



KINGSWAY

HEALTH ANALYTICS

Prepared For

Sample Patient



Kingsway Medical: Health Analytics

Dear Sample Patient,

Thank you for choosing to do your Health Screening with us.

This is a report of your Health Screening Analysis. This analysis is generated based on multiple points of personal health data gathered during your Health Screening with us, and is derived from Evidence-based Clinical Guidelines.

However, this may not take into account the complete psychosocial and medical history of each individual, and therefore is not meant to replace sound advice from your Family Doctor for Holistic Care. Therefore, we recommend strongly that you go through your Health Screening Analysis Report with your Family Doctor.

Yours Sincerely,

Dr Joel Lim

*Medical Director & Co-founder
Kingsway Medical Group*

Visit our website more information on our Clinical Services:

<https://www.kingswaymedical.sg/>



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Personal Profile

Personal Profile	Details
Name	Sample Patient
Age (Years)	64
Gender	Female
Height (m)	1.6
Weight (kg)	72.0
Blood Pressure	160/95
Are you taking Blood Pressure Medications?	No
Do you have history of Diabetes?	No
Do you have a history of Ischemic Heart Disease, Stroke, Peripheral Vascular Disease, Aortic Anuerysm or Familial (Genetic) Hyperlipidemia?	Yes



Underweight: Below 18.5

Healthy: 18.5 - 22.9

Overweight: 23.0 - 29.9

Obese: 30.0 and above



Your BMI

28.1

Your calculated BMI is 28.1 kg/m².

- This means that you are Overweight.

Your Ideal Weight Range is between 47.4 kg and 58.9 kg.

- Your current weight is 72.0 kg.
- This means you will need to lose at least 13.1 kg so as to achieve your Ideal Weight.

What is a Healthy Body Mass Index?

A BMI is calculated with the following formula: $BMI = \text{Weight (kg)} \div [\text{Height (m)}]^2$

- If your BMI is less than 18.5, you are Underweight.
- If your BMI is between 18.5 to 22.9, you have a Healthy Weight.
- If your BMI is between 23.0 to 27.4, you are Overweight.
- If your BMI is above 27.5, you have Obesity.

Being underweight puts you at an increased risk of health problems such as - osteoporosis (fragile bones), weakened immune system, malnutrition, feeling tired or weak. Whereas being Overweight or Obese puts you at increased risk for weight-related health problems including - Type 2 Diabetes, Heart Disease, Stroke, Cancer, Bone & Joint Disorders like Osteoarthritis.

Lifestyle Recommendations:

If you have a High BMI, aim for a weight loss of not more than 0.5 to 1kg per week, or not more than 10% of your body weight over 6 months. There is a very helpful Article written by the Health Promotion Board on how to lose weight the Healthy Way:

https://www.healthhub.sg/live-healthy/224/lose_weight_healthy_way

A Balanced Diet and Exercise play very important roles in reducing your risk of Cardiovascular Disease.

- Healthy Meals: 1/2 plate of fruit or vegetables, 1/4 plate of wholegrains, and 1/4 plate with good sources of protein.
- Exercise: Minimum physical activity session should be at least 10 minutes. The 10-minute sessions can be accumulated throughout the week to achieve 150 minutes of moderate intensity, or 75 minutes of vigorous intensity physical activity a week.



Blood Pressure Analysis

Blood Pressure	Clinic BP	Clinic BP Target	Home BP Target
Systolic Blood Pressure (mmHg)	160	< 130	< 130
Diastolic Blood Pressure (mmHg)	95	< 80	< 80
Blood Pressure Analysis	Grade 2: Hypertension [Diabetes w/ Nephropathy]		

Your Clinic Blood Pressure is measured at 160/95 mmHg.

- Your Clinic Blood Pressure Target is < 130/80 mmHg.
- Your Systolic Blood Pressure is High.
- Your Diastolic Blood Pressure is High.
- Note: If you have a Blood Pressure Device, you can take Blood Pressure measurements at home. Your Home Blood Pressure readings should be below a target of < 130/80 mmHg. This is most accurately measured while you are rested in the Morning and Evening.

What is Hypertension?

Hypertension is a chronic condition whereby your blood pressure is persistently higher than normal. The heart is a pump that exerts pressure, pushing blood around the body through blood vessels. The Systolic blood pressure is measured when the heart contracts, while the Diastolic blood pressure is measured when the heart relaxes.

How is it diagnosed?

Hypertension is typically diagnosed based on two or more high blood pressure measurements taken on separate occasions.

What are its complications?

High Blood Pressure if left untreated causes excessive pressure on the Heart and Blood Vessels in the body. This can lead to heart attacks, strokes and kidney disease and other serious health problems.

Who are at risk?

- A family history of Hypertension
- Age above 65 years old
- Co-existing conditions: Diabetes, Kidney Disease
- Lifestyle Risk Factors: Unhealthy diets (high in salt, saturated or trans fats, low intake of fruit and vegetables), physical inactivity, smoking, alcohol, and being overweight or obese.

How can my High Blood Pressure be treated?



These healthy Lifestyle habits can help with reducing your blood pressure:

- Restricting salt intake to 5 to 6 g per day
- Moderating alcohol consumption to no more than 2 standard drinks per day for Men and 1 standard drink per day for Women
- Increasing your consumption of vegetables, fruits, low-fat dairy products, and decrease intake of saturated and total fats
- Do at least 30 minutes of moderate dynamic exercise 5 to 7 days per week. Any physical exercise above the basal level, up to 150 minutes/week, confers incremental cardiovascular and metabolic benefits, including blood pressure reduction.
- Avoid Smoking. Speak to your Doctor if you need assistance to quit smoking.
- Aim for a BMI less than 23. This means that you should aim for a weight loss of 71.2 kg.

Do I need Blood Pressure Medications?

- Since you have Low Cardiac Risk, where appropriate, your doctor may observe you over a significant period of time before deciding whether or not to begin drug treatment for Hypertension.
- If blood pressure medications are indicated, an ACE inhibitor or ARB is your first-line treatment (i.e. for individuals with diabetic nephropathy).

Clinical Checklist - Routine Clinical Evaluation for Hypertension includes following:

	Clinical and family history
	Full standard physical examination
	Urine analysis or dipstick: Test for Hematuria & Albuminuria
	Measurement of serum concentrations of electrolytes, creatinine, urea, fasting glucose and fasting lipids
	Calculation of estimated glomerular filtration rate (eGFR)
	12-lead electrocardiography (ECG)

When to refer to a specialist

- Conditions needing emergency or urgent treatment e.g. malignant hypertension, hypertensive heart failure or other impending complications
- Hypertension that is difficult to manage e.g. unusually labile BP or hypertension refractory to multiple drugs in different pharmacological classes
- Secondary Hypertension i.e. hypertension due to an underlying cause such as hyperaldosteronism
- Hypertension in special circumstances e.g. pregnancy and young children



Cardiovascular Risk Analysis

Item	Value	Score Points
Age	64	10
Smoker	No	0
Total Cholesterol	5.8	2
HDL Cholesterol	2.6	-1
Systolic Blood Pressure	160	4
Blood Pressure Medication:	No	
Ethnicity	Indian	
Total Framingham Score	15	
Cardiovascular Risk (%)	7% - Low risk	

Your Total Framingham Score is 15.

- The Framingham Risk Score is a gender-specific algorithm used to estimate the 10-year Cardiovascular Risk of an individual. This score is useful in helping you and your Family Doctor decide on a prevention strategy to reduce the risk of Cardiovascular Disease - whether through lifestyle modification or preventive medical treatment.

Your Risk of developing Cardiovascular Disease in the next 10 years is estimated to be 7%.

- Comment: This Risk is considered to be Low.



Lipid Profile Analysis

Test Item	Lab Result (mmol/L)	Lab Result (mg/dL)	Ideal Target
Total Cholesterol	5.8	224	< 5.2 mmol/L 200 mg/dL
HDL-Cholesterol	2.6	101	> 1.0 mmol/L 40 mg/dL
LDL-Cholesterol	4.8	186	< 2.1 mmol/L 80 mg/dL
Triglycerides	4.7	416	< 1.7 mmol/L 150 mg/dL
Diagnosis	High Cholesterol Moderate-Severe Hypertriglyceridemia		

Your Total Cholesterol is 5.8 mmol/L (224.3mg/dL).

- Your Total Cholesterol Target is < 5.2 mmol/L (200 mg/dL).
- This means that your Total Cholesterol is High.

Your HDL-Cholesterol is 2.6 mmol/L (100.5mg/dL).

- Your HDL-Cholesterol Target is \geq 1.0 mmol/L (40 mg/dL).
- This means that your HDL-Cholesterol is at a Desirable Level.

Note: The HDL-Cholesterol is considered the Good Cholesterol, and a high level is correlated with a lower risk of developing Cardiovascular disease.

Your LDL-Cholesterol is 4.8 mmol/L (185.6mg/dL).

- Your LDL-Cholesterol Target is < 2.1 mmol/L (81.2mg/dL).
- This means that your LDL-Cholesterol is High.

Note: The LDL-Cholesterol is considered the Bad Cholesterol, as a high level narrows and damages Blood Vessels by a process known as Atherosclerosis. Your aim is to keep the LDL-Cholesterol levels low.

Your Triglycerides is 4.7 mmol/L (416.3mg/dL).

- Your Triglycerides Target is < 1.7 mmol/L (150 mg/dL).
- Your Triglycerides is Moderate to Severely High.
- Note: If your triglycerides is above 4.5 mmol/L, you are at an increased Pancreatitis (i.e. inflammation of the pancreas). The risk increases with higher Triglyceride levels, and especially if the levels are above 10 mmol/L. Niacin and high intake of Omega-3 Fish Oils can help to bring down Triglyceride levels. If your Triglyceride is above 4.5 mmol/L, speak to your Family Doctor regarding treatment.*

What is Hyperlipidemia?

Hyperlipidemia is when fatty substances like cholesterol or triglycerides in your blood is too high.

How is it diagnosed?

As hyperlipidemia has no symptoms, it is typically diagnosed through a lipid panel blood test.



What are its complications?

A high level of lipids in the blood, leads to fatty deposits in the blood vessel walls, thereby increases the risk of blockage of the blood vessels. This can lead to coronary heart disease, heart attacks, strokes & peripheral vascular disease. Additionally, if your Triglyceride levels are high, you may be at risk of acute inflammation of the pancreas (i.e. Pancreatitis).

Who are at risk?

- Having a diet high in saturated fats
- Physical Inactivity
- Smoking
- Stressful lifestyles
- Excessive alcohol intake
- Having a Family History of Hyperlipidemia (i.e. genetics) or Cardiovascular Disease < 50 years old
- Having other co-existing illnesses like Diabetes or Kidney disease or Hypothyroidism

How can my Hyperlipidemia be treated?

These healthy Lifestyle habits can help with reducing your blood pressure:

- Moderating alcohol consumption to no more than 2 standard drinks per day for Men and 1 standard drink per day for Women
- A diet rich in wholegrains, vegetables, fruit, legumes, nuts, fish and unsaturated oils, and low in saturated and trans fat / refined sugars / cholesterol is encouraged. Dietary fibre intake should be 25-30 grams per day.
- Do at least 30 - 60 minutes of moderate intensity dynamic exercise over 5 to 7 days per week (i.e. 150 - 300 minutes/week)
- Avoid Smoking. Speak to your Doctor if you need assistance to quit smoking.
- Aim for a BMI less than 23. This means that you should aim for a weight loss of 71.2 kg.

Some patients will require Cholesterol Medications to treat their hyperlipidemia depending on the levels and their risk of Cardiovascular disease.

Do I need to start Cholesterol Medications or increase my Cholesterol Medications Dose?

- Since you have Low Cardiac Risk, your LDL-cholesterol target is < 4.1 mmol/L (160 mg/dL).
- Your LDL-Cholesterol is above target. Have a discussion with your family doctor on how to achieve your Cholesterol targets through adjustments made to your lifestyle and/or Cholesterol medications.



Diabetes Profile Analysis

Test Item	Lab Result	Ideal Target
Fasting Glucose (mmol/L)	8.0	< 6.1
HbA1c (%)	8.0	≤ 6.0
Diagnosis	Newly Diagnosed Diabetes	

Note: Hemoglobin-A1c (HbA1c) tells us your average blood sugar level over the past 3 months. Whereas a Fasting Glucose tells us your sugar levels at the point in time when you are fasted for at least 8 hours.

Your HbA1c is 8.0%.

- This is Significantly Raised.

Your Fasting Glucose is 8.0 mmol/L.

- This is High.

This means that you have Newly Diagnosed Diabetes. Consult your Family Doctor regarding treatment.

What is Diabetes?

Diabetes is a chronic condition whereby the sugar (glucose) levels in your blood is persistently higher than normal. Insulin is a hormone that helps the cells in the body take up sugar for energy. However, with Diabetes, there is either not enough insulin being produced or that the body becomes resistant to the insulin. This prevents glucose from being used properly where it is needed, leading to high blood sugar levels.

How is it diagnosed?

Diabetes can be diagnosed through a blood sugar test ordered by your Family Doctor. Symptoms of diabetes often include frequent urination, increased thirst and increased appetite.

What are its complications?

If left untreated, diabetes can cause many health complications. Acute complications from very high sugar levels include diabetic ketoacidosis, hyperosmolar hyperglycemic state, or death. Serious long-term complications of poorly controlled diabetes causes damage to the blood vessels, nerves and kidney membranes in the body. This leads to Cardiovascular disease, Stroke, Chronic kidney disease, Diabetic foot ulcers & Amputations, Blindness and Dementia. Diabetic Individuals also have a weakened immune system and are at increased risk of Infections.

Who are at risk?

- A family history of Hypertension
- Age above 65 years old



- Co-existing conditions: Diabetes, Kidney Disease
- Lifestyle Risk Factors: Unhealthy diets (high in salt, saturated or trans fats, low intake of fruit and vegetables), physical inactivity, smoking, alcohol, and being overweight or obese.

How can it be treated?

Lifestyle habits such as having a healthy diet - low GI, exercising, weight loss can help. Some people may require medications to help control their diabetes. Speak to your Family Doctor if your blood sugar is high in order confirm your diagnosis & get treated early.

How do I monitor for its complications?

You will require annual Diabetic Foot Screen and Retinal Photography. Your doctor would order blood and urine tests as well to monitor its control and to check for DM complications.

Clinical Checklist - Routine Clinical Evaluation for Diabetes includes following:

	Full Clinical and Family history
	Diabetes Foot Screening (Yearly)
	Diabetes Retinal Photography (Yearly)
	Blood Investigations: Lipid Panel, Glucose & HbA1c, Urine Albumin:Creatinine Ratio, Kidney Function Tests
	Blood Pressure Monitoring



Kidney Health Analysis

Test Item	Lab Result	Normal Range	Diagnosis
Creatinine ($\mu\text{mol/L}$)	129.0	refer to eGFR	CKD Stage 3
estimated GFR (mL/min)	37	≥ 60	CKD Stage 3
Sodium (mmol/L)	132.0	136 - 145	Mild Hyponatremia
Potassium (mmol/L)	5.2	3.5 - 5.4	Normal Levels
Urine Albumin:Creatinine	4.0	< 3.5	Moderate
Urinalysis: ECs	0	≤ 20	Normal Range
Urinalysis: RBCs	0	0 - 5	Normal Range
Urinalysis: WBCs	0	0 - 6	Normal Range

Your estimated Glomerular Filtration Rate is 37.69 mL/min.

- This is calculated using the CKD-EPI formula.
- Comment: CKD Stage 3

Your Urine Albumin:Creatinine ratio (UACR) is 4.0 mg/g.

- This level is Raised.
- Note: An abnormally raised Urine Albumin:Creatinine Ratio may indicate damage to the filter membranes of the kidney at the microscopic level, allowing protein molecules to leak through. You will need a confirmatory test done 3 months apart to confirm its diagnosis.

Your Sodium level is 132.0 mmol/L.

- This level is Low.

What is Hyponatremia?

Hyponatremia means having too little Sodium in your blood. Common causes for Hyponatremia include heart, kidney or liver diseases, dehydration due to vomiting or diarrhea, certain medications and hormonal imbalances.

What are the complications of Hyponatremia?

Symptoms of Hyponatremia include thirst, muscle cramps, lethargy and in severe cases, confusion, seizures and loss of consciousness.

Your Potassium level is 5.2 mmol/L.

- This level is Normal.



The Urine Microscopic Examination is Normal.

Chronic Kidney Disease (CKD) is defined based on the presence of either kidney damage or decreased kidney function for three or more months.

- This means that you require at least 2 abnormal tests done ≥ 3 months apart to diagnose CKD.

The severity of Chronic Kidney Disease (CKD) is classified as follows:

- Normal Kidney Function: eGFR ≥ 90 with no Proteinuria/Albuminuria above the Normal Range
- Stage 1 CKD: eGFR ≥ 90 with Evidence of kidney damage
- Stage 2 CKD (Mild): eGFR 60 - 89 with Evidence of kidney damage
- Stage 3 CKD (Moderate): eGFR 30 - 59
- Stage 4 CKD (Severe): eGFR 15 - 29
- Stage 5 CKD (End-Stage Kidney Failure): eGFR <15

**Markers of Kidney Damage include protein in urine, electrolyte abnormalities (tubular disorders), evidence of damage on histology / imaging, urine sediments, history of kidney transplant.*



Liver Health Analysis

Test Item	Lab Result (U/L)	Normal Range (U/L)
Aspartate Aminotransferase (AST)	45.0	< 32
Alanine Transaminase (ALT)	35.0	< 25
Bilirubin	85.0	< 25.7
Alkaline Phosphatase (ALP)	104.0	< 100
Gamma-Glutamyl Transferase (GGT)	215.0	< 36

* The Liver Function Test comprises Markers of Inflammation (AST & ALT) and Makers of Congestion (Bilirubin, ALP & GGT).

Your Bilirubin is 85.0 U/L.

- This is in the Raised.
- Elevated bilirubin levels are usually due to either Liver or Blood disorders.

Your AST is 45.0 U/L.

- This is Raised indicating Liver Inflammation.

Your ALT is 35.0 U/L.

- This is Raised indicating Liver Inflammation.

Your ALP is 104.0 U/L.

- This is Raised.
- A raised ALP alongside a raised GGT suggests Congestive Liver Disease.

Your GGT is 215.0 U/L.

- This is Raised.
- A raised ALP alongside a raised GGT suggests Congestive Liver Disease.

Your R-Factor is calculated at 1.3.

- The R-Factor is commonly used in clinical practice to help identify patterns of liver injury.
- Your R Value is ≤ 2 suggesting Cholestatic Injury (i.e. congestion of the Liver).

When do you need to see a Gastroenterology Specialist?

- Persistent Elevations ≥ 2 times the upper limit of normal for AST/ALT or 1.5 times the upper limit of normal for ALP
- Patients who require a liver biopsy
- Liver biochemical tests remain elevated without a clear explanation, if they subsequently



increase

- For those with mild elevations of AST/ALT/ALP do not meet the upper normal limit thresholds, expectant management is reasonable in most cases. In such patients, you may trend liver function tests every 6 months.



Hematology Analysis

Test Item	Lab Result	Normal Range
Hemoglobin (g/dL)	13.8	Between 11.5 to 16.5
MCH (pg)	26.0	Between 27 to 31
MCV (pg)	75.0	Between 80 to 96
White Blood Cells ($10^3/\mu\text{L}$)	3.8	Between 4.0 to 11.0
Platelets ($10^3/\mu\text{L}$)	144.0	Between 150 to 450

Your Hemoglobin is 13.8 g/dL.

- Your Blood count is Normal.

Your White Blood Cell Count is $3.8 \times 10^3/\mu\text{L}$.

- Your White Blood Cell Count is Low.

Your Platelets Count is $144.0 \times 10^3/\mu\text{L}$.

- Your Platelets is Low.

The Full Blood Count comprises 3 main blood cell types, namely Red Blood Cells (oxygen carrying cells), White Blood Cells (immune function to fight infections), and Platelets (that help with blood clotting to stop bleeding).

- Red Blood Cells (Hemoglobin):**

A low Red Cell Count is called "Anemia", whereas a high Red Cell Count is called "Polycythemia". Common causes for Anemia include Low Dietary Iron / B12 / Folate intake, Blood loss (e.g. Heavy Menses), Chronic Kidney Disease, and certain Blood Disorders. Polycythemia is often caused by a blood disorder, and is sometimes seen in those who Smoke.

- White Blood Cells:**

Both a high or low White Cell Count value may indicate an Acute Infection or underlying Blood Disorders.

- Platelets:**

A low value may be caused by an Infection or certain Medications. In some cases, a Blood Disorder may present itself with too few or too many platelets.



Cancer Screening Recommendations

These Cancer Screening Recommendations are for those who are of average risk (i.e. without a family history of the cancer being screened for) and are currently without any symptoms. These guidelines are based on the Singapore Ministry of Health Cancer Screening Clinical Guidelines, and are also in line with the World Health Organization Cancer Screening Recommendations to help patients and doctors decide on which cancers are appropriate for screening.

Recommended Screening	Details
Cervical Cancer Screening	HPV test once every 5 years.
Breast Self-Examination	Perform monthly Breast Self-Examination. Speak to your Family Doctor on how to conduct a proper Breast Self-Examination.
Breast Cancer Screening	Mammogram once every 2 years.
Colorectal Cancer Screening	The US health guidelines have reduced screening age to 45 in recognition of younger age Colorectal Cancers. The gold-standaard for screening is a colonoscopy.

Colorectal Cancer Screening

When should I start screening for Colorectal Cancer?

- Colorectal Cancer is the leading cancer in Singapore.
- Early screening is the key to prevention
- Singapore Ministry of Health recommends screening at the age of 50 or earlier if there is family history of colorectal cancer
- US Health authorities now recommend screening at the age of 45 in recognition of younger age colorectal cancers

How do I screen for Colorectal Cancer?

- Colonoscopy is the gold standard in screening. It is highly accurate, and can remove pre-cancerous polyps if detected.
- The procedure is done under gentle sedation. It is done as a day surgery without the need for admission.
- Insurance and Medisave claimable. Financial counselling will be done by our partnering Colorectal Surgeon. This includes pre-authorisation to secure guarantee of payment from insurance carriers.

To find out more about arranging a Colonoscopy, contact us: hello@kingswaymedical.sg or +65 88033070 (WhatsApp-only) to enquire more.



Vaccination Recommendations

These Vaccination Recommendations are based on Singapore Health Promotion Board for the general healthy population. This however does not take into account a full medical history and at-risk groups. It is recommended that you speak to your doctor regarding vaccine recommendations.

There is a very helpful guide provided by Health Promotion Board at this link:

<https://www.healthhub.sg/programmes/163/vaccinate>

Recommended Vaccines	Details
Hepatitis B Vaccine	Hepatitis B (3-Doses) Vaccine protects against Hepatitis B infection, that can cause liver inflammation, scarring, liver failure and liver cancer. It is spread by contact through blood or bodily fluids. The vaccine is recommended for all adults who do not have evidence of immunity/past infection.
Chicken Pox Vaccine	The Chicken Pox (2-Doses) vaccine protects against Chicken Pox infection, that causes a generalised itchy rash involving the scalp, face, limbs and trunk. Other symptoms include Fever, Headache, Bodyaches, Tiredness, Loss of Appetite. It can spread by airbourne route and is highly contagious. This vaccine is recommended for all adults who do not have evidence of immunity/past infection/previous vaccination.
MMR Vaccine	The MMR Vaccine (2-doses) protects against Measles, Mumps and Rubella infections which can lead to serious complications. This vaccine is recommended for all adults who do not have evidence of immunity/past infection/previous vaccination.
Tdap Vaccine	The Tdap vaccine (1-Dose) protects against serious illnesses caused by the Tetanus Bacteria, Diptheria and Pertussis. This vaccine is recommended for all pregnant women to protect themselves and their baby.
Influenza Vaccine	Recommended yearly influenza vaccinations for all individuals with Diabetes.
Pneumococcal Vaccine	Recommended PCV13 and PPSV23 (1 year later) to prevent lung infections caused by pneumococcal bacteria for all individuals with Diabetes.