



Aarca Research

**Intelligent Health Risk  
Assessment Report**



### Customer Details

**Name** : ██████████ **Date** : 18-Feb-2021  
**Age / Gender** : ██████████ **Customer ID** : AR15694951  
**Email Address** : ██████████ **Referred By** : ██████████

### Family History

**Type 2 Diabetes** : None  
**Hypertension** :  
**Brain Stroke** :  
**Heart Attack** :

### Personal History

**Known Type 2 Diabetic** : No  
**Known Hypertension** : No  
**Known Dyslipidemia** : No  
**Other Conditions** : None

## Thermography Details



**Respiratory Rate** : 18 / min (Level: Normal)  
**Body Temperature** : 22.9°C (Normal)

**ASCVD Risk by IHRA** : 5 / 10 (Level: Medium)  
**% Asymmetry** : 0.3%

### Note:

Our non-invasive, non-contact method of infrared thermal imaging is a new diagnostic modality for diagnosing Type 2 Diabetes, Hypertension and Dyslipidemia. The temperature on the skin surface is related to the energy of infrared radiation emitted by human skin, which has an emissivity of 0.98. This imaging technique works on the principle of identification of temperature variations and patterns on the region of interest, i.e., face & neck. The AI-based software uses imaging techniques to calculate observed variance percentage, which works as a biomarker to identify the above-mentioned medical conditions. The observed variance percentage is an indicative metric to identify severity of the disease/medical condition.

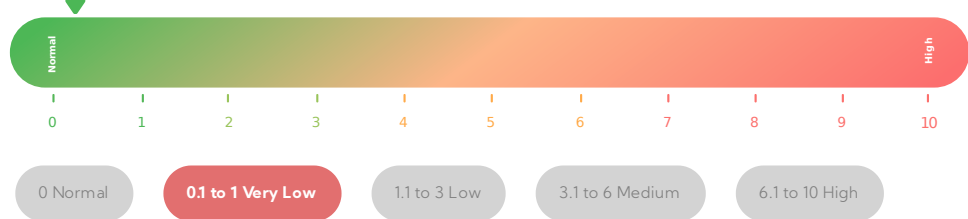
# Investigation: Type 2 Diabetes

Name : ██████████  
Age / Gender : ██████████  
Email Address : ██████████  
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**Result** : IMRI: 0.2



**Description** : This score means that our biomarkers have noted very early indicators related to Type 2 Diabetes in your thermal video. Based on the severity of these indicators, the risk is currently **Very Low**.

**Recommended Tests** : Annual health check-up

**Suggestions** : Risk factors for developing Type 2 Diabetes range from family history to lifestyle factors such as obesity, lack of physical activity etc. We advise you to avoid the risk of developing this condition by adopting a healthy lifestyle and incorporating exercise as part of your daily schedule.

## Additional Details

### How Our Technology Works

Our software analyses the temperature variations on your face in the collected thermal video. Our risk assessment algorithms use various image and signal processing techniques to identify biomarkers indicating the risk factors of Type 2 Diabetes.

### What Are Our Biomarkers

In a normal condition, an individual maintains near-constant blood glucose levels. However, when she develops insulin resistance, blood glucose levels fluctuate. These fluctuations cause functional and structural changes in vascular structures, which is often a pre-cursor to the development of Type 2 Diabetes. These changes also cause a decreased blood flow rate which accelerates atherosclerosis, causing changes in the heat distribution from the blood to the skin surface. We use these changes in temperature as biomarkers.

### Understanding The Report

The risk assessment score is displayed as IMRI (Individual Morbidity Risk Index), a propriety metric of our software that indicates the overall risk score of Type 2 Diabetes. Our risk scale indicates normal or potential diabetes status in normal people and controlled or uncontrolled status in diagnosed Type 2 Diabetic patients. Our proposed metrics are indicative and may aid an individual to determine further course of a medical plan, dietary plan, and lifestyle changes.

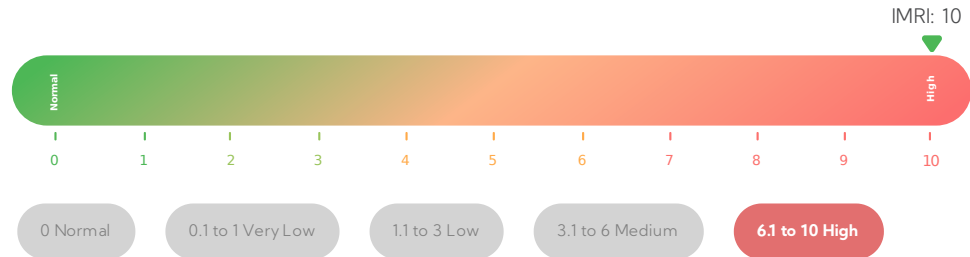
# Investigation: Hypertension

Name : ██████████  
Age / Gender : ██████████  
Email Address : ██████████  
Date : 18-Feb-2021  
Customer ID : AR15694951  
Referred By : ██████████



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## Result



## Description

: This score means that our biomarkers have noted significant indicators related to Secondary Hypertension in your thermal video. Based on the severity of these indicators, the risk is currently **High**.

## Recommended Tests

: Full body health checkup in the next 3 months

## Suggestions

: In some cases, the increase in blood pressure might be due to an underlying condition such as renal disorder, thyroid dysfunction, etc. known as secondary hypertension. Our biomarkers have noted indicators related to the same. We advise you to consult a physician for a complete health checkup and effective diagnosis.

## Additional Details

### How Our Technology Works

Our software analyses the temperature variations on your face in the collected thermal video. Our risk assessment algorithms use various image and signal processing techniques to identify biomarkers indicating the risk factors of Hypertension.

### What Are Our Biomarkers

In a normal condition, an individual maintains near-constant blood pressure levels. However, when she develops increased levels of blood pressure for an increased duration, it affects the elasticity of blood vessel walls. This increases the resistance to the blood flow, changing the blood flow pattern. These changes in blood flow can be measured using the changes in the heat distribution to the skin. We use these changes in temperature as biomarkers.

### Understanding The Report

The risk assessment score is displayed as IMRI (Individual Morbidity Risk Index), a propriety metric of our software that indicates the overall risk score of Hypertension. Our risk scale indicates normal or potential Hypertension status in normal people and controlled or uncontrolled status in diagnosed hypertensive patients. This risk scale may help in the identification of the severity of the disease associated with secondary symptoms. Secondary symptoms can range from metabolic disorders such as thyroid or hormonal imbalances to long term smoking or drug usage. Additional tests are required to identify the underlying secondary condition(s). Our proposed metrics are indicative and may aid an individual to determine further course of a medical plan, dietary plan, and lifestyle changes.

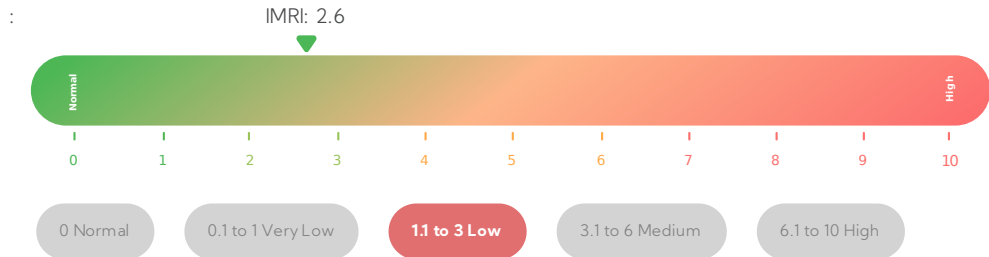
# Investigation: Dyslipidemia

Name : ██████████  
Age / Gender : ██████████  
Email Address : ██████████  
Date : 18-Feb-2021  
Customer ID : AR15694951  
Referred By : ██████████



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## Result



## Description

: This score means that our biomarkers have noted early indicators related to Dyslipidemia in your thermal video. Based on the severity of these indicators, the risk is currently **Low**.

## Recommended Tests

: Annual health check-up  
Lipid test in the next 6 months

## Suggestions

: Risk factors for developing Dyslipidemia range from family history to lifestyle factors such as dietary habits, physical activity etc. We advise you to avoid the risk of developing this condition by adopting a healthy lifestyle and incorporating exercise as part of your daily schedule.

## Additional Details

### How Our Technology Works

Our software analyses the temperature variations on your face in the collected thermal video. Our risk assessment algorithms use various image and signal processing techniques to identify biomarkers indicating the risk factors of Dyslipidemia.

### What Are Our Biomarkers

In a normal condition, an individual maintains near-constant blood cholesterol levels. However, when she develops fluctuating cholesterol levels for an increased duration, it changes the lipid deposition on the vessel wall. These changes in lipid depositions cause functional and structural changes in vascular structures. These changes also cause blood flow fluctuations causing changes in the heat distribution from the blood to the skin surface. We use these changes in temperature as biomarkers.

### Understanding The Report

The risk assessment score is displayed as IMRI (Individual Morbidity Risk Index), a propriety metric of our software that indicates the overall risk score of Dyslipidemia. Our risk scale indicates normal or potential Dyslipidemia status in normal people and controlled or uncontrolled status in diagnosed Dyslipidemia patients. Our proposed metrics are indicative and may aid an individual to determine further course of a medical plan, dietary plan, and lifestyle changes.

# Healthy Diet & Physical Activity

Name : ██████████  
Age / Gender : ██████████  
Email Address : ██████████  
Date : 18-Feb-2021  
Customer ID : AR15694951  
Referred By : ██████████



## Your Ultimate Goal for Good Health



Reducing body weight by 5–10% and exercising 30 minutes a day can cut your diabetes and the risk of its complications by 58% (landmark Diabetes Prevention Program study).

- 30 minutes of moderate activity done 5 days a week.
- Some strength training and stretching twice a week.
- Incorporate some balance training as you get older.

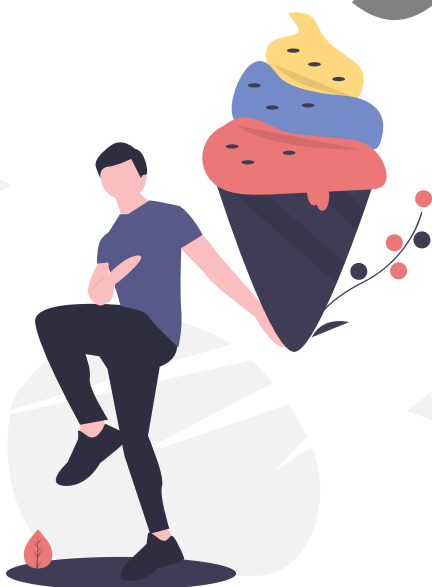
## Guidelines For Dietary Foods To Emphasize Eating

- Vegetables and leafy vegetables
- Fish and shellfish
- Plant-based proteins, such as beans, peas, lentils, tofu, and nuts
- Whole grains and whole-grain products
- Healthy fats such as olive oil and avocado
- Fresh fruit
- Spices and herbs (In Moderation)
- Starchy vegetables (e.g., peas, winter squash, corn, and sweet potatoes)
- Lean animal proteins, such as skinless poultry and eggs.
- Water and other low-calorie, hydrating beverages such as decaffeinated green tea.
- Reduced-fat dairy products, such as low-fat cheese and fat-free cottage cheese, plain yogurt.

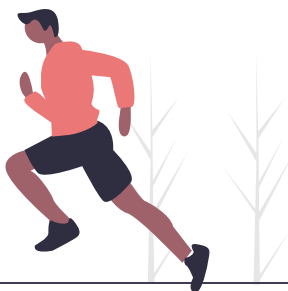


## Guidelines For Dietary Foods To Limit Or Avoid Eating

- Processed meats
- Fried foods
- Fatty red meat and poultry with skin
- Solid fats (e.g., lard and butter)
- Refined grains (e.g., white bread, pasta, rice, and crackers, and refined cereals)
- Sweets (e.g., candy, cake, ice cream, pie, pastries, and cookies)
- Sugar-sweetened beverages, (e.g., soft drinks, energy drinks, sports drinks, and sugar-sweetened coffee and tea beverages)
- Alcoholic beverages and mixed drinks
- Sugar-sweetened foods, such as flavoured yogurt and oatmeal, and sugary condiment
- Instead of snacking on chips or sweets, eat unsalted pretzels or nuts, raisins, low-fat and fat-free yogurt, unsalted plain popcorn with no butter, and raw vegetables.
- Read food labels to choose products that are lower in sodium
- Dried fruit and fruit juices



Name : ██████████  
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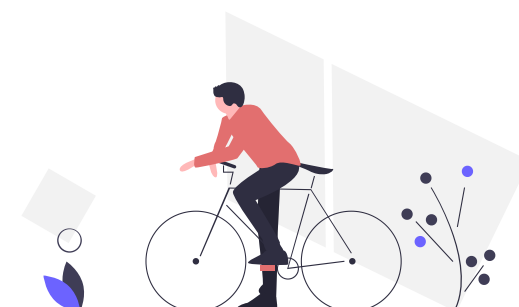
## Guidelines For Physical Activity

- Always get your physician's approval before starting an exercise program.
- Start slowly and ask for help if needed. Instruction from a certified fitness professional can get you off to a good start and help you maintain your exercise program.
- Aim to do some type of physical activity that raises your heart rate for 30 minutes a day. When starting, do 10 minutes, if that is all you can tolerate. Build slowly to 30 minutes over the next few weeks.
- Choose a variety of activities that you enjoy. Try something new. Take a lesson or try a new sport.
- Build physical movement into your day: walk the dog, park at the far end of the parking lot, take stairs instead of the elevator or escalator, etc.
- Use a pedometer to gauge your level of physical activity. 10,000 steps per day is a fantastic goal, but build up to that level. On average, there are about 2,000 steps per mile.
- Keep a daily log of your activities. This can be motivational and helps you stick to your program, especially at the start.
- Plan for your daily exercise session. Make an appointment for yourself—you deserve it.
- Exercise with a friend, neighbour, partner or pet. Making exercise a social experience provides extra motivation. Having fun will boost your fitness and your spirits.
- Water and other low-calorie, hydrating beverages such as decaffeinated green tea.
- Wear good shoes. Proper footwear is critical so you can enjoy the activities in which you plan to participate. Proper fitting shoes can minimize foot irritations, blisters and sores.



## Additional Guidelines For Type 2 Diabetic And Hypertensive Patients

- Drink plenty of fluids while being physically active to prevent dehydration (harmful loss of water in the body).
- After being physically active, check your feet for sores, blisters, irritation, cuts, or other injuries. Call your health care provider if an injury doesn't begin to heal after 2 days
- If you are feeling nauseated or dizzy, stop the physical activity immediately and rest. Consult your physician to take necessary precautions before you resume your physical activity again
- Make sure to check your blood sugar before being physically active, especially if you take insulin.
  - If it's below 100 mg/dL, you may need to eat a small snack containing 15–30 grams of carbohydrates, such as 2 tablespoons of raisins or ½ cup of fruit juice or regular soda (not diet), or glucose tablets so your blood sugar doesn't fall too low while being physically active. Low blood sugar (Hypoglycemia) can be very serious.
  - If it's above 240 mg/dL, your blood sugar may be too high (Hyperglycemia) to be active safely. Test your urine for ketones – substances made when your body breaks down fat for energy. The presence of ketones indicates that your body doesn't have enough insulin to control your blood sugar. If you are physically active when you have high ketone levels, you risk ketoacidosis – a serious diabetes complication that needs immediate treatment.





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### Diabetes Mellitus Risk Management

- ✓ Preliminary diagnosis
- ✓ Disease monitoring



### Hypertension Risk Management

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- ✓ Disease monitoring



### Dyslipidemia Risk Management

- ✓ Preliminary diagnosis
- ✓ Disease monitoring

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