

it is probably genetic and medication to control your blood lipid levels will then be prescribed to you.

However, these drugs may interact with your HIV medication. It is important to discuss it with your doctor treating you for HIV so that the doses can be adjusted if needed.

#### **HIV control**

Studies have shown that suppression of the viral load and restoration of the immune system have a protective effect against cardiovascular disease.

#### **Changing antiretroviral therapy**

If necessary, to control dyslipidemia, your doctor can consider modifying your antiretroviral therapy.

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# Dyslipidemia

## DEFINITION

Dyslipidemia occurs when lipid levels in the blood are disrupted, such as when cholesterol or triglyceride levels are too high.

During blood tests, a distinction is made between good cholesterol (HDL) and bad cholesterol (LDL).

## WHAT CAUSES IT?

The exact cause of dyslipidemia is difficult to determine. There are several possible causes. Some people suffer from dyslipidemia because of their poor diet and lack of physical activity. Meanwhile, others are more genetically predisposed to having problems with their blood lipid levels.

HIV itself or certain drugs used to treat HIV can also cause dyslipidemia problems. In particular, the class of viral protease inhibitors except for atazanavir (Reyataz<sup>®</sup>) unboosted with ritonavir. Efavirenz (Sustiva<sup>®</sup>), stavudine (Zerit<sup>™</sup>) and zidovudine (Retrovir<sup>®</sup>, Combivir<sup>®</sup> and Trizivir<sup>™</sup>) can also account for dyslipidemia.

## HOW TO KNOW IF YOU HAVE DYSLIPIDEMIA?

Your doctor will use a blood test to determine whether you have a dyslipidemia problem.

This type of blood test should always be done before beginning treatment and every three to six months afterwards.

## WHY IS IT IMPORTANT TO KNOW IF YOU HAVE DYSLIPIDEMIA?

It is Important to know whether someone has dyslipidemia. Dyslipidemia alone and especially associated with other factors predisposes a person to cardiovascular disease such as myocardial infarction (heart attacks).

Also, by knowing this, it becomes possible to identify the cause of dyslipidemia and find ways to treat it.

## WHAT TO DO?

A healthy diet and regular physical exercise along with weight loss (if needed) are sometimes successful in controlling dyslipidemia.

**Meeting with a nutritionist** will help you acquire better eating habits, for instance, by modifying your fat consumption and, if necessary, by eliminating unnecessary calories.

For instance, the nutritionist will tell you about the different types of fat and will suggest that you avoid eating foods such as chips or pastries that contain saturated fat. She will tell you to favour unsaturated fats such as olive or canola oil.

The nutritionist will also tell you to eat foods that help control dyslipidemia. For instance, fatty fish such as salmon contains Omega-3s, which help increase good cholesterol and lower triglyceride levels. Oatmeal, oat bran, psyllium and legumes are rich in soluble fibre, which also helps decrease bad cholesterol.

The nutritionist can also help you learn how to read the labels on food packaging so that you can make better food choices.

**Physical activity:** ideally, at least 30 minutes of physical exercise every day increases good cholesterol and reduces bad cholesterol.

Note that three 10-minute exercise sessions are as efficient as one 30-minute session. Sometimes it's easier to begin with 10 minutes and then to progressively increase the time.

**Smoking:** if you smoke, find out about how you can stop. Tobacco considerably increases the risk of cardiovascular disease.

**Pharmacological treatment:** While you have never had symptoms (dyslipidemia does not have any visible effects) or heart disease, dyslipidemia should be treated. It is also possible that you may never be able to control your dyslipidemia despite a healthy diet and exercise. In this case,

## WHEN SHOULD YOU SEE A DOCTOR?

- When diarrhea is chronic (persistent for more than three weeks), or when it is affecting your quality of life.
- When fever is present in addition to the diarrhea.
- When you feel dehydrated, i.e. when you feel thirsty and your mouth is dry, you do not urinate a lot, you feel dizzy, and have trouble remaining standing.
- If you have lost weight due to diarrhea.
- When there is blood in your stools.
- When the diarrhea is accompanied by severe stomach pain.
- If diarrhea occurs after antibiotic treatment.
- If you have recently been on a trip.

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# Diarrhea

## DEFINITION

Diarrhea is diagnosed when stool weight increases by 300 grams a day. This increase is caused by the quantity of water in the stools.

A person has diarrhea if passing soft or liquid stools more than three times per day. Diarrhea can also be accompanied by cramps along with irritation around the anus. Sometimes it is also characterized by an urgent need to go to the bathroom, at times leading to fecal incontinence (loss of bowel control).

Diarrhea is considered to be chronic when it persists for more than three weeks.

## WHAT CAUSES IT?

Diarrhea has many causes. There is the actual HIV, other viruses, bacteria, parasites, lactose intolerance (milk and dairy products), bowel or thyroid disease, or a problem with fat absorption.

A number of drugs can cause diarrhea, including HIV drugs such as the viral protease inhibitors Viracept®, Kaletra™, Telzir®, Aptivus®, Invirase®, Norvir®, Prezista® and Reyataz®.

When diarrhea is caused by medication, it begins shortly after the initial doses of the drug are taken.

## WHY TALK ABOUT IT?

It is useful to inform a health professional if you have diarrhea for several reasons, the first being to correctly identify what is causing the diarrhea and determine possible types of treatment.

Since diarrhea can affect your quality of life, it may also decrease your treatment adherence.

Diarrhea can also result in major water and mineral loss. It can also decrease the absorption of your medication and, as a result, its effectiveness.

It is therefore important to not wait to be dehydrated and to have lost weight before seeing your doctor.

## WHAT TO DO?

**Don't give up:** diarrhea is generally worse at the start of treatment and tends to go away after two or three weeks, once the body has grown accustomed to the medication.

**Talk to your pharmacist about it:** changing the time at which the medication is taken and the way it is taken help control diarrhea. For instance, if your medication must be taken with food, maybe you could take it in the middle or end of the meal. Talk to your doctor or pharmacist about it.

**Meeting with a nutritionist** can help you pinpoint the foods that worsen diarrhea and those that help decrease it.

- a) For instance, you may benefit from decreasing your consumption of foods that irritate or stimulate the intestine such as fat, spices, alcohol, tobacco, caffeine, chocolate, very sweet foods and insoluble fibre (found in foods such as wheat bran and whole wheat bread).
- b) Conversely, agents that contain soluble fibre (e.g. psyllium, pectin, oats, bananas, oat bran, white rice, barley) absorb water and can thus help decrease diarrhea.
- c) The nutritionist can also suggest ways to prevent dehydration.
- d) She can also give you tips on how to eat balanced meals and not lose weight.

**Pharmaceutical advice:** there are also products or drugs sold in the drug store to control diarrhea. Examples include calcium supplements, psyllium (Metamucil®), loperamide (Imodium®) and diphenoxylate (Lomotil®, Benefiber®).

Talk to your pharmacist or doctor about when and how you should take them.

yourself from vomiting because the body needs to get rid of the harmful substances.

## WHEN SHOULD YOU SEE A DOCTOR?

- When nausea is affecting your quality of life.
- When nausea is often accompanied by vomiting.
- When vomiting frequency increases or you have been vomiting for more than 24 or 48 hours.
- When nausea prevents you from eating properly, you are tired or have lost weight.
- When other symptoms are also present such as extreme fatigue, fever, rash (redness), stomach cramps, diarrhea, muscle or joint pain, light-coloured stools or dark-coloured urine.
- When you feel dehydrated, i.e. when you are thirsty and have a dry mouth and dry skin. If you feel dizzy, confused, tired, have a hard time remaining standing, or urinate very little.
- When you vomit blood.

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# Nausea and vomiting

## DEFINITION

Nausea is characterized by a feeling of discomfort followed by a need to vomit or by vomiting. Vomiting consists in expelling the contents of the stomach orally.

## WHAT CAUSES IT?

Several medications can cause nausea or vomiting, including HIV drugs.

Most of the antiretroviral drugs can cause nausea, specifically zidovudine (Retrovir®, Combivir®, Trizivir™) and the class of viral protease inhibitors. If the medication is the culprit, nausea will usually appear shortly after the first doses of the medication are taken.

A viral or bacterial infection can also cause nausea and vomiting.

It's important to identify the cause so that the symptoms can be properly treated.

## WHY TALK ABOUT IT?

To correctly identify the cause.

Because nausea, and more particularly vomiting, affect your quality of life, which may decrease treatment adherence.

Because nausea can prevent you from eating properly, and could lead to fatigue and weight loss.

Because vomiting may result in substantial loss of water, minerals and can lead to dehydration.

Vomiting may also decrease the absorption of your medication and as a result reduce its effectiveness.

## WHAT TO DO?

**Don't give up:** nausea is usually more severe at the start of treatment and tends to go away after two or three weeks, once your body has become used to the medication.

**Talk to your pharmacist about it:** changing the time at which the medication is taken and the way it is taken sometimes help control nausea.

For instance, if the medication should be taken with food, talk to your doctor or pharmacist about taking it in the middle or at the end of the meal.

Your doctor or pharmacist will recommend, for example, that you avoid taking the medication just before bedtime. It is preferable to take the medication 30 minutes before bedtime with a glass of water.

If several different drugs must be taken at the same time, talk to your pharmacist about the possibility of spacing them out.

**Nutritional advice:** meeting with a nutritionist can be a big help in identifying the foods that aggravate nausea, those that help decrease it, and those that are more easily digested when nausea is present.

- a) In general, avoid alcohol, coffee, tobacco and spicy or fatty foods.
- b) Eat frequent, small meals (every hour or two) of foods that you are able to tolerate.
- c) Space out eating and drinking by 30 minutes. Drink small quantities of liquids at a time.
- d) Begin meals with dry foods such as toast or crackers.
- e) Avoid eating while lying down. Wait 30 minutes before lying down after meals.
- f) Drinking hot water with lemon or ginger drinks can help control nausea.

**Pharmaceutical advice:** there are also products or drugs sold in the drug store to control nausea and vomiting. Dimenhydrinate (Gravol®) is the most frequently prescribed drug for nausea. Gravol® can be taken 30 minutes before the medication that causes nausea or 30 minutes before eating to make it easier to digest.

Sometimes the medication that causes nausea must be replaced with another medication that does not cause this side effect.

**Warning:** when nausea is due to food poisoning or the overconsumption of alcohol or food, you should not prevent

### Non-pharmacological advice:

If you are anxious or are having trouble sleeping, different relaxation techniques can help control stress or help you sleep. Tips on adopting good sleeping habits can help you control the medication's effects on the central nervous system.

## WHEN SHOULD YOU SEE A DOCTOR?

- When the effects on the central nervous system won't go away and they make you uncomfortable or prevent you from performing your daily activities.
- If the symptoms worsen.
- If you feel very anxious, depressed or are having suicidal thoughts.
- If you are behaving aggressively and think that this may be related to the drug.
- If your family and friends find you have changed.

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# Effects on central nervous system

## DEFINITION

The central nervous system consists of the brain and spinal cord.

The effects of treatment on the central nervous system are varied and mainly consist of dizziness, drowsiness, insomnia, the feeling of being dissociated from reality, confusion, headaches, difficulty concentrating, anxiety and strange dreams.

More severe symptoms such as psychosis, mood disorders (depression or manic episode) and aggressive behaviour occur more rarely.

## WHAT CAUSES IT?

Caffeine, alcohol, tobacco or recreational drugs can potentiate the effects on the central nervous system.

HIV and brain infections may affect the central nervous system.

Another cause may simply be ageing.

Many drugs, including anti-HIV medication (more specifically efavirenz (Sustiva®, Atripla™) and zidovudine (Retrovir®, Combivir®), can also affect the central nervous system.

## WHY TALK ABOUT IT?

To correctly identify the cause of the effects on the central nervous system and treat it, if necessary.

Because the effects on the central nervous system can affect your quality of life and decrease your adherence to treatment.

Because the effects on the central nervous system can affect your relationships and adversely affect your social life.

## WHAT TO DO?

**Before starting the medication:** let your doctor know that you have already had mental health problems in the past such as depression, psychosis or severe anxiety. It is also important to tell your doctor if you are using recreational drugs.

**When you start taking the medication:** if possible, begin taking the medication when you are rested, such as on the weekend or on a day off. During the first few days, avoid doing activities that require concentration.

### During treatment:

**Don't give up:** the effects on the central nervous system appear when you begin taking the medication and tend to decrease and go away after two to four weeks, once your body has become accustomed to the drug. Get some rest and decrease your level of activity for a few days.

**Ask for help:** if you are having trouble concentrating, take notes and ask your family or friends for help during the first weeks of treatment.

**Talk to your pharmacist or doctor:** changing when and how you take the medication sometimes helps control the drug's effects on the central nervous system.

In general, taking the medication at bedtime allows you to sleep through the adverse effects and feel them less.

When you experience too much drowsiness in the morning, it is recommended that you take efavirenz (Sustiva® or Atripla™) earlier in the evening rather than at bedtime.

Alcohol, recreational drugs and some medication may worsen effects on the central nervous system. They should be avoided. Your doctor and pharmacist can help you identify the drugs that are to be avoided.

You may sometimes feel an effect on your central nervous system caused by an interaction between some of the different drugs you are taking. Tell the pharmacist which drugs you are taking, both prescription and off-the-counter. The pharmacist may be able to determine which medications are interacting.

Your pharmacist or doctor may decide to measure the quantity of efavirenz in your blood to determine whether the effects on your central nervous system are due to overly high levels of the medication. Never change the medication dosage without first talking to your doctor.

### Pharmaceutical advice:

If you experience headaches, acetaminophen (Tylenol®) or anti-inflammatories (Advil®, Motrin®) should alleviate the symptoms. However, check with your pharmacist or doctor to make sure you are able to take these medications.

Depression, anxiety and insomnia can be treated with or without drugs.

If you have symptoms that prevent you from doing your day-to-day activities or symptoms that are more severe, your doctor may look into whether another type of treatment is available.

There is no vaccine for Hepatitis C. To avoid catching it, never share syringes and always use a latex condom when having sexual relations.

Tell your doctor or pharmacist if you are taking or intend to take any natural products. Some of these products can cause liver toxicity.

Go to your medical appointments to allow your doctor to monitor your clinical progress.

## WHEN SHOULD YOU SEE A DOCTOR?

Immediately see a doctor or go to the emergency room if you have more than one of the following symptoms: rash, nausea, vomiting, diarrhea, light-coloured or fatty stools, stomach cramps, tiredness, loss of appetite, jaundice (yellow skin and eyes), severe itching, dark-coloured urine and muscle pain.

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# Hepatotoxicity

## DEFINITION

**Hepatotoxicity:** defined as the power of a substance (such as drugs) to damage the liver.

Liver toxicity takes the form of an inflammation (known as hepatitis) or necrosis (dead liver cells), in the most severe cases. Hepatic steatosis occurs when there is an accumulation of fat in the liver.

The liver is an important organ since it helps the body eliminate toxic substances to which we are exposed daily.

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## WHAT CAUSES IT?

Liver damage can result from different medications, including drugs used to treat HIV.

Virtually all the antiretrovirals have been known to affect the liver, but more specifically nevirapine (Viramune®), stavudine (Zerit™), didanosine (Videx™) and zidovudine (Retrovir®, Combivir®). In addition, all protease inhibitors (PI) such as tipranavir (Aptivus®) and darunavir (Prezista®) have been associated with liver toxicity, especially in hepatitis carriers.

The medication may cause a reaction that is directly toxic to the liver or be allergic in nature and occur because the person is genetically predisposed to have this type of reaction.

It is usually impossible to know who is at risk of having such a reaction. However, we know that Hepatitis B or C carriers appear to be more at risk.

Furthermore, treating HIV protects the liver against manifestations of Hepatitis B and C. Hepatitis B or C carriers can therefore receive HIV drugs. It is therefore important that a proper follow-up be done, in particular through regular blood tests and by monitoring the effect of the drugs on liver function.

There are several other possible causes of liver toxicity such as alcohol and drug use (cocaine and ecstasy).

### Hepatitis reactivation when HIV medication is stopped

It is very important that you talk with your doctor if you are a Hepatitis B carrier and wish to stop your HIV medication. In fact, some drugs used to treat HIV are also used to treat Hepatitis B. Stopping anti-HIV agents can reactivate the hepatitis virus.

## HOW DO YOU KNOW IF YOU HAVE A HEPATITIS VIRUS?

Symptoms are not always present. Through regular blood tests, your doctor will check the condition of your liver.

When your liver becomes toxic, there is usually an increase in liver enzymes (AST and ALT). Other tests (e.g. bilirubin, platelets, RNI, albumin) can also be used to check liver function.

Sometimes symptoms can occur such as nausea and vomiting, diarrhea, light-coloured or fatty stools, abdominal pain, tiredness, loss of appetite, jaundice (yellow skin and eyes), severe itching, dark-coloured urine and muscle pain. In addition, upon examining you, your doctor may find that your liver has increased in size.

Symptoms of liver toxicity usually appear within a few days to a few weeks (about 8 weeks) after having begun the medication and can continue a few days after the medication is stopped.

More rarely, symptoms can occur several months after the medication is started.

## WHAT TO DO?

To protect your liver, avoid consuming large quantities of alcohol or drinking on a regular basis and never consume alcohol at the same time as you take your HIV medication. If you drink alcohol, drink small quantities and only occasionally. Also avoid using recreational drugs.

Before starting a new medication, let your doctor know if you are a carrier of a hepatitis virus. If so, you need to be monitored regularly so that treatment can be started when appropriate.

If you are not a Hepatitis A or B carrier, you should be vaccinated against both of these hepatitis viruses. Talk to your doctor about it.

## WHEN SHOULD YOU SEE A DOCTOR?

Immediately see a doctor or go to the hospital emergency room if one or more of the following symptoms appears along with the rash: fever, nausea or vomiting, diarrhea, loss of appetite, stomach pain, muscle or joint pain, extreme fatigue, mouth sores, skin swelling or blistering, red eyes.

Consult a doctor if the symptoms worsen, especially each time the medication is taken.

If the rash is considered too severe to continue taking the medication or if a hypersensitivity reaction is suspected, stop taking the medication (the doctor will tell you in any case to stop taking it). Symptoms should usually disappear in 24 to 48 hours.

Any medication that is stopped as a result of an allergic reaction should never be taken again. By taking it again, you run the risk of causing an even more severe reaction that progresses more quickly than the initial one.

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## Skin Rash

### DEFINITION

A rash is an irritation or inflammation of the skin or an outbreak of spots on the body, usually separated from each other. However, when there are many spots, they sometimes connect and then form patches. A rash can be accompanied by itching and sometimes fever.

## WHAT CAUSES IT?

For many patients, the start of HIV treatment is accompanied by a rash. Several anti-HIV agents, especially those from the NNRTI class, some PIs, as well as several antibiotics used to treat opportunistic infections, can cause a rash.

When the rash appears within the first few days of starting a medication, this is a good indication that the drug is most likely the culprit since the effect usually occurs within a few days or weeks after the start of treatment. When more than one medication is taken at once, the challenge then becomes to determine which drug is responsible for the rash.

Other causes are possible: a transient and short-lived rash is the first symptom of a viral, bacterial or parasitic infection.

## WHY TALK ABOUT IT?

To correctly identify the cause.

A rash caused by anti-HIV agents is usually mild or moderate and therefore not dangerous. However, in rare instances, the reaction may progress to a more severe level and have more serious consequences. This is why it is recommended that you see a doctor when a rash occurs.

A skin rash is sometimes accompanied by other symptoms such as fever, nausea or vomiting, diarrhea, loss of appetite, stomach pain, muscle or joint pain, extreme fatigue, mouth sores, skin swelling or blistering, red eyes, and a drop in blood pressure. This is known as a hypersensitivity reaction, an unpredictable drug reaction.

This type of reaction is more frequent with nevirapine (Viramune®) and abacavir (Ziagen®, Kivexa™, Trizivir™).

Some patients experience more or less severe allergic reactions to antibiotics such as sulfa or penicillin.

If an allergic or hypersensitivity reaction is confirmed, the drug or antibiotic should be stopped and never taken again. Taking it could lead to death.

## WHAT CAN YOU DO TO PREVENT IT?

Before starting antiretroviral therapy, inform your doctor of any allergic reactions you have previously experienced.

Prior to being prescribed abacavir (Ziagen®, Kivexa™, Trizivir™), an HLA-B5701 test is always done. This test is used to identify patients at risk of having a hypersensitivity reaction to this drug. Patients with a positive HLA-B5701 test cannot take abacavir. If the test is negative, the possibility of abacavir causing a hypersensitivity reaction is virtually nil, though some rare cases have been reported.

## WHAT TO DO?

If the rash is considered mild or moderate, the doctor will tell you to continue taking the medication and the rash should go away after one to two weeks.

To reduce the reaction, and especially the itching, the doctor may prescribe an antihistamine such as diphenhydramine (Benadryl®), hydroxyzine (Atarax®) or a corticosteroid-based cream.