

# Hiv and nutrition

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Few crises have affected human health and threatened social and economic development like HIV/AIDS. As infection rates continue to escalate around the world — particularly in countries with large rural populations and widespread small-scale agriculture — the pandemic is having a significant impact on food security and nutrition, creating a deadly cycle: HIV/AIDS typically strikes the household's most productive members first. When these people become ill, there is an immediate strain on the family's ability to work, feed themselves and provide care.

As the disease progresses, it can become even harder for a family to cope, especially as resources are drained — for instance, valuable assets, such as livestock and tools, may need to be sold in order to pay for food and medical expenses — and poverty advances. Without food or income, some family members may migrate in search of work, increasing their chances of contracting HIV — and bringing it back home. For others, commercial sex may be their only option to feed and support their family. Food insecurity also leads to malnutrition, which can aggravate and accelerate the development of AIDS. Likewise, the disease itself can contribute to malnutrition by reducing appetite, interfering with nutrient absorption, and making additional demands on the body's nutritional status. Therefore nutrition plays a big part in enabling patients to properly take medication, manage side effects, and maintain adequate nourishment. Some of the nutritional issues include:- 1.

Recommendations for light snacks are included, as are remedies for unpleasant tastes caused by some medications. . Weight gain is an issue for all AIDS patients on antiretroviral therapy. 3. Nutritionists advise that to

manage increasing weight, patients should cut fat and calories, but not eliminate the good fats, such as monounsaturated fats and Omega 3 polyunsaturated fat. 4. Because AIDS-related illnesses can cause loss of lean body mass and wasting, people with AIDS need to consume more protein.

It is also important to maintain calcium in the diet for bone health, blood clotting, nerve transmission, and regulating heartbeat. 5. Carbohydrates round out the healthy diet by lowering cholesterol, lowering glucose absorption, alleviating constipation, and facilitating movement through the bowel. 6. Aside from a well balanced diet, it is important to prepare food safely and to know the source of any drinking water. As we have seen, HIV and nutrition are intimately linked. HIV infection can lead to malnutrition, while poor diet can in turn speed the disease's progress.

As AIDS treatment becomes increasingly available in the poorest parts of the world, critical questions are emerging about how well the drugs work in people who are short of food. Uncertainty also surrounds the role of vitamins and other supplements. And for those already receiving treatment, side effects such as body fat changes are a daily concern. Understandably, HIV positive people and those who care for them are keenly interested in whatever might benefit their health. RELATIONSHIPS BETWEEN HIV AND NUTRITION, AND WHAT THIS MEANS FOR TACKLING THE DISEASE. 1. Body changes AIDS is well known for causing severe weight loss known as wasting.

In Africa, the illness was at first called “ slim” because sufferers became like skeletons. Yet body changes are not only seen during AIDS; less dramatic

changes often occur in earlier stages of HIV infection. Whereas starving people tend to lose fat first, the weight lost during HIV infection tends to be in the form of lean tissue, such as muscle. This means there may be changes in the makeup of the body even if the overall weight stays the same. In children, HIV is frequently linked to growth failure. One large European study found that children with HIV were on average around 7 kg (15 lbs) lighter and 7.5 cm (3 inches) shorter than uninfected children at ten years old.

What causes these changes? One factor behind HIV-related weight loss is increased energy expenditure. Though no one knows quite why, many studies have found that people with HIV tend to burn around 10% more calories while resting, compared to those who are uninfected. People with advanced infection or AIDS (particularly children) may expend far more energy. But faster metabolism is not the only problem. In normal circumstances, a small rise in energy expenditure may be offset by eating slightly more food or taking less exercise. There are two other important reasons why people with HIV may lose weight or suffer childhood growth failure. The first factor is decreased energy intake or, to put it simply, eating less food.

Once HIV has weakened the immune system, various infections can take hold, some of which can affect appetite and ability to eat. For example, sores in the mouth or throat may cause pain when swallowing, while diarrhoea or nausea may disturb normal eating patterns. Someone who is ill may be less able to earn money, shop for food or prepare meals. Stress and psychological issues may also contribute. Secondly, weight loss or growth failure can occur

when the body is less able to absorb nutrients – particularly fat – from food, because HIV or another infection (such as cryptosporidium) has damaged the lining of the gut. Diarrhoea is a common symptom of such malabsorption. 2.

Effects of antiretroviral treatment Current antiretroviral drug

treatments control HIV infection and prevent severe wasting, as well as other AIDS-related conditions. Emaciated people tend to regain weight once they begin treatment, and stunted children start to grow faster. Nevertheless, the drugs do not eliminate wasting. Studies have found that relatively small weight loss (between 5% and 10% over six months) is quite common among people with HIV who are taking treatment and not trying to lose weight.

Although this might not seem like much, losses of this size have been linked to an increased risk of illness or death, as discussed below. In addition, some antiretroviral drugs have been linked to a problem called lipodystrophy.

Whereas HIV-related wasting tends to deplete lean tissue, lipodystrophy involves changes in fat distribution.

Prolonged treatment is sometimes associated with losing fat from the face,

limbs or buttocks, or gaining fat deep within the abdomen, between the shoulder blades, or on the breasts. Antiretroviral treatment can also

contribute to lipid abnormalities by raising LDL cholesterol, lowering HDL cholesterol, and raising triglyceride levels in the blood. This may result in

higher risks of heart disease, stroke and diabetes. Other side effects of

antiretroviral treatment include insulin resistance, which can occasionally

lead to diabetes. 3. Micronutrient deficiencies Micronutrients are vitamins and minerals that the body needs to maintain good health. Researchers have

found that people with HIV are more likely to show signs of micronutrient deficiencies, compared to uninfected people.

Specifically they have found low levels of vitamin A, vitamin B12, vitamin C, vitamin D, carotenoids, selenium, zinc and iron in the blood of various populations. Nevertheless, it must be noted that the evidence is not entirely conclusive. It is possible that HIV might affect the markers used to measure micronutrient levels more than it affects the actual amounts of micronutrients available in the body. Some studies suggest that antiretroviral treatment improves micronutrient status. EFFECTS OF NUTRITION ON HIV 1. Disease progression The links between HIV and nutritional status run both ways. It has long been known that weight loss strongly predicts illness or death among people with HIV.

More recently it has been found that this applies even to people taking antiretroviral treatment. Losing as little as 3-5% of body weight significantly increases the risk of death; losing more than 10% is associated with a four- to six-fold greater risk. A Zambian study involving nearly 30, 000 patients has shown that failure to gain weight six months after the start of antiretroviral treatment increases the chance of death ten fold when compared with those who gain over 10 kilograms. Therefore, HIV leads to:- \*

- Insufficient food intake, malabsorption, increased energy expenditure \*
- Worsened disease \*
- Nutritional deficiencies

Various micronutrients have been linked to changes in the rate at which HIV infection progresses to AIDS. Low levels of vitamin A, vitamin B12, vitamin E and selenium seem to

accelerate progression. The effects of other micronutrients, however, are more controversial. One such example is zinc.

Although zinc is essential for a healthy immune system, it has been shown to play a role in HIV's replication cycle. On the other hand, some scientists claim zinc delays HIV disease progression. 2. Antiretroviral treatment There is strong evidence that malnourished people are less likely to benefit from antiretroviral treatment. One study in Malawi found that patients with mild malnutrition (a low body weight for their height) were twice as likely to die in the first three months of treatment. For those with severe malnutrition the risk was six times greater than for those of healthy body weight. Researchers in Singapore have reported similar findings.

A study in Zambia showed death rates in the first three months of starting antiretroviral treatment were highest (95%) among the most severely malnourished. This is not just an issue for developing countries; for example a study of people receiving antiretroviral treatment in Sydney, Australia found that one in three did not have access to nutritious food, and one in five said they regularly went hungry. Without food or the right nutrition, taking antiretroviral drugs can be so painful that people simply don't. In a choice between taking pills with no immediate or obvious effect, and eating food to survive, food will almost certainly take priority every time. A health worker in Zimbabwe, where malnutrition is widespread, explained that taking antiretroviral drugs on an empty stomach is like digesting razor blades. The result is that many simply do not take them. In resource-poor countries such

as, treatment in children is made more difficult because many children with HIV are severely malnourished.

Very little is known about how best to treat such children, and in particular whether it is best to start antiretroviral treatment before or after nutritional rehabilitation. The World Health Organisation recommends treating the malnutrition first, but stresses that “ further research on these matters is urgently needed. ” The ways in which the body digests, absorbs and makes use of drugs are very similar to the ways in which it treats food, providing many opportunities for food-drug interactions. As explained later in this article, a number of foods and supplements are known to alter the effects of antiretroviral drugs. It is also possible that some micronutrient deficiencies may make the drugs less effective, or may worsen side effects 3. HIV transmission The chance of someone transmitting HIV is linked to the amount of virus in their bodily fluids, which is known as the viral load. In theory, micronutrient deficiencies may increase viral load by enabling HIV to replicate faster, or by weakening the immune system.

Similarly, someone whose immune system has been weakened by micronutrient deficiencies may be more likely to acquire HIV. Research in this area has, however, been largely inconclusive. The strongest evidence links low levels of retinol (the animal form of vitamin A) in women’s blood with increased rates of mother-to-child transmission. Poor nutrition may also affect the spread of HIV in a very different way: by altering sexual behaviour. One study of two thousand people in Botswana and Swaziland found that women lacking enough food to eat were less likely to use condoms and more



likely to engage in risky activities, such as exchanging sex for money or resources. **DIETARY ADVICE FOR HIV POSITIVE PEOPLE** Dietary advice should be tailored to individual circumstances. However, in general the recommendations for people living with asymptomatic HIV infection are much the same as for everyone else, meaning a healthy, balanced diet.

Only three differences are worth noting: \* Because people with untreated HIV tend to burn more energy, the total number of calories should be around 10% higher than the usual guideline amounts, and up to 30% higher during recovery from illness. The balance of fat, protein and carbohydrates should remain the same. Many experts recommend a daily multivitamin (usually without iron, except in menstruating women or people with iron deficiency). \* The World Health Organisation recommends vitamin A supplements every 4-6 months for young children living with HIV in resource-poor settings. HIV positive people suffering loss of appetite may need to make an extra effort to ensure they are eating enough. Helpful suggestions include eating several small meals per day, taking exercise to stimulate appetite, possibly mashing or liquidising food to ease swallowing, and seeking advice from a health provider or dietician. If other approaches have failed to reverse wasting then doctors may recommend a liquid food supplement, an appetite stimulant, or resistance exercise to build muscle.

Other possibilities include steroids and hormone treatments, though these can be expensive and have serious side **SUPPLEMENTS AS AN OPTION TO BOOST THE DIETARY NEEDS** When scientists compare people who have chosen to take a supplement versus people who haven't, they cannot be

sure that the supplement is making the difference; for example, it could be that those taking the supplement tend to lead generally healthier lifestyles. Therefore the most reliable evidence comes from large trials in which scientists randomly choose who takes the supplement and who takes a dummy pill called a placebo. Yet even the results of randomised trials must be treated with caution because diet and nutritional status vary widely. It is possible for a supplement that benefits one group of people to be ineffective or even harmful in another group. Multivitamins A trial involving a thousand HIV positive pregnant women in Tanzania found that daily multivitamins benefited both the mothers and their babies, compared to placebo. After four years, multivitamins were found to reduce the women's risk of AIDS and death by around 30%. A large trial in Thailand also found that multivitamins led to fewer deaths, but only among people in the advanced stages of HIV disease.

A third, smaller trial in Zambia found no benefits from multivitamins after one month of use Based on these and other, less rigorous studies, many experts recommend multivitamins for people living with HIV, particularly those who are undernourished and have advanced disease. For example PEPFAR (the American government's international AIDS initiative) supports the provision of micronutrient supplements to high-risk individuals with inadequate diets Individual nutrients When it comes to supplementing individual vitamins and minerals, the evidence is less clear. Few studies have found significant effects on HIV transmission, disease progression or death rates. The most interesting results have come from studies of vitamin A and zinc. Vitamin A supplements have been found to reduce rates of illness and

death among African children living with HIV. The World Health Organisation recommends vitamin A supplements every 4-6 months for all young children (6-59 months old) at high risk of vitamin A deficiency; this includes those born to HIV positive mothers in resource-limited settings. In contrast, studies providing vitamin A to pregnant, HIV positive women have had mixed results.

Two trials in South Africa and Malawi found no effect on mother-to-child transmission, but saw some other benefits for the infants. A third trial in Tanzania found that vitamin A supplementation had no beneficial effects, and actually increased the risk of mother-to-child transmission by 40%. The inconsistency of these results (perhaps due to differences in diet) means that vitamin A supplementation is not generally recommended for HIV positive, pregnant women. Several studies have found that zinc supplementation reduces cases of diarrhoea among children in developing countries.

30 However most trials have been conducted among HIV negative children outside Africa, and their results may not apply in all situations. One study in South Africa found that zinc supplements reduced bouts of diarrhoea among HIV positive children, without hastening the progress of their HIV infection. Other results from Africa have been mixed, with some studies finding no evidence of benefit. 32 Studies undertaken on zinc supplementation and adults living with HIV paint an equally unclear picture.

While some studies have found that zinc supplements do not have any impact on HIV positive patients, another has shown a 60% reduced risk of diarrhoea in the HIV positive participants of a study conducted over 18 months. Potential for harm Some HIV positive people take a lot of

supplements in the hope that at least some of them might be beneficial. This is not necessarily a sensible idea, however, because supplements can do harm as well as good. As an expert reviewer has noted: " different doses may have different and even opposite effects, and the effect of the same dose may depend on baseline micronutrient intake or status... Furthermore, micronutrients often interact, so that the effect of a micronutrient supplement depends on the intake of other micronutrients. " Taking doses of vitamins far in excess of the recommended daily allowances – known as megavitamin therapy – is certainly not advisable. Megadose vitamin C, for example, has no proven benefit and can lead to diarrhoea, while too much vitamin A can cause a range of ailments including jaundice, nausea and vomiting. Some foods, herbs and supplements interact with antiretroviral drugs, potentially increasing the risk of treatment failure or side effects.

Harmful interactions have been observed between certain drugs and some of the foods promoted as nutritional therapy for people living with HIV, which otherwise may be beneficial as part of a balanced diet. Notable examples are St John's Wort, African potato, Sutherlandia, garlic, vitamin C and grapefruit juice. It is important for HIV positive people to tell their doctors about any supplements they are taking.

**NUTRITIONAL ASSISTANCE** Because HIV and nutrition are so strongly linked, nutritional assistance is seen as an important part of the response to HIV. This may take the form of nutritional assessment, counselling, or food provision. Nutritional assessment and counselling Nutritional assessment helps HIV positive people receive appropriate treatment, care and nutritional support. Even in the poorest settings, according to the World Health Organisation: " Screening for

nutritional status and assessment of dietary intake should be included routinely in HIV treatment and care for adults and children.

” In the US, the Department of Health and Human Services advises that, ideally, all people living with HIV should have access to the services of a registered dietician with expertise in HIV/AIDS. A dietician can assess the patient’s diet, lifestyle and nutritional status, and provide counselling and referrals as necessary. Nutritional counselling may include education on various topics, including:

- \* Healthy eating
- Achieving or maintaining a healthy body weight
- \* Managing lipid abnormalities and lipodystrophy
- \* Managing dietary complications related to antiretroviral treatment
- \* Managing symptoms that may affect food intake
- \* Appropriate use of herbal and/or nutritional supplements
- \* The role of exercise
- \* Food safety (important for preventing opportunistic infections)

Providing food

Providing food supplements to malnourished patients on antiretroviral treatment can increase programme success. Some programmes helping people living with HIV provide a limited amount of food to those most in need. For example PEPFAR funding may be spent on food for the following groups, if funds cannot be obtained elsewhere:

- \* Orphans and vulnerable children born to HIV infected parents
- \* HIV-positive pregnant and lactating women
- \* Malnourished adults in antiretroviral therapy and care programmes

Foods provided in resource-poor areas include peanut butter-based paste, milk, flour and vegetable oil, each fortified with micronutrients. Alternatively HIV positive people may be helped to set up vegetable gardens or animal rearing projects to improve their diet. In some rich countries there are non-profit

organizations that deliver meals to the homes of people who are ill because of HIV infection.

Examples include Moveable Feast in Baltimore, USA, and The Food Chain in London, England. Food provision is, however, not without its hazards. Organizations focused on combating HIV are wary of getting drawn into providing long-term food aid. In communities with widespread hunger, providing food only to HIV positive people may fuel discrimination, or even appear to reward people for becoming infected. In most cases food is provided to mitigate the impact of HIV, or to support antiretroviral treatment. Some experts have suggested that more general hunger alleviation could have a role in slowing the spread of the epidemic: " In poverty-stricken communities, the incentive of reducing HIV risk behavior should be an added reason for national governments and international agencies to invest in reducing hunger by improving infrastructure and development... Ignoring such basic issues as food or hunger could be a major stumbling block to HIV prevention strategies. Professor Nigel Rollins Why is good nutrition important in HIV? \* Good nutrition helps keep your immune system strong, enabling you to better fight disease.

A healthy diet improves quality of life. \* Weight loss, wasting, and malnutrition continue to be common problems in HIV, despite more effective antiretroviral medications, and can contribute to HIV disease progression. \* Good nutrition helps the body process the many medications taken by people with HIV. Diet (and exercise) may help with symptoms such as diarrhea, nausea, and fatigue, and with fat redistribution and metabolic

abnormalities such as high blood sugar, cholesterol, and triglycerides.

CONCLUSION HIV and nutrition are directly related and there is need for proper nutrition for those infected. Patients need to fortify the body with all the nutritional requirements to help the body withstand the ravages of the diseases and to cope with the ARV's. Dietary requirements and recipes are available to ensure that the daily nutritional needs of the patients are met.

However there are so many challenges that need to be overcome in developing countries like Kenya, the biggest of which is lack of sufficient income to cater for the special dietary needs of the patients. REFERENCES1.

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