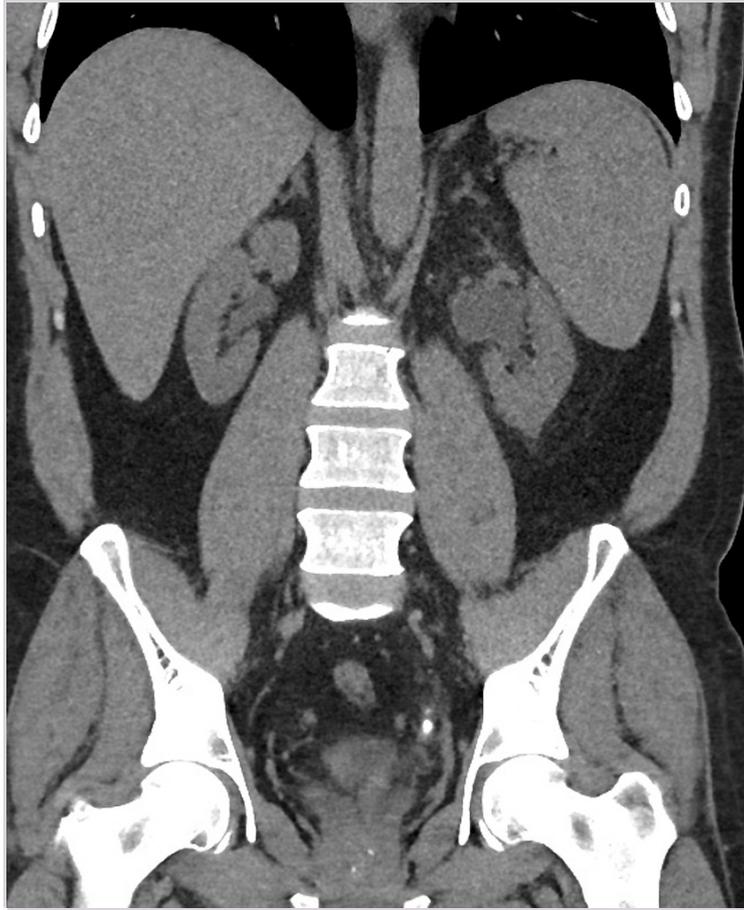
Always start with an ultrasound scan of the head (cerebral ultrasound). This provide good information about the intracranial conditions and one can also see the suture lines. Three challenges are: a) the experience of the radiologist, b) a cooperative patient, c) too much hair (reduced insight).

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104

A 59-year-old man suddenly experiences severe abdominal pain with an urge to move. The pain is more predominant towards the left flank/back. A CT scan was carried out, see the attached image. Based on this, it was decided that active intervention was required.

What type of treatment is the patient likely to receive?



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

- A** Extracorporeal shock wave lithotripsy (ESWL)
Used primarily for concretions in the renal pelvis, calyces and upper ureter. The patient has concretion in the distal left ureter with hydronephrosis.
- B** Percutaneous nephrolithotripsy (PCNL) with a nephrostomy
Used for large concretions in the renal pelvis that cannot be treated with ESWL. The patient has concretions in the distal left ureter with hydronephrosis.
- C** Left-sided nephrectomy
The image shows left-sided hydronephrosis secondary to the concretions in the distal left ureter. Hydronephrosis is not an indication for nephrectomy.
- D X** Cystoscopy, possibly ureterorenoscopy (URS), with a stent
The image shows concretions in the distal left ureter. Cystoscopy or ureterorenoscopy is therefore the preferred treatment. The patient also has hydronephrosis with indications for a stent. URS is a frequently used method for concretions in the lower and middle sections of the ureter. In acute cases one often uses cystoscopy with a stent, followed by URS if the concretions are not passed.
<http://nhi.no/pasienthandboka/sykdommer/kirurgi/nyrestein-ureterorenoskopi-10817.html?page>

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105

A 24 mm relatively low-attenuating, homogenous, well-defined and rounded lesion is detected in the renal parenchyma of a 73-year-old patient as an incidental finding. Not macroscopically fatty. Before contrast, the lesion attenuates 43 HU (Hounsfield units), after contrast, it attenuates 81 HU. What is the lesion most suspicious of and the correct action?

- A** Relatively low attenuation and attenuation change between 20 and 50 HU is almost pathognomonic for oncocytoma. No need for biopsy.

Oncocytoma cannot be ruled out, but the lesion is unclear and should be biopsied.

- B** Homogeneous and significant contrast loading is most likely a benign tumor. No need for biopsy. *The fact that the lesion is homogeneous says nothing about malignancy potential. Should be biopsied.*

- C** Attenuation change < 50 HU and therefore most likely a simple cyst. No need for biopsy.

Attenuation change in a lesion > 10 mm of > 20 HU is considered a certain contrast loading and is not compatible with a simple cyst.

- D X** Significant attenuation change and most likely a tumor of undetermined degree of malignancy. Should be biopsied.

Attenuation change in a lesion > 10 mm of > 20 HU is considered a certain contrast loading and is suspicious for a tumor. The degree of malignancy is unclear until a biopsy is taken.

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106

Which imaging diagnostic modality is used for grading vesicoureteral reflux (VUR)?

- A** X-ray urography

- B X** X-ray MCUG

Used for diagnostics and grading. The other modalities that can be used are NM MCUG (often for patients who are > 18 years old) or ce-VUS (used a lot abroad, especially in the USA).

- C** Ultrasound scan of the urinary tract

- D** 3-phase CT scan of the urinary tract

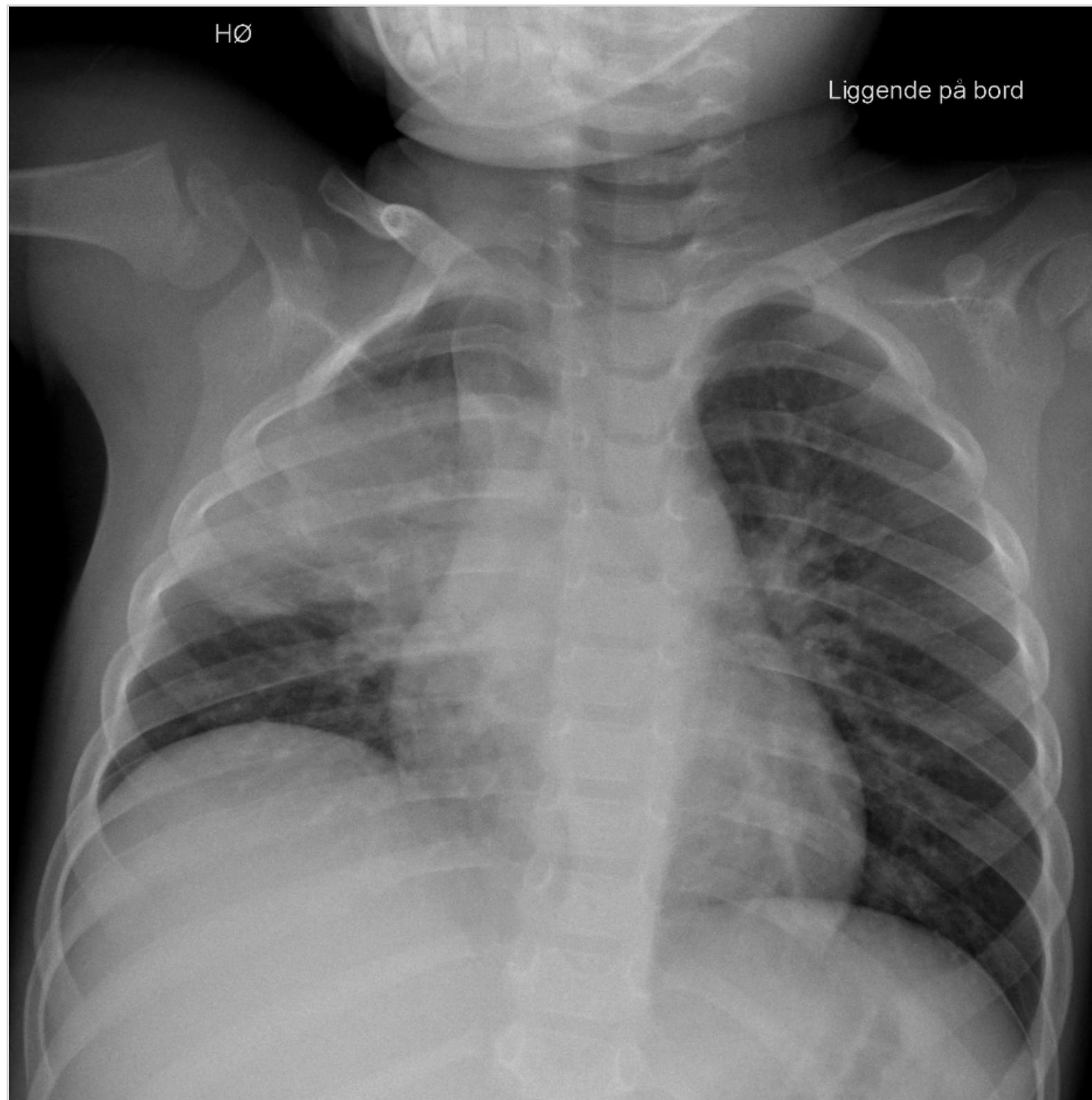
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107

You are working as an intern/specializing doctor in a child reception centre and receive a 4-year-old boy who has been suffering from increasing respiratory tract symptoms during the past week. The boy's GP has treated him conservatively for a viral lower respiratory tract infection. He is clinically exhausted, has a temperature and an elevated respiratory rate of 56. His CRP level is 240 (ref. <5). Upon auscultation you can hear diminished respiratory sounds basally on the right side. You refer him for a chest x-ray. What does the image show?

HØ

Liggende på bord



- A Delimited collection of fluid between the lower and upper right lobes
Very uncommon. Fluid-filled pneumatoceles may be sequelea after an infection or trauma. A lung abscess would be a collection of fluid (pus), but that diagnosis is not made by CT/MRI.
 - B X** Mass-like consolidation in the upper right lobe
Many types of consolidations. In this case (involving infectious clinical findings) this is a round pneumonia mass.
 - C Congenital lung anomaly in the upper right lobe
Changes such as CPAM (congenital pulmonary airway malformation) or BPS (bronchopulmonary sequestration) can result in secondary recurrent infections. Most of these are discovered prenatally or in newborns. A check-up after an infection can be used for such an assessment. To the observant eye: lobus venae azygos right side (congenital venous anomaly WITHOUT clinical significance).
 - D Atelectatic mass in the upper right lobe
This change has an atelectatic component (elevated diaphragm), but from a definition point of view that term is not used for clinical infectious findings.
-

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108

Physical abuse of children is something every clinician must have in the back of their minds. The radiologist can be the first person to suspect/give a diagnosis and say something about the extent of injury, particularly when the medical history does not agree completely with the findings on the images. **What type of fractures are very specific in this respect?**

- A X** Metaphyseal fractures (bucket handle/corner fractures)
Of these alternatives, this is the fracture that is most specific
 - B Greenstick fractures
 - C Unilateral, isolated rib fractures
One-sided single rib fractures can occur accidentally, but rib fractures posteriorly and bilaterally are suspicious indicating NA. This makes metaphyseal injuries in the form of bucket handle and corner fractures more suspicious.
 - D Avulsion fractures
-

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109

A 25-year-old woman has been suffering from recurrent urinary tract infections and has been examined without any pathological findings. She visits her GP for a check-up and brings a urine sample with her. She has no symptoms of infection. Her urine dipstick tests shows a full count of leucocytes and nitrites and you interpret this as being asymptomatic bacteriuria. What should you do in your capacity as her GP?

- A X** Ask if she is pregnant
Asymptomatic bacteriuria should not generally be treated with antibiotics since it may protect against symptomatic urinary tract infections. One important exception is when the patient is pregnant.
 - B Treat her with a 3 days course of antibiotics due to current guidelines
It is particularly important to target treatment after resistance testing for patients with recurrent infections in order to reduce the risk of developing resistance. However, the advice here is not to give treatment if the patient does not have any symptoms.
 - C Do a urine culture test so that the right type of antibiotics can be given
If the patient has symptoms this is not the correct answer
 - D Wait and see how the situation develops and ask the patient to come back if she has symptoms
This is correct, provided that the patient is not pregnant
-

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110

A 62-year-old previously healthy man has been diagnosed with a bladder tumour and a transurethral resection of the tumour shows tumor stage T2 grade 3. Further investigation shows no signs of metastasis. What is the best treatment for this patient?

- A Re-resection in 4-6 weeks
Re-resection is not relevant when a muscle-invasive tumour has been diagnosed. This does not provide any further information.
 - B Mitomycin C instillation treatment
Not used for bladder cancer which has invaded the musculature
 - C X** Radical cystectomy
For stage T2 bladder cancer without metastasis which has invaded the musculature, radical cystectomy is the correct treatment. Patients who are able to tolerate it can also be given neoadjuvant chemotherapy; i.e. before the operation.
 - D BCG installation treatment
Not used for bladder cancer which has invaded the musculature
-

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111

A 50-year-old man visits you, his GP, with a swollen, painful scrotum. You palpate a swollen, tender epididymis on his left side. His testicles feel normal when palpated. He is afebrile and his CRP level is 30 (ref. range < 5). In your capacity as his GP what should you do next with this patient?

- A You suspect epididymitis and commence treatment with ciprofloxacin 500mg x 2 for 10 days
Taking ciprofloxacin, which is a quinolone, is not recommended since this drug increases the risk of developing resistant bacteria. It also takes a long time to decompose in nature. Only recommended for use exceptionally when other antibiotics are ineffective or not possible to use.
 - B X** You suspect epididymitis and commence treatment with trimethoprim/sulfamethoxazol 800/160mg x 2 for 10 days
This is probably an ordinary case of epididymitis for which the treatment has been specified
 - C You suspect an abscess and refer the patient for an emergency ultrasound scan of his scrotum and possibly an incision and drainage.
Based on these findings an abscess is not very likely.
 - D You suspect an epididymal abscess and refer him for an ultrasound scan the next day.
It is unlikely to be an abscess since the patient's CRP level is so low and he is afebrile, but if you have a patient who very likely has an abscess then that patient should be referred for emergency treatment the same day in order to reduce the risk of developing sepsis.
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112

A 71-year-old previously healthy man visits his GP after suffering from increasing problems in the form of lethargy, back pain, poor pressure on urination and urinary incontinence. During the past week he has had problems with emptying his bladder. As his GP you wish to take a urine sample and the patient passes approx. 2dl of cloudy urine. He feels that he had not completely emptied his bladder and a bladder scan reveals 9 dl of residual urine. What is the next step for treating him at the GP's surgery?

- A You insert a permanent catheter, undertake a digital rectal examination of his prostate and take blood tests for information purposes, including a PSA test.
Everything is OK, apart from his PSA test which should never be taken in an acute situation since the values will increase if the patient has an infection or retention.
- B You empty his bladder using a disposable catheter, undertake a digital rectal examination, send off his urine for culture and commence antibiotic treatment. You ask the patient to come back if his urination does not start to flow during the course of the day.
This bladder probably requires permanent relief for a few weeks. A disposable catheter is not enough in this situation since it should be assumed that the bladder may be weakened.
- C X You insert a permanent catheter; undertake a digital rectal examination of his prostate, take blood tests with a view to infection and kidney function and refer him to the urology outpatients clinic.
This patient obviously has major problems when he has 900 ml in his bladder without experiencing any particular pain. He probably has a drainage problem which has developed slowly over time and has caused dilation of the bladder and possibly also of the kidneys/ureter since he has back pain. In this case it is important to relieve the bladder and to refer him for further tests. Upon palpation of the prostate you obtain information about its size and suspect a possible tumour. A PSA test can be taken at a later point and can be included in his tests.
- D You empty his bladder using a disposable catheter, undertake a digital rectal examination, take a PSA test, send off his urine for culture, commence antibiotic treatment and book an ultrasound scan of his kidneys.
This bladder requires permanent relief for a while so that it has the opportunity to regain what should be assumed to be a weakened detrusor muscle. The patient needs to be examined by the urology outpatients clinic. A PSA test should not be taken in acute cases.

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113

You are an A&E doctor for the primary health service and are called by a woman who says that her 15-year-old son woke up one hour ago with severe pain in the right side of his scrotum. What should you do?

- A You ask them to go to the nearest hospital if he is still in pain after 2-3 hours
No reason to wait for diagnostics when torsion is suspected
- B You ask them wait for 2-3 hours and call back if he is still in pain
No reason to wait when there is a high risk of torsion
- C You ask them to attend an emergency appointment as soon as the medical centre opens at 0800 hrs
An early diagnosis is important and the patient needs to be examined as soon as possible
- D X You ask them to come into the A&E immediately
An early diagnosis is important since there is a high risk of torsion in this age group

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114

A 78-year-old man attends his GP for a check-up of his blood pressure. He has suffered for several years with mild irritation from his urinary tract since he had radiation treatment for prostate cancer 10 years ago. There has not been any changes in his urination during the last 8 years. His urine dipstick tests shows 1+ blood. Otherwise his tests are negative. Which is the best measure for this patient?

- A The patient is at risk and is referred for a 3-phase CT scan of his urinary tract and cystoscopy
 - B The patient is at risk and is referred for an ultrasound scan of his urinary tract and cystoscopy
 - C The patient is at risk and his PSA levels should be checked
The patient risks developing a secondary tumour in the irradiated area. For example, his bladder could be affected, but 1+ is not defined as microhematuria and according to the current guidelines a further check-up is not therefore recommended.
 - D X** No measures are necessary
*A urine dipstick test with 1+ blood is not defined as microhematuria and no further tests are required.
A urine dipstick test with 1+ is more defined as microhematuria.*
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115

The Norwegian Institute of Public Health has evaluated performing prostate biopsies by using New Methods and has reached a conclusion that is changing clinical practice. What does this change involve?

- A X** Prostate biopsies shall be carried out via the skin in the perineum, also called transperineal biopsies.
In order to avoid serious infections after performing prostate biopsies via the colon a decision has now been made to take samples via the skin.
 - B Using risk calculators is recommended in order to avoid performing biopsies on patients who are unlikely to have cancer.
 - C Targetted biopsies shall be performed by using fusion tools.
 - D In order to avoid infections the rectum should be cleaned with iodine and adequate antibiotic prophylaxis shall be given.
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116

A 57-year-old woman with diabetes and hypertension is diagnosed with a 2.5 cm tumour in her left kidney. A biopsy shows that this is a clear-cell renal cell carcinoma. What is the best treatment alternative for this patient?

- A The patient should probably have a nephrectomy since the tumour is over 2 cm in size.
When possible tumour resection should be tried, and normally this is possible for a tumour which is 2.5 cm in size. It is not regarded as being a large tumour.
 - B Since the tumour is only 2.5 cm in size it can be followed by using CT scan check-ups. If it grows over the course of 6 months the patient should undergo surgical treatment.
This could be a strategy for an elderly comorbid patient. However, in her age group treatment rather than a CT scan check-up would probably be recommended.
 - C X** The patient should undergo a tumour resection if possible.
This patient should undergo a tumour resection and it is particularly important that she keeps as much renal tissue as possible since she has both diabetes and hypertension.
 - D The patient should undergo RFA (radio frequency ablation) of the tumour since she has comorbidity due to her diabetes and hypertension.
RFA could be an alternative for patients who are unable to tolerate an operation, but we consider surgical treatment to be safer and it should be recommended for the patient as being the best treatment.
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117

A 55-year-old man has previously suffered from moderate urination problems, including fairly frequent urination, urge incontinence and nocturia. After visiting a football pub and having a few beers he woke up the following day with severe bladder pressure, but unable to urinate a single drop. He visits his GP who empties 600 ml from his bladder using a disposable catheter. How would it be best to treat him next?

- A The patient should be examined further and blood tests, including a PSA test, should be taken before he goes home.
PSA tests should not be taken in acute situations since their values could be falsely elevated.
- B X** The GP asks the patient to return if his urination does not improve and books an appointment for further investigation of his prostate.
This is a good strategy. The patient can then be informed about the results of his PSA test, if taken.
- C After emptying out 600 ml a permanent catheter should probably be inserted and the patient should be referred to a urologist for further investigations.
In this case one can expect to achieve spontaneous urination after emptying the bladder using a disposable catheter and a permanent catheter and referral are not indicated for the time being.
- D His bladder should be relieved with a permanent catheter for one week before removal.
Patients with moderate urination problems can experience urinary retention when consuming alcohol. In such cases it is usually enough to empty the bladder using a disposable catheter and urination will recommence spontaneously. Having the catheter in for one week is a bit much and the patient would risk bacterial colonisation.

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118

A 65-year-old man has had a stroke and is in a wheelchair. He lives in sheltered accommodation and is dependent on a permanent catheter. He now attends the A&E in a severely impaired state of general health. He has fever, severe pain in his scrotum and is very tender when palpated. There is crepitus beneath the skin of his scrotum which is red and swollen. What is the most likely diagnosis?

- A X** Necrotising fasciitis
*In this case it is crepitus beneath the skin which particularly gives rise to suspicion of gas-forming bacteria and necrotising fasciitis.
This is a very serious infection and the patient must have an emergency operation where all the necrotic tissue is opened and removed and the patient receives several types of i.v. antibiotics.*
- B Testicular torsion
Can cause severe pain, but rarely affects one's general state of health with a temperature and no crepitus beneath the skin.
- C Urinary infection with epididymitis
Crepitus beneath the skin gives rise to suspicion of a more serious condition and requires different treatment than an urinary infection with epididymitis.
- D Incarcerated inguinal hernia
This can cause painful swelling in the scrotum and affect one's general state of health, but does not give crepitus beneath the skin

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Testen har 118 oppgaver. På utskriftstidspunktet var 0 oppgaver blitt trukket og det var gjort fasitendringer på 0 oppgaver.