A Roadmap for Managing Your Triglycerides and Protecting Your Heart
# Table of Contents and Key Takeaways

**Healthcare Provider:** Please use this table of contents to determine which sections of this educational tool to share with your patient

## Triglycerides—A Brief Description
- Triglycerides are a type of fat; when blood levels are too high, you have a condition called hypertriglyceridemia
- Hypertriglyceridemia can be caused by some lifestyle factors, diseases, and medications

## Triglycerides and Your Heart
- If you have hypertriglyceridemia, your risk for coronary heart disease increases
- Cigarette smoking, high blood levels of "bad" cholesterol, high blood pressure, diabetes, or a family history of heart attack can also increase your risk for coronary heart disease

## Managing Hypertriglyceridemia—The Office Visit
- A blood test called a lipid profile can help assess your risk for developing heart disease
- The first goal of treatment if your lipid levels are not normal is to lower your LDL cholesterol; for people with high triglyceride levels, the second goal is to lower your non-HDL cholesterol

## Managing Hypertriglyceridemia—Lifestyle Changes—The First Step
- Increasing your physical activity, losing extra weight, eating heart-healthy foods, and avoiding alcohol can lower your blood triglycerides and reduce your risk for coronary heart disease
- For a heart-healthy diet, you should eat lots of fruits and vegetables, limit foods with saturated or trans fats, choose foods low in salt, avoid foods with added sugar, and eat fish twice a week

## Managing Hypertriglyceridemia—Pharmacologic Therapies
- When lifestyle changes are not enough to lower blood triglycerides, your healthcare provider may prescribe niacin, a fibrate, or EPA and DHA
- These drugs can be given to people who are already taking a statin to lower their "bad" cholesterol levels
What Are Triglycerides?

- **Triglycerides** are a type of fat found:
  - In your body
  - In food

- Many types of fat in foods contain triglycerides:
  - *Monounsaturated* and *polyunsaturated fats* (healthy)
  - *Saturated fats* (unhealthy)
  - *Trans fats* (very unhealthy)

- Even healthy fats should be consumed in moderation!
Why Are Triglycerides Important?

- **Triglycerides:**
  - Are a source of energy
  - Help your body absorb vitamins and other nutrients
  - Contain **essential fatty acids**, which are important for growth

- **The goal:** eat healthy foods in moderation to get your triglycerides!

- Unhealthy food with too many triglycerides can cause weight and heart problems
## What Foods Are High in Triglycerides?

<table>
<thead>
<tr>
<th>Trans Fats: AVOID</th>
<th>Saturated Fats: LIMIT</th>
<th>Monounsaturated Fats</th>
<th>Polyunsaturated Fats</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Some fish</td>
<td>Liquid vegetable oils</td>
</tr>
<tr>
<td>Partially</td>
<td>Most fats and oils,</td>
<td>Some fish oil</td>
<td>Nuts</td>
</tr>
<tr>
<td>hydrogenated</td>
<td>especially:</td>
<td>Lean meat</td>
<td>Seeds</td>
</tr>
<tr>
<td>vegetable oils</td>
<td>- Coconut oil</td>
<td>Skinless poultry</td>
<td>Fish</td>
</tr>
<tr>
<td>Butterfat</td>
<td>- Butterfat</td>
<td>- Nuts</td>
<td>Fish oil</td>
</tr>
<tr>
<td>French fries</td>
<td>- Meat, poultry</td>
<td>- Seeds</td>
<td></td>
</tr>
<tr>
<td>Cakes</td>
<td>- Hydrogenated</td>
<td>- Avocados</td>
<td></td>
</tr>
<tr>
<td>Cookies</td>
<td>vegetable oils</td>
<td>- Olive oil</td>
<td></td>
</tr>
<tr>
<td>Donuts</td>
<td>- Cocoa butter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crackers</td>
<td>- Lard</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If you need more information about which foods contain healthy and unhealthy fats, please ask your healthcare provider.
What Is Hypertriglyceridemia?

- **Hypertriglyceridemia** = too much triglyceride in the blood
- There may be no symptoms until triglyceride levels are very high
- High levels can lead to **coronary heart disease**
  - Coronary heart disease = when the blood vessels in your heart narrow and cannot supply enough blood and oxygen
What Causes High Triglyceride Levels?

- Lifestyle factors, diseases, medical conditions, and medications
- It can also be **genetic** ("run in your family")

<table>
<thead>
<tr>
<th>Lifestyle Factors</th>
<th>Diseases and Medical Conditions</th>
<th>Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of physical activity and exercise</td>
<td>Being overweight or obese</td>
<td>Estrogen replacement therapy</td>
</tr>
<tr>
<td>A diet high in carbohydrates (starch and sugar)</td>
<td>Having type 2 diabetes, kidney disease, or low thyroid hormone production</td>
<td>Corticosteroids</td>
</tr>
<tr>
<td>Excessive alcohol use (&gt;1 drink/day* for women; &gt;2 drinks/day for men)</td>
<td></td>
<td>Beta-blockers</td>
</tr>
</tbody>
</table>

*1 drink = 12 oz beer, 5 oz wine, or 1.5 oz 80-proof distilled spirits.*

- Oral contraceptives
- Protease inhibitors for HIV
- Tamoxifen
- Atypical antipsychotics
- Thiazide diuretics
- Retinoids
How Will I Know if I Have High Triglyceride Levels?

- There may be no symptoms
- Best way to find out: get a blood test!
  - It will show whether your levels are high or normal
- If your levels are high, they will be either:
  - Borderline-high,
  - High, or
  - Very high

<table>
<thead>
<tr>
<th>Triglyceride Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
</tr>
<tr>
<td>Less than 150 mg/dL*</td>
</tr>
<tr>
<td>Borderline-High</td>
</tr>
<tr>
<td>150–199 mg/dL</td>
</tr>
<tr>
<td>High</td>
</tr>
<tr>
<td>200–499 mg/dL</td>
</tr>
<tr>
<td>Very High</td>
</tr>
<tr>
<td>500 mg/dL and higher</td>
</tr>
</tbody>
</table>

*"mg/dL" is the "unit of measurement" for triglycerides, just as "ounce" and "gallon" are units of measurement.
Why Is Having High Triglyceride Levels a Problem?

- High triglyceride levels can lead to **atherosclerosis** and **coronary heart disease**
  - Arteries in the heart are clogged by a fatty substance
  - The fatty substance gets trapped in the artery and hardens into **plaques**
- When plaques are small, there may be no symptoms
- When plaques are large, "**angina**" (chest pressure or tightness) or "**myocardial infarction**" (heart attack) can occur
Why Do I Have Triglycerides and Cholesterol in My Blood?

- Your body needs **triglycerides** and cholesterol to build tissues.
- Your bloodstream carries triglycerides and cholesterol to your body on “transport vehicles” called **lipoproteins**:
  - High-density lipoprotein (HDL)
  - Low-density lipoprotein (LDL)
  - Very low-density lipoprotein (VLDL)
  - Chylomicrons
- **Coronary heart disease** can occur if triglycerides and cholesterol levels are not normal.
What Else Can Cause Coronary Heart Disease?

- Modifiable = can be changed
- Non-modifiable = cannot be changed

### Other Causes of Coronary Heart Disease

<table>
<thead>
<tr>
<th>Modifiable Causes</th>
<th>Non-modifiable Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet</td>
<td>Relatives with coronary heart disease</td>
</tr>
<tr>
<td>Cigarette smoking</td>
<td>Age: 45 years or older for men and 55 years or older for women</td>
</tr>
<tr>
<td>Lack of physical activity and exercise</td>
<td>Having atherosclerosis in other areas of the body</td>
</tr>
<tr>
<td>Obesity</td>
<td>- Arms or legs</td>
</tr>
<tr>
<td>Low blood levels of <strong>high-density lipoprotein (HDL) cholesterol</strong> (&quot;good&quot; cholesterol)</td>
<td>- Abdomen</td>
</tr>
<tr>
<td></td>
<td>- Head and neck</td>
</tr>
<tr>
<td>High blood levels of <strong>low-density lipoprotein (LDL) cholesterol</strong> (&quot;bad&quot; cholesterol)</td>
<td></td>
</tr>
<tr>
<td>High triglyceride levels</td>
<td></td>
</tr>
<tr>
<td>High blood pressure</td>
<td></td>
</tr>
<tr>
<td>Blood clotting problems</td>
<td></td>
</tr>
<tr>
<td><strong>Type 2 diabetes</strong></td>
<td></td>
</tr>
</tbody>
</table>

*High-density lipoprotein (HDL) cholesterol is called "good" cholesterol, because high levels may protect your heart.*
Your risk for getting **coronary heart disease** is higher if:

- Your parent, brother, or sister had heart disease at a young age
- You have more than 1 close relative with heart disease
Do I Have a Blood Lipid Problem?

- LDL cholesterol, HDL cholesterol, triglycerides, and total cholesterol are sometimes called “lipids.”

- A blood test called a Lipid Profile will tell you if your lipids are normal.
## What Are My Treatment Goals?

<table>
<thead>
<tr>
<th>Lipid Type</th>
<th>Optimal</th>
<th>Borderline</th>
<th>High-Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDL cholesterol</td>
<td>&lt;100 mg/dL*</td>
<td>100 mg/dL</td>
<td>≥160 mg/dL</td>
</tr>
<tr>
<td>HDL cholesterol</td>
<td>≥60 mg/dL</td>
<td>40-59 mg/dL</td>
<td>&lt;40 mg/dL</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>&lt;150 mg/dL</td>
<td>150-199 mg/dL</td>
<td>≥200 mg/dL</td>
</tr>
<tr>
<td>Total cholesterol</td>
<td>&lt;200 mg/dL</td>
<td>200-239 mg/dL</td>
<td>≥240 mg/dL</td>
</tr>
</tbody>
</table>

*“mg/dL” is the “unit of measurement” for triglycerides, just as “ounce” and “gallon” are units of measurement.

- **Lower LDL cholesterol**
  - Medicines called “statins” may be used

- **Lower “non-HDL cholesterol”** (if triglycerides are high)
  - **Non-HDL cholesterol = total cholesterol – HDL cholesterol**

- Lower triglyceride levels (if levels are very high)
What Can I Do to Lower My Triglyceride Levels?

- Make lifestyle changes:
  - More physical activity (30 minutes on most or all days)
  - Less alcohol
  - Reduce calories if you are overweight
  - Reduce **saturated fat, trans fat**, and cholesterol in your diet
    - Use canola oil instead of butter
    - Eat fish instead of red meat
How Much Weight Do I Have to Lose to Improve My Heart Health?

- Even modest weight loss can help prevent heart disease by:
  - Lowering triglycerides and LDL cholesterol (bad cholesterol)
  - Increasing HDL cholesterol (good cholesterol)
  - Lowering blood pressure
  - Lowering risk for diabetes

- Example: If a 200-pound person loses 10 to 20 pounds—5% to 10% of body weight—it will improve his or her chances of avoiding heart disease
Will Increasing My Physical Activity Help My Heart Health?

- Regular physical activity:
  - Helps prevent *coronary heart disease*
  - Helps prevent or control *diabetes*
  - Helps control weight
  - Improves strength, endurance, and flexibility

- Increase your physical activity and help your heart!
### How Can I Increase My Physical Activity?

<table>
<thead>
<tr>
<th>Moderate Physical Activity</th>
<th>Calories Burned per Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiking</td>
<td>370</td>
</tr>
<tr>
<td>Light gardening/yard work</td>
<td>330</td>
</tr>
<tr>
<td>Dancing</td>
<td>330</td>
</tr>
<tr>
<td>Golf (walking and carrying clubs)</td>
<td>330</td>
</tr>
<tr>
<td>Bicycling (less than 10 mph)</td>
<td>290</td>
</tr>
<tr>
<td>Walking (3.5 mph)</td>
<td>280</td>
</tr>
<tr>
<td>Weight lifting (light workout)</td>
<td>220</td>
</tr>
<tr>
<td>Stretching</td>
<td>180</td>
</tr>
</tbody>
</table>

- Simple ways to add more activity to your daily life:
  - Take the stairs, not the elevator
  - If possible, walk or bike rather than drive
How Can I Eat Right to Protect My Heart?

- Eat more fruits and vegetables
- Limit foods with saturated or trans fats
- Choose whole-grain and high-fiber foods
- Reduce salt
- Eat more fish—avoid fried fish and rich sauces
- Limit sugar—soft drinks, candy, cookies, cakes
Here are some tips to help you control portion size:

<table>
<thead>
<tr>
<th>If You’re Eating...</th>
<th>...Your Portion Should Be the Size of a:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables or fruit</td>
<td>Baseball</td>
</tr>
<tr>
<td>Rice, pasta, chips, or pretzels</td>
<td>Rounded handful</td>
</tr>
<tr>
<td>Meat, fish, or poultry</td>
<td>Deck of cards</td>
</tr>
<tr>
<td>Dried fruit or nuts</td>
<td>Golf ball</td>
</tr>
<tr>
<td>Ice cream</td>
<td>Tennis ball</td>
</tr>
<tr>
<td>Baked potato</td>
<td>Computer mouse</td>
</tr>
<tr>
<td>Peanut butter</td>
<td>Thumb tip</td>
</tr>
<tr>
<td>Cheese</td>
<td>6 dice</td>
</tr>
</tbody>
</table>
How Can I Use Food Labels to Make Healthy Food Choices?

Look for “Nutrition Facts” on food packages to help you make good choices:

- **Serving Size, Servings Per Container, and Calories:** will help you divide the package of food into healthy portions

- **Percent Daily Value:** tells you the amount of nutrients in each serving
  - Limit sodium (salt) and cholesterol by choosing foods with values 5% or less
  - Increase fiber and vitamins by choosing foods with values 20% or higher

- Which is the healthier food choice on this page?
What Are Omega-3 Fatty Acids and Why Are They Important?

- **Omega-3 fatty acids** are good for your heart
- There are 3 types: **EPA**, **DHA**, and **ALA**
- EPA and DHA are found in fish and help lower triglyceride levels
- ALA is found in plants, nuts, and certain oils
  - ALA does not lower triglyceride levels but has other health benefits
What Foods Are Good Sources of EPA and DHA?

**Fish and Shellfish**

- Fresh tuna
- Sardines
- Salmon
- Mackerel
- Herring
- Trout
- Oysters
- Anchovies
# How Much EPA and DHA Should I Be Getting?

<table>
<thead>
<tr>
<th>People without coronary heart disease</th>
<th>A variety of fish at least twice per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>People with coronary heart disease</td>
<td>About 1 gram of EPA and DHA per day from fatty fish. Ask your healthcare provider about EPA and DHA in capsule form</td>
</tr>
<tr>
<td>People with high triglyceride levels</td>
<td>4 grams of EPA and DHA per day (capsule), under your healthcare provider’s supervision</td>
</tr>
</tbody>
</table>
Are Vitamin and Mineral Supplements Good for My Heart?

- There is no proof that vitamin or mineral supplements help prevent *coronary heart disease*.
- Vitamin and mineral supplements are not tested for effectiveness and safety by the government.

It is important that you tell your healthcare provider about all the prescription and nonprescription drugs that you are taking.
Additional **prescription medications** may be needed if lifestyle changes and statins do not control your triglyceride levels

- **Niacin**
- **Fibrates**
- **Omega-3 fatty acids (EPA and DHA)**

It is important that you tell your healthcare provider about all the prescription and nonprescription drugs that you are taking.
What Do I Need to Know About Taking Niacin for High Triglyceride Levels?

- Lowers triglyceride levels, increases good (HDL) cholesterol
- Protects against heart attacks in people with heart disease
- Possible side effects
  - Flushing—redness of the face, neck, and shoulders
  - Increased blood sugar; important if you have diabetes or high blood sugar
  - Increased uric acid levels; important if you have gout
- There is both prescription and over-the-counter niacin
- Prescription niacin is approved by the government for lowering triglycerides

It is important that you tell your healthcare provider about all the prescription and nonprescription drugs that you are taking.
What Do I Need to Know About Taking Fibrates for High Triglyceride Levels?

- Lower triglyceride levels, increase good (HDL) cholesterol
- Protect against heart attacks in people with heart disease
- Possible side effects
  - Unusual muscle pain/tenderness, especially when used with statins (cholesterol-lowering drugs)
  - Gallbladder disease or gallstones
- May interfere with other drugs you are taking (called “drug-drug interaction”)

It is important that you tell your healthcare provider about all the prescription and nonprescription drugs that you are taking.
What Do I Need to Know About Taking Prescription Omega-3 Fatty Acids (EPA and DHA) for High Triglyceride Levels?

- Lower triglyceride levels
- Protect against heart attacks and strokes in people with heart disease
- Regulated by the government for quality and safety
- Possible side effects
  - Belching, upset stomach, “fishy” aftertaste
  - Freezing capsules or taking with food reduces these effects
- Will not interfere with other drugs you are taking

It is important that you tell your healthcare provider about all the prescription and nonprescription drugs that you are taking.
What Are the Differences Between Prescription Omega-3 Fatty Acids (EPA and DHA) and Dietary Supplements?

<table>
<thead>
<tr>
<th></th>
<th>Prescription Formulation</th>
<th>Dietary Supplement Formulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government approved and regulated</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>for safety and effectiveness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consistency of ingredients from</td>
<td>Yes</td>
<td>Not Government Regulated</td>
</tr>
<tr>
<td>batch to batch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purity of ingredients (control of</td>
<td>Yes</td>
<td>Not Government Regulated</td>
</tr>
<tr>
<td>toxins) from batch to batch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount of <strong>EPA</strong> and <strong>DHA</strong> in</td>
<td>840 mg</td>
<td>200-500 mg*</td>
</tr>
<tr>
<td>a 1-gram capsule</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Usual amount in dietary supplements.
Summary

**Triglycerides**
- Are a type of fat
- Food contains triglycerides in the form of *unsaturated fats*, *saturated fats*, and *trans fats*
- **Hypertriglyceridemia** means that triglyceride levels are above normal
- High triglyceride levels increase *coronary heart disease* risk
- There may be no symptoms until triglyceride levels are very high

**Treatment for High Triglyceride Levels**
- Healthy lifestyle choices
  - Increase physical activity
  - Lose weight if necessary
- Healthy food choices
  - Use **Nutrition Facts** on food packages to make healthy choices
  - Eat smaller portions
- Prescription medications
  - Statins
  - Niacin
  - Fibrates
  - Omega-3 fatty acids (EPA and DHA)