Case 1

Mr HA is a 50-year-old accountant who was admitted 2 days ago to hospital following a blackout whilst watching a football match with his son.

His preliminary examination reveals bruising to his left arm and upper thigh for which he has been prescribed **paracetamol 1g** four times daily and as required **ibuprofen 400 mg** three times a day.
His past medical history indicates that he is on no medication and seemed to be a reasonably fit man for his age with no existing diagnosed medical conditions.

On examination he is slightly **overweight** at 81 kg, he **smokes** 20 cigarettes per day and drinks approximately 30 units of **alcohol** per week. His blood pressure on admission was 165/80 mmHg with a heart rate of 90 beats per minute. This degree of raised blood pressure and heart rate has been maintained over the last 48 hours. He is subsequently diagnosed as having hypertension.

Question:

1. **What is hypertension?**
2. **What are the appropriate treatment targets for this patient's blood pressure?**
3. **Besides blood pressure, what other advice and treatment does this patient require to ensure his risk of a cardiovascular event is reduced? Give clear reasons for your advice and explain the risks associated with not taking this advice.**
4. **What are the main classes of drug used to treat hypertension?**
5. **Which class of drug would be appropriate first-line treatment for Mr HA?**
6. **For one of the classes of drugs mentioned in question 4 indicate the following:**
   a. A drug from that class
   b. A suitable starting dose and frequency
   c. The maximum dose for hypertension
   d. Three contraindications
   e. Three common side-effects.

6- In view of Mr HA's age he requires cardiovascular risk assessment. How would you assess this patient's cardiovascular risks?

Case 2

Mr.Mark is a 52-year old man who presented with a 2-week history of polyuria, polydipsia, polyphagia, weight loss, fatigue, and blurred vision. A random glucose test performed 1 day before presentation was 352 mg/dl. The patient had symptoms of numbness, tingling in hands or feet, dysuria, sometimes he had chest pain, cough. He had history of diabetes and no family history of diabetes, also he said that he always eat fast food.

Admission non-fasting serum glucose 248 mg/dl (N=<180 mg/dl), HbA1c 9.6% (N=4-6.1%). Electrolytes, BUN and creatinine were normal, total serum cholesterol 266 mg/dl (N: <200 mg/dl), high-density lipoprotein (HDL) cholesterol 29 mg/dl (N: >35 mg/dl), triglycerides 285 mg/dl (N: <200 mg/dl). Physical examination revealed weight of 180 pounds, height 5'5.5" (IBW 140-145). The rest of the examination was unremarkable, i.e., no signs of retinopathy or neuropathy.

The patient was taught self-monitoring of blood glucose and begun on 5 mg glyburide once a day and Atorvastatin (Lipitor).He was instructed in diet (1800 cal ADA). Blood glucose levels ranged from 80 to 120 mg/dl within 2 weeks of starting glyburide, his symptoms disappeared and weight remained constant.

During the next two months, blood glucose levels decreased to 80 mg/dl, and glyburide was stopped. Patient did not return until one year later; fasting serum glucose was 190 mg/dl, and HbA1c 8%. He again had polyuria and nocturia. Weight was unchanged from time of presentation. The physician put him on 5 mg/day of glyburide. His blood sugar one month later remained at 180 mg/day. At this point, his physician decided to put him on insulin alone, 20 units/day at bedtime. Two weeks later, his fasting plasma glucose was 120 mg/dl.

Questions:

1. **What is diabetes mellitus, types, which type does Mr. Mark has?**
2. **What are the signs and symptoms that Mr.Mark has?**
3. **What are the factors responsible for the disease that the patient have and does he have risk factors for cardiovascular disease?**
4. **What are the complications that can happen if the patient did not take the right treatment?**
5. **Mention the drugs used to treat the patient and their mechanism of action?**
6. **Mention the drugs used in treatment of Diabetes mellitus?**
7. **What are other factors that can help in patient treatment?**

Case 3

Jim is a three-month-old baby born at 35 weeks' gestation. He has been in hospital since birth with a variety of problems. He is now feeding enterally via a bottle, but is not thriving and his weight is falling off the centile chart. He has been on feed thickeners and ranitidine for the last month for gastrooesophageal reflux, but symptoms still persist.

Questions

1. What is gastro-esophageal reflux and what are the main symptoms?
2. What is the rationale behind the ranitidine treatment already started?
3. What alternative class of drug may work in the same way as ranitidine, but be more effective?
4. What are the practical problems of using this second class of medicine in an infant?
5. Name three prokinetic agents which could be added to the regimen at this stage?
6. What is the rationale of use of these products?

Case 4

A 40 years old female complains that she has tried 3 **Antinal**® capsules daily for 3 days to stop diarrhea, but with no relief. The patient says that she occasionally complains from abdominal pain, cramping or bloating that is typically relieved or partially relieved by passing a bowel movement and sometimes alternating bouts of diarrhea and constipation and also she experienced mucus in the stool. She also said that her husband had passed away 5 months ago. She also said that she had constipation 2 weeks ago and lasted for 5 days.

1. What is IBS?
2. What are the causes of IBS?
3. What are the signs and symptoms?
4. What are the risk factors?
5. What are the Complications?
6. How to prevent IBS?

Case 5

An 80 year old man presented with impairment of brain functions, alterations of mood and behavior. His family reported that he was having progressive disorientation and memory loss over the past 6 months. He had trouble handling money and paying bills. He repeated questions, took longer to complete normal daily tasks, had poor judgement, and had developed mood and personality changes.

There was no family history of dementia. The routine blood, urine and C.S.F. analysis did not reveal much. After a computerized tomography (CT) scan and the histopathological examination of the brain tissue, the patient was diagnosed to have Alzheimer's disease.

Questions:

1) What is the pathophysiology of this disease?

2) What are the laboratory investigations required for diagnosis?

3) What it its prognosis of this case?

4) How can this case be managed/ treated?

Case 6

A 66-year-old woman notices that she is having trouble performing some everyday tasks such as doing up buttons on her blouse and chopping up vegetables in her cooking. She complains that her muscles feel stiff, and it is taking her longer than it did to walk to the local shops. She is anxious about these problems since she lives alone and has to do everything for herself. She has noticed a little shakiness which she ascribes to anxiety. Her daughter has told her that it is becoming increasingly difficult to read the small writing in the letters she sends. She is a retired journalist and has no significant past medical history. There is no disturbance of her bowels or micturition. Her appetite has been good and her weight steady. She complains that she has been sleeping poorly and is, consequently, rather tired. She does not smoke tobacco and drinks only occasionally. She has hypertension and takes atenolol 50 mg daily.

Examination

Her pulse is 60/min and regular, blood pressure is 134/84 mmHg. There are no abnormalities in the cardiovascular or respiratory systems. On neurological examination there is no muscle wasting. She has generally increased muscle tone throughout the range of movement and equal in flexors and extensors. There is a slight tremor affecting mainly her right hand, which is suppressed when she tries to do something. She has problems with fine tasks such as doing up buttons. Power, reflexes, co-ordination and sensation are all normal. When asked to walk she is a little slow to get started and has difficulty stopping and turning. There is evidence in the history and examination of tremor, rigidity and bradykinesia. Her writing shows micrographia secondary to the rigidity and slowness of movement so she had been diagnosed to have **Parkinson's disease**. Her hypertension is well controlled on the beta-blocker

Questions

1. **What is Parkinson's disease?**
2. **What is the difference between Parkinson's and parkinsonism?**
3. **What are the causes of Parkinson's disease?**
4. **How would you investigate and diagnose this patient?**
5. **What are the signs and symptoms?**
6. **What are the risk factors?**
7. **What are the Complications?**
8. **How to manage Parkinson's disease?**

Case 7

An 18-year-old man, VB, presents with a history of recurrent episodes of wheeze after walking 200 meters. VB has recently started to go to a gym and his episodes of wheeze have worsened. He goes to see his GP. He can talk in sentences but his respiratory rate is increased. His peak flow is 420 L/min which is 80% of predicted result. A diagnosis of mild asthma is made. He is started on salbutamol metered dose inhaler (MDI) two puffs when required and beclometasone (Qvar) 50 micrograms twice daily.

Questions:

1- What is asthma?
2- What are the risk factors for developing asthma?
3- What are the risk factors does this patient have?
4- Describe the pharmacokinetic and pharmacodynamics of beta2-agonists and inhaled corticosteroids
5- What are the side-effects of beta2-agonists?
6- What are the available pharmaceutical formulations of salbutamol and corticosteroids available in the market for treatment of Asthma? And what are the advantages and disadvantages of each type?
7 -Describe how to use an MDI.

Case 8

AW, a 25-year-old Afro-Caribbean man, has been admitted to your ward with a sickle cell crisis. AW has a raised temperature and complains of severe pain in his limbs, chest and lower back.

His regular medications are:

- Phenoxymethylpenicillin 500 mg twice a day.
- Folic acid 5 mg daily.

AW's blood results are as follows:

- **WBC:** 13.1 × 10^9/L (4.0–11.0 × 109/L)
- **RBC:** 3.5 × 10^9/L (3.8–4.8 × 109/L)
- **Hb:** 8.5 g/dL (12.0–15.0 g/dL)
- **Hct:** 0.33 (0.36–0.46)
- **Bilirubin:** 45 micromol/L (3–17 micromol/L)

Blood film showed increased reticulocytes, sickle cells and presence of target cells.

Please answer the followings:

1. What is the cause of sickle cell anemia?
2. What is a sickle cell crisis? What situations may precipitate a sickle cell crisis?
3. What do you think may have precipitated AW's crisis?
4. The doctor caring for AW asks your advice regarding analgesia. So far, he has prescribed regular paracetamol and full-dose dihydrocodeine but AW is still in severe pain. What recommendations can you make regarding analgesia for AW?
5. Comment on AW's blood results.
6. What other acute management may be necessary for AW?
7. Why is AW taking phenoxymethylpenicillin and folic acid?
8. What are the prognosis and long-term complications for patients with sickle cell anemia?
9. Due to AW's frequent crises the medical team caring for him is considering initiating hydroxycarbamide (hydroxyurea). What evidence is there to support the use of hydroxycarbamide in the management of sickle cell anaemia?
10. How is hydroxycarbamide thought to work in the management of sickle cell anaemia?
11. State the different types of sickle cell anemia.
12. What are the types of hemoglobin?
13. State the type of mutation occurs in sickle cell anemia. Explain.

Case 9

Mr HA is a 50-year-old accountant who was admitted 2 days ago to hospital following a blackout whilst watching a football match with his son.

His preliminary examination reveals bruising to his left arm and upper thigh for which he has been prescribed **paracetamol 1g** four times daily and as required **ibuprofen 400 mg** three times a day.
His past medical history indicates that he is on no medication and seemed to be a reasonably fit man for his age with no existing diagnosed medical conditions.

On examination he is slightly **overweight** at 81 kg, he **smokes** 20 cigarettes per day and drinks approximately 30 units of **alcohol** per week. His blood pressure on admission was 165/80 mmHg with a heart rate of 90 beats per minute. This degree of raised blood pressure and heart rate has been maintained over the last 48 hours. He is subsequently diagnosed as having hypertension.

Question:

7. **What is hypertension?**
8. **What are the appropriate treatment targets for this patient's blood pressure?**
9. **Besides blood pressure, what other advice and treatment does this patient require to ensure his risk of a cardiovascular event is reduced? Give clear reasons for your advice and explain the risks associated with not taking this advice.**
10. **What are the main classes of drug used to treat hypertension?**
11. **Which class of drug would be appropriate first-line treatment for Mr HA?**
12. **For one of the classes of drugs mentioned in question 4 indicate the following:**
    a. A drug from that class
    b. A suitable starting dose and frequency
    c. The maximum dose for hypertension
    d. Three contraindications
    e. Three common side-effects.

7- In view of Mr HA's age he requires cardiovascular risk assessment. How would you assess this patient's cardiovascular risks?

Case 10

Mr.Mark is a 52-year old man who presented with a 2-week history of polyuria, polydipsia, polyphagia, weight loss, fatigue, and blurred vision. A random glucose test performed 1 day before presentation was 352 mg/dl. The patient had symptoms of numbness, tingling in hands or feet, dysuria, sometimes he had chest pain, cough. He had history of diabetes and no family history of diabetes, also he said that he always eat fast food.

Admission non-fasting serum glucose 248 mg/dl (N=<180 mg/dl), HbA1c 9.6% (N=4-6.1%). Electrolytes, BUN and creatinine were normal, total serum cholesterol 266 mg/dl (N: <200 mg/dl), high-density lipoprotein (HDL) cholesterol 29 mg/dl (N: >35 mg/dl), triglycerides 285 mg/dl (N: <200 mg/dl). Physical examination revealed weight of 180 pounds, height 5'5.5" (IBW 140-145). The rest of the examination was unremarkable, i.e., no signs of retinopathy or neuropathy.

The patient was taught self-monitoring of blood glucose and begun on 5 mg glyburide once a day and Atorvastatin (Lipitor).He was instructed in diet (1800 cal ADA). Blood glucose levels ranged from 80 to 120 mg/dl within 2 weeks of starting glyburide, his symptoms disappeared and weight remained constant.

During the next two months, blood glucose levels decreased to 80 mg/dl, and glyburide was stopped. Patient did not return until one year later; fasting serum glucose was 190 mg/dl, and HbA1c 8%. He again had polyuria and nocturia. Weight was unchanged from time of presentation. The physician put him on 5 mg/day of glyburide. His blood sugar one month later remained at 180 mg/day. At this point, his physician decided to put him on insulin alone, 20 units/day at bedtime. Two weeks later, his fasting plasma glucose was 120 mg/dl.

Questions:

1. **What is diabetes mellitus, types, which type does Mr. Mark has?**
2. **What are the signs and symptoms that Mr.Mark has?**
3. **What are the factors responsible for the disease that the patient have and does he have risk factors for cardiovascular disease?**
4. **What are the complications that can happen if the patient did not take the right treatment?**
5. **Mention the drugs used to treat the patient and their mechanism of action?**
6. **Mention the drugs used in treatment of Diabetes mellitus?**
7. **What are other factors that can help in patient treatment?**

Case 11

Jim is a three-month-old baby born at 35 weeks' gestation. He has been in hospital since birth with a variety of problems. He is now feeding enterally via a bottle, but is not thriving and his weight is falling off the centile chart. He has been on feed thickeners and ranitidine for the last month for gastrooesophageal reflux, but symptoms still persist.

Questions

7. What is gastro-esophageal reflux and what are the main symptoms?
8. What is the rationale behind the ranitidine treatment already started?
9. What alternative class of drug may work in the same way as ranitidine, but be more effective?
10. What are the practical problems of using this second class of medicine in an infant?
11. Name three prokinetic agents which could be added to the regimen at this stage?
12. What is the rationale of use of these products?

Case 12

A 40 years old female complains that she has tried 3 **Antinal**® capsules daily for 3 days to stop diarrhea, but with no relief. The patient says that she occasionally complains from abdominal pain, cramping or bloating that is typically relieved or partially relieved by passing a bowel movement and sometimes alternating bouts of diarrhea and constipation and also she experienced mucus in the stool. She also said that her husband had passed away 5 months ago. She also said that she had constipation 2 weeks ago and lasted for 5 days.

7. What is IBS?
8. What are the causes of IBS?
9. What are the signs and symptoms?
10. What are the risk factors?
11. What are the Complications?
12. How to prevent IBS?

Case 13

An 80 year old man presented with impairment of brain functions, alterations of mood and behavior. His family reported that he was having progressive disorientation and memory loss over the past 6 months. He had trouble handling money and paying bills. He repeated questions, took longer to complete normal daily tasks, had poor judgement, and had developed mood and personality changes.

There was no family history of dementia. The routine blood, urine and C.S.F. analysis did not reveal much. After a computerized tomography (CT) scan and the histopathological examination of the brain tissue, the patient was diagnosed to have Alzheimer's disease.

Questions:

5) What is the pathophysiology of this disease?

6) What are the laboratory investigations required for diagnosis?

7) What it its prognosis of this case?

8) How can this case be managed/ treated?

Case 14

A 66-year-old woman notices that she is having trouble performing some everyday tasks such as doing up buttons on her blouse and chopping up vegetables in her cooking. She complains that her muscles feel stiff, and it is taking her longer than it did to walk to the local shops. She is anxious about these problems since she lives alone and has to do everything for herself. She has noticed a little shakiness which she ascribes to anxiety. Her daughter has told her that it is becoming increasingly difficult to read the small writing in the letters she sends. She is a retired journalist and has no significant past medical history. There is no disturbance of her bowels or micturition. Her appetite has been good and her weight steady. She complains that she has been sleeping poorly and is, consequently, rather tired. She does not smoke tobacco and drinks only occasionally. She has hypertension and takes atenolol 50 mg daily.

Examination

Her pulse is 60/min and regular, blood pressure is 134/84 mmHg. There are no abnormalities in the cardiovascular or respiratory systems. On neurological examination there is no muscle wasting. She has generally increased muscle tone throughout the range of movement and equal in flexors and extensors. There is a slight tremor affecting mainly her right hand, which is suppressed when she tries to do something. She has problems with fine tasks such as doing up buttons. Power, reflexes, co-ordination and sensation are all normal. When asked to walk she is a little slow to get started and has difficulty stopping and turning. There is evidence in the history and examination of tremor, rigidity and bradykinesia. Her writing shows micrographia secondary to the rigidity and slowness of movement so she had been diagnosed to have **Parkinson's disease**. Her hypertension is well controlled on the beta-blocker

Questions

9. What is Parkinson's disease?

10. **What is the difference between Parkinson's and parkinsonism?**
11. **What are the causes of Parkinson's disease?**
12. **How would you investigate and diagnose this patient?**
13. **What are the signs and symptoms?**
14. **What are the risk factors?**
15. **What are the Complications?**
16. **How to manage Parkinson's disease?**

Case 15

An 18-year-old man, VB, presents with a history of recurrent episodes of wheeze after walking 200 meters. VB has recently started to go to a gym and his episodes of wheeze have worsened. He goes to see his GP. He can talk in sentences but his respiratory rate is increased. His peak flow is 420 L/min which is 80% of predicted result. A diagnosis of mild asthma is made. He is started on salbutamol metered dose inhaler (MDI) two puffs when required and beclometasone (Qvar) 50 micrograms twice daily.

Questions:

3-What is asthma?
4-What are the risk factors for developing asthma?
3-What are the risk factors does this patient have?
7-Describe the pharmacokinetic and pharmacodynamics of beta2-agonists and inhaled corticosteroids
8-What are the side-effects of beta2-agonists?
9-What are the available pharmaceutical formulations of salbutamol and corticosteroids available in the market for treatment of Asthma? And what are the advantages and disadvantages of each type?
7 -Describe how to use an MDI.

Case 16

AW, a 25-year-old Afro-Caribbean man, has been admitted to your ward with a sickle cell crisis. AW has a raised temperature and complains of severe pain in his limbs, chest and lower back.

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- Folic acid 5 mg daily.

AW's blood results are as follows:

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- **Hct:** 0.33 (0.36–0.46)
- **Bilirubin:** 45 micromol/L (3–17 micromol/L)

Blood film showed increased reticulocytes, sickle cells and presence of target cells.

Please answer the followings:

14. What is the cause of sickle cell anemia?
15. What is a sickle cell crisis? What situations may precipitate a sickle cell crisis?
16. What do you think may have precipitated AW's crisis?
17. The doctor caring for AW asks your advice regarding analgesia. So far, he has prescribed regular paracetamol and full-dose dihydrocodeine but AW is still in severe pain. What recommendations can you make regarding analgesia for AW?
18. Comment on AW's blood results.
19. What other acute management may be necessary for AW?
20. Why is AW taking phenoxymethylpenicillin and folic acid?
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23. How is hydroxycarbamide thought to work in the management of sickle cell anaemia?
24. State the different types of sickle cell anemia.
25. What are the types of hemoglobin?
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Case 17

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On examination he is slightly **overweight** at 81 kg, he **smokes** 20 cigarettes per day and drinks approximately 30 units of **alcohol** per week. His blood pressure on admission was 165/80 mmHg with a heart rate of 90 beats per minute. This degree of raised blood pressure and heart rate has been maintained over the last 48 hours. He is subsequently diagnosed as having hypertension.

Question:

13. **What is hypertension?**
14. **What are the appropriate treatment targets for this patient's blood pressure?**
15. **Besides blood pressure, what other advice and treatment does this patient require to ensure his risk of a cardiovascular event is reduced? Give clear reasons for your advice and explain the risks associated with not taking thisadvice.**
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8- In view of Mr HA's age he requires cardiovascular risk assessment. How would you assess this patient's cardiovascular risks?

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Questions:

1. **What is diabetes mellitus, types, which type does Mr. Mark has?**
2. **What are the signs and symptoms that Mr.Mark has?**
3. **What are the factors responsible for the disease that the patient have and does he have risk factors for cardiovascular disease?**
4. **What are the complications that can happen if the patient did not take the right treatment?**
5. **Mention the drugs used to treat the patient and their mechanism of action?**
6. **Mention the drugs used in treatment of Diabetes mellitus?**
7. **What are other factors that can help in patient treatment?**