

# HOW TO KEEP HEART HEALTHY

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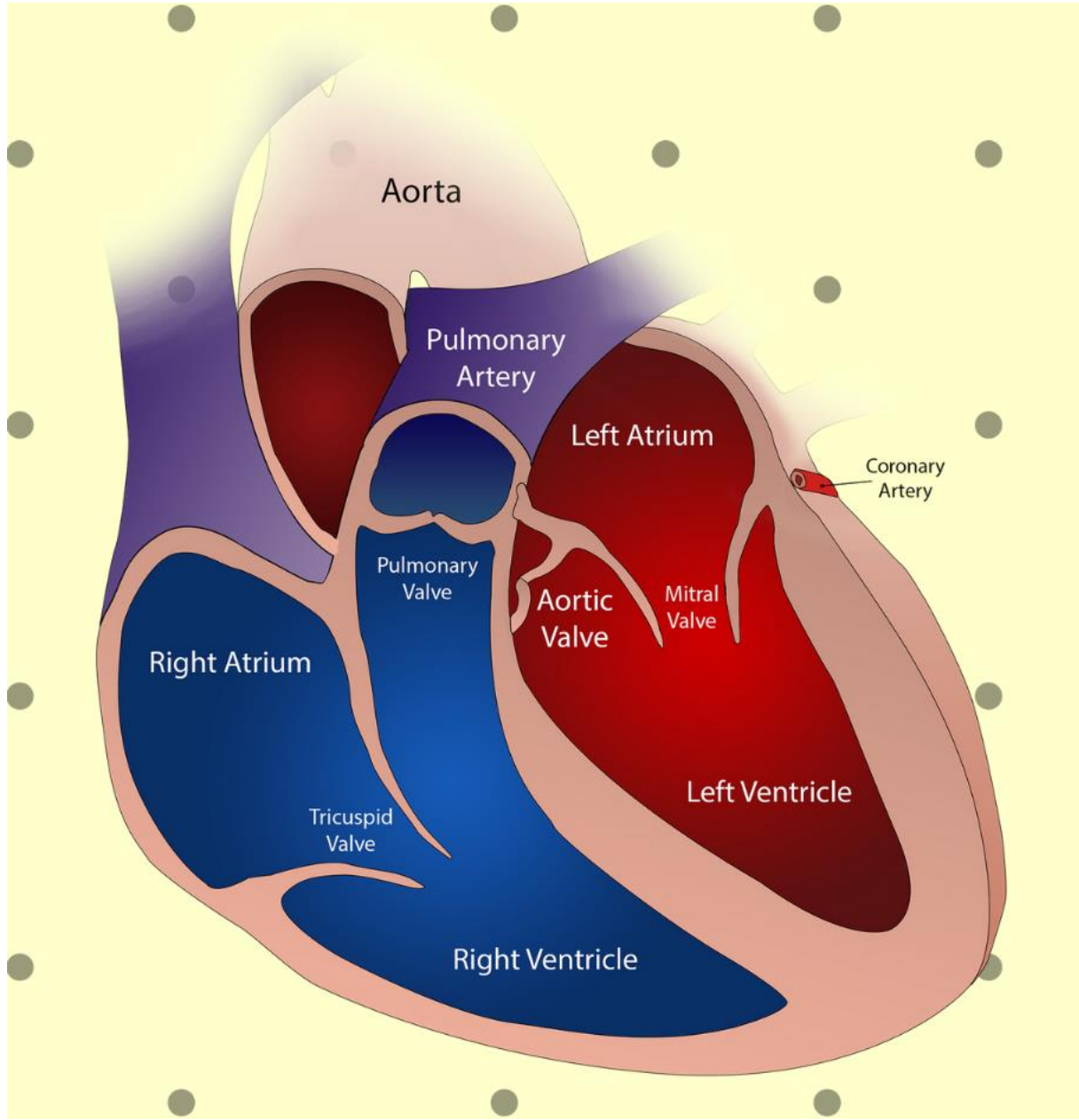
नुगःचुयात गथेयाना भिकां  
तयेगु ।

हाम्रो मुटुलाई कसरी

स्वास्थ्य राख्ने ?

# Topics Covered

1. Facts about Heart
2. International Data
3. Heart Attack & Coronary Artery Disease
4. Risk Factors for Heart Disease
5. Smoking
6. Blood Pressure
7. Blood Cholesterol & Healthy Diet
8. Diabetes
9. Body Weight & Abdominal Obesity
10. Exercise
11. Food (Egg, Alcohol)
12. Palpitations



# हाम्रो मुटु

- मुटु एउटा मांसपेशीले बनेको अंग हो ।
- मानिसको मुटुमा चारवटा कोठा हुन्छन् ।
- तलपट्टी दुई र माथि दुई ।

# Interesting Facts about Human Heart

- Heart beats : 1 Lakh times in a day
  - 2.5 Billion : (Average Life Span)
- Pumps : 1.5 Gallon of blood each minute
- 60,000 miles of blood vessels (2 times around the world)
  
- Size:

# Magnitude & Severity of Heart Disease

- 10-12 million deaths every year: World
- 2.4 million deaths in the India every year

# Blocked Vessels, ↑BP, Diabetes\* in the Cities

- Blocked Heart Vessels:
  - In 10% of age  $\geq 30$  years
- High Blood Pressure:
  - 25-30% of urban population
- Diabetes
  - 7-9% of urban population

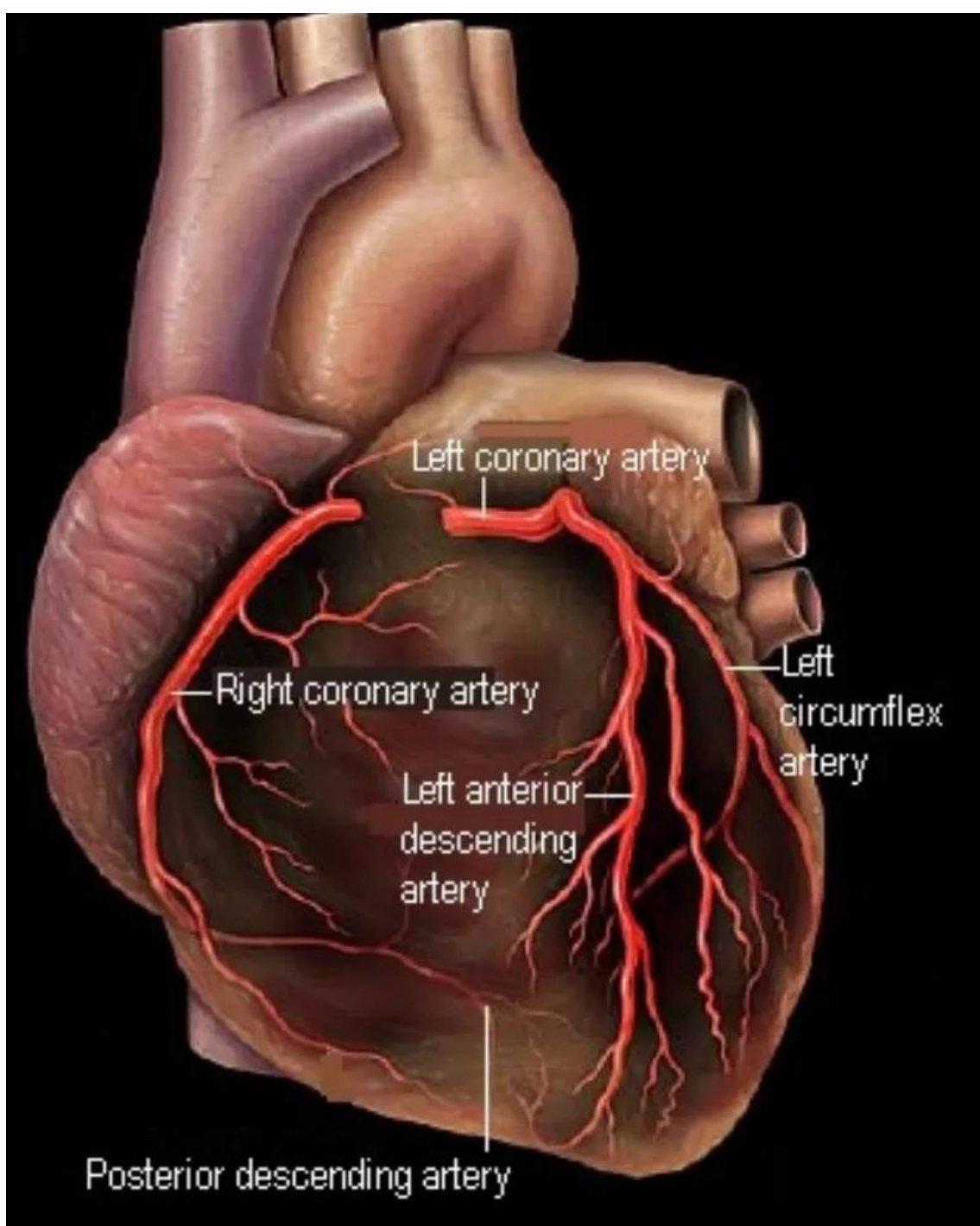


# More Data

- Death rate much higher than the rest of the world.
- Prevalence of blocked arteries of the heart is roughly 2-4 times higher than world.
- The chance of blockages of the arteries of heart and heart attacks in Indians residing in USA is
  - Four times higher in than the local white population
  - Six times higher as compared to the local Chinese population.

# Nepal DATA

- In 2017:
- Cardio Vascular Diseases contributed to 26.9% of total deaths
- Due to blocked heart Vessels 16.4% deaths



मुटुका

रगतका

नसाहरु

# Heart Attack: Canada & USA

- 1 out of 12 Canadians (Over 20 years) - Heart Disease (CCDSS\*)
- 34 (with heart disease) dies every hour (CCDSS)
- 2<sup>nd</sup> Leading cause of death in Canada
  
- No. 1 cause of death in U.S.A.
- Every 40 seconds some one has heart attack (CDC\*\* October 2022)
- 1 dies every 34 seconds due to Cardiovascular Disease

\*CANADIAN CHRONIC DISEASE SURVEILLANCE SYSTEM

\*\*CENTERS FOR DISEASE CONTROL & PREVENTION

# Most Heart Attack Occurs

- Christmas day
- Day after Christmas
- New Year
- Monday

# Risk Factors for Heart Attack

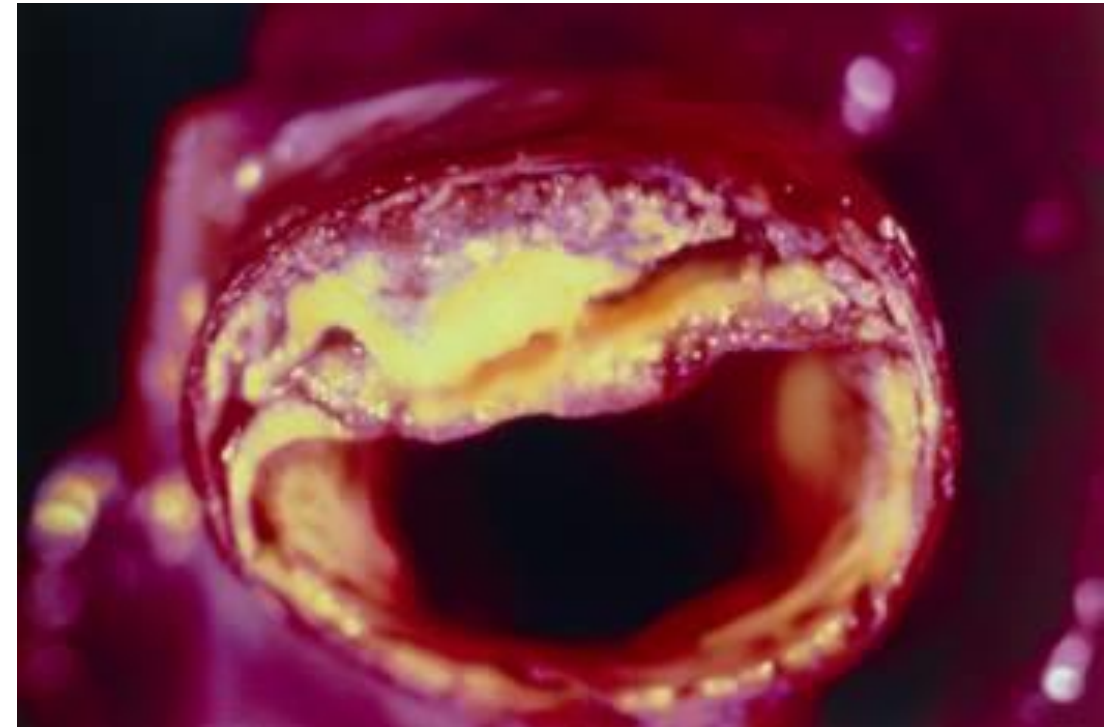
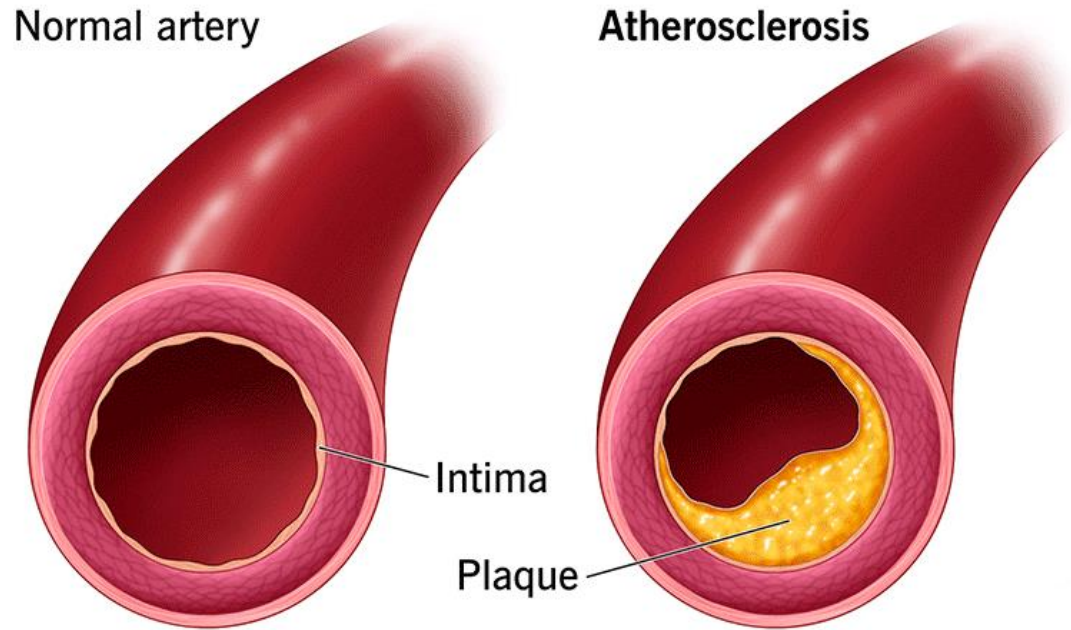
1. Age: Male > 45 yrs and Females > 55 yrs
2. Gender: Male
3. Smoking
4. High blood pressure
5. Diabetes
6. High blood cholesterol
7. Family History of Premature Heart Vessel Disease:
  - Father or brother having CAD/ heart attack at age < 55 yrs
  - Mother or sister having CAD/ heart attack at the age < 65 yrs

# I<sup>0</sup> Cause of Heart Attack: Atherosclerosis

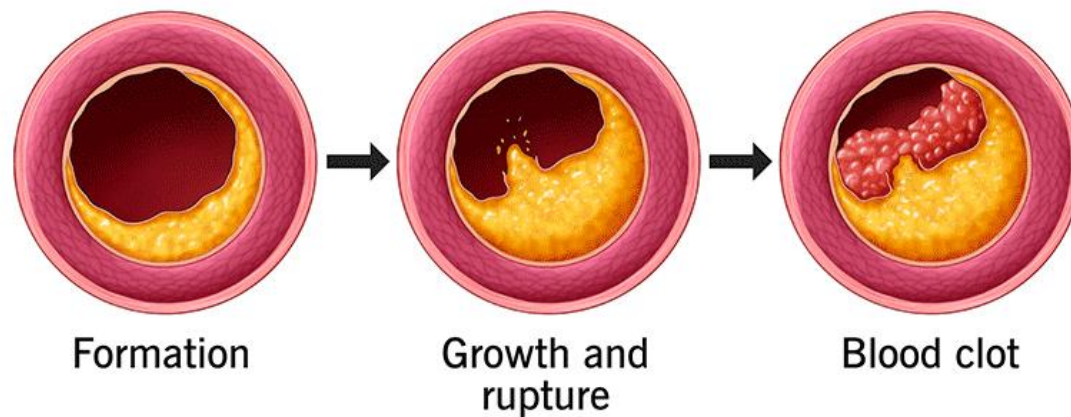
Deposition of fat in the arteries supplying blood to the heart causing blockage

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हुनु

# Atherosclerosis

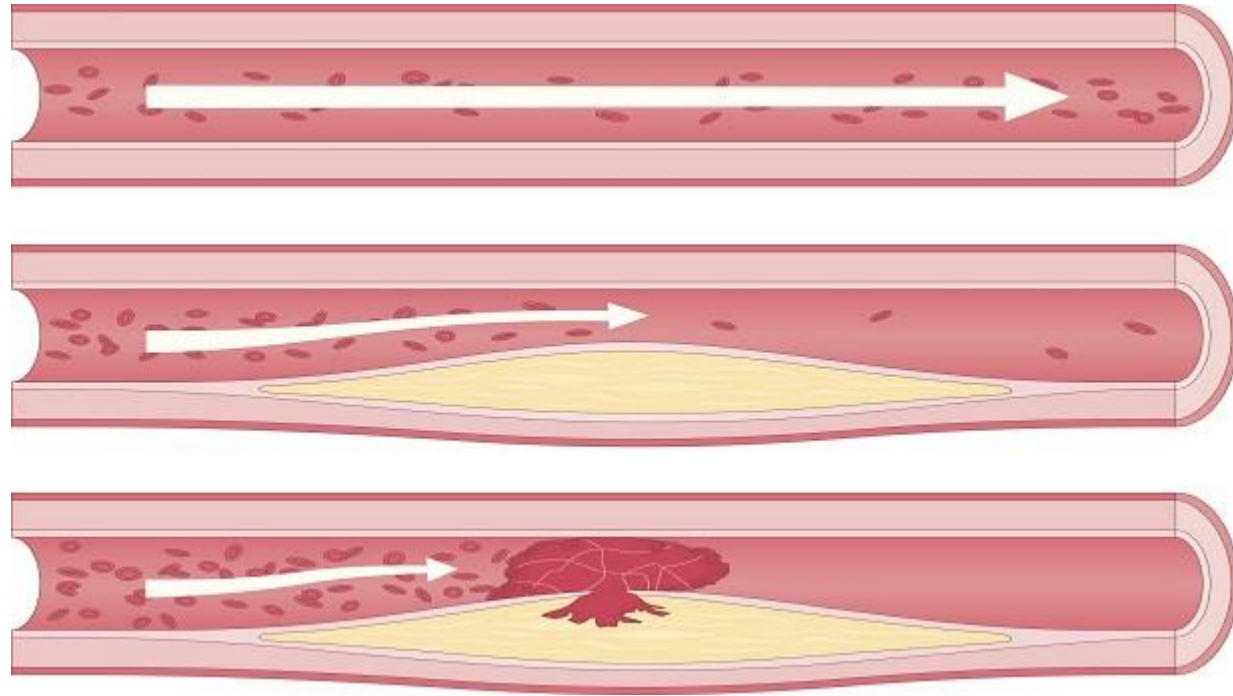


## Progression



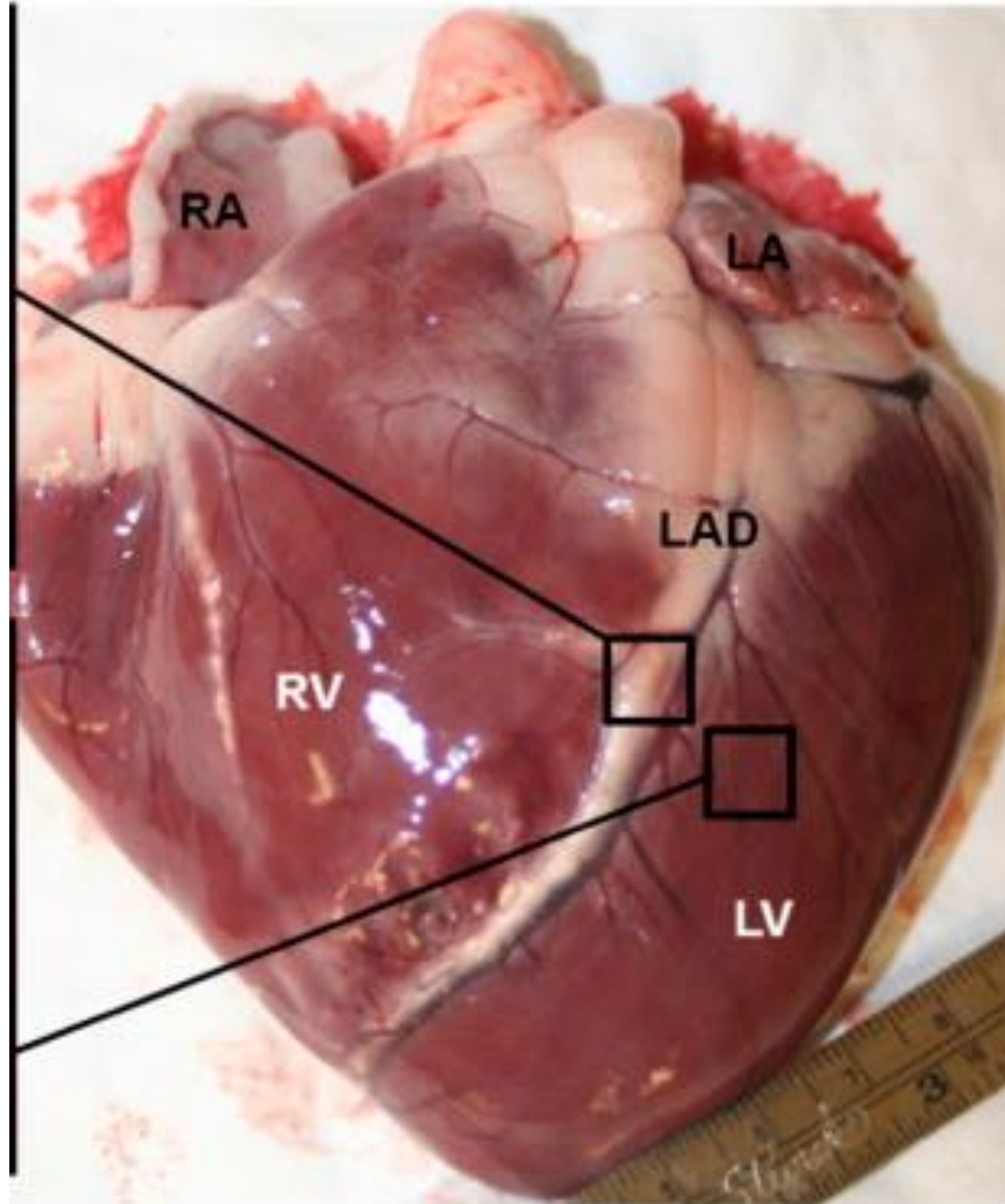
The heart vessels gets narrowed with deposition of Fat ie Cholesterol: Atherosclerosis





Bursting of  
Plaque or  
Narrowed  
part of heart  
vessels.

मुटुको मुख्य  
नसा ब्लक  
भएको



# Symptoms Heart Attack

- Severe Retrosternal Chest pain, may radiate to both arms (especially left), back. Burning, Stabbing or Crushing type
- Associated with sweating and feels like Vomiting
- Typically lasts 15 to 20 minutes or more

# What to Do in Case of Suspected Heart Attack at Home?

- Give 300 mg of Aspirin to be chewed and swallowed immediately
- Call 911 for Ambulance
- Old medical records and medicines he/she is been taking
- H/O Stroke, previous heart attacks etc
- Keep the patient in a comfortable position
- Check blood pressure, pulse and oxygen saturation
- Note the time of onset of severe chest pain
  - Info required for Intervention like Coronary Angioplasty:
  - Best time 3 to 6 hours. Less than 12 hours.

# धुम्रपान (चुरोट सेवन)

- सात हजार भन्दा बढि खराब तत्व अर्थात केमिकल हरु
- कम्तिमा दुइसय पचास खतरा पुर्ण
- चालिस भन्दा बढिले क्यान्सर गराउन सक्ने
- निकोटिन, हाइड्रोकार्बन, कार्बन मोनोअक्साइड, टार, बेन्जिन, फर्माल्डिहाइड, अमोनिया, हाइड्रोजन साइनाइड र आर्सेनिक इत्यादि

# Smoking Increases

- Blocked Heart Artery and Stroke by 2 to 4 times
- Lung cancer by 25 times
- Source: CDC

# What Happens after You Stop Smoking\*?

- Heart rate decreases after 20 minutes
- Carbon Monoxide blood level drops to normal after 12 hours
- Heart & Lung function improves after 2 – 12 Weeks
- Cough and Shortness of Breath decreases in 1 to 9 months
- Stroke risk is reduced to that of a non smoker in 5 – 15 years
- Risk of death due to Lung cancer is reduced to half (compared to smoker)
- Within 15 years risk of heart disease is similar to that of non smoker

\*WHO

# Vaping

- Doesn't contain tobacco
- But More Nicotine than in Cigarette



# High Blood Pressure

उच्च रक्तचाप

हाई ब्लड प्रेशर

# Normal Blood Pressure

- Blood Pressure: 18 years or above
- Less than 140/90 mmHg
  
- High Blood Pressure:
- More than 140/90 mmHg on two or more occasions

# कसरी प्रेसर जाँचन

- कफको साइज ठिक हुनु पर्छ
- हात मुटुको लेभलमा हुनु पर्छ
- बाहुला नभई खुला हुनुपर्छ
- कफको तल्लो भाग कुहिना भन्दा ३ से.मी. माथि हुनु पर्छ
- कफको पाइप अगाडी पर्नु पर्छ

# The Correct Way to Measure Blood Pressure

## Before your reading

- No food or drink for 30 minutes
- Empty your bladder

## During the reading



- No talking
- Arm resting at chest height
- Cuff against bare skin
- Back is supported
- Sit with feet flat on floor

Visit [cdc.gov/bloodpressure](https://www.cdc.gov/bloodpressure) for tips and resources.



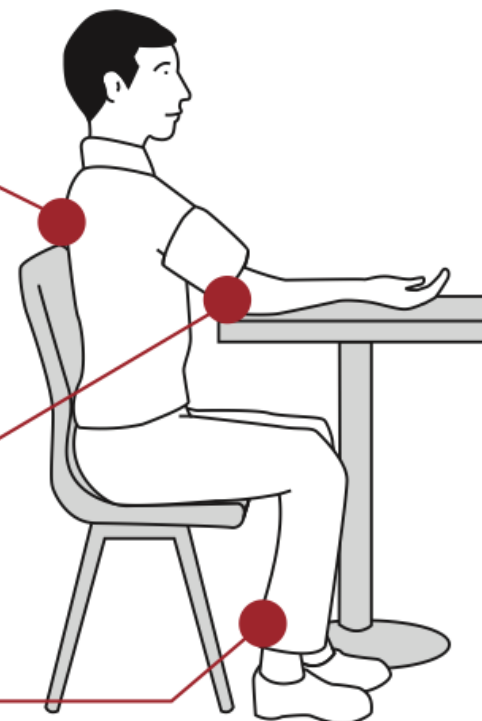
# BLOOD PRESSURE MEASUREMENT



## When you measure your blood pressure:

Rested for 10  
minutes

- ✓ Sitting position
- ✓ Back supported
- ✓ Arm bare and supported
- ✓ Use a cuff size appropriate for your arm
- ✓ Middle of the cuff at heart level
- ✓ Lower edge of cuff 3 cm above elbow crease
- ✓ Do not talk or move before or during the measurement
- ✓ Legs uncrossed
- ✓ Feet flat on the floor



Do not cross  
legs

Do not make  
Fist



# DIGITAL BP MACHINE







WRIST  
MONITORS  
ARE NOT  
ACCURATE



SMART  
WATCHES  
ARE EVEN  
MORE  
INACCURATE  
IN  
RECORDING  
BP

चिल्लो अर्थात कोलेष्ट्रॉल



खराब चिल्लो

# SATURATED FAT

- In Red meat
- Dairy products
  - Butter
  - Lard (Animal Fat)
  - Full-fat milk
  - Yogurt
  - Full-fat cheese
- Baked foods
- Fried foods
  
- Solid at Room temperature

# Trans Fat

- Made by adding hydrogen to vegetable oil\*
- If you heat the same oil over & over again it breaks down into Trans Fat & free radicals
- Occurs in small amounts in
  - Red meat
  - Dairy products
  - Margarine.
- Liquid at room temperatures

\*Partial hydrogenation during food Processing,  
Partially hydrogenated oil cannot be added to foods in the U.S.



**MARGARINE**

# Both are Bad

- Why? Because they tend to raise low-density lipoprotein (LDL) cholesterol levels in the blood.
- High cholesterol levels can increase your risk of heart disease and stroke.

# Recommendations of Fat Consumption

- Limit **saturated fat to less than 10% of daily calories.**
  - Limit trans fat to less than 1% of your daily calories.
  - eg. For someone with a 2,000 calorie a day diet, this is 20 calories or 2 grams per day.
- 
- AHA <7% OF Daily Calories

राम्रो चिल्लो

# POLY UNSATURATED FAT

- Studies : Foods rich in Polyunsaturated fat improves blood cholesterol levels,
  - Which decrease - risk of heart attack and stroke.
- Particularly — omega-3 fatty acid
  - Boost heart health by improving cholesterol levels,
  - Reducing blood clotting
  - Reducing irregular heartbeats
  - Slightly lowering blood pressure.



# Types of Unsaturated Fat

- **Monounsaturated fat**
  - Oils: Olive, canola, peanut, sunflower and safflower.
  - Avocados, peanut butter and most nuts.
- **Polyunsaturated fat**
  - Sunflower, corn, soybean and cottonseed oils.
  - Walnuts, pine nuts, flaxseed, and sesame, sunflower and pumpkin seeds.
  - Omega-3 Fatty Acids
    - In fatty fish: Salmon, herring and sardines.

# What to Use or Eat ?

- Use oil instead of butter.
  - (Quick Fry) with olive oil instead of butter
  - Use canola oil when baking.
- Eat fish rich in omega-3 fatty acids, such as salmon, at least twice a week.
- Choose lean meat and skinless poultry.
  - Trim visible fat from meat.
  - Remove fat and skin from poultry.

# Healthy Diet

- Fibres (Whole grains, eat with skin of fruits, potatoes)
- Vegetables (Esp. Green Leafy Vegetables)
- Fruits
- Peanuts, Walnut, Pistachio, Almond, Flax Seed, Fish

रगतमा कोलेस्ट्रॉलको मात्रा

# Blood Cholesterol

- LDL > 190 mg/dl
- **GOOD CHOLESTROL: HDL**
  - Males: < 40 mg/dl
  - Females: < 50 mg/dl
- TG > 400 mg/dl
  
- If diabetic, history of stroke, heart attack or peripheral vessel disease then
- LDL < 100 mg/dl
- LDL:HDL < 5:1, < 3:1 is GOOD

# Application for Treating Cholesterol

**American Society of Cardiovascular Diseases  
(ASCVD)**

9:01

70%

Kathmandu  
Wed, Nov 2  
6:46 PM

Vancouver  
Wed, Nov 2  
6:01 AM

Wed, November 2  
9:01 AM  
Mississauga  
6°  
UV index : Low 5:40 AM

कार्तिक १६  
०६:४६ PM

Up  
UpToDate

M  
Medscape

ESC  
Pocket  
Guidelines

EP Mobile

Outlook

Gmail

ASCVD Plus

Adobe  
Acrobat

Merriam-  
Webster D...

Viber

Messenger

Twitter

Facebook

Instagram

Clock

Office

Truecaller

WhatsApp

Calendar


Phone

Settings


Calculator

Messages

Camera



# ASCVD Risk Estimator Plus



AMERICAN COLLEGE of CARDIOLOGY

| Estimate Risk   | Therapy Impact | Advice |
|---|----------------|--------|
| <p><b>37.5%</b><br/>High</p> <p><b>Current 10-Year ASCVD Risk**</b></p>   |                |        |
| <p>Lifetime Risk Calculator only provides lifetime risk estimates for individuals 40 to 59 years of age.</p> <p><b>Optimal ASCVD Risk: 5.8%</b></p> |                |        |
| <p><b>Smoker? ⓘ *</b></p> <p>Current ⓘ</p> <p>✓ Former ⓘ</p> <p>Never ⓘ</p>   |                |        |
| <p><b>How long ago did patient quit smoking? *</b></p> <p>6 months-1.5 years ago ▼</p>  |                |        |
| <p><b>On Hypertension Treatment? *</b></p> <p>Yes</p> <p>✓ No</p>   |                |        |
| <p><b>On a Statin? ⓘ ○</b></p> <p>Yes</p> <p>✓ No</p>   |                |        |

| Estimate Risk   | Therapy Impact | Advice |
|---|----------------|--------|
| <p>...</p>  |                |        |
| <p>White</p> <p>✓ African American</p> <p>Other</p>   |                |        |
| <p><b>Systolic Blood Pressure (mm Hg) *</b></p> <p><input type="text"/></p> <p><i>Value must be between 90-200</i></p>  |                |        |
| <p><b>Diastolic Blood Pressure (mm Hg) *</b></p> <p><input type="text"/></p> <p><i>Value must be between 60-130</i></p> |                |        |
| <p><b>Total Cholesterol (mg/dL) *</b></p> <p><input type="text"/></p> <p><i>Value must be between 130 - 320</i></p>     |                |        |
| <p><b>HDL Cholesterol (mg/dL) *</b></p> <p><input type="text"/></p> <p><i>Value must be between 20 - 100</i></p>        |                |        |
| <p><b>LDL Cholesterol (mg/dL) ⓘ ○</b></p> <p><input type="text"/></p> <p><i>Value must be between 30-300</i></p>        |                |        |
| <p><b>History of Diabetes? *</b></p> <p>Yes</p> <p>No</p>   |                |        |



# FOOD LABELS



## Nutrition Facts Valeur nutritive

Per 1 cup (250 mL)  
pour 1 tasse (250 mL)

|                                       | % Daily Value*<br>% valeur quotidienne* |
|---------------------------------------|---|
| <b>Calories 110</b>                   |   |
| <b>Fat / Lipides 0 g</b>              | 0 %                                     |
| Saturated / saturés 0 g               | 0 %                                     |
| + Trans / trans 0 g                   |   |
| <b>Carbohydrate / Glucides 26 g</b>   |   |
| Fibre / Fibres 0 g                    | 0 %                                     |
| Sugars / Sucres 22 g                  | 22 %                                    |
| <b>Protein / Protéines 2 g</b>        |   |
| <b>Cholesterol / Cholestérol 0 mg</b> |   |
| <b>Sodium 0 mg</b>                    | 0 %                                     |
| <b>Potassium 450 mg</b>               | 10 %                                    |
| <b>Calcium 30 mg</b>                  | 2 %                                     |
| <b>Iron / Fer 0 mg</b>                | 0 %                                     |

\*5% or less is a little, 15% or more is a lot

\*5% ou moins c'est peu, 15% ou plus c'est beaucoup



# Color-coded Nutritional Information

- Food has:
- High, medium or low amounts of fat, saturated fat, sugars and salt.
- **Red** means high
- **Amber** means medium
- **Green** means low

# Daily Calorie Requirement

- Roughly 2000 to 2500 Cal
- 1500 for elderly
- 1500 to 1800 for diabetic ([diabetescouncil.com](http://diabetescouncil.com))

# HEALTHY EATING PLATE

Use healthy oils (like olive and canola oil) for cooking, on salad, and at the table. Limit butter. Avoid trans fat.



The more veggies – and the greater the variety – the better. Potatoes and French fries don't count.

Eat plenty of fruits of all colors.



**STAY ACTIVE!**

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Harvard T.H. Chan School of Public Health  
The Nutrition Source  
[www.hsph.harvard.edu/nutritionsource](http://www.hsph.harvard.edu/nutritionsource)



Drink water, tea, or coffee (with little or no sugar). Limit milk/dairy (1-2 servings/day) and juice (1 small glass/day). Avoid sugary drinks.

Eat a variety of whole grains (like whole-wheat bread, whole-grain pasta, and brown rice). Limit refined grains (like white rice and white bread).

Choose fish, poultry, beans, and nuts; limit red meat and cheese; avoid bacon, cold cuts, and other processed meats.

Harvard Medical School  
Harvard Health Publications  
[www.health.harvard.edu](http://www.health.harvard.edu)



डायबेटिज अर्थात सुगर

# Diabetes Data

- **90 million adults (20-79) - diabetes in the South-East Asia: 2021.** (International Diabetes Federation)
- Why is diabetes more common in South Asians?
  - **Increased body fat**
  - **Insulin resistance**
  - **Impaired  $\beta$ -cell function**
  - **Genetic predisposition to diabetes**

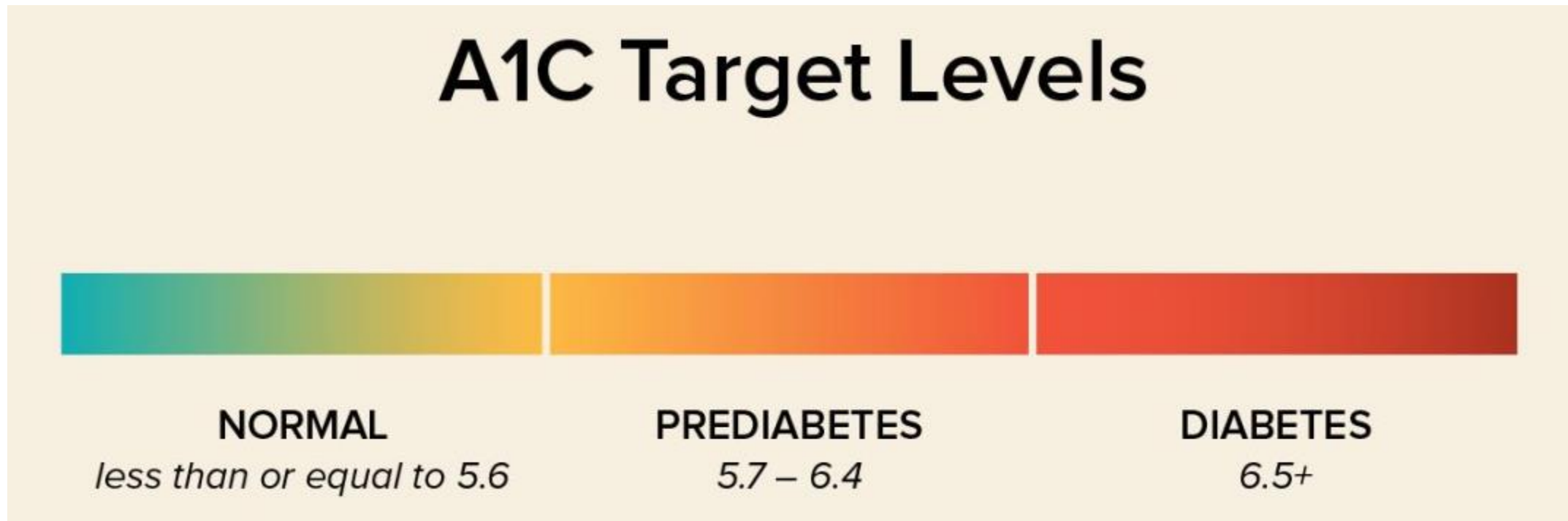
# Blood Sugar Level (WHO)

- Pre diabetes:
  - Fasting Sugar 100 to 125 mg/dl
  - After 2 hours after (Glucose) meal  $> 140$  mg/dl or 7.8 mmol/L
- Diabetes: On two separate tests
  - Fasting Sugar  $\geq 126$  mg/dl ( $\geq 7$  mmol/L)
  - 2 hours after (Glucose) meal  $\geq 200$  mg /dl ( $\geq 11.1$  mmol/L)



# HbA1C

- Average blood sugar level for the past 3 months.
- Measures the percentage of blood sugar attached to hemoglobin, the oxygen-carrying protein in red blood cells.



# FOR DIABETICS

## Non Starchy Vegetables

Asparagus

Eggplant

Carrots

Broccoli or Cauliflower

Brussels Sprout

Cabbage

Cucumber

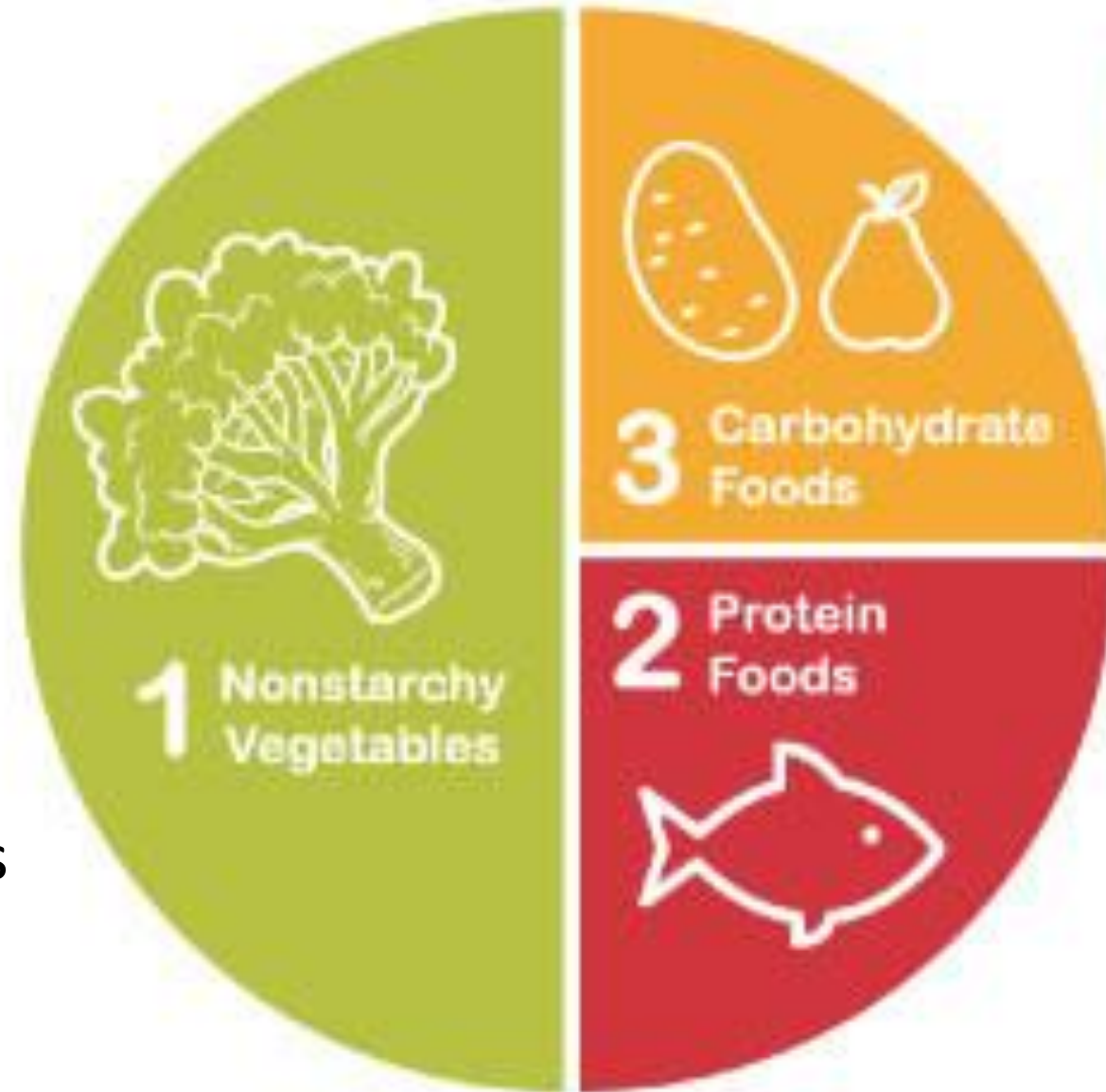
Mushroom

Beans, Lentils, Legumes & Peas

Tomatoes

Salad Leafy Greens: Lettuce,

Spinach



Water or  
0-Calorie  
Drink

# Starchy Vegetables

- Acorn & butternut squash
- [Green peas](#)
- [Parsnips](#)
- [Plantain](#)
- [Potato](#)
- [Pumpkin](#)
- [Sweet potato](#)
- [Yam](#)
- Lentils

# Carbohydrates for Diabetics

- Brown Rice, Brown Bread
- Oat meal
- Popcorn
- Beans and legumes

# How Much Sugar You Should Take?

- To cut down on sugar, limit your consumption of foods that have more than 5gm of total sugars per 100gm.
- Avoid over ripened fruit (Contains increase amt. of sugar)

# Salt Consumption

- American Heart Association recommends
- No more than 2,300 milligrams (mgs) a day
- Ideally **no more than 1,500 mg per day** for those with high blood pressure.
- Even cutting back by 1,000 mg a day can improve blood pressure and heart health.
  
- 1 teaspoon of table salt, which is a combination of sodium and chloride, has **2,325 milligrams (mg) of sodium**.

# Body Weight & Abdominal Obesity

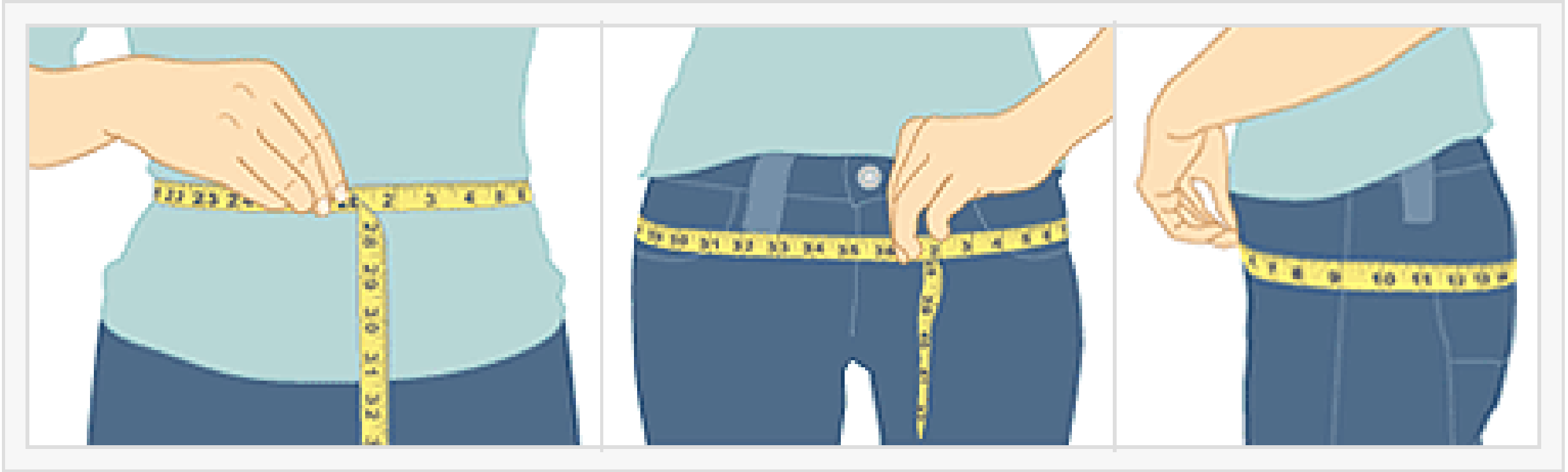
- Body Mass Index (BMI)
- Waist Hip Ratio

# Ideal Body Weight

- BMI: For Asians 18.5 to 23, For Caucasians: 18.5 – 24.9
- Weight Loss: Plan to reduce 5 kg of weight in 6 months time



# How to Measure Waist & Hip



- Waist circumference: Stand - breathe out. Measure around the smallest part of your waist, just above your belly button.
- Hip circumference: Measure around the widest part of your buttocks.

# Waist Hip Ratio

- For Asians:
- **0.95 in men and 0.80 in women**
- More - denotes abdominal obesity.

**EXERCISE**

# Exercise Recommendation

- WHO recommends **BRISK WALKING** for 45 minutes every day
- Or at least 30 minutes of brisk walking for at least 5 days a week
- Fixed exercise cycle
- Tread Mill (if no knee pain)

# BENEFITS OF REGULAR EXERCISES

1. Improves heart and lung function
2. Decreases blood pressure
3. Reduces body fat and body weight
4. Reduces bad cholesterol & Increases good cholesterol
6. Increases energy level & improves physical conditioning
7. Reduces mental stress and depression
8. Controls blood sugar and prevents diabetes
9. Strengthens the joints by improving muscle function and improves joint mobility.
10. Improves heart blood flow (Collateral Vessels)

# How Much Should You Exercise?

- The American Heart Association recommends a **Target Heart Rate (TGR)** of:
  - **Moderate exercise intensity: 50% to about 70% of your Maximum Heart Rate (MHR).**
  - Vigorous exercise intensity: 70% to about 85% of your MHR

# Heart Rate Aim

- Maximum Heart Rate:  $220 - \text{Age in years}$  ( $\pm 15$  to  $20$  bpm)
- Example: For moderate intensity exercise.
- If you are 55 yrs, MHR would be  $220 - 55 = 165$  beats per minute
  - Then 50 to 70% of 165 would be 82 to 111.5 bpm

# How Much Can You Drink?

- One Standard Drink equals to:
  - **341 ml** (12 oz) bottle of 5% Beer or Cider.
  - 43 ml (1.5 oz) of 40% hard drink (Vodka, Rum, Whisky, Gin)
  - 142 ml (5oz) of 12% Wine.
- 2020-2025 Dietary Guidelines for Americans recommends:
  - Adults can choose **Not to Drink**
  - Or to drink in moderation by limiting intake to
    - 2 drinks or less in a day for men
    - Or 1 drink or less in a day for women



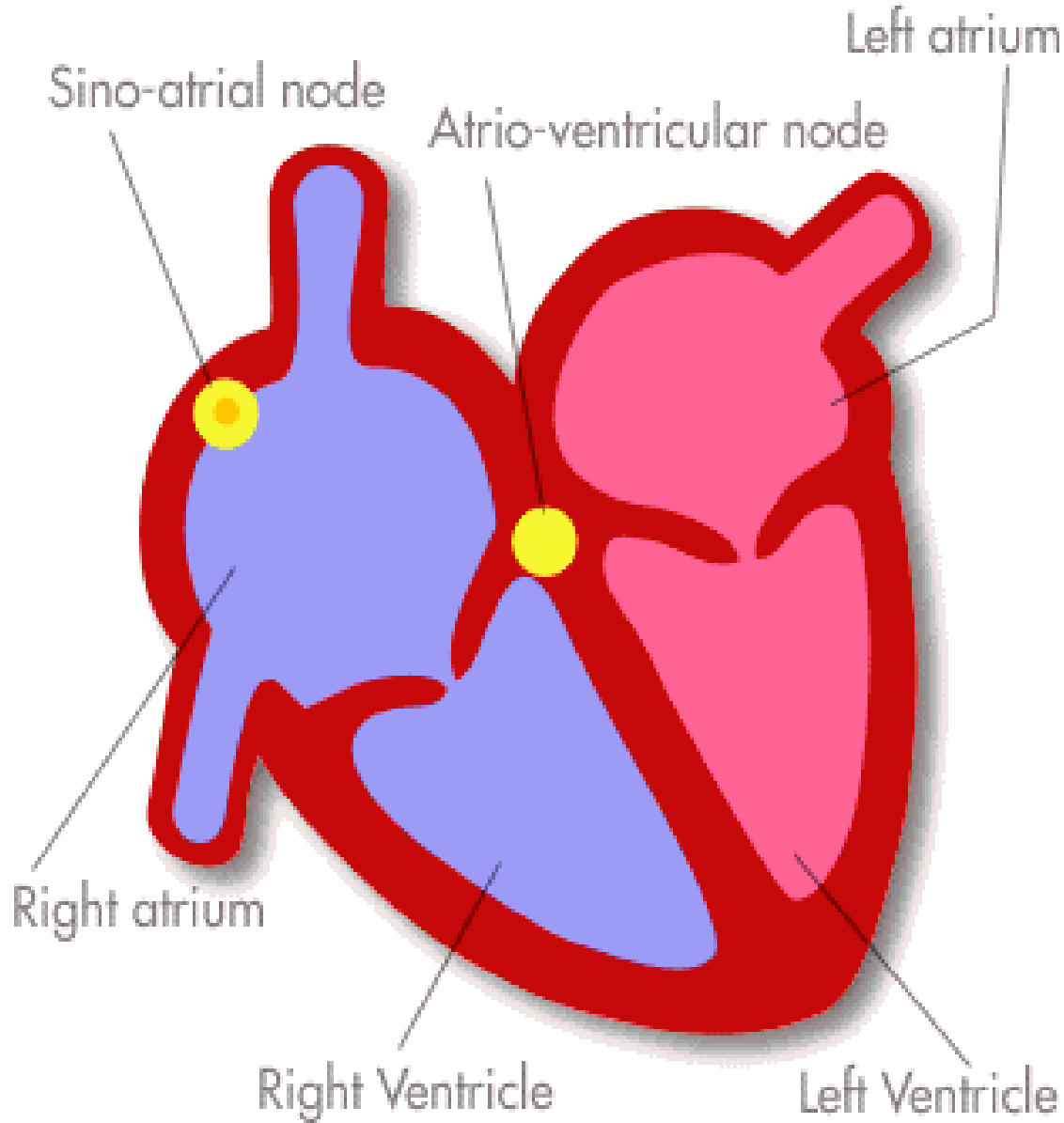
# Egg Consumption

- American Heart Association recommends:
- **Up to one egg a day for most people,**
- Fewer for people with high blood cholesterol, diabetes & at risk for heart disease
- Up to two eggs a day for older people with normal cholesterol levels and who eat a healthy diet.
- One egg: 186 mg of Cholesterol & 1.5 gm of Saturated Fat
- Monounsaturated 38%, 16% is polyunsaturated and 28% is saturated

मुटुको धडकनको समस्या

**PALPITATIONS**

# मुटुको चाल कसरी उत्पन्न हुन्छ ?

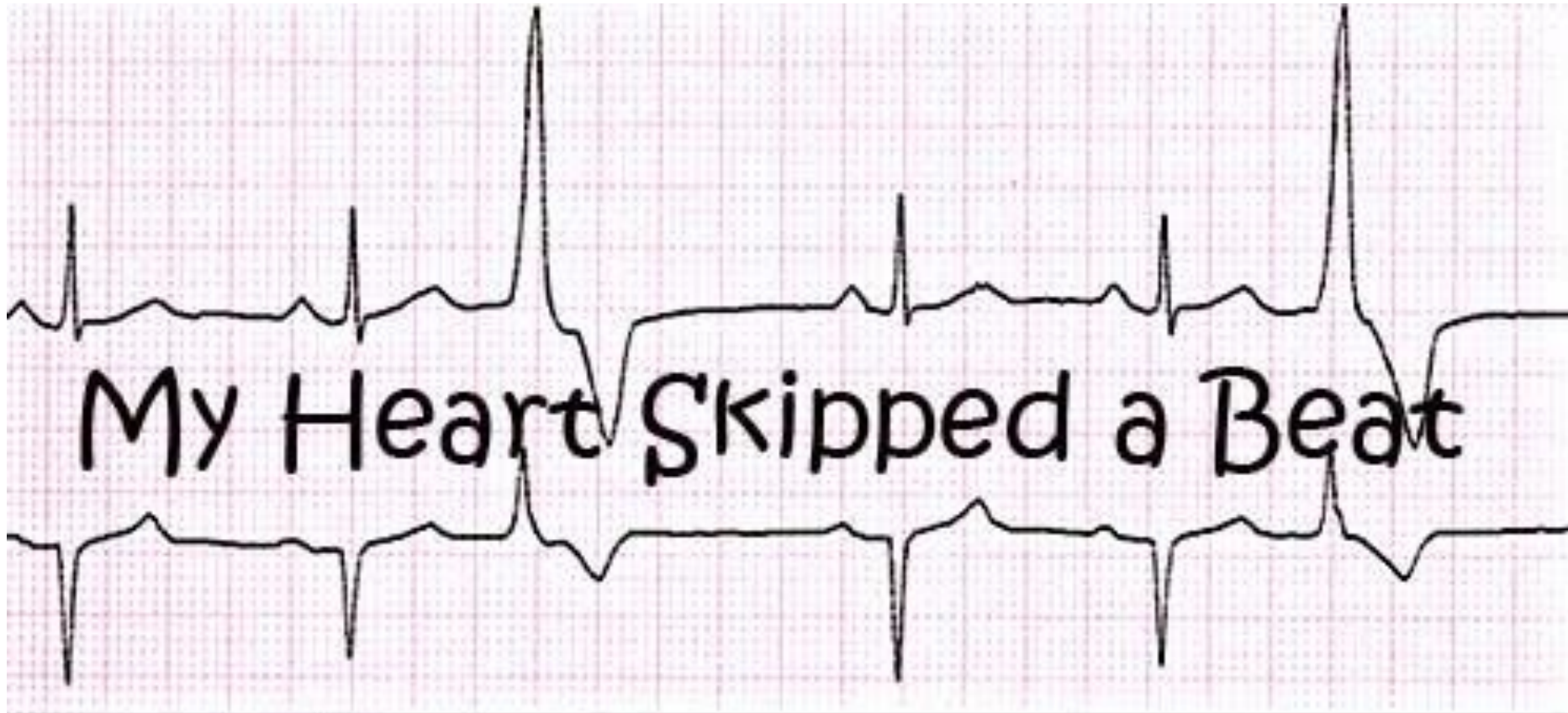


- मुटु एउटा आफै चल्ने: स्वचालित अंग हो । जिवन भर मुटु चलिरहन्छ ।
- मुटुको आफ्नै बिद्युतीय तरंग उत्पादन गर्ने प्रणाली हुन्छ ।

# प्राकृतिक पेशमेकर भनेको के हो?

- मुटु धड्कनको लागि मुटुमा विद्युतीय करेन्ट पैदा हुन्छ ।
- मुटुको दाँया तथा माथि रहेको कोठामा रहेको साइनस नोड भन्ने तन्तु बाट विद्युतिय तरंग पैदा तथा प्रवाहित हुन्छ ।
- साइनस नोडलाई नै मुटुको प्राकृतिक पेशमेकर भनिन्छ
- यस तन्तुमा विद्युतीय तरंग मुटुका अन्य स्थान भन्दा पहिले उत्पादन हुन्छ ।

डाक्टर मेरो मुटु एकछिनको लागि बन्द भयो



# Atrial or Ventricular Ectopic Beats

- Extra beats causing awareness of skipped or missed beats
- Not to worry
- Increases with age
- Cough medications, Asthma medications

# असमान्य तवरले मुटुको चाल बढने कारणहरु

- जन्मजात मुटु भित्र असामान्य तन्तुहरु हुनु
- जन्मजात मुटु भित्र विधुतिय तरङ्ग जाने छुट्टै बाटो हुनु ( यसलाइ डब्लु. पि. डब्लु. पनि भनिन्छ)
- उमेर बढ्दै गएपछि मुटु भित्रका कोषिका हरुमा परिवर्तन आएर तन्तु हरु विग्रदै र सुक्दै जानु

# अन्य कारणहरू

- डर, त्रास, मानसिक छटपटी र अत्याधिक चिन्ता
- खोकी, दम, दमका औषधि तथा अन्य औषधी हरु जसले मुटुको चाल बढाउने वा गडबडी ल्याउन सक्छ
- रगतको हेमोग्लोबिन कम भएमा
- ज्वरो आएमा
- व्यायाम पछि
- थाइराइड ग्रन्थिको समस्या
- मुटुका भाल्भको रोग (धेरै जसो मुटुको बाथ पछि)



# लक्षण हरुः

- मुटु हल्लिरहेको अनुभव
- रिंगटा लाग्ने
- टाउको भुम्म
- घाटीं च्याप्प कसेको जस्तो छाती दुख्ने
- श्वास फेर्न गाहो
- घाँटीको नसा छिटोछिटो चलेको जस्तो अनुभव



PULSE  
OXIMETER









धन्यवाद