

HELIOS Participant Health Information Booklet

We thank you for your participation in the HELIOS study. The information provided in this booklet is health information in general relating to some of the tests that you have undergone in the study. We hope that this booklet will help you to understand your study report. Please note that this information is generic, and may not all be applicable to you. Please contact us at helios@ntu.edu.sg or call +65 69047077 if you have any queries, or consult your own family doctor if you need further clinical inputs.

Tobacco smoking

Background Tobacco smoking is one of the leading preventable causes of morbidity and mortality throughout the world, associated with increased risk of cancer, chronic lung diseases, coronary heart and cardiovascular diseases and other unfavourable health outcomes.

Action If you smoke, you should stop. There are many methods to assist people to stop smoking, and your family doctor will be able to give you advice. Alternatively, you can contact QuitLine, a confidential smoking cessation counselling service via the below methods:

QuitLine Call 1800 438 2000 (Toll-free)

QuitLine SMS +65 9463 3771

QuitLine Email: hpb_quitline@hpb.gov.sg

QuitLine Windows Live Messenger: Add hpb_quitline@hpb.gov.sg

Alcohol drinking

Background Drinking alcohol is best when you do not overdo it. Alcohol is a cause of cancers of the upper gastrointestinal tract and is associated with increased risk of cancers of the liver, colorectum and breast. In contrast, moderate alcohol intake appears to be protective against cardiovascular disease. Drinking alcohol in moderation and with responsibility, can be fun and enjoyable. However, some people should not drink at all. These groups include children, adolescents, recovering alcoholics, pregnant women, and those under medication, or those who have certain medical conditions such as alcohol allergy, liver problems, uncontrolled high blood pressure and asthma. In addition, those who drive, operate machinery or engage in activities that require concentration, skill or coordination should not drink prior to these activities.

Action If you do drink, moderation is the key. Women should drink no more than 1 standard drink a day and men should limit themselves to 2 standard drinks a day. A standard alcoholic drink contains 10 grams of alcohol, and this can be estimated to be: 1 can (330 ml) of regular beer; or half glass (175 ml) of wine; or 1 nip (35 ml) of spirit. If your alcohol intake is high, you should cut down your alcohol intake.

Mood

Background Depression is a medical condition that affects how you think and behave, and the way you feel and function. Depression causes feelings of sadness and/or a loss of interest in activities once enjoyed. Depression may affect your work, interest in activities and quality of life. It is not a sign of weakness and it does not just 'go away'.

Depression symptoms can vary from mild to severe and can include:

- Feeling sad or having a depressed mood
- Loss of interest or pleasure in activities once enjoyed
- Changes in appetite — weight loss or gain unrelated to dieting
- Trouble sleeping or sleeping too much
- Loss of energy or increased fatigue
- Increase in purposeless physical activity (e.g., hand-wringing or pacing) or slowed movements and speech (actions observable by others)
- Feeling worthless or guilty
- Difficulty thinking, concentrating or making decisions
- Thoughts of death or suicide

Action Of the various mental disorders, depression is one of the most treatable. Depression can be managed using a range of different strategies including medication, counselling or psychological intervention and lifestyle changes. If you have the above symptoms of depression, you may want to seek advice from your family doctor, psychologist or psychiatrist.

Body Mass Index (BMI)

Background BMI is a marker of overall body fat and is used to define overweight and obesity, which are well-established, strong risk factors for cardiovascular disease (CVD), stroke, diabetes, high blood pressure, and certain cancers as well as osteoarthritis.

Action If you are overweight or obese, you may want to discuss weight reduction strategies with your family doctor.

Weight classification of Asian Adults (aged 18 and above) according to BMI*

Classification	BMI	Cardiovascular Risk
Underweight	< 18.5	
Normal Range	18.5 – 22.9	Low
Overweight	23.0 – 27.4	Moderate
Obese	> 27.5	High

*According to HPB-MOH Clinical Practice Guidelines on Obesity, June 2016.

Waist Circumference

Background Waist circumference assesses the abdominal fat content and is used in conjunction with BMI to identify increased disease risk. The current Asia Pacific consensus recommend waist circumference cut-offs of 90 and 80 cm to define excess risk in males and females respectively.

Action If your waist circumference is above the cut-off value, you may want to discuss your results with your family doctor.

Blood pressure (BP)

Background Your blood pressure is constantly changing depending upon, for example, whether you are rested, exercised or stressed. There is, therefore, a normal range for blood pressure and not just a single value. In a healthy adult the blood pressure reading should be less than 140/90 mmHg.

Action If the blood pressure we measured was over 140/90 mmHg, you should have it re-checked by your family doctor.

Electrocardiogram (ECG)

Background The electrocardiogram (ECG) is a non-invasive test that is used to reflect underlying heart conditions by measuring the electrical activity of the heart. By positioning electrodes (electrical sensing devices) on the body in standardized locations, information about many heart conditions can be learned by looking for characteristic patterns on the ECG print-out.

Action Your feedback letter may advise you to speak to your family doctor about your result. Your doctor is best placed to advise you on the significance of any findings in the light of your own personal history.

BLOOD TEST

Full blood count

Background RBC test counts the number of red blood cells in a sample of blood. Red blood cells, which are made in the bone marrow, carry oxygen from the lungs to the cells and transport carbon dioxide from the cells to the lungs.

Hemoglobin test measures the amount of haemoglobin (a protein found in red blood cells) in your blood and is a good indication of your blood's ability to carry oxygen throughout your body. MCV stands for mean corpuscular volume. It measures the average size of your red blood cells.

WBC test counts the number of white blood cells in a sample of blood. White blood cells are made in the bone marrow and protect the body against infection and aid in the immune response.

Platelets are tiny fragments of cells made in the bone marrow and circulate in the blood. Because they are very sticky, they are the first components to be activated when there has been an injury to a blood vessel and begin the formation of a "blood clot". The platelet count is a test that determines the number of platelets in your blood.

Action Out-of-range result will be highlighted in the feedback letter. You may want to speak to your family doctor about your result. Your doctor is best placed to advise you on the significance of any findings in the light of your own personal history.

Urea and Creatinine

Background Urea is produced when protein is broken down by the body. Healthy kidneys eliminate more than 90% of the urea the body produces.

Creatinine is produced in your muscles when a compound called creatinine spontaneously breaks down. Creatinine is used in the process in body cells to produce the energy needed to contract muscles and it is produced at a relatively constant rate. Almost all creatinine is excreted by the kidneys.

So blood levels of Urea and Creatinine are a good measure of how well your kidneys are working.

Action Out of range result will be highlighted in the feedback letter. You may want to speak to your family doctor about your result. Your doctor is best placed to advise you on the significance of any findings in the light of your own personal history.

Lipid profile

Background Cholesterol is a substance that is essential for life. It forms the membranes for cells in all organs and tissues in your body. It is used to make hormones that are essential for development, growth and reproduction. It forms bile acids that are needed to absorb nutrients from food. A small amount of your body's cholesterol circulates in the blood in complex particles called lipoproteins. These lipoproteins include some particles that carry excess cholesterol away for disposal (high density lipoprotein, HDL, good cholesterol) and some particles that deposit cholesterol in tissues and organs (low density lipoprotein, LDL, bad cholesterol).

Triglycerides are a form of fat and a major source of energy for the body. High levels of triglycerides in the blood are associated with an increased risk of developing cardiovascular disease and acute pancreatitis.

Action Out of range result will be highlighted in the feedback letter. You may want to speak to your family doctor about your result. Your doctor is best placed to advise you on the significance of any findings in the light of your own personal history.

Glucose and HbA1c

Background Glucose is a simple sugar that serves as the main source of energy for the body. The brain and nervous system cells rely on glucose for energy, and can only function when glucose levels in the blood remain within a certain range. Normally blood glucose levels rise slightly after a meal, and insulin is released to lower them, with the amount of insulin released matched up with the size and content of the meal. If blood glucose levels drop too low, such as might occur in between meals or after a strenuous workout, glucagon (another hormone from the pancreas) is produced to tell the liver to release some of its glucose stores, raising the blood glucose levels. If the glucose/insulin system is working properly the amount of glucose in the blood remains fairly stable.

As glucose circulates in your blood, some of it spontaneously binds to haemoglobin (the protein that carries oxygen in your red blood cells). This combination is called glycated haemoglobin A (HbA1c). The amount of HbA1c formed is directly related to the amount of glucose in your blood. HbA1c levels do not change quickly since red blood cells live for about 3 months. Because of this, the amount of HbA1c in your blood reflects the average amount of glucose in your blood during the last few months.

Action Out of range result will be highlighted in the feedback letter. You may want to speak to your family doctor about your result. Your doctor is best placed to advise you on the significance of any findings in the light of your own personal history.

Uric acid

Background

Uric acid is produced by the breakdown of purines. Purines are nitrogen-containing compounds found in the cells of the body, including our DNA. As cells get old and die, they break down, releasing purines into the blood. To a lesser extent, purines may come from the digestion of certain foods, such as liver, anchovies, mackerel, dried beans and peas and certain alcoholic drinks, primarily beer. Most uric acid is removed from the body by the kidneys and is excreted in the urine, with the remainder eliminated in the stool. This test measures the level of uric acid in the blood.

If too much uric acid is produced or not enough is excreted, it can accumulate in the body, causing increased levels in the blood (hyperuricemia). The presence of excess uric acid can cause gout, a condition characterized by inflammation of the joints due to the formation of uric acid crystals in the joint (synovial) fluid. Excess uric acid can also be deposited in tissues such as the kidney, leading to kidney stones or kidney failure.

Action

Out of range result will be highlighted in the feedback letter. You may want to speak to your family doctor about your result. Your doctor is best placed to advise you on the significance of any findings in the light of your own personal history.

Sodium

Background

Sodium is an important electrolyte present in all body fluids. It is vital for normal cell function and regulation of fluid amount in the body.

Action

Out of range result will be highlighted in the feedback letter. You may want to speak to your family doctor about your result. Your doctor is best placed to advise you on the significance of any findings in the light of your own personal history.

Potassium

Background

Potassium is an important electrolyte present in all body fluids. It is vital for cell metabolism, nerves, heart and muscle functions.

Action

Out of range result will be highlighted in the feedback letter. You may want to speak to your family doctor about your result. Your doctor is best placed to advise you on the significance of any findings in the light of your own personal history.