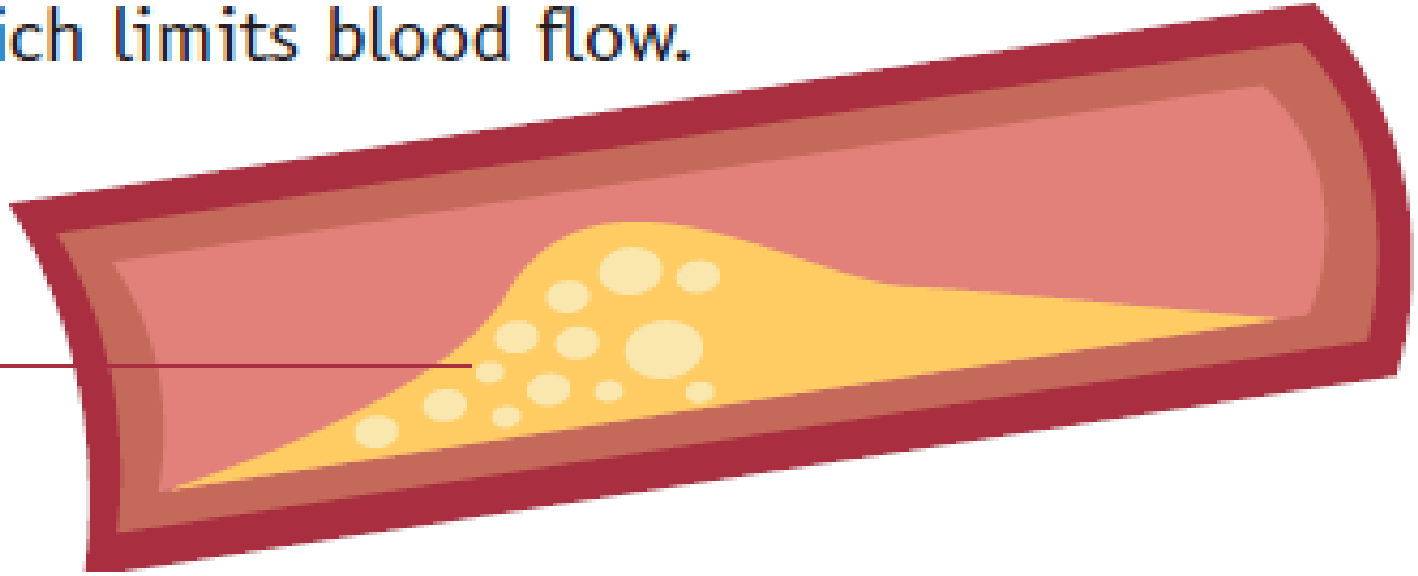
Epidemiology of Atherosclerotic Cardiovascular Disease(ASCVD)

Assistant Prof.
Dr. Alaa A.Salih –FICMS(FM)-2024

What **CAUSES** Heart Disease?

Atherosclerotic cardiovascular disease (ASCVD) can cause a heart attack or stroke. It happens when **PLAQUE** — made up of fat, cholesterol, and other substances — builds up in the walls of blood vessels called arteries. Over time, this plaque can harden and narrow the arteries, which limits blood flow.



What Increases **YOUR RISK?**

Certain factors raise your chance of developing heart disease. Some you can't change – your age, sex, race – and others you can change such as:

BLOOD PRESSURE

CHOLESTEROL

DIABETES

WEIGHT

DIET

PHYSICAL ACTIVITY

SMOKING

“Noncommunicable diseases (NCDs) are the leading cause of morbidity and death in Iraq (Iraqi Ministry of Health, 2019). It is estimated that 30% of Iraqis have high blood pressure, 14% have diabetes, and more than 30% are obese. Some 38% of Iraqi males smoke and a growing number of schoolchildren – 20% of males and 9% of females aged between 13 and 15 years – are tobacco users.”

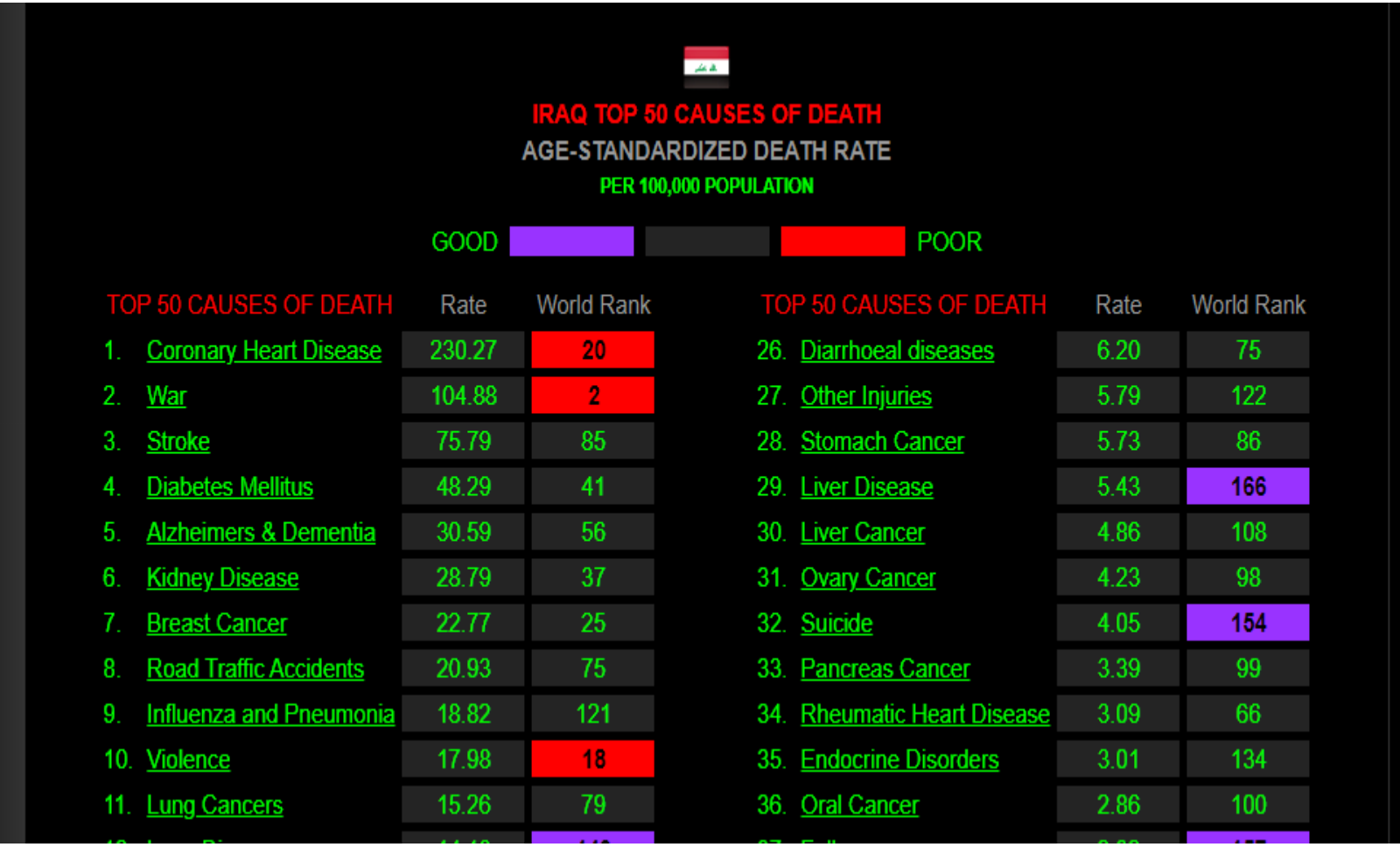
STATUS IN IRAQ

In December 2020 the WHO published data on causes of death across the WHO member states covering 2019.

The data stated that in 2019 there were 36,600 deaths caused by Ischaemic heart disease, 2500 deaths caused by hypertensive heart disease and 300 deaths caused by rheumatic heart disease in Iraq.

According to the WHO data, heart disease was the leading cause of death in Iraq in 2019

IRAQ 2021 CAUSES OF DEATH



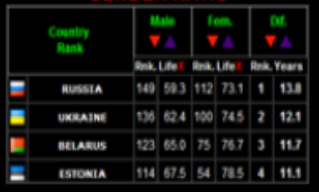
IRAQ TOP 50 CAUSES OF DEATH

AGE-STANDARDIZED DEATH RATE

PER 100,000 POPULATION

GOOD POOR

TOP 50 CAUSES OF DEATH	Rate	World Rank	TOP 50 CAUSES OF DEATH	Rate	World Rank
1. Coronary Heart Disease	230.27	20	26. Diarrhoeal diseases	6.20	75
2. War	104.88	2	27. Other Injuries	5.79	122
3. Stroke	75.79	85	28. Stomach Cancer	5.73	86
4. Diabetes Mellitus	48.29	41	29. Liver Disease	5.43	166
5. Alzheimers & Dementia	30.59	56	30. Liver Cancer	4.86	108
6. Kidney Disease	28.79	37	31. Ovary Cancer	4.23	98
7. Breast Cancer	22.77	25	32. Suicide	4.05	154
8. Road Traffic Accidents	20.93	75	33. Pancreas Cancer	3.39	99
9. Influenza and Pneumonia	18.82	121	34. Rheumatic Heart Disease	3.09	66
10. Violence	17.98	18	35. Endocrine Disorders	3.01	134
11. Lung Cancers	15.26	79	36. Oral Cancer	2.86	100



What are ASCVD diseases

ASCVD, = atherosclerotic cardiovascular disease, is caused by plaque buildup in arterial walls and refers to the following conditions:

- Coronary heart disease (CHD), such as myocardial infarction, angina, and coronary artery stenosis > 50%.
- Cerebrovascular disease, such as transient ischemic attack, ischemic stroke, and carotid artery stenosis > 50%.
- Peripheral artery disease, such as claudication.

Cardiovascular Diseases

Coronary Artery Disease

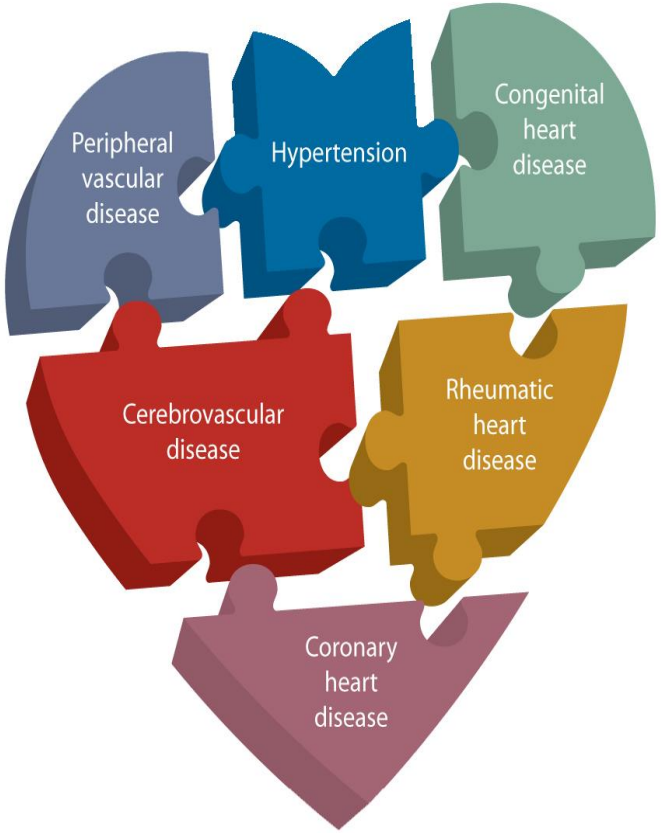
- **Accounts for nearly 50% of all ASCVD**

Arterial Hypertension

Left Ventricular Dysfunction (Congestive Heart Failure)

Valvular Disease

Cardiac Dysrhythmias



AHA Life's Simple 7

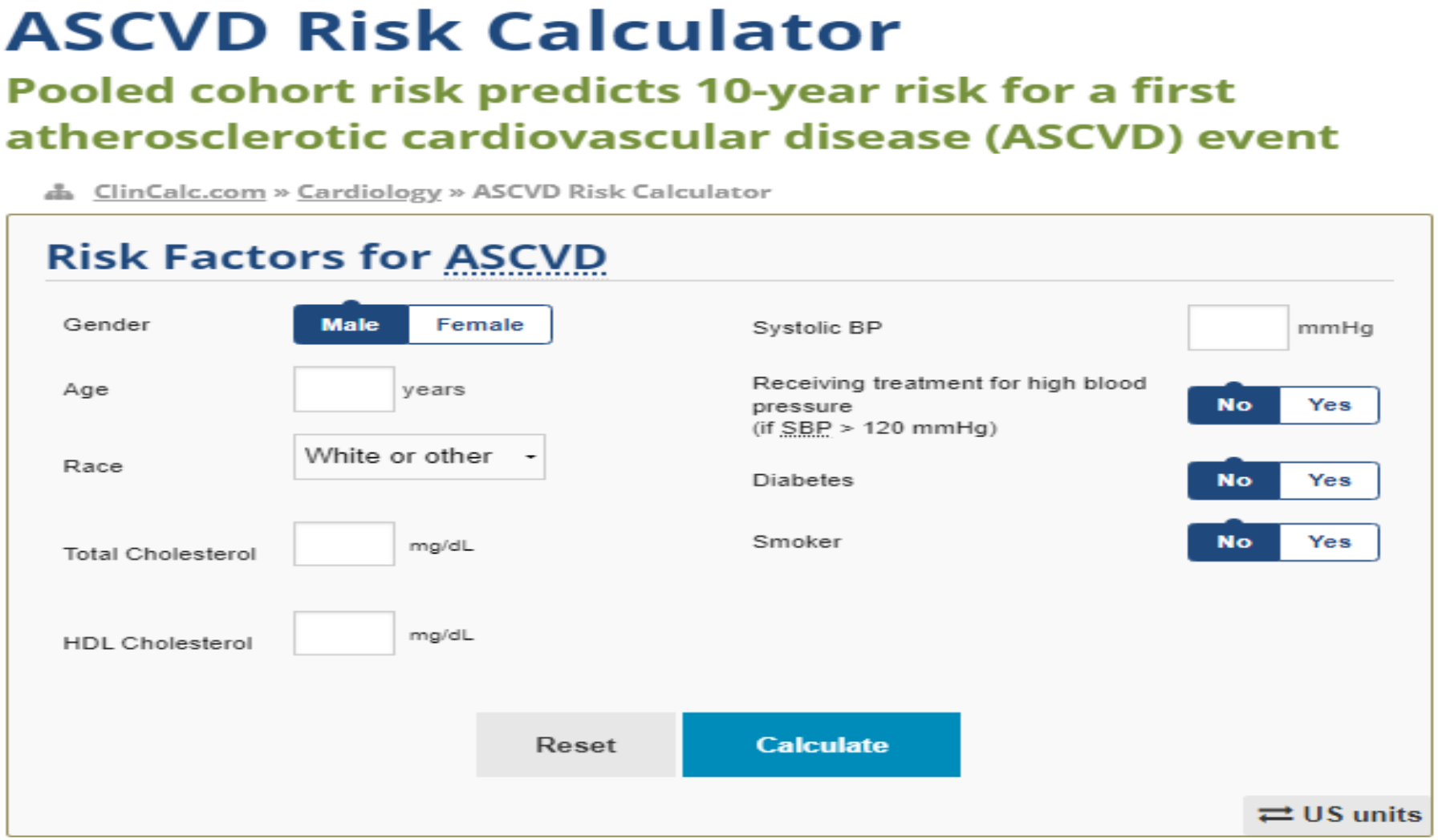
Life's Simple 7

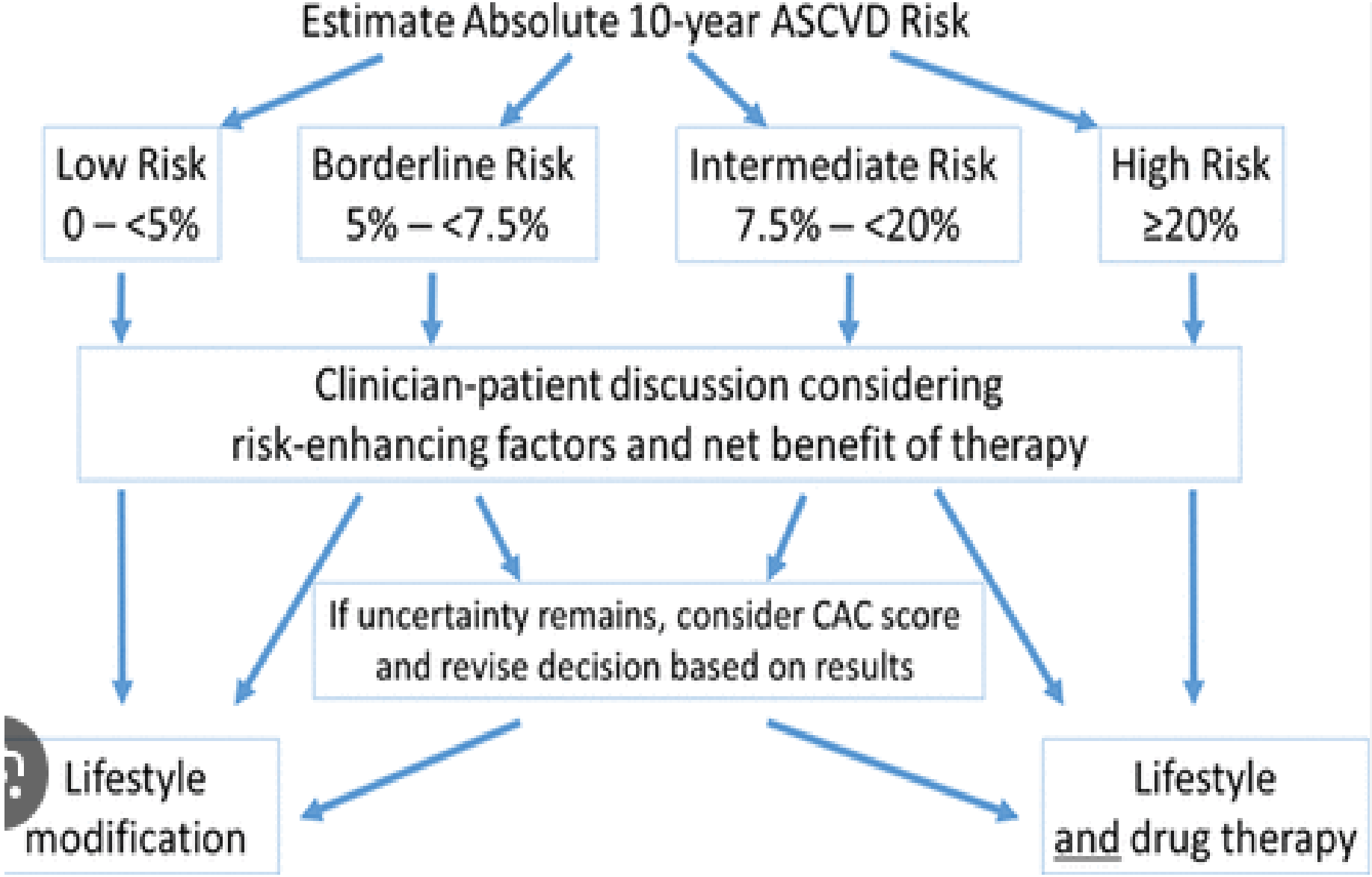
1. Get active
2. Eat better
3. Lose weight
4. Stop smoking
5. Control cholesterol
6. Manage blood pressure
7. Reduce blood sugar

1. ≥150 minutes moderate activity /week or ≥75 minutes vigorous activity/week
2. Eat a healthy diet (4–5 components of healthy diet score*)
3. Have a normal body weight (BMI<25)
4. Never smoked or quit >1 year ago
5. Total cholesterol <200 mg/dL
6. Blood pressure <120/<80 mm Hg
7. Fasting blood glucose <100 mg/dL

*1) 4.5 cups or more of fruits and vegetables per day; 2) two or more 3.5-oz servings of fish per week; 3) three servings per day of whole grains; 4) less than 1500 mg of sodium per day; and 5) 36 ounces or less of sugar-sweetened beverages per

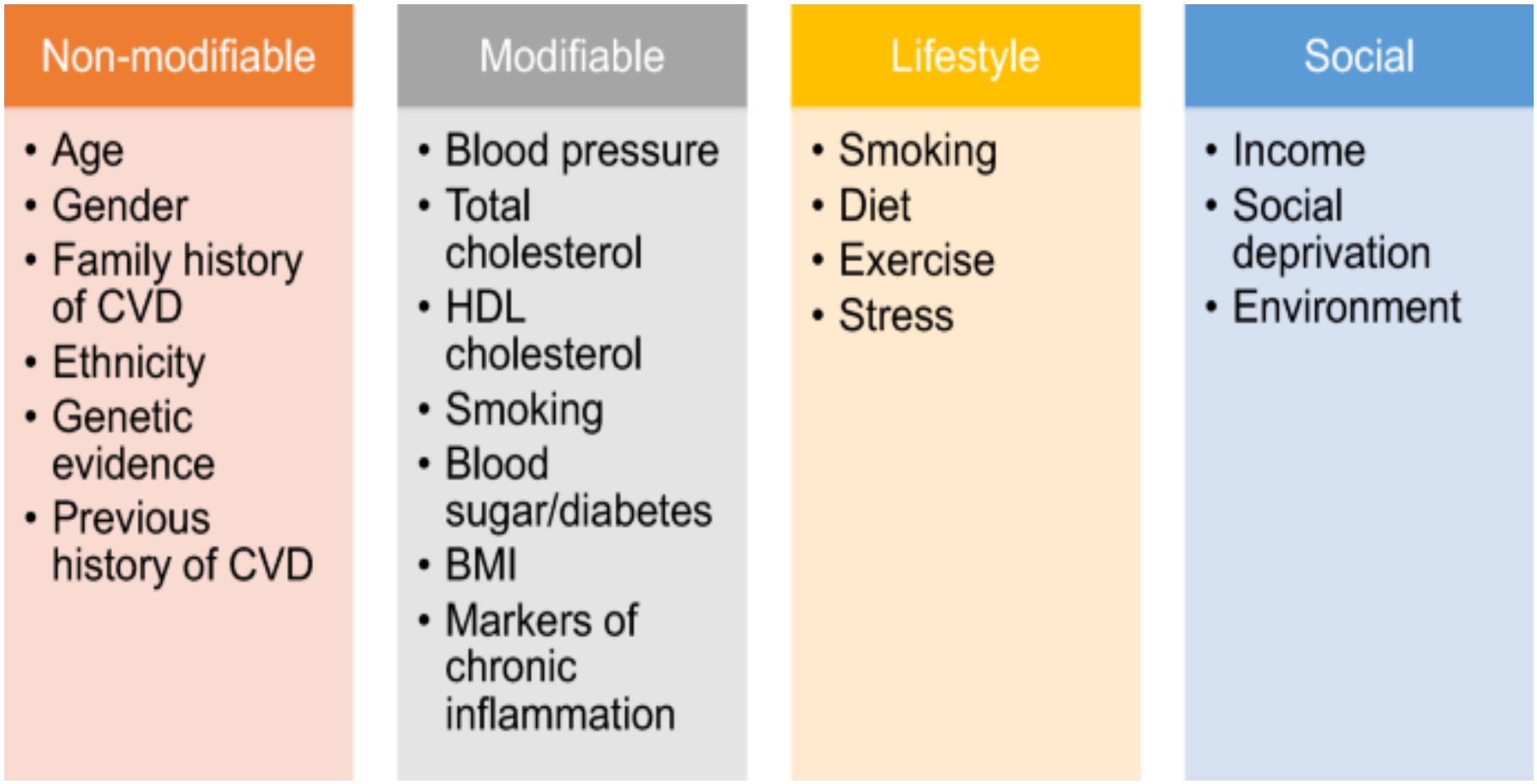
https://clincalc.com/Cardiology/ASCVD/PooledCohort.aspx




Estimate Absolute 10-year ASCVD Risk
Low Risk
0 – <5%
Borderline Risk
5% – <7.5%
Intermediate Risk
7.5% – <20%
High Risk
≥20%
Clinician-patient discussion considering
risk-enhancing factors and net benefit of therapy
If uncertainty remains, consider CAC score
and revise decision based on results
Lifestyle
modification
Lifestyle
and drug therapy

Goals of Primary Prevention

Modify risk factors or prevent their development with the aim of delaying or Preventing new-onset ASCVD.


Non-modifiable
• Age
• Gender
• Family history of CVD
• Ethnicity
• Genetic evidence
• Previous history of CVD
Modifiable
• Blood pressure
• Total cholesterol
• HDL cholesterol
• Smoking
• Blood sugar/diabetes
• BMI
• Markers of chronic inflammation
Lifestyle
• Smoking
• Diet
• Exercise
• Stress
Social
• Income
• Social deprivation
• Environment

PRIMARY PREVENTION GUIDELINES

Top 10 Messages

1. **Promote a healthy lifestyle throughout life.**

2. **Clinicians should evaluate the social determinants of health that affect individuals to inform treatment decisions.**

3. **Adults who are 40 to 75 years of age and are being evaluated for CVD prevention should undergo 10-year ASCVD risk estimation and have a clinician–patient risk discussion before starting on pharmacological therapy, such as antihypertensive therapy, a statin, or aspirin.**

4. **All adults should consume a healthy diet : vegetables, fruits, nuts, whole grains, lean vegetable or animal protein, and fish and minimizes the intake of *trans* fats, red meat and processed red meats, refined carbohydrates, and sweetened beverages.**

5. Adults should engage in :

at least 150 minutes per week of accumulated moderate-intensity physical activity

Walking fast, Doing water aerobics, Riding a bike on level ground or with few hills.

Or 75 minutes per week of vigorous-intensity physical activity.

Hiking, Jogging at 6 mph, Shoveling. Carrying heavy loads.

Bike fast (14-16 mph)

6. For adults with type 2 diabetes mellitus, lifestyle changes, such as improving dietary habits and achieving exercise recommendations, are crucial.

If medication is indicated

metformin is first-line therapy

followed by consideration of a sodium-glucose cotransporter 2 inhibitor –SGLT-2

or a glucagon-like peptide-1 receptor agonist. –GLP-1

7. All adults should be assessed at every healthcare visit for tobacco use, and those who use tobacco should be assisted and strongly advised to quit.

8. Aspirin should be used infrequently in the routine primary prevention of ASCVD because of lack of net benefit.

9. **Statin therapy is first-line treatment for primary prevention of ASCVD in patients with**

elevated LDL-C levels (≥190 mg/dL)

those with diabetes mellitus

who are 40 to 75 years of age

10. **Nonpharmacological interventions are recommended for all adults with elevated blood pressure or hypertension.**

For those requiring pharmacological therapy, the target blood pressure should generally be <130/80 mm Hg.

Table 3. Risk-Enhancing Factors for Clinician-Patient Risk Discussion

Risk-Enhancing Factors
• **Family history of premature ASCVD** (males, age <55 y; females, age <65 y) • **Primary hypercholesterolemia** (LDL-C 160–189 mg/dL [4.1–4.8 mmol/L]; non–HDL-C 190–219 mg/dL [4.9–5.6 mmol/L])* • **Metabolic syndrome** (increased waist circumference [by ethnically appropriate cutpoints], elevated triglycerides [>150 mg/dL, nonfasting], elevated blood pressure, elevated glucose, and low HDL-C [<40 mg/dL in men; <50 mg/dL in women] are factors; a tally of 3 makes the diagnosis) • **Chronic kidney disease** (eGFR 15–59 mL/min/1.73 m^2 with or without albuminuria; not treated with dialysis or kidney transplantation) • **Chronic inflammatory conditions,** such as psoriasis, RA, lupus, or HIV/AIDS

Table 3. Risk-Enhancing Factors for Clinician-Patient Risk Discussion (cont'd)

Risk-Enhancing Factors
• **History of premature menopause (before age 40 y) and history of pregnancy-associated conditions that increase later ASCVD risk, such as preeclampsia** • **High-risk race/ethnicity** (e.g., South Asian ancestry) • **Lipids/biomarkers**: associated with increased ASCVD risk • Persistently elevated,* primary hypertriglyceridemia (≥175 mg/dL, nonfasting); • **If measured:** ▪ **Elevated high-sensitivity C-reactive protein** (≥2.0 mg/L) ▪ **Elevated Lp(a):** A relative indication for its measurement is family history of premature ASCVD. An Lp(a) ≥50 mg/dL . ▪ **Elevated apoB** (≥130 mg/dL): A relative indication for its measurement would be triglyceride ≥200 mg/dL. A level ≥130 mg/dL corresponds to an LDL-C >160 mg/dL and constitutes a risk-enhancing factor ▪ **ABI** (<0.9)= ankle brachial index

Lifestyle Factors Affecting Cardiovascular Risk

Nutrition and Diet

1. A diet :vegetables, fruits, legumes, nuts, whole grains, and fish is recommended to decrease ASCVD risk factors.
2. Replacement of saturated fat with dietary monounsaturated and polyunsaturated fats can be beneficial to reduce ASCVD risk.
3. A diet containing reduced amounts of cholesterol and sodium can be beneficial to decrease ASCVD risk.

Nutrition and Diet (cont'd)

4. As a part of a healthy diet, it is reasonable to minimize the intake of processed meats, refined carbohydrates, and sweetened beverages to reduce ASCVD risk.
5. As a part of a healthy diet, the intake of *trans* fats should be avoided to reduce ASCVD risk.

Exercise and Physical Activity

1.	Adults should be routinely counseled in healthcare visits to optimize a physically active lifestyle.
2.	Adults should engage in at least 150 minutes per week of accumulated moderate-intensity or 75 minutes per week of vigorous-intensity aerobic physical activity (or an equivalent combination of moderate and vigorous activity) to reduce ASCVD risk.

Exercise and Physical Activity (cont'd)

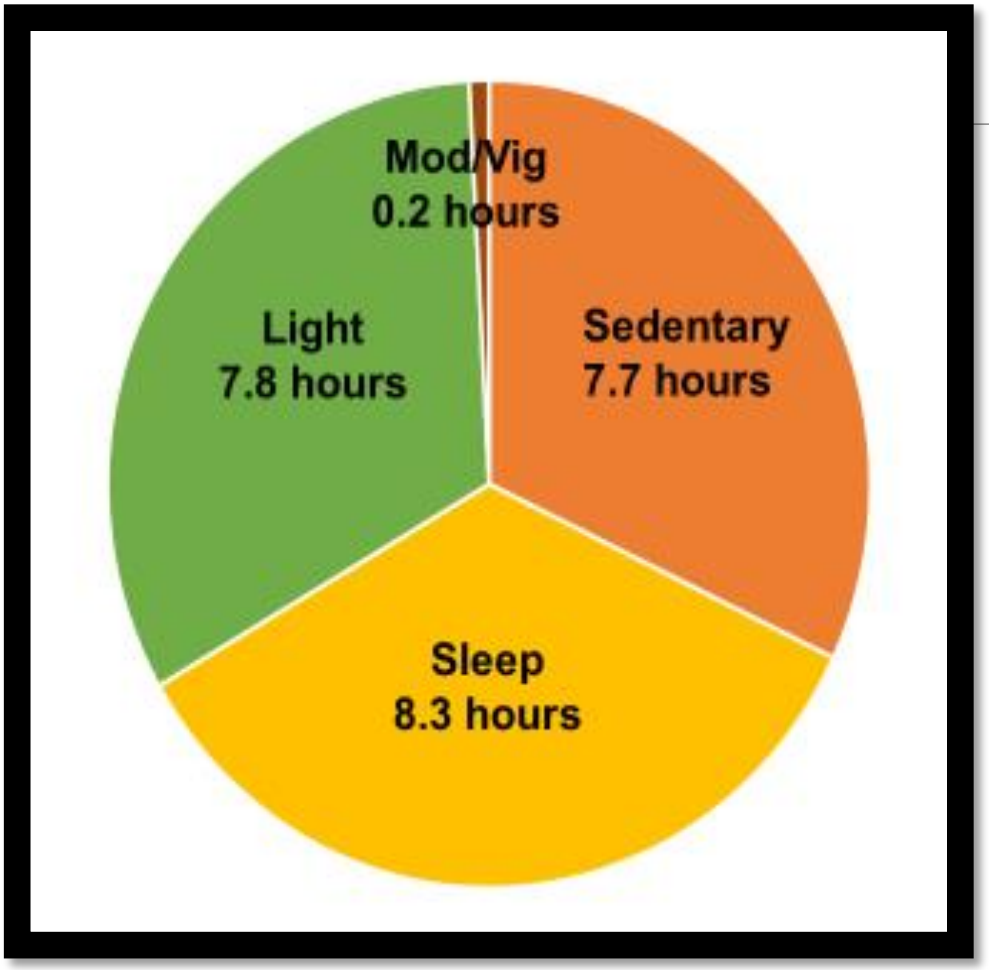
3. For adults unable to meet the minimum physical activity recommendations (at least 150 minutes per week of accumulated moderate-intensity or 75 minutes per week of vigorous-intensity aerobic physical activity), engaging in some moderate- or vigorous-intensity physical activity, even if less than this recommended amount, can be beneficial to reduce ASCVD risk.
4. Decreasing sedentary behavior in adults .

Table 4. Definitions and Examples of Different Intensities of Physical Activity

Intensity	METs	Examples
Sedentary behavior*	1–1.5	Sitting, reclining, or lying; watching television
Light	1.6–2.9	Walking slowly, cooking, light housework
Moderate	3.0 –5.9	Brisk walking (2.4–4 mph), biking (5–9 mph), ballroom dancing, active yoga, recreational swimming
Vigorous	≥6	Jogging/running, biking (≥10 mph), singles tennis, swimming laps

******Sedentary behavior* **is defined as any waking behavior characterized by an energy expenditure ≤1.5 metabolic equivalent (METs) while in a sitting, reclining, or lying posture. Standing is a sedentary activity in that it involves ≤1.5 METs, but it is not considered a component of sedentary behavior.**

Figure 1. Hours Per Day Spent in Various States of Activity



U.S. adults spend >7 h/d on average in sedentary activities. Replacing sedentary time with other physical activity involves increasing either moderate- to vigorous-intensity physical activity or light-intensity physical activity.

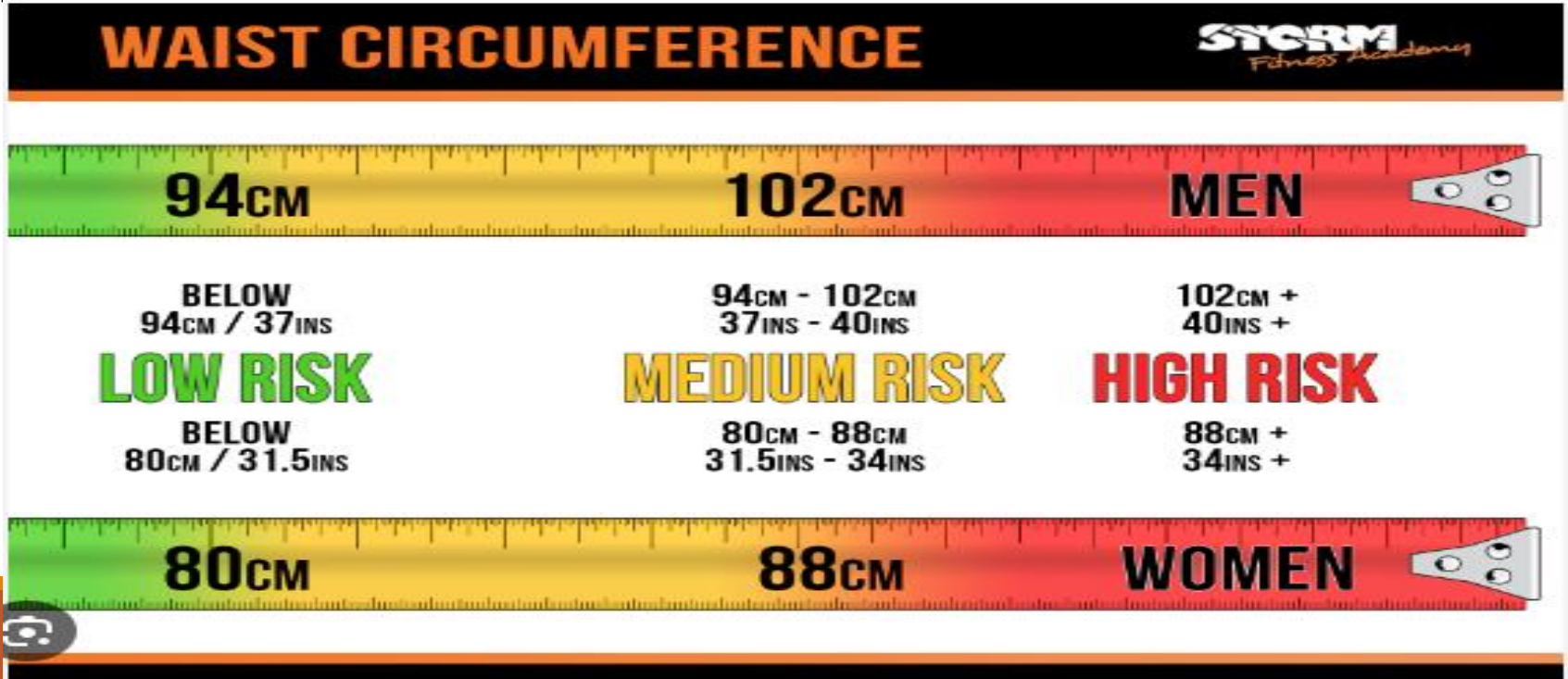
Factors Affecting Cardiovascular Risk

Adults with Overweight and Obesity

1.	**In individuals with overweight and obesity, weight loss is recommended to improve the ASCVD risk factor profile.**
2.	**Counseling and comprehensive lifestyle interventions, including calorie restriction, are recommended for achieving and maintaining weight loss in adults with overweight and obesity.**

Adults with Overweight and Obesity (cont'd)

3. **Calculating body mass index (BMI) is recommended annually or more frequently to identify adults with overweight and obesity for weight loss considerations.**



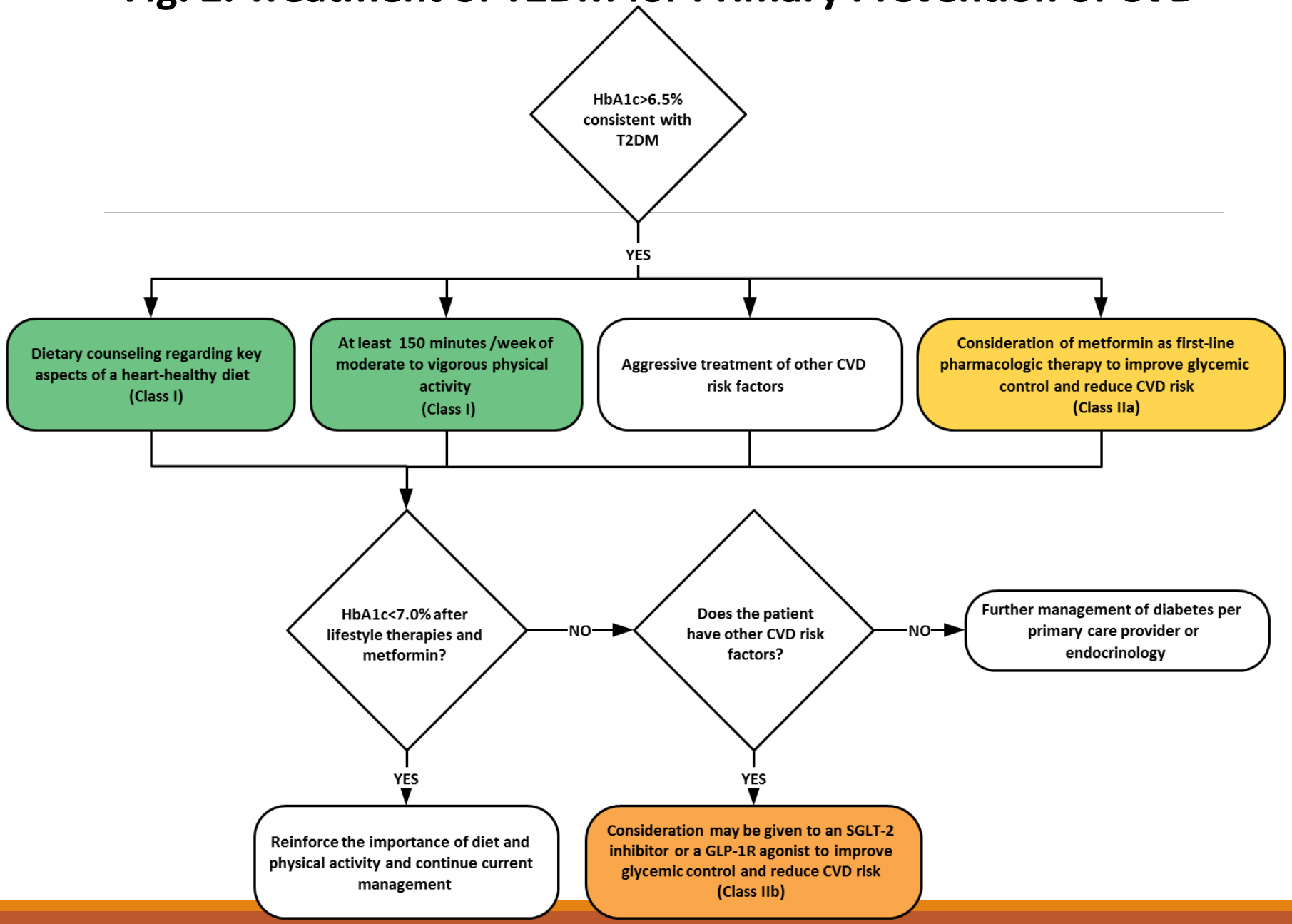
Adults with Type 2 Diabetes Mellitus

1.	**For all adults with T2DM, a tailored nutrition plan focusing on a heart-healthy dietary pattern is recommended to improve glycemic control, achieve weight loss if needed, and improve other ASCVD risk factors.**
2.	**Adults with T2DM should perform at least 150 minutes per week of moderate-intensity physical activity or 75 minutes of vigorous-intensity physical activity to improve glycemic control, achieve weight loss if needed, and improve other ASCVD risk factors.**

Adults with Type 2 Diabetes Mellitus (cont'd)

3.	**For adults with T2DM, it is reasonable to initiate metformin as first-line therapy along with lifestyle therapies at the time of diagnosis to improve glycemic control and reduce ASCVD risk.**
4.	**For adults with T2DM and additional ASCVD risk factors who require glucose-lowering therapy despite initial lifestyle modifications and metformin, it may be reasonable to initiate a sodium-glucose cotransporter 2 (SGLT-2) inhibitor or a glucagon-like peptide-1 receptor (GLP-1R) agonist to improve glycemic control and reduce CVD risk.**

Fig. 2. Treatment of T2DM for Primary Prevention of CVD



Adults with High Blood Cholesterol

1.	**In adults at intermediate risk (≥7.5% to <20% 10-year ASCVD risk), statin therapy reduces risk of ASCVD, and in the context of a risk discussion, if a decision is made for statin therapy, a moderate-intensity statin should be recommended.**
2.	**In intermediate risk (≥7.5% to <20% 10-year ASCVD risk) patients, LDL-C levels should be reduced by 30% or more, and for optimal ASCVD risk reduction, especially in patients at high risk (≥20% 10-year ASCVD risk), levels should be reduced by 50% or more.**

Adults with High Blood Cholesterol (cont'd)

3. In adults 40 to 75 years of age with diabetes, regardless of estimated 10-year ASCVD risk, moderate-intensity statin therapy is indicated.
4. In patients 20 to 75 years of age with an LDL-C level of 190 mg/dL (≥4.9 mmol/L) or higher, maximally tolerated statin therapy is recommended.

Adults with High Blood Cholesterol (cont'd)

5. **In adults with diabetes mellitus who have multiple ASCVD risk factors, it is reasonable to prescribe high-intensity statin therapy with the aim to reduce LDL-C levels by 50% or more.**
6. **In intermediate-risk (≥7.5% to <20% 10-year ASCVD risk) adults, risk-enhancing factors favor initiation or intensification of statin therapy.**

Adults with High Blood Cholesterol (cont'd)

7. **In intermediate-risk (≥7.5% to <20% 10-year ASCVD risk) adults or selected borderline-risk (5% to <7.5% 10-year ASCVD risk) adults in whom a coronary artery calcium score is measured for the purpose of making a treatment decision, AND**

   - **If the coronary artery calcium score is zero, it is reasonable to withhold statin therapy and reassess in 5 to 10 years, as long as higher-risk conditions are absent (e.g., diabetes, family history of premature CHD, cigarette smoking);**
   - **If coronary artery calcium score is 1 to 99, it is reasonable to initiate statin therapy for patients ≥55 years of age;**
   - **If coronary artery calcium score is 100 or higher or in the 75th percentile or higher, it is reasonable to initiate statin therapy.**

Adults with High Blood Cholesterol (cont'd)

8. **In patients at borderline risk (5% to <7.5% 10-year ASCVD risk), in risk discussion, the presence of risk-enhancing factors may justify initiation of moderate-intensity statin therapy.**

Fig. 3.

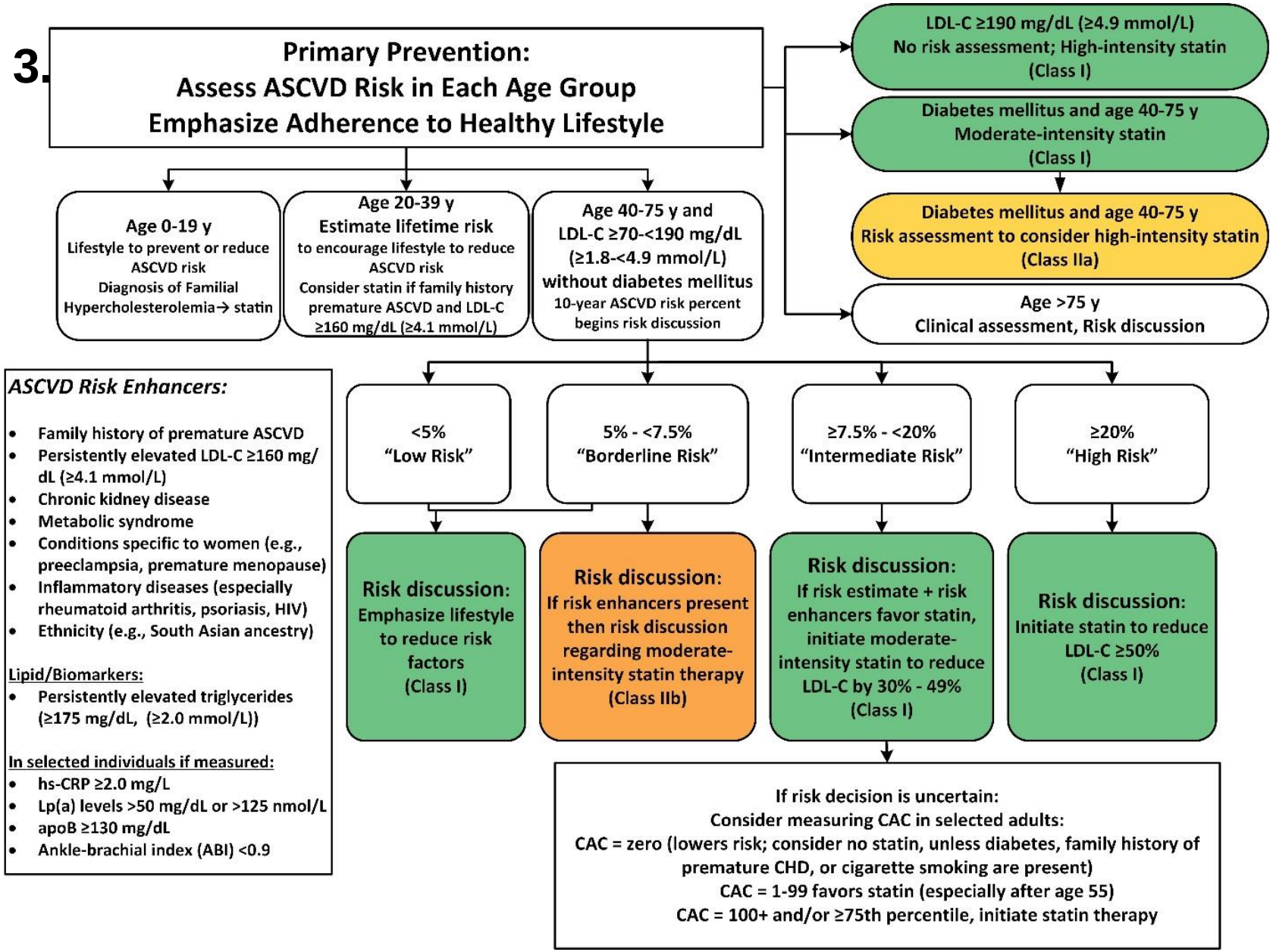
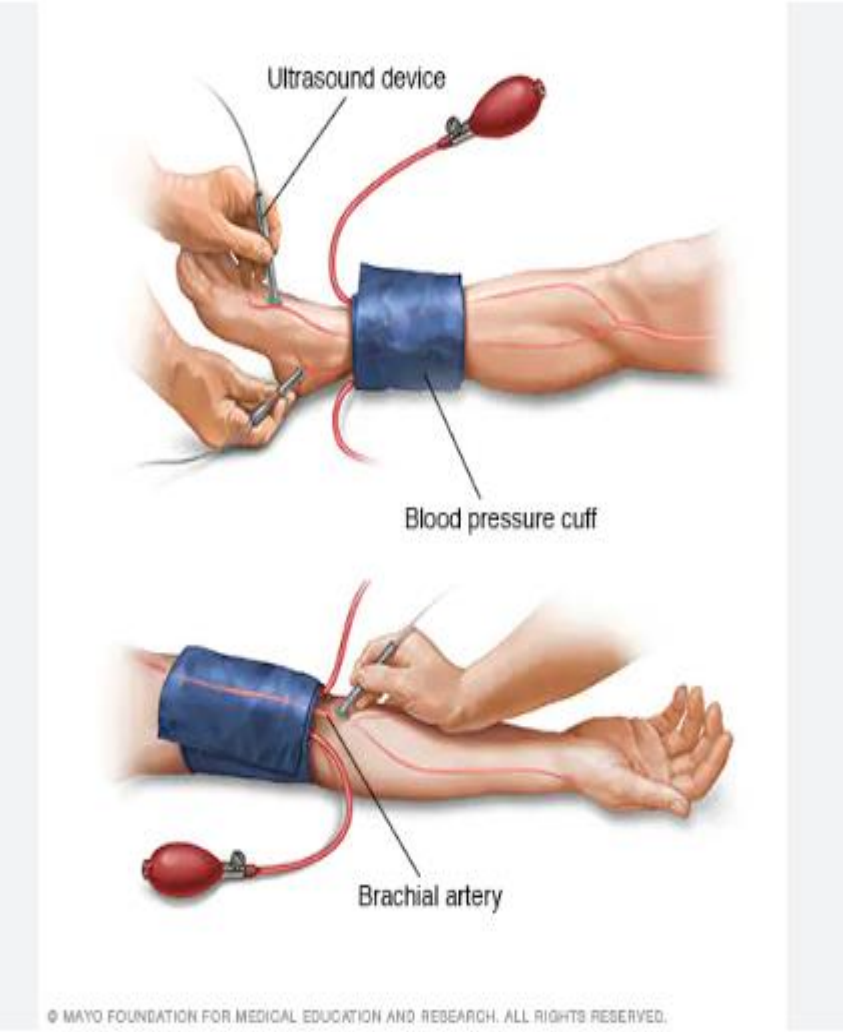

Primary Prevention:
Assess ASCVD Risk in Each Age Group
Emphasize Adherence to Healthy Lifestyle
LDL-C ≥190 mg/dL (≥4.9 mmol/L)
No risk assessment; High-intensity statin
(Class I)
Diabetes mellitus and age 40-75 y
Moderate-intensity statin
(Class I)
Diabetes mellitus and age 40-75 y
Risk assessment to consider high-intensity statin
(Class IIa)
Age >75 y
Clinical assessment, Risk discussion
Age 0-19 y
Lifestyle to prevent or reduce ASCVD risk
Diagnosis of Familial Hypercholesterolemia→ statin
Age 20-39 y
Estimate lifetime risk
to encourage lifestyle to reduce ASCVD risk
Consider statin if family history premature ASCVD and LDL-C ≥160 mg/dL (≥4.1 mmol/L)
Age 40-75 y and
LDL-C ≥70-<190 mg/dL (≥1.8-<4.9 mmol/L)
without diabetes mellitus
10-year ASCVD risk percent begins risk discussion
ASCVD Risk Enhancers:
Family history of premature ASCVD
Persistently elevated LDL-C ≥160 mg/dL (≥4.1 mmol/L)
Chronic kidney disease
Metabolic syndrome
Conditions specific to women (e.g., preeclampsia, premature menopause)
Inflammatory diseases (especially rheumatoid arthritis, psoriasis, HIV)
Ethnicity (e.g., South Asian ancestry)
Lipid/Biomarkers:
Persistently elevated triglycerides (≥175 mg/dL, (≥2.0 mmol/L))
In selected individuals if measured:
hs-CRP ≥2.0 mg/L
Lp(a) levels >50 mg/dL or >125 nmol/L
apoB ≥130 mg/dL
Ankle-brachial index (ABI) <0.9
<5%
"Low Risk"
5% - <7.5%
"Borderline Risk"
≥7.5% - <20%
"Intermediate Risk"
≥20%
"High Risk"
Risk discussion:
Emphasize lifestyle to reduce risk factors
(Class I)
Risk discussion:
If risk enhancers present then risk discussion regarding moderate-intensity statin therapy
(Class IIb)
Risk discussion:
If risk estimate + risk enhancers favor statin, initiate moderate-intensity statin to reduce LDL-C by 30% - 49%
(Class I)
Risk discussion:
Initiate statin to reduce LDL-C ≥50%
(Class I)
If risk decision is uncertain:
Consider measuring CAC in selected adults:
CAC = zero (lowers risk; consider no statin, unless diabetes, family history of premature CHD, or cigarette smoking are present)
CAC = 1-99 favors statin (especially after age 55)
CAC = 100+ and/or ≥75th percentile, initiate statin therapy

Table 5. Diabetes-Specific Risk Enhancers That Are Independent of Other Risk Factors in Diabetes Mellitus

Risk Enhancers in Diabetic Patients
• Long duration (≥10 years for T2DM or ≥20 years for type 1 diabetes mellitus • Albuminuria ≥30 mcg albumin/mg creatinine • eGFR <60 mL/min/1.73 m^2 • Retinopathy • Neuropathy • ABI <0.9



	Supine Resting Ankle Brachial Index	Posterexercice Ankle Brachial Index
Normal	>1.0	No change or increase
Mild disease	0.8–0.9	>0.5
Moderate disease	0.5–0.8	>0.2
Severe disease	<0.5	<0.2

Adults with High Blood Pressure or Hypertension

1. **In adults with elevated blood pressure (BP) or hypertension, including those requiring antihypertensive medications nonpharmacological interventions are recommended to reduce BP. These include:**
   - **weight loss,**
   - **a heart-healthy dietary pattern,**
   - **sodium reduction,**
   - **dietary potassium supplementation,**
   - **increased physical activity .**
   - **limited alcohol.**

Adults with High Blood Pressure or Hypertension (cont'd)

2. **In adults with an estimated 10-year ASCVD risk* of 10% or higher and an average systolic BP (SBP) of 130 mm Hg or higher or an average diastolic BP (DBP) of 80 mm Hg or higher, use of BP-lowering medications is recommended for primary prevention of CVD.**

Adults with High Blood Pressure or Hypertension (cont'd)

3. **In adults with confirmed hypertension and a 10-year ASCVD event risk of 10% or higher, a BP target of less than 130/80 mm Hg is recommended.**

4. **In adults with hypertension and chronic kidney disease, treatment to a BP goal of less than 130/80 mm Hg is recommended.**

Adults with High Blood Pressure or Hypertension (cont'd)

5. **In adults with T2DM and hypertension, antihypertensive drug treatment should be initiated at a BP of 130/80 mm Hg or higher, with a treatment goal of less than 130/80 mm Hg.**

6. **In adults with an estimated 10-year ASCVD risk <10% and an SBP of 140 mm Hg or higher or a DBP of 90 mm Hg or higher, initiation and use of BP-lowering medication are recommended.**

Adults with High Blood Pressure or Hypertension (cont'd)

7. In adults with confirmed hypertension without additional markers of increased ASCVD risk, a BP target of less than 130/80 mm Hg may be reasonable.

ALL the following are modifiable risk factors excepts

1. LDL more than 160 mg/dl
2. systolic BP more than 150 mmHg
3. FBS more than 140 mg /dl
4. mother died with MI
5. BMI more than 30 Kg/m2

Secondary prevention

Secondary prevention refers to the effort to treat known, clinically significant ASCVD, and to prevent or delay the onset of disease manifestations.

<u>Target Population</u>

The target population for secondary prevention of ASCVD is patients who have been diagnosed with ASCVD.

This guideline addresses treatment of underlying ASCVD only, and does not address treatment of any associated conditions.

<u>Goals</u>

Reduce recurrent cardiovascular events and decrease coronary mortality.

New	Previous
SGLT2 inhibitors are recommended for patients with type 2 diabetes and established ASCVD (in addition to or after metformin therapy) due to their ability to reduce the risk of major cardiovascular events.	SGLT2 inhibitors were not included in the guideline.

SGLT2 inhibitors =Sodium-glucose transport protein 2 inhibitors


forxiga
dapagliflozin
28 film-coated tablets
Oral use
10mg
film-coated tablets
AstraZeneca


30 tablets
Empagliflozin
Jardiance®
25 mg
Tablet
Antidiabetic
Rx

TABLE 25.1 ACC/AHA Atherosclerotic Cardiovascular Disease Risk Enhancers Used in the ACC/AHA Guidelines

Family history of premature ASCVD (men <55 years, women <65 years)
Primary hypercholesterolemia (LDL-C ≥160 mg/dL [4.1 mmol/L]; non-HDL-C ≥190 mg/dL [4.9 mmol/L])
Chronic kidney disease (eGFR 15–59 mL/min/1.73 m^2, not on dialysis or kidney transplant)
Metabolic syndrome
Conditions specific to women (e.g., preeclampsia, premature menopause)
Chronic inflammatory conditions (especially rheumatoid arthritis, lupus, psoriasis, HIV)
High-risk race/ethnicity (e.g., South Asian ancestry)
Lipids/Biomarkers
Persistently elevated triglycerides (≥175 mg/dL [2 mmol/L], fasting or nonfasting)
In selected individuals if measured:
hsCRP ≥2 mg/L
Lipoprotein(a) ≥50 mg/dL or ≥125 nmol/L
Apolipoprotein B ≥130 mg/dL
Ankle-brachial index <0.9

Lipid screening tests

Lipid panel: for most patients

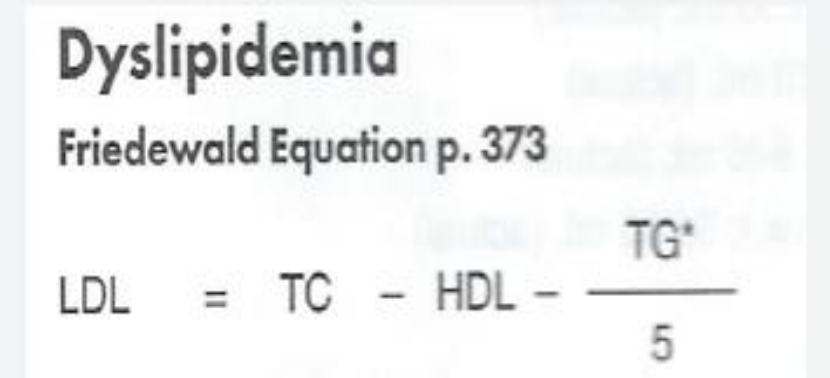
The results of a **lipid panel—**total cholesterol, HDL, LDL, and include the patient's 10-year risk calculation for cardiovascular disease.

It is recommended that the patient be non-fasting for the lipid panel, as this is much easier for the patient and does not require a return visit.

Any patient who has a triglyceride level > 400 mg/dL (regardless of LDL level) will need to return for a fasting lipid panel.

hs-CRP: consider for patients at 7.5–14.9% risk

LDL-C can be measured directly, but in most studies and many laboratories, LDL-C is calculated using

- 

The calculation is only valid when the concentration of triglycerides is <4.5 mmol/L (400 mg/dL), and not precise when LDL-C is very low [<1.3 mmol/L (50 mg/dL)].
In patients with low LDL-C levels and/or hyper triglyceridaemia (<_800 mg/dL), alternative formulae
are available or LDL-C can be measured directly.

Table 1. Lipid screening for patients not already on statins

Eligible population	Test	Frequency
Under age 40	Routine screening is not recommended unless patient has a major cardiovascular risk factor (e.g., diabetes, hypertension, family history, smoking).	
Age 40–75	Non-fasting lipid panel	Every 5 years at a minimum [1]
Over age 75	Routine screening is not recommended.	Upon patient request or based on other ASCVD risk factors

Consider re-screening intervals based on ASCVD risk:

- **Every 5 years if ASCVD risk < 7.5% over 10 years**
- **Every 2 years if ASCVD risk 7.5–14.9% over 10 years**
- **Annually if ASCVD risk ≥ 15% over 10 years and not on statin**

Statin Therapy

Table 3. Overview of statin therapy recommendations for primary prevention of ASCVD	
Population	**Statin therapy**
ASCVD risk 5–7.4% over 10 years	**Use shared decision-making. Consider treatment with a moderate-intensity statin.**
ASCVD risk 7.5–14.9% over 10 years	**Use shared decision-making. Consider treatment with a moderate- to high-intensity statin.**
ASCVD risk ≥ 15% over 10 years	**Initiate or continue moderate- to high-intensity statin.**
People with diabetes, aged 40–75, with ASCVD risk ≥ 7.5% over 10 years	**Initiate or continue moderate-intensity statin. Consider use of a high-intensity statin.**
People with diabetes, aged 40–75, with LDL cholesterol 70–189 mg/dL	**Initiate or continue moderate-intensity statin.**
LDL cholesterol ≥ 190 mg/dL	**Initiate or continue high-intensity statin.**

LIPID PROFILE

	DESIRABLE	BORDERLINE	HIGH RISK
Cholesterol	<200 mg/dl	200-239 mg/dl	240 mg/dl
Triglycerides	<150 mg/dl	150-199 mg/dl	200-499 mg/dl
HDL cholesterol	60 mg/dl	35-45 mg/dl	<35 mg/dl
LDL cholesterol	60-130 mg/dl	130-159 mg/dl	160-189 mg/dl
Cholesterol/ HDL ratio	4.0	5.0	6.0

All the following are desirable lipid profiles except:

1. **LDL 90 mg/dl**
2. **TG 130 mg/dl**
3. **Total cholesterol 210 mg/dl**
4. **HDL 65 mg/dl**
5. **Cholesterol/HDL 4**

Table 27-1 Low-Density Lipoprotein (LDL) Cholesterol Goals and Thresholds for Initiating Therapeutic Lifestyle Change (TLC) and Pharmacologic Intervention

Risk Category*	LDL Goal	LDL Level to Initiate TLC	LDL Level to Consider Drug Therapy
CHD or CHD risk equivalents (10-year risk >20%)	<100 mg/dL (optional goal <70)††	≥100 mg/dL All patients regardless of LDL	≥130 mg/dL (100-129 mg/dL: drug optional) ≥100 mg/dL‡ (<100 mg/dL: drug optional)
2+ risk factors (10-year risk: 10%-20%)	<130 mg/dL (optional goal <100)	≥130 mg/d All patients regardless of LDL	≥130 mg/dL (> 100 mg/dL: drug optional‡)
2+ risk factors (10-year risk ≤10%)	<130 mg/dL	≥130 mg/dL	≥160 mg/dL
0-1 risk factor†	<160 mg/dL	≥160 mg/dL	≥190 mg/dL (160-189 mg/dL: LDL-lowering drug optional)

STANDARD (moderate-intensity) statin dosing for primary prevention of ASCVD Standard dosing applies to patients for whom there are no concerns about their ability to tolerate moderate-intensity statin therapy.

Line	Medication	Initial dose	Maximum dose
1st	Atorvastatin	20 mg daily	80 mg daily
	Rosuvastatin	5–10 mg daily	40 mg daily
2nd	Simvastatin	40 mg daily at bedtime	40 mg [1] daily at bedtime

[1] For patients already on simvastatin 80 mg daily, it is acceptable to maintain the dose if they have been taking the drug for 12 months or longer, are not taking interacting medications, are at LDL goal, and are without myopathy.

Hypertension

Damages vessel walls

Increases ***afterload*** on the heart (= more work)

Leading ***cause*** of CVA & heart failure

BP > 140 systolic and/or 90 diastolic increases CAD risk

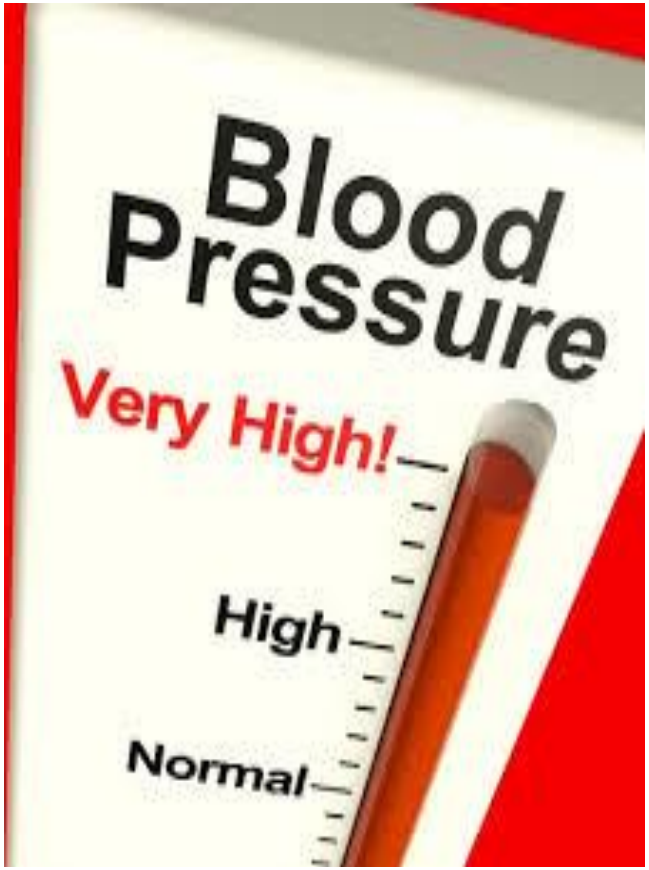


Table 12 Categories for conventionally measured seated office blood pressure[a]

Category	SBP (mmHg)		DBP (mmHg)
Optimal	<120	and	<80
Normal	120–129	and/or	80–84
High-normal	130–139	and/or	85–89
Grade 1 hypertension	140–159	and/or	90–99
Grade 2 hypertension	160–179	and/or	100–109
Grade 3 hypertension	≥180	and/or	≥110
Isolated systolic hypertension[b]	≥140	and	<90

TABLE 2. MANAGEMENT OF HYPERTENSION, DIABETES, AND DYSLIPIDEMIA FOR PRIMARY PREVENTION OF CARDIOVASCULAR DISEASE

	Sources	Treatment Goals
Hypertension	JNC 8	Blood pressure goal: <140/90 mm Hg or <150/90 mm Hg in patients 60 years and older
Diabetes	ADA	• Glycated hemoglobin treatment goal: <7.0% • Preprandial treatment goal: 80-130 mg/dL • Postprandial treatment goal: <180 mg/dL
Dyslipidemia	ACC/AHA	Statin therapy is recommended for the following groups of patients without cardiovascular disease: • Patients with a low-density lipoprotein level ≥190 mg/dL • Patients 40 years and older with diabetes • Patients with an ASCVD risk ≥7.5%

ACC/AHA = American College of Cardiology/American Heart Association; ADA = American Diabetes Association; ASCVD = atherosclerotic cardiovascular disease; JNC = Joint National Committee.
Adapted from references 4 and 14-16.

RISK FACTORS FOR CARDIOVASCULAR DISEASES

RISK FACTORS WE CAN CHANGE

Behavioural factors	Metabolic factors	Environmental factors
-Insufficient physical activity -High sodium intake -High alcohol consumption -Tobacco smoking	-High blood pressure -High fasting plasma glucose -High body-mass index -High levels of low-density lipoprotein (LDL) cholesterol	-Air Pollution -Water Pollution -Sound Pollution


Plavix
Clopidogrel 75 mg
14 film-coated tablets
sanofi aventis
Bristol-Myers Squibb


amazon
basic care
Chewable Tablets
NDC 72288-467-68
Aspirin 81mg
Pain Reliever (NSAID)
Low Dose Aspirin Regimen
Talk to your doctor or other healthcare provider before using this product for your heart.
36 TABLETS
actual size
Orange Flavored
Compare to Bayer® Chewable Low Dose Aspirin
active ingredient**

Antiplatelet Therapy: Common Oral Agents

	Acetylsalicylic acid (ASA)	Clopidogrel bisulfate*	Ticlopidine hydrochloride*
Trade Name	Aspirin	Plavix®	Ticlid®
Class	Salicylate	Thienopyridine	Thienopyridine
Formulation	Active Drug	Pro-Drug	Active Drug
Maintenance Dose	75-325 mg daily	75 mg daily	250 mg twice daily
Major Bleeding Risk (%)	2-3%[1]	1-4% alone[2,3] 3-5% w/ ASA[4]	1% alone[5] 2-6% w/ ASA[6,7]

[1]Topol EJ et al. *Circulation* 2003;108:399-406
[2]Diener HC et al. *Lancet* 2004;364;331-7
[3]Plavix® package insert. www.sanofi-synthelabo.us
[4]Peters RJ et al. *Circulation* 2003;108:1682-7
[5]Hass WK. *NEJM* 1989;321:501-7
[6]Urban P. *Circulation* 1998;98:2126-32
[7]Ticlid® package insert. www.rocheusa.com

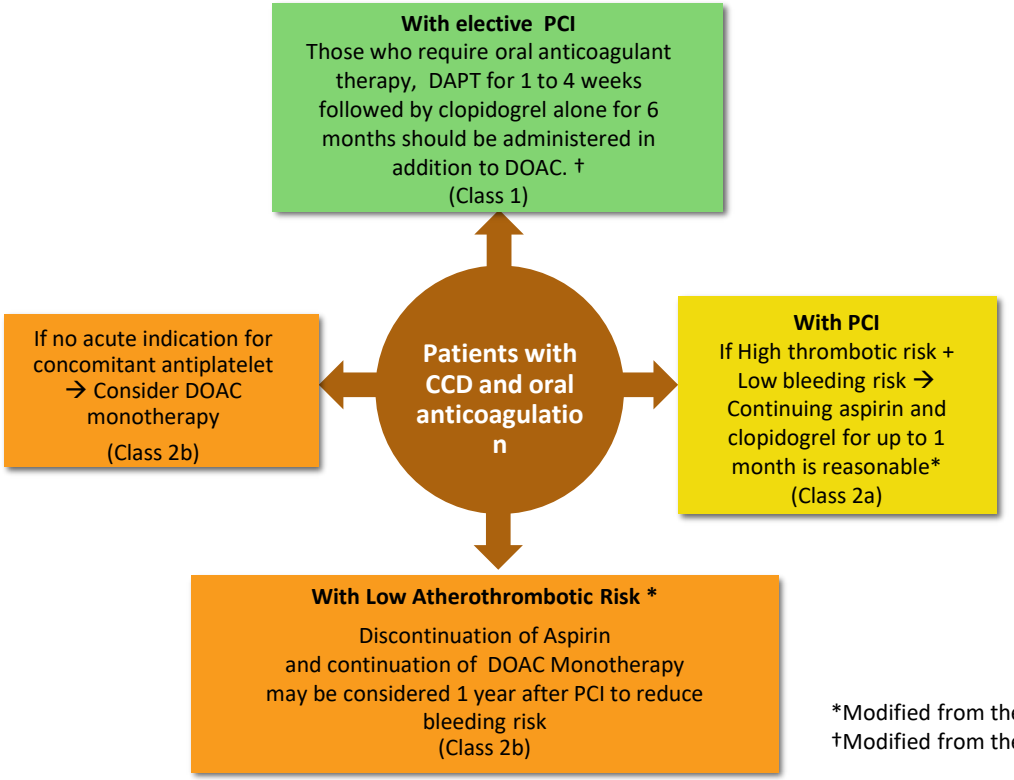
*Clopidogrel is generally given preference over Ticlopidine because of a superior safety profile

We recommend against the **routine** use of ASA for primary prevention of ASCVD regardless of sex, age, or diabetes, in patients without ASCVD .

DAPT Duration After PCI .

In the 2018 antiplatelet guidelines, DAPT with ASA and a $P2Y_{12}$ inhibitor was recommended for a minimum of 1 year as a standard and can be considered up to 3 years in patients at high ischemic/low bleeding risk.

Recommendations for Antiplatelet therapy with OAC



Antiplatelet therapy and Low dose DOAC

Patients with CCD without an indication for therapeutic DOAC or DAPT
High risk of recurrent ischemic events + low-to-moderate bleeding risk → Adding low dose Rivaroxaban 2.5 mg twice daily to aspirin 81 mg daily → Reasonable for long term reduction of risk for MACE (Class 2a)

DAPT and PPI

Patients with CCD on DAPT → PPI can be effective in reducing GI bleeding risk.* (Class 2a)

*Modified from the 2016 ACC/AHA Guideline Focused Update on DAPT
†Modified from the 2021 ACC/AHA/SCAI Guideline for Coronary Artery Revascularization.

Abbreviations: CCD indicates chronic coronary disease; DAPT, dual anti-platelet therapy; DOAC, direct oral anticoagulant; MACE, major adverse coronary event; OAC, oral anticoagulants; PCI, percutaneous coronary intervention; and PPI, proton pump inhibitors.

American Heart Association.

Virani, S. S., et al. 2023 AHA/ACC/ACCP/ASPC/NLA/PCNA Guideline for the Management of Patients With Chronic Coronary Disease. *Circulation*.

Recommendations for Antiplatelet therapy without OAC

Patients with CCD + PCI	
COR	**RECOMMENDATIONS**
1	DAPT (Aspirin and clopidogrel) for 6 months post PCI followed by SAPT
2a	If patient also has drug eluting stent, and completed 1-3 months of DAPT, use of P2Y12 inhibitor monotherapy (for least 12 months)

Patients with CCD + Stroke/TIA/ICH history	
COR	**RECOMMENDATIONS**
3: Harm	Prasugrel should not be used due to risk of significant/fatal bleed
3: Harm	Vorapaxar should not be added to DAPT (increased risk of major bleed/ICH)

Patients with CCD	
COR	**RECOMMENDATIONS**
1	If no indication for OAC, low dose aspirin 81mg (75mg-100mg) recommended
2b	+ previous MI and at low bleeding risk, extended DAPT (12 months- 3 yrs) may be reasonable to reduce MACE
2b	+ history of MI (w/out stroke, TIA, ICH) vorapaxar may be added to aspirin therapy to reduce MACE.
2b	Use of DAPT after CABG may be useful to reduce the incidence of saphenous vein graft occlusion.
3: No Benefit	w/o recent ACS or a PCI-related indication for DAPT, the addition of clopidogrel to aspirin therapy is not useful to reduce MACE.
3: Harm	Chronic NSAID's should not be used because of increased cardiovascular & bleeding complications

Abbreviations: CABG indicates coronary artery bypass graft; CCD, chronic coronary disease; DAPT, dual antiplatelet therapy; ICH, intracranial hemorrhage; NSAID, non-steroidal anti-inflammatory drug; MACE, major adverse cardiac event; MI, myocardial infarction; OAC, oral anticoagulant; PCI, percutaneous coronary intervention; SAPT, singe antiplatelet therapy; TIA, transient ischemic attack; and yrs, years.

American Heart Association.

Virani, S. S., et al. 2023 AHA/ACC/ACCP/ASPC/NLA/PCNA Guideline for the Management of Patients With Chronic Coronary Disease. *Circulation*.

LOWER YOUR CHANCE of Heart Disease

RISK FACTOR	NORMAL	MY NUMBERS	MY GOAL
Blood Pressure	Less than 120/80		
Cholesterol - Your cholesterol numbers help estimate your chance of having a heart attack or stroke	Total < 200	Total:	Ask your health care professional what your goals should be
	LDL < 100	LDL:	
	HDL > 40 in men > 50 in women	HDL:	
	Triglycerides < 150	Triglycerides:	
Diabetes - Control blood sugar (A1c) to prevent or manage diabetes	A1c ≤ 5.7% If you have diabetes: A1c < 7%		
Weight - Body Mass Index, or BMI	BMI < 25		Lose ____ pounds in _____ weeks
Diet	Eat fruits, vegetables, nuts, whole grains, fish		
Physical Activity	At least 20 minutes of moderate-intensity activity each day		
Stress Level & Social Support	Varies from person to person		

Eat **BETTER**

Eat more **FRUITS, VEGETABLES, NUTS, WHOLE GRAINS, FISH OR LEAN MEATS.**

LIMIT OR AVOID	EXAMPLES
 **Saturated fat**	Red meat, Whole-fat dairy products
 **Processed meats**	Deli meat, hot dogs, sausages, bacon
 **Refined carbohydrates**	Candy, cakes and ice cream
 **Sugar-sweetened beverages**	Soda pop, juices
 **Salt**	Often found in frozen meals, canned foods, pickles, chips

Move **MORE**

Adults should get **AT LEAST 150 MINUTES OF MODERATE-INTENSITY EXERCISE OR 75 MINUTES OF VIGOROUS EXERCISE** each week to promote good health. If you can't reach that goal at first, some activity – **EVEN JUST 10 MINUTES AT A TIME** – can help.

INTENSITY	EXAMPLES
Light	Walking slowly, cooking, light housework
Moderate	Brisk walking (2.4 mph–4 mph), ballroom dancing, recreational swimming
Vigorous	Jogging, biking (≥10 mph), singles tennis, swimming laps

MANAGE Stress

Too much **STRESS MAY BE HARMFUL TO THE HEART.** Handling stress in a healthy way and staying connected are key to heart health.

DE-STRESS: For some people, taking deep breaths, meditating or yoga can help.

GET ENOUGH SLEEP: Try to get at least seven hours of sleep each night. Not sleeping enough has been linked to a greater risk for heart disease, obesity, and other health issues.

CONNECT MORE: Loneliness has been linked to poorer health. If you have no one to talk to in times of need or feel alone, ask your health care professional about support groups.

THANK YOU