

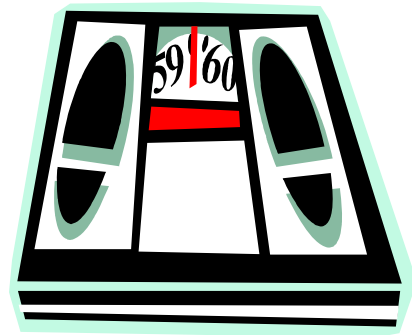
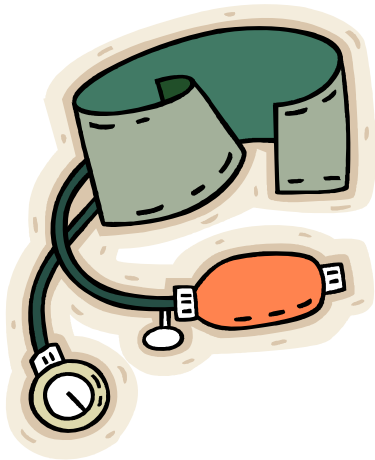
Middlesex County Public Health Department



HEALTHY HABITS

Know Your Numbers

A brief guide to understanding Blood Pressure, Blood Glucose, Cholesterol, LDL, HDL, Triglycerides, BMI, Waist Circumference and Waist to Hip Ratio



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Know Your Numbers

Blood Pressure (BP), Blood Sugar, Cholesterol, LDL, HDL, Triglycerides, Body Mass Index (BMI), Weight, Waist Circumference, Waist to Hip Ratio – How are you supposed to make sense of it all?

Here you will find a reference guide which will help you understand what these things mean.

Blood Pressure

High blood pressure (HBP) is also known as Hypertension and is a serious condition that can lead to coronary heart disease, heart failure, kidney failure and other health problems.

Blood pressure is the force of the blood as it pushes against the walls of the arteries as the heart pumps blood out of the heart into the body.

About 1 in 3 adults in the United States has high blood pressure. Since it has no symptoms, you could have high blood pressure for years without knowing it. During this time, damage can be done to the heart, blood vessels, and kidneys.

Blood pressure readings vary throughout the day and over time, even among people with normal blood pressure values. When the readings go above normal and stay that way, you are then at risk.

Blood pressure is recorded as two numbers—the systolic pressure (as the heart beats) over the diastolic pressure (as the heart relaxes between beats). The measurement is written one above or before the other, with the systolic number on top and the diastolic number on the bottom. For example, a blood pressure measurement of 120/80 mmHg (millimeters of mercury) is expressed verbally as "120 over 80."

Normal blood pressure is less than 120 mmHg systolic and less than 80 mmHg diastolic.

Categories for Blood Pressure Levels in Adults (in mmHg, or millimeters of mercury)

Category	Systolic (top number)		Diastolic (bottom number)
Normal	Less than 120	<i>And</i>	Less than 80
Pre-hypertension	120–139	<i>Or</i>	80–89
High blood pressure			
Stage 1	140–159	<i>Or</i>	90–99
Stage 2	160 or higher	<i>Or</i>	100 or higher

The ranges in the table apply to most adults (aged 18 and older) who do not have short-term serious illnesses.

All levels above 120/80 mmHg raise your risk, and the risk grows as blood pressure levels rise. “Pre-hypertension” means you are likely to end up with HBP, unless you take steps to prevent it.

Blood Sugar – Blood Glucose

Blood sugar and blood glucose are used as interchangeable terms. Although there are other sugars present in the blood, glucose is what serves as a controlling signal for metabolic regulation.

Blood sugar concentration, or glucose level, is tightly regulated in the human body. The normal blood glucose level is about 90mg/100ml. Glucose levels rise after meals for an hour or two by a few grams and are usually lowest in the morning, before the first meal of the day.

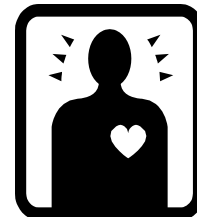
Failure to maintain blood glucose in the normal range leads to conditions of persistently high (hyperglycemia) or low (hypoglycemia) blood sugar. Diabetes mellitus, characterized by persistent hyperglycemia from any of several causes, is the most prominent disease related to failure of blood sugar regulation. Consequences of diabetes are neuropathy, nephropathy (kidney failure), retinopathy, and cardiovascular disease.

Blood glucose levels are as listed below:

Normal and target blood glucose ranges (mg/dL)	
Normal blood glucose levels in people who do not have diabetes	
Upon waking (fasting)	70 to 110
After meals	70 to 140
Target blood glucose levels in people who have diabetes	
Before meals	90 to 130
1 to 2 hours after the start of a meal	less than 180
Hypoglycemia (low blood glucose)	70 or below

Cholesterol

Cholesterol is a fat like substance that is found in animal based food sources such as milk, cheese, eggs, fish, chicken, and meats or any foods containing those foods. It is also manufactured in the body by the liver. Your cholesterol level has a lot to do with your chances of getting heart disease. High blood cholesterol is one of the major risk factors for heart disease. As your cholesterol level increases, your risk for heart disease increases.



When there is too much cholesterol in your blood, it builds up in the walls of your arteries. Over time, this build-up causes “hardening of the arteries” so that arteries become narrowed and blood flow to the heart is slowed down or blocked.

Everyone aged 20 and older should have their cholesterol measured at least once every 5 years. It is best to have a “lipoprotein profile” which is done after a 9 to 12 hour fast and will give values for:

- Total cholesterol
- LDL (bad) cholesterol – the main source of cholesterol buildup in the arteries
- HDL (good) cholesterol – this helps to keep cholesterol from building up in the arteries
- Triglycerides

If it is not possible to get a lipoprotein profile done, knowing your total cholesterol and HDL cholesterol can give you a general idea about your cholesterol levels. If your total cholesterol is 200 mg/dL* or more, or if your HDL is less than 40 mg/dL, you will need to have a lipoprotein profile done. See how your cholesterol numbers compare to the tables below.

Total Cholesterol Level	Category
Less than 200 mg/dL	Desirable
200-239 mg/dL	Borderline High
240 mg/dL and above	High

* Cholesterol levels are measured in milligrams (mg) of cholesterol per deciliter (dL) of blood.

LDL Cholesterol Level	LDL-Cholesterol Category
Less than 100 mg/dL	Optimal
100-129 mg/dL	Near optimal/above optimal
130-159 mg/dL	Borderline high
160-189 mg/dL	High
190 mg/dL and above	Very high

HDL (good) cholesterol protects against heart disease, so for HDL, higher numbers are better. A level less than 40 mg/dL is low and is considered a major risk factor because it increases your risk for developing heart disease. HDL levels of 60 mg/dL or more help to lower your risk for heart disease.

Triglycerides

Triglycerides are a type of fat in your blood and they are a component of very low density lipoproteins (VLDL). When you eat, your body converts any calories that it does not need to use right away into triglycerides. The triglycerides are stored in your fat cells. Later, hormones release the triglycerides for energy between meals. If you regularly eat more calories than you burn, you may have high triglycerides.

A simple blood test can reveal whether your triglycerides fall into a healthy range.

- **Normal** — Less than 150 milligrams per deciliter (mg/dL) (less than 1.7 mmol/L)
- **Borderline high** — 150 to 199 mg/dL (1.8 to 2.2 mmol/L)
- **High** — 200 to 499 mg/dL (2.3 mmol/L to 5.6 mmol/L)
- **Very high** — 500 mg/dL or above (5.7 mmol/L or above)

Your doctor will usually check for high triglycerides as part of a test referred to as a lipid profile.

The best way to lower triglycerides is to:

- Lose excess pounds.
- Cut back on total caloric intake.
- Avoid sugary and refined foods as they can cause sharp increases in insulin production and affect triglyceride levels.
- Limit the cholesterol in your diet.
- Choose healthier fats such as monounsaturated fat.
- Eliminate trans fats which are found in many fried foods and many commercial baked products, such as cookies and crackers. Do not rely on a package, even if it says “trans fat free” as it is legal in the United States for a food that has .5 grams of trans fat to be labeled as trans fat free. Any food with hydrogenated vegetable oil has trans fat in it.
- Avoid alcoholic beverages as they are high in calories and sugar and have a very potent effect on triglycerides.
- Exercise regularly. Aim for at least 30 minutes of physical activity on all or most days of the week.

BMI

Body mass index is a reliable indicator of total body fat, which is related to risk of chronic disease and death. It is based on the relative weight for height and applies to both adult men and women. The limits to its use are that:

- It may overestimate body fat in athletes and others who have a muscular build
- It may underestimate body fat in older persons and others who have lost muscle mass

To calculate your BMI, visit <http://www.nhlbisupport.com/bmi/>

The following chart will give you an idea of what the BMI range is for underweight through obese.

	BMI
Underweight	Below 18.5
Normal	18.5 - 24.9
Overweight	25.0 - 29.9
Obesity	30.0 and Above

In general, a person of five feet, four inches should have a BMI between 19 and 24 to be considered a normal weight. This would equal a weight range of 110 pounds to 140 pounds.

Waist Circumference

Although waist circumference and BMI are interrelated, waist circumference provides an independent prediction of risk over and above that of BMI. According to the National Institutes of Health, a high waist circumference is associated with an increased risk of Type 2 diabetes, dyslipidemia, hypertension and cardiovascular disease when the BMI is between 25 and 34.9. Waist circumference is most useful for people who are normal or overweight in terms of BMI. For example, an athlete with high muscle mass may be overweight as their BMI is over 25, but their waist circumference would indicate that they are really not overweight. However changes in waist circumference over time can indicate an increase or decrease in abdominal fat.

To determine your Waist Circumference, locate the upper hip bone and place a measuring tape around the abdomen. Make sure that the tape measure is horizontal, coming across the naval and snug, but not too tight.

Classification of Overweight and Obesity by BMI, Waist Circumference, and Associated Disease Risk*

	BMI (kg/m²)	Obesity Class	Disease Risk* Relative to Normal Weight and Waist Circumference	
			Men ≤102 cm (≤40 in.) Women ≤88 cm (≤35 in.)	Men >102 cm (>40 in.) Women >88 cm (>35 in.)
Underweight	18.5		-----	-----
Normal+	18.5 - 24.9		-----	-----
Overweight	25.0 - 29.9		Increased	High
Obesity	30.0 - 34.9	I	High	Very High
	35.0 - 39.9	II	Very High	Very High
Extreme Obesity	≥40	III	Extremely High	Extremely High

When a person's BMI is at or over 35, the waist circumference adds no additional information because the risk is already very high.

Waist to Hip Ratio

People with more weight around their *waists* have more health risks than people who carry more weight around their *hips*. People who tend to gain weight mostly in their hips and buttocks have what is considered a pear shape, while those who gain weight mostly in their abdomen have more of an apple body shape.

To calculate this ratio, simply divide the waist circumference into the hip circumference and use the chart below to see where you stand.

Waist to Hip Ratio

Male	Female	Health Risk Based Solely on WHR
.95 or below	.80 or below	Low Risk
.96 to 1.0	.81 to .85	Moderate Risk
1.0 +	.85+	High Risk



For More information visit:

The Centers for Disease Control and Prevention

<http://www.cdc.gov/DiseasesConditions/>

The American Heart Association

www.americanheart.org

The National Heart Lung and Blood Institute

<http://www.nhlbi.nih.gov/>

The American Diabetes Association

www.diabetes.org



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