

Total Cholesterol in Pregnancy

DNA Health Report

REPORT CATEGORIES —



HEART & BLOOD
VESSELS



REPRODUCTIVE
HEALTH

Sample Client

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DISCLAIMER

This report does not diagnose this or any other health conditions. Please talk to a healthcare professional if this condition runs in your family, you think you might have this condition, or you have any concerns about your results.

Personal information

NAME

Sample Client

SEX AT BIRTH

Male

HEIGHT

5ft 5" 165cm

WEIGHT

137lb 62kg



How this works

Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.



Similarly, our Trait Reports look at how your DNA influences your traits.



Your DNA is like an instruction manual — it contains a lot of information.
You can think of it as a blueprint for your body.

Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



We use artificial intelligence and machine learning to analyze all this information.
We then summarize your results as a risk score or display it on a gauge.

In total, we analyze up to 83 million genetic variants.

When we give a risk score, the risk icon tells you if you are at a higher or lower risk compared to other people:



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

You have 2 risk alleles

Your risk is also displayed as a percentile. This will tell you how your risks compare to our sample population. The lower your percentile number, the lower your risk. The "50th percentile" would be an average risk.

Similarly, the gauge tells you your relative risk score compared to our sample population, or it indicates a specific trait or haplotype you are more likely to have based on your genetic variants.

When applicable, we also list top evidence-based recommendations that may help lower your risk. The focus is on recommendations that may be of benefit to you, based on your genetics.

Our recommendations come in four categories: lifestyle, diet, supplements and drugs.
The following icons tell you which category a recommendation falls into:



Our team of scientists also ranks each recommendation.
We rank based on impact and the strength of evidence in the medical literature.

Impact shows how strongly a recommendation will affect your health in a certain area.
Evidence is how much scientific support there is for the recommendation. Rankings are from 1 to 5 (low to high):



Impact

Impact scores range from 1-5. These scores reflect how much of an effect each recommendation can have. An impact score of 5 predicts the biggest effect.

When a recommendation affects something we can measure, we use those measurements to assign the impact score. For example, a recommendation that decreases cholesterol by 20% will have a higher impact score than one that decreases it by 5%.

Some recommendations affect things that we cannot directly measure, like stress or mood. For these, the impact score is based on how well they work relative to other recommendations and standard treatments. The best ones get the highest scores.

If there is a lot of research that shows a recommendation works especially well for your genotype, the impact score gets increased.

Recommendation Evidence

5 / 5

Recommendations that are considered effective and generally recommended by experts and medical bodies.

4 / 5

Recommendations that are considered likely effective and that have multiple independent meta-analyses and a great many studies supporting them.

3 / 5

Recommendations that are considered possibly effective and have many studies supporting them

2 / 5

Recommendations that have insufficient evidence, with two or several clinical trials supporting them, or many studies but with ambiguous results.

1 / 5

Recommendations that have insufficient evidence, with a single clinical trial, or with many studies most of which didn't find support for the recommendation.

0 / 5

No evidence in humans.

Genotype-specific Evidence

High-quality

Direct evidence that a recommendation helps more in people with your gene variant (many clinical trials, a few large clinical trials, or a meta-analysis).

Medium-quality

Direct evidence that a recommendation helps more in people with your gene variant (a few clinical trials or one large clinical trial).

Low-quality

Direct evidence that a recommendation helps more in people with your gene variant (a single clinical trial or more trials with inconsistent results).

Indirect

A recommendation may help more in people with your gene variant because it targets a specific gene or protein affected by your variant (e.g., MTHFR, dopamine).

In theory

A recommendation may help more in people with your gene variant because it targets a specific mechanism affected by your variant (e.g., inflammation, oxidative stress).

Some things to keep in mind:

- Genetics doesn’t play a considerable role in a condition or a trait.
- There is not enough research available to estimate a genetic predisposition.
- There are technical limitations to estimating or presenting a genetic predisposition.
- The topic is sensitive, and a genetic predisposition should only be estimated and presented by a healthcare professional.

Introduction

Cholesterol is a substance that performs essential functions in the human body. While often viewed negatively in clinical settings, it remains fundamental for cell structure, vitamin D production, and hormone synthesis [\[R\]](#), [\[R\]](#).

Elevated total cholesterol levels often signal increased cardiovascular risk. Clinical interpretation of cholesterol profiles focuses on several key parameters [\[R\]](#):

- Total cholesterol levels above 200 mg/dL warrant clinical attention
- The ratio of total cholesterol to HDL provides valuable prognostic information
- Elevated triglycerides frequently accompany cholesterol abnormalities

Several established risk factors contribute to elevated cholesterol levels [\[R\]](#), [\[R\]](#):

- Poor dietary habits, like high saturated fat intake
- Sedentary lifestyle patterns
- Advanced age
- Tobacco use
- Presence of diabetes mellitus
- Family history of dyslipidemia
- Obesity and metabolic syndrome

Clinical management strategies typically include [\[R\]](#):

- Dietary modification with emphasis on reduced saturated fat intake
- Regular physical activity prescription
- Weight management interventions
- Smoking cessation support
- Pharmacological intervention when indicated by risk assessment

Factors Affecting Total Cholesterol Levels in Pregnancy

During pregnancy, cholesterol levels naturally fluctuate to support fetal development, but abnormal levels may pose risks to both the mother and baby. Cholesterol levels naturally increase by **25-50%** during pregnancy to **support the production of hormones and fetal development**. These changes are considered normal and typically resolve after delivery [\[R, R\]](#).

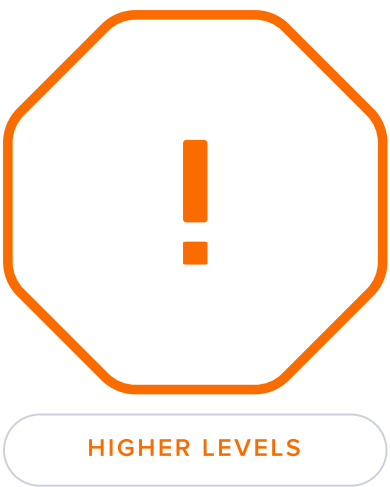
The following dynamics of cholesterol levels during pregnancy is typical, though it can vary a lot individually [\[R, R\]](#):

- **First trimester:** Levels are similar to pre-pregnancy values.
- **Second trimester:** Begin to rise significantly.
- **Third trimester:** Peak levels, often ranging between **200-350 mg/dL**

Excess cholesterol levels during pregnancy may warrant closer monitoring, especially in women with risk factors for cardiovascular disease. They are linked to a higher risk of [\[R, R\]](#):

- **Preeclampsia:** Studies suggest that elevated LDL may increase the risk of this hypertensive disorder.
- **Gestational Diabetes:** High LDL is associated with a greater likelihood of developing glucose metabolism issues.
- **Preterm Birth:** Uncontrolled lipid levels may contribute to premature delivery.
- **Fetal Growth Restrictions:** Abnormal cholesterol levels can affect placental function, impacting the baby’s growth.
- **Long-term Cardiovascular Risk:** Persistently high LDL after pregnancy increases the mother’s lifetime risk of cardiovascular disease.

Factors that may particularly affect total cholesterol levels during pregnancy include [\[R, R\]](#):



Predisposed to higher cholesterol levels in pregnancy based on 42 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
APOE	rs190712692	GG
APOE	rs141622900	GG
APOE	rs7412	CC
APOE	rs1065853	GG
APOE	rs61679753	TT
APOE	rs111784051	TT
APOE	rs1160983	GG
APOE	rs72654473	CC
APOE	rs7254892	GG
INSIG2	rs10490626	GG
SORT1	rs12740374	GG
SORT1	rs7528419	AA
SORT1	rs646776	TT
SORT1	rs629301	TT
PPP1R3B	rs9987289	GG
LDLR	rs6511720	GG
DNAJC13	rs17404153	GG
TTC38	rs4253772	CT
VLDLR	rs3780181	AG
DOCK7	rs2131925	TT
NLRC5	rs3764261	AA
MTARC1	rs2642438	GG
ALDH1A2	rs1532085	AA

- **Pre-pregnancy lipid levels:** Women with pre-existing dyslipidemia are more likely to have abnormal cholesterol during pregnancy.
- **Diet and lifestyle:** High saturated fat intake or sedentary behavior can elevate cholesterol.
- **Multiple pregnancies:** Increased cholesterol production to meet the needs of multiple fetuses.
- **Health conditions:** Gestational diabetes, obesity, or hypothyroidism can influence lipid metabolism.
- **Genetics and family history.**

Up to **65%** of differences in cholesterol levels may be attributed to genetics. Genes that may affect cholesterol during pregnancy influence [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Cholesterol production and metabolism ([HMGCR](#))
- Cholesterol receptors ([CELSR2](#), [VLDLR](#), [LDLR](#))
- Cholesterol transport ([APOE](#), [APOC1](#), [APOB](#))
- Sugar metabolism ([GCKR](#))

Interestingly, many well-established genes linked to cholesterol levels **didn’t show associations** in pregnant women [\[R\]](#).

Consumer Summary

- Cholesterol is essential for your body, especially during pregnancy, to support your baby’s growth and development. It helps build cells and produces important hormones.
- During pregnancy, cholesterol levels naturally rise by 25-50%, especially in the second and third trimesters. These changes are normal and usually return to pre-pregnancy levels after delivery.
- Too much cholesterol during pregnancy can lead to health issues like high blood pressure, diabetes, preterm birth, or poor baby growth. If you have high cholesterol before pregnancy, your doctor might monitor you more closely.
- Factors like your pre-pregnancy cholesterol levels, diet, exercise, and health conditions like diabetes or thyroid problems can affect cholesterol during pregnancy. Genetics also play a big role, affecting how your body processes and transports cholesterol.
- To keep your cholesterol at healthy levels, focus on a balanced diet, staying active, and regular prenatal checkups. If you’re concerned, talk to your doctor about the best steps to protect your health and your baby’s development.

GENE	SNP	GENOTYPE
EFCAB13	rs7206971	AG
EFCAB13	rs7225700	CT
KCNK17	rs2758886	AG
GCKR	rs1260326	TC
GPAM	rs2255141	GA
UBASH3B	rs7117842	CT
APOB	rs1367117	AG
NAT2	rs1495741	GA
PLEC	rs7832643	TG
CPLANE2	rs6656611	CT
HMGCR	rs7703051	AC
HMGCR	rs12916	CT
PIM1	rs913499	AG
CLPTM1	rs434132	CC
APOE	rs429358	TT
APOE	rs814573	AA
APOE	rs4420638	AA
SLC22A1	rs1564348	TT
SIDT2	rs964184	CC

The number of "risk" variants in this table doesn't necessarily reflect your overall result.

Your Recommendations

Your recommendations are prioritized according to the likelihood of it having an impact for you based on your genetics, along with the amount of scientific evidence supporting the recommendation.

You'll likely find common healthy recommendations at the top of the list because they are often the most impactful and most researched.

DOSAGE		DOSAGE	
1	Choose Healthy Fats	2	Exercise At Least One Hour a Day1 hour
3	Eat Fiber-Rich Foods	4	Probiotics30 billion CFU
5	Mediterranean Diet	6	Mind-Body Exercise1 hour

1



Choose Healthy Fats

IMPACT

4 / 5

EVIDENCE

5 / 5

How to implement

Incorporate sources of unsaturated fats such as olive oil, avocados, nuts, seeds, and fatty fish into your daily diet. Aim for at least two servings of fatty fish per week and use olive oil for cooking and salad dressings. Replace saturated fats found in red meat, butter, and processed foods with these healthier options whenever possible.

Description

Choosing healthy fats, such as those found in avocados, nuts, and fatty fish, can support cardiovascular health, reduce inflammation, and promote overall well-being. A diet balanced in healthy fats can help manage cholesterol levels and reduce the risk of heart disease.

Based on their structure, the fats in our diet can be broadly divided into *saturated* and *unsaturated* fat. Trans fat is a type of unsaturated fat [\[R, R, R\]](#).

In large amounts, trans fat and saturated fat may have a negative impact on your heart and reproductive health. Processed foods and animal products like red meat and dairy are rich in these fats [\[R, R, R, R, R\]](#).

Some types of unsaturated fat can protect your heart and support fertility. **Experts say you should add more unsaturated fats to your diet.** Some good sources include [\[R, R, R\]](#):

- Nuts
- Seeds
- Fish

Unsaturated fats include polyunsaturated fats or PUFAs (omega-3 and omega-6) and monounsaturated fats or MUFAs [\[R, R\]](#).

How it helps

Choosing healthy fats during pregnancy helps manage cholesterol while providing essential fatty acids for fetal brain development and reducing inflammation.

Experts agree that eating less saturated and trans fats may help lower total cholesterol. This may lower your risk of heart disease [\[R, R, R, R, R, R, R, R, R, R\]](#).

However, **replacing saturated fats with processed and sugary foods may not help reduce the risk of heart disease** [\[R\]](#).

To make a meaningful change, replace saturated fats with unsaturated fats [\[R, R, R, R, R, R\]](#).

Fish, walnuts, and seeds are rich in **polyunsaturated fats** (PUFAs). These fats may be the best replacement for saturated fat [\[R, R\]](#).

Avocado consumption is associated with lower levels of total cholesterol due to its content of **monounsaturated fats** and fiber. A meta-analysis of 10 studies and 229 participants concluded that consuming avocados **lowers LDL-C (by 16.50 mg/dL)** [\[R\]](#).

2



Exercise At Least One Hour a Day

IMPACT

3 / 5

EVIDENCE

5 / 5

How to implement

Dedicate a minimum of 60 minutes to moderate-intensity activities such as brisk walking, swimming, or cycling. Do this most days of the week, aiming for at least 5 days to optimize benefits.

TYPICAL STARTING DOSE

1 hour

Description

[Exercise](#) can do wonders for your health. It can help you lose weight, improve your heart health, boost your mood, and more [\[R\]](#).

There are many ways you can be active. You can walk, run, swim, dance, or play team sports. **Everything counts, and it's never too late to start!**

Try to get at least **60 minutes of moderate physical activity on most days**, including walking. **Getting a mix of cardio (min 150 min/day) and strength training (min 2 times a week) may be optimal.**

How it helps

Regular exercise during pregnancy helps manage cholesterol levels while improving circulation, reducing swelling, and preparing the body for labor.

Exercise is an effective way to improve your heart health. Experts recommend 150 minutes of exercise a week to help lower cholesterol [\[R, R, R, R\]](#).

Many types of exercise may help lower total cholesterol. These include:

- Cardio [\[R, R, R, R\]](#)
- Strength training [\[R, R\]](#)
- Water exercise [\[R\]](#)
- Low-intensity exercise, such as tai chi and [yoga](#) [\[R, R, R, R\]](#)

Exercising for longer and doing harder exercises may help with total cholesterol even more [\[R, R, R, R\]](#).

Exercise may also be more effective when combined with a healthy diet [\[R, R\]](#).

Exercise may help lower total cholesterol by helping your muscles use fat as energy [\[R\]](#).

3



Eat Fiber-Rich Foods

IMPACT3 / 5

EVIDENCE4 / 5

How to implement

Incorporate foods high in fiber, such as fruits, vegetables, whole grains, and legumes, into your daily meals. Aim for a total dietary fiber intake of 25 to 30 grams per day, spread out over all meals.

Description

Fiber is a type of carb that your body can’t digest which supports digestion, heart health, and blood sugar control. You can get fiber by eating things like whole grains, fruits, nuts, seeds, and leafy greens.

Fiber is a type of carb that your body can’t digest. It supports digestion, heart health, blood sugar control, and more [\[R, R\]](#).

Adults should get 28 g of fiber every day. Most people in the US don’t get enough fiber [\[R, R\]](#).

You can get more fiber by eating [\[R, R\]](#):

- Whole grains
- Fruits
- Leafy greens
- Nuts and seeds
- Beans
- Broccoli

Fiber supplements, such as [psyllium husk](#), are available for people who don’t get enough fiber from their diets [\[R, R\]](#).

How it helps

Adequate dietary fiber during pregnancy helps control cholesterol while preventing constipation and supporting healthy weight gain.

Experts recommend eating more fiber (3-10 g) to improve your cholesterol levels. Fiber stops your gut from absorbing too much cholesterol. By doing so, it lowers cholesterol levels in the blood [\[R, R, R\]](#).

High-fiber foods that may help lower cholesterol include:

- Buckwheat [\[R, R, R\]](#)
- Oats [\[R\]](#)
- Barley [\[R, R\]](#)
- Beans [\[R\]](#)
- Apples [\[R\]](#)
- Jujube [\[R, R, R\]](#)

The following fiber supplements may also help:

- [Psyllium](#) [\[R, R, R, R\]](#)
- Beta-glucans [\[R, R, R, R\]](#)
- [Glucomannan](#) [\[R, R\]](#)
- [Inulin](#) [\[R, R, R, R\]](#)
- [Pectin](#) [\[R, R\]](#)
- [Resistant starch](#) [\[R\]](#)
- Xylo-oligosaccharides (prebiotic fiber) [\[R\]](#)

4



Probiotics

IMPACT

3 / 5

EVIDENCE

4 / 5

How to implement

Take a probiotic supplement containing 10 billion or more live cultures once daily, preferably with a meal or as directed by the packaging or a healthcare provider.

TYPICAL STARTING DOSE
30 billion CFU

Description

Probiotics are live beneficial bacteria and yeasts that can support gut health and digestive function when consumed as supplements or found in fermented foods like yogurt and sauerkraut. They may be beneficial to gut health, immune function, blood sugar, and mood.

Probiotic bacteria are “good” bacteria found mainly in the large intestine. They support your body and mind by [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Maintaining gut health
- Supporting a healthy immune system
- Improving your mood
- Helping to maintain healthy blood sugar

Prebiotics are certain types of fiber and other complex carbs that serve as food for gut bacteria. **They support gut health by helping boost the activity and growth of “good” bacteria** [\[R\]](#), [\[R\]](#).

Prebiotics are also added to foods and supplements. Common prebiotic ingredients are [\[R\]](#), [\[R\]](#):

- Oligo-fructose
- Oligo-galactose
- [Inulin](#)

Mixtures of probiotics and prebiotics are known as **synbiotics** [\[R\]](#).

How it helps

Probiotic supplementation during pregnancy supports healthy cholesterol metabolism while optimizing maternal gut health and fetal immune development.

Probiotics (taken for at least 8 weeks) may help lower total cholesterol. Probiotic products that may help with total cholesterol include [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Fermented milk products like yogurt and kefir
- Fermented foods like kimchi [\[R\]](#), [\[R\]](#)
- Probiotic supplements
- Synbiotic supplements (probiotic + prebiotic) with oligo-fructose as a prebiotic

Fermented dairy products containing probiotics may offer a greater benefit than supplements in capsule form [\[R\]](#), [\[R\]](#).

Helpful probiotics include [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- *Lactobacillus* (e.g. [Lactobacillus acidophilus](#) and [L. plantarum](#))
- *Bifidobacterium* (e.g. [Bifidobacterium animalis](#))

Products containing multiple probiotics or probiotics at higher concentrations (at least 1 billion CFU*) may help more [\[R\]](#), [\[R\]](#), [\[R\]](#).

Probiotics may help by:

- Reducing how much cholesterol is made and absorbed [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#)
- Increasing cholesterol clearance [\[R\]](#)
- Reducing fat storage and increasing fat breakdown [\[R\]](#), [\[R\]](#)

*CFU (colony forming units) = the number of active bacteria in one probiotic serving

5



Mediterranean Diet

IMPACT

2 / 5

EVIDENCE

4 / 5

How to implement

Incorporate a variety of primarily plant-based foods, such as fruits, vegetables, whole grains, nuts, and legumes, into every meal. Choose healthy fats, like olive oil, over saturated fats and consume fish and poultry at least twice a week. Limit red meat to a few times a month and include a moderate amount of dairy products. Opt for water and red wine in moderation as your beverages.

Description

The [Mediterranean diet](#) is based on the traditional cuisine from the Mediterranean regions. It moderates the intake of red meat and dairy, while being rich in fruits and vegetables, whole grains, and healthy fats ([olive oil](#)).

The [Mediterranean diet](#) focuses on traditional cuisine from the Mediterranean regions. It’s rich in [\[R\]](#):

- [Olive oil](#)
- Fruits and vegetables
- Whole grains
- Nuts and seeds
- Fish

This type of diet may **reduce inflammation and protect the brain and heart** [\[R, R, R, R\]](#).

Limited intake of animal products, saturated fat, and refined sugar likely contribute to the health benefits of the Mediterranean diet [\[R\]](#).

How it helps

The Mediterranean diet during pregnancy helps manage cholesterol while providing optimal nutrition for fetal development and reducing pregnancy complications.

The Mediterranean diet may be one of the most helpful diets to lower total cholesterol [\[R, R, R, R, R, R\]](#).

This diet may be a great choice because it is:

- Low in saturated fat [\[R\]](#)
- Focused on healthy fat sources like olive oil and fish [\[R, R\]](#)
- Rich in fiber [\[R\]](#)

Experts agree that the Mediterranean diet may help improve cholesterol and protect against heart disease [\[R, R, R\]](#).

6



Mind-Body Exercise

IMPACT

2 / 5

EVIDENCE

3 / 5

How to implement

Incorporate mind-body exercises such as yoga, tai chi, or meditation into your daily routine. Allocate at least 30-60 minutes per day to these activities, aiming for consistency over intensity. Choose a quiet, comfortable space and make it a regular part of your day, ideally at the same time each day to establish a routine.

TYPICAL STARTING DOSE

1 hour

Description

Mind-Body exercises like yoga and Tai Chi combine physical movement with mindfulness, offering benefits such as improved flexibility, balance, and mental focus. These practices promote holistic well-being by enhancing both physical and mental health.

How it helps

Prenatal yoga helps maintain healthy cholesterol levels while reducing stress, improving flexibility, and preparing the body for labor.

Exercise is an effective way to improve your heart health. Experts recommend 150 minutes of exercise a week to help lower cholesterol [\[R, R, R, R\]](#).

Low-intensity exercise such as [yoga](#) and **tai** chi may help [\[R, R, R, R\]](#).