In this case study, we are going to investigate and explain the relationship between exercise, lifestyle, gender, age, and health by examining blood pressure, heart rate, and cholesterol level. A data table outlining the medical history of six individuals is shown below. By analyzing the data, we will develop and assess the possible medical conditions, age, lifestyle, and gender of each individual.

Examine the following data on six individuals to answer questions 1,2 and 3

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Individual 1** | **Individual 2** | **Individual 3** | **Individual 4** | **Individual 5** | **Individual 6** |
| **Cholesterol Level** | 200 mg/dL | 185 mg/dL | 280 mg/dL | 165 mg/dL | 150 mg/dL | 150 mg/dL |
| **Activity Level** | moderate | sedentary | sedentary | moderate | intense | moderate |
| **Resting heart rate** | 72 beats/min | 55 beats/min | 81 beats/min | 60 beats/min | 50 beats/min | 90 beats/min |
| **Smoker?** | no | no | yes | no | no | no |
| **Blood pressure** | 120/80 mm Hg | 120/80 mm Hg | 147/95 mm Hg | 133/90 mm Hg | 100/70 mm Hg | 106/62 mm Hg |
| **White blood cell count** | 14000 / µL | 6520 / µL | 9200 / µL | 6000 / µL | 7000 / µL | 5000 / µL |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Individual 1** | **Individual 2** | **Individual 3** | **Individual 4** | **Individual 5** | **Individual 6** |
| **Assessment** | sick adult male | healthy elderly (+65) | high risk for heart disease | elderly Female after being exposed to cold temperature | athlete | healthy child (12 year old) |

1)Individual 6 is a 12-year-old boy. Explain why the heart rate is different than a healthy adult.

2)Why is the resting heart rate of individual 5 significantly lower than other individuals?

3)Which individual is most likely a healthy elderly? Explain your answer.

4)Explain the structural difference between an artery and a vein. Why is there a difference?

Use the following link to help you answer question number 5

https://www.cdc.gov/mmwr/preview/mmwrhtml/mm4829a1.htm

5) List four ways that public health has improved the control of infectious diseases in the 20th century and give a brief explanation of how.

6) Blood transfusions are a relatively common and safe procedure in our modern medical system. However, due to the great number of transfusions that occur every day, mistakes are made. If a patient is given the wrong blood type, the patient’s immune system attacks the foreign blood accordingly. Describe the eight steps that would involve antibodies and be part of this attack. \*Note that in this case killer T cell s are not important, as this invader is not a virus.\*

7) How can we limit the spread of malaria, Ebola, and measles through public health education? Provide your answer using 1–2 sentences for each disease.

8) After completing an independent research of your own, describe what smallpox is and why we have stopped vaccinating for it in Canada. Is there a possibility that it may resurface? Explain your answer.

Look at these two articles to answer the next question

A shot in the dark

Vaccines myhs

9) What is your position on vaccinations? After consulting the two articles, answer the questions below in your own words.

a) Evaluate the sources for the two articles you have read for this case study and determine if there are any biases. (1 mark)

b) Evaluate the risks and benefits of vaccination. (1 mark)

c) Which disease would you have your child vaccinated for? How has your opinion changed after this case study? (1 mark)