Living with HIV

HIV and Nutrition

The nutrition that goes into your mouth, from both food and nutrient supplements, can have a powerful impact for those wishing to live long and well with HIV. By improving your nutrition, you can help your body fight HIV while at the same time improving your quality of life, whether it’s eliminating symptoms, improving your energy level, or increasing your overall feelings of well-being.

The fundamental reason that nutrients can have such powerful effects is simple. Nutrients provide the building blocks for both the body’s physical structure—its cells, tissues, and organs—and its function, including its immune response and all other aspects of its daily functioning. That would be important for anyone, but for someone living with HIV, it’s particularly crucial.

Why is nutrition so important?
There are several ways that proper nutrition can help HIV-positive people remain healthy:

Fighting HIV: The ongoing presence of the virus means that the immune system must always be providing the immune cells and chemicals required to fight it. Since those cells and chemicals are created from nutrients, a steady supply is a must for the body’s contribution to viral control.

Protecting the body: Any damage to the body caused by HIV or AIDS-related infections—and by the body’s immune response to the infection—must be repaired. Nutrients are the actual building materials with which the body creates and repairs itself, so there is an ongoing need for those materials.

Improving quality of life: Good nutrition is a must for feeling well. Optimal levels of nutrients are required for good energy and overall well-being, and for the prevention or the management of the many symptoms that nutrient deficiencies can cause (e.g., fatigue, appetite loss, skin problems, weight loss, mental changes [like memory problems or difficulty concentrating], nerve damage, muscle cramps, depression, anxiety, and many others). In addition, the presence of adequate levels of certain nutrients may actually help prevent and help reverse certain drug side effects. Thus, nutrients are an important tool for helping people to feel better and maintain a higher quality of life.

Managing coinfections: Many HIV-positive people also have other chronic infections to deal with, including hepatitis C and/or hepatitis B. For people coinfected with HIV and hepatitis all of the above is doubled in importance since the body must handle more than one chronic infection, and
has a particular need to support the liver, and prevent it from being damaged.

How does nutrition become a problem in HIV?
Unfortunately, research has shown that nutritional problems are among the first negative effects of HIV infection. These problems—deficiencies in certain nutrients—often get worse over time and can contribute to immune dysfunction and disease progression in multiple ways.

There are several reasons why these deficiencies are common:

Nutrients burn faster: As discussed above, the immune system is continuously fighting HIV—even when anti-HIV drugs are being used—and repairing damage caused by the virus and other infections. This causes the body to burn nutrients faster, which can cause many nutrient levels to become low.

Nutrients aren’t absorbed properly: Another cause of nutrient deficiencies is the poor absorption of nutrients that may occur as the result of intestinal infections (including HIV itself) or diarrhea. Some HIV-positive people have a difficult time absorbing fat, which can prevent the absorption of important vitamins like A, E, D and K.

Poor diets: Simply put, many HIV-positive people don’t eat enough of the right kinds of foods. This may be due to fatigue, appetite loss, changes in the senses of smell or taste, nausea, vomiting, infections or other problems of the mouth or throat, or simply not knowing how to eat to best support health.

Which nutrients are deficient?
It is common for HIV-positive people to have multiple nutrient deficiencies, even early on in the course of infection. Researchers have reported that in both children and adults, deficiencies of zinc, selenium, copper, B-6, and B-12 (all of which are important for an intact immune response) are common in HIV-positive people, even before their immune system becomes damaged. In people with AIDS, nearly every specific nutrient is deficient. Researchers have also reported that these deficiencies appear to speed disease progression and that replenishing these nutrients (including B-6, B-12, and zinc) can actually help boost CD4 (T4 cell) counts.

Many other researchers have reported that deficiencies of glutathione and other important antioxidants (including vitamins C and E and the mineral selenium) are common. This is most likely because one of the body’s responses to infection is the creation of unstable molecules, usually referred to as “free radicals,” which are intended to destroy viruses and other disease-causing germs. These free radicals serve an important immune purpose but after their mission is carried out, they need to be countered by antioxidant nutrients in order to stop a chain reaction that could otherwise damage the body. So-called “oxidative stress” results when insufficient antioxidants are present to counter oxidative damage to cells and tissues in the body. Researchers have shown that oxidative stress is very common in both HIV disease and hepatitis C, and is a factor in progression of both diseases. Keeping optimal levels of antioxidants in the body is crucial to lessen oxidative stress and prevent body damage.
The amount of this oxidative damage increases early in HIV disease, and tends to worsen over time. For example, studies have shown that decreased levels of glutathione, the most important antioxidant found in cells, occur within weeks of HIV infection. The lowered levels of glutathione lead to immune cell dysfunction in multiple ways, and allow body cells and tissues to become damaged from the oxidative stress. In fact, researchers have shown that lowered levels of glutathione are strongly tied to an increased risk for disease progression. Insufficient glutathione also means that the liver is less able to properly break down drugs and other toxins, increasing the potential for liver damage from meds. Thus, boosting glutathione levels is important for anyone living with HIV.

How can I improve my nutrition?
There are two sources for obtaining the nutrients that can meet all the needs discussed in the previous sections: eating and drinking the right kinds of foods and liquids, and taking appropriate nutrient supplements—vitamins, minerals, amino acids and fatty acids. But it’s important to know that one can’t substitute for the other. Gulping down handfuls of pills won’t make up for eating a bad diet, and even the best diet may not provide the level of certain nutrients that may be needed to protect and repair the body and maintain an optimal immune response.

Thus, any information aimed at improving nutrition in HIV-positive people must begin with a discussion of diet. Only a steady intake of good food can provide not only the nutrients of which we are aware, but also the many we haven’t yet discovered. Research continues to show us that nutrients about which nothing was known in the recent past may play critical roles in immune function and health preservation. And it’s safe to say that there are many other nutrients still out there waiting for discovery.

To ensure health, there is a critical need for all the nutrients Mother Nature designed, not just the ones we’ve studied so far. In addition, food contains countless “accessory” nutrients that help important nutrients work better in the body. Thus, although obtaining higher levels of certain nutrients may require the use of supplements (see below), only a healthy diet can provide the base that’s absolutely necessary for health.

The first step in ensuring the presence of all the nutrients required to meet the needs of those living with HIV is making the most of what you eat. In the simplest terms, this means consuming a wide variety of whole foods—as opposed to processed, nutrient-poor foods—every day, along with plenty of water and the other healthful liquids that your body needs to function at its best.

Instead of struggling to follow complex dietary rules, it is easier for most people to just look at the overall picture and try to always choose healthful foods, while avoiding those that adversely affect health. So here are some simple guidelines to accomplish that:

Choose carbohydrates wisely. Certain breads, cereals, rice, and pastas are good carbohydrates that are rich in nutrients and loaded with fiber. Along with the carbohydrates you get from fruits and vegetables, they can provide a substantial portion of the energy you need every day.
Eat a wide variety of vegetables and fruits on a daily basis. That’s how you up the chances of getting all the nutrients and fiber that’s needed for your body’s healthy function, especially its immune function. Aim for at least three to five servings of vegetables and two to four servings of fruit each day. One serving of vegetables is approximately one cup of raw vegetables or one-half cup of cooked vegetables. One serving of fruit is approximately one-half cup of fresh chopped or canned fruit.

Get plenty of protein. Protein is essential for a healthy body and a stronger immune system. You can choose from a wide variety of foods that will contribute to your total protein intake, including lean meat, poultry, fish, beans, eggs, nuts, seeds, milk, yogurt, and cheese. The exact amount you need may need to be adjusted, based on individual needs.

Watch intake of fats and sweets. Although a reasonable amount of the good kinds of fats is healthy, keeping the overall fat content of the diet moderately low is important since researchers have shown that a high fat intake can be immunosuppressive, can cause diarrhea in some HIV-positive people, and is tied to an increased risk of progression to cirrhosis in those also living with chronic hepatitis C. For those with taking HIV medications causing elevated blood fats, a high-fat diet could also be risky to cardiovascular health.

It’s also important to limit your intake of sweets and other “junk” foods. They contain few nutrients and are often used as substitutes for more healthful foods that should be eaten. Lowering your intake of sweets and white-flour snack foods will likely improve your intake of healthy nutrients, help keep triglyceride levels in check, and maintain cardiovascular health.

Remember variety and color. Each food has its particular strengths and weaknesses in terms of nutrient content so choosing from a wide variety of foods at each pyramid level will help ensure intake of all the nutrients nature can provide, rather than the more limited number that might result from repeating the same foods over and over. And emphasizing color when you select that wide variety of foods is nutritional insurance. Call it the Rainbow Theory of Shopping. When you’re in the bread, pasta, cereal, and cracker aisles, choose brown, whole-grain varieties instead of white to get all the nutrients that over-refining removes. And when you’re in the produce section, grab red, purple, green, orange, yellow and blue because that’s where the nutrition is. Any time you see natural color, you’re seeing nutrients. The more your shopping basket looks like a rainbow of color, the better off your diet will be.

Should my diet be adjusted for my individual needs?
It’s important to be aware that certain standard dietary recommendations might need to be modified based on your individual needs. One of the possible modifications is the amount of food that will be required to meet your calorie needs. Because both individual metabolism—the rate at which your body is using energy at the cellular level—and lifestyle can significantly affect calorie requirements, it is always difficult to make generic recommendations on how many calories someone needs every day. You may have an innately higher than normal rate of metabolism, an energy-demanding job as a construction worker, or an intensive daily exercise schedule, all of which serve to increase your calorie needs. On the other hand, you might have been born with a
very low rate of metabolism and have chosen a sedentary desk job and a lifestyle that doesn’t include working out, all of which serve to lessen your calorie needs.

Here are some examples of why you should adjust your diet:

The need for additional calories: Regardless of these individual variants, the total intake of food that you need daily is somewhat increased by a chronic viral infection like HIV since the energy demanded by an ongoing immune response to the virus is constantly burning up calories. In addition, any other infections—including not only opportunistic infections, but any others that you might develop—will further increase this need for additional calories. Weighing yourself regularly and keeping a weight diary can be very useful for ensuring that your daily food intake is sufficient to maintain your body. Asking your physician to do a bioelectrical impedance analysis (BIA) regularly will also help keep track of your body status. This simple test provides information on your body percentages of fat, muscle, and water. Tracked over time, it can give clear indications of unhealthy changes.

Dealing with lactose intolerance: It is quite common for HIV-positive people, especially those with more advanced disease, to develop lactose intolerance—an inability to properly digest the milk sugar lactose that results in gas or diarrhea when dairy products are consumed. The severity of this problem is highly variable, with some people unable to tolerate even small amounts of dairy products, while others would react badly to large amounts but could easily consume moderate amounts every day without any problems. When the problem does occur, reduction or elimination of milk and the many products made from it (cheese, ice cream, yogurt, etc.) or with it (sauces, gravies, soups, and many types of snack foods and baked goods) may be necessary.

Problems absorbing fat: Fat malabsorption, a possible cause of diarrhea and gas, is also common in HIV disease. Researchers have reported that around one-quarter of people in early disease stages have already developed fat malabsorption, and that by later disease stages, this problem may occur in more than half of all HIV-positive people. Thus, many people may find it necessary to keep the fat content of their diet moderately low.

HIV drugs and dietary requirements: Some of the HIV drug regimens require certain dietary adjustments. Be sure to ask your physician about any such restrictions for any and all of the drugs you’re taking.

Underlying liver damage: Certain dietary changes may be needed in those with any significant level of liver damage. For example, for some people with advanced liver disease, most commonly due to coinfection with hepatitis virus(es), the protein content of the diet may need to be reduced. Since, for all the reasons discussed below, adequate protein is so important, some people jump to the conclusion that more is better. Unfortunately, with serious liver disease, a too-high level of protein may be dangerous. When protein is broken down in the body, one of the byproducts is ammonia. A damaged liver cannot process ammonia as well as a healthy liver can. The result can be an overload that results in encephalopathy, a brain condition that can result in a state of mental confusion and, in advanced stages, a coma. Another diet change that may be very
important for some people with liver disease is salt reduction. In people who have developed ascites, a complication of cirrhosis (damage to the liver) that results in an abnormal accumulation of fluid in the abdomen, too much salt intake can worsen the problem. It may also be important to limit iron intake, since diets higher in iron have been tied to liver damage in those with [hepatitis C](#).

For all these reasons, it’s very important to always discuss everything about your individual situation—including all aspects of your HIV disease, any other problems like blood sugar or heart or kidney concerns, and, especially for those coinfected, the current state of your liver—with your physician, and ask his or her advice on any dietary adjustments that may be needed. And don’t be afraid to ask your doctor for a referral to speak with a registered dietitian or nutritionist! If there are things you don’t understand in this lesson—or you find yourself with a lot of questions about eating right—it’s always best to discuss them with a dietitian or nutritionist who knows HIV and AIDS.

**What about fluids?**

Drinking plenty of good liquids is just as critical as eating well. Your diet must include plenty of water. The old adage about drinking eight large glasses of water per day (approximately two quarts) is actually a good beginning. However, because your size affects how much water you need, a better and simpler rule is to divide your body weight in pounds in half, and then drink at least that number of ounces every day. For example, if you weigh 140 pounds, divide that in half and drink 70 ounces of water (almost nine cups) per day. Many people drink far too little water, thinking that they can substitute drinks (like colas or other soft drinks or coffee) that are made with water. They can’t and they shouldn’t.

Here are a few tips to consider:

**Drink lots of water:** You need lots of fresh, pure water put into your body every single day. Without sufficient water, the body doesn’t function. Always remember that any time you’re running a fever or have diarrhea, or are suffering from nausea or vomiting or daytime or night sweats, you run the risk of dehydrating and should put plenty of fluids at the top of your list of priorities. And remember that your water should be safe. It’s very important to eliminate disease-causing organisms from your water by either boiling it or using one of the water purifiers designed to kill or filter out bacteria, protozoa, and other disease-causing organisms. The risk of water-borne infections is too high to ignore this. This is important for anyone since there are organisms (like cryptosporidia) that can cause infections even in the HIV-negative, but it is particularly crucial for those who have lower T4 counts (especially under 100), since they are at the highest risk of developing serious waterborne infections.

**Herbal teas and fresh juices:** Many people find herb teas to be a nice addition to their good liquid list. Just make sure that you’ve consulted with your pharmacist or physician to ensure that the herbs you’re drinking hold no potential for interactions with your medications or for liver toxicity. Fresh fruit and vegetable juices are other healthful liquids. Just remember that much of the nutrient content in vegetable and fruit juices is in the pulp. If you’re preparing fresh juice for yourself, it’s best to use a juicer that retains the pulp.
Bottled fruit and vegetable juices: These are another source of good liquids, which are widely available. Just make sure you pick the juices with little or no sugar. There are also canned or bottled juice spritzers, which are a good alternative to a cola or other soft drinks. They have no added sugar but great flavor and are just as fizzy. They still have simple sugars and therefore shouldn’t be used in excessive amounts, but they do contain far more nutrients than most standard soft drinks, and with none of the added chemicals.

Warm beverages: These include soups, herb teas, and roasted-grain coffee substitutes. Not only are they nutritious, but also less demanding on the body than icy cold drinks. Anything that’s drunk icy cold will require some of your body’s energy to warm it up. Thus, a large consumption of such cold beverages can actually drain away calories your body needs because it’s burning them up heating that cold liquid. And those soups already mentioned as a good source of protein and vegetables can also contribute to your fluid intake.

Caution with caffeine: Your days at Starbucks are not limited. As long as you drink plenty of water (since caffeine stimulates fluid loss from the body), a reasonable number of cups of coffee or tea daily is fine. Both coffee and either black or green tea are actually loaded with certain classes of nutrients like bioflavonoids of various kinds that may be health promoting. Don’t drink them in place of the healthful liquids you need, but you don’t have to eliminate them entirely. Just be aware of what you put in them since it’s the cream/sugar/mocha additions that can pump lots of fat and sugar into your daily intake.

What about nutritional supplements?
Even with a great diet that’s providing a broad spectrum of nutrients to provide all the basics for your body’s health, there is an important role for nutritional supplements. Multiple studies have shown the value of nutrients in improving the health of people living with HIV, and the same is true for those living with hepatitis C. Among these are large studies showing slower disease progression in people with higher levels of nutrients overall, as well as smaller studies that tie slowed disease progression, increases in CD4 cell counts, and/or improvements in various symptoms to supplementation with specific vitamins, minerals, amino acids or fatty acids.

A steady intake of antioxidant nutrients to counter oxidative stress is particularly important since this will help protect the body— including both the immune system and the liver—from harm. The nutrients that are either antioxidants themselves or are used by the body to create antioxidant enzymes include vitamins C and E; the carotenoids, including beta-carotene, alpha-carotene, lycopene, the xanthophylls, and hundreds of others; the trace minerals selenium, manganese, copper, and zinc; the amino acids methionine and cysteine; and the bioflavonoids, such as quercetin, hesperidin, rutin, and catechin. The body creates many antioxidants as needed, including the thiol compounds, such as glutathione and alpha-lipoic acid; the hormone melatonin; the enzymes, such as superoxide dismutase, glutathione peroxidase, and catalase; and the coenzymes, such as coenzyme Q10. The creation of these antioxidants requires a broad spectrum of nutrients, deficiencies of any of which will sabotage the body’s ability to create these antioxidants when needed.
All these antioxidants are important, and one cannot generally substitute for another since they work in many different ways and in different locations in the body. Some antioxidants, like vitamin E, are fat-soluble and work predominantly in the fat-containing cell membranes, quenching lipid (fat) peroxyl radicals. Vitamin E is, in fact, the major antioxidant that protects cell membranes. However, it has little if any activity against radicals in the aqueous phase (in water; that is, the blood and other fluids). Vitamin C, on the other hand, is water-soluble and works predominantly in the watery parts of the body, particularly the blood. Alpha-lipoic acid works in both lipid and aqueous parts of the body, and works in partnership with other antioxidants, helping to recycle and regenerate them. Thus, each antioxidant is important and has a separate role in protection against oxidative stress. In addition it has been shown that all these antioxidants work synergistically, with the effects of a combination of multiple antioxidants being much greater than that from any single one.

Of particular importance to HIV-positive people and those living with hepatitis C are the nutrients that work together to raise the levels of glutathione, the intracellular antioxidant that is needed to protect cells throughout the body, improve immune cell function, and protect the liver during the breakdown of toxins. The nutrients that contribute, either directly or indirectly, to raising glutathione in the body are alpha-lipoic acid (ALA), N-acetyl-cysteine (NAC), and L-glutamine. In addition, both the B vitamins and the mineral selenium contribute to the glutathione defense system. Thus, ensuring that the body has a plentiful supply of all of these nutrients is crucial.

A nutritional supplement program should have as its base a potent multiple vitamin and mineral that will supply a basic level of all the nutrients most important to human function. This type of supplement will provide a balanced supply of nutrients in appropriate ratios for normal function.

Additional supplements may also be important in order to include those things that may not be present in some multiple vitamins, and to address deficiency-caused symptoms, if present. These would include, most importantly, higher levels of antioxidants and the nutrients used by the body to create them (vitamin E, carotenoids, vitamin C, alpha-lipoic acid, N-acetyl-cysteine, L-glutamine, Coenzyme Q10, selenium, etc.), essential fatty acids (especially the omega-3 fatty acids that are important to both immune and cardiovascular health), B12 (deficiencies of which are present in many people living with HIV, and are tied to faster disease progression, as well as chronic fatigue and memory problems), and L-carnitine or its sulfated form, L-acetyl-carnitine (which may help to counter mitochondrial toxicity in those taking certain nucleoside reverse transcriptase inhibitors [NRTIs]).

For those coinfected with hepatitis C, all the antioxidant nutrients are particularly important since researchers have found that oxidative stress is clearly tied to both the grade of liver fibrosis and the level of liver cell damage. Ensuring a steady supply of antioxidants may help to prevent this.

Selenium, a trace mineral that is a crucial contributor to the antioxidant defense system, may be particularly important. One particularly compelling five-year study of 7,342 men who were chronic carriers of hepatitis B and/or C showed that the risk of hepatocellular carcinoma, the liver cancer that can cause death in chronic hepatitis sufferers, was much higher in those with lower blood
levels of selenium. In fact, those with low levels of selenium were 47 percent more likely to develop this cancer than those with higher levels. So in addition to providing general antioxidant protection and immune defense, supplementation with selenium in doses of 200 to 400 mcg daily may provide protection against the possible development of this potentially fatal liver cancer. Studies have also shown that certain antioxidant nutrients, including vitamin E, selenium, and N-acetyl-cysteine (especially when used in combination), may improve the response to hepatitis treatment.

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