

HIV and Nutrition: Complex Interactions

HIV infection affects nutrition through reductions in dietary intake, nutrient malabsorption and loss, and complex metabolic alterations that culminate in weight loss and wasting common in AIDS (Macallen, 1999; Babameto and Kotler, 1997).

The effect of HIV on nutrition begins early in the course of the disease, even before an individual may be aware that he or she is infected with the virus (Friis et al, 2001a, 2001b; Bogden et al, 2000; Semba and Tang, 1999; Beach et al, 1992). The effects of malnutrition on the immune system are well known, and the phenomenon was referred to as “Nutritionally Acquired Immune Deficiency Syndrome”. Several studies of HIV-infected patients show that the clinical outcome is poorer and the risk of death is higher when nutrition is compromised. In Africa and elsewhere, many who become HIV-infected are malnourished even before they contract the disease. HIV is an added burden (Fawzi and Villamor, 2001; Duggan and Fawzi, 2001).

The triad of HIV infection, nutritional status and immune function are intimately related and synergistic, and each factor has a critical role to play which affects the other (Macallen, 1999). **Nutrition should be an essential component of the minimum package of care for HIV-infected adults and children**, along with symptom management, treatment for opportunistic infections, psychosocial support and ARVs.

Nutrient requirements for people living with HIV/AIDS (WHO, 2003)

- People living with HIV have increased nutritional requirements because of their HIV status. The WHO reported that energy requirements for HIV-infected persons increases by 10-30 percent in adults and by 50-100 percent in HIV-infected children.
- Although it is commonly believed that people with HIV have higher protein requirements and need to consume protein-rich diets, in fact, data do not yet support this recommendation. *[Studies suggest protein metabolism is altered during HIV infection, but high-protein supplements do not reverse muscle wasting. Food supplementation may produce weight gain, but this is primarily fat, not lean body mass (muscle)].*
- Improved attention to diet and nutrition may enhance ARV acceptability, adherence and effectiveness. *[It is important to note that treatment for tuberculosis and other HIV-related infections as well as ARV treatment to control viral replication have resulted in weight gain and nutritional improvements in HIV infected individuals.]*

Data suggest that people with HIV may have higher micronutrient needs than uninfected individuals because micronutrient deficiencies exist even when intakes are at or above daily recommended allowances (Kupka and Fawzi, 2002; Friis et al 2001a, 2001b; Semba and Tang, 1999; Baum et al, 1995). On the other hand, however, high intakes of some nutrients have produced detrimental effects in immune compromised individuals, including those with HIV (Fawzi, Msamanga et al, 1998; Fawzi & Msamanga et al, 2003).

At present, data are not sufficient to propose specific micronutrient requirements in HIV, and caution is advised with regard to daily multivitamin supplements. However, during times when nutritional requirements increase, such as pregnancy and lactation, multiple micronutrient supplements may provide health benefits to HIV-infected women and their children (Fawzi, Msamanga et al, 1998; Fawzi & Msamanga et al, 2003).

Addressing Nutrition Across HIV Disease Progression

Nutrition for Positive Living

Nutrition counseling and intervention during early (asymptomatic) HIV infection is recommended because it will benefit the majority of people living with HIV – those who are still relatively healthy and not yet eligible for ARV treatment. Nutrition in HIV positive individuals is largely preventive in nature, as it is intended to maintain weight/prevent weight loss and prevent infections that can accelerate deteriorating health in people living with HIV. HIV compromises the nutritional status of infected individuals, creating additional nutritional needs and causing symptoms that limit dietary intake and reduce nutrient absorption and utilization – which may lead to progression of the disease. Malnutrition worsens the effects of HIV by further weakening the immune system and increasing susceptibility to infections (Piwoz & Preble, 2000).

While science proves that nutrition maintains and improves immune status, there is a lack of evidence that nutrition support alone will increase the life span of HIV-infected individuals. Additionally, one cannot say that providing nutrition can delay the onset of ARV therapy. Research (non-HIV) has proven that malnutrition has a negative impact on the immune system and is strongly associated with morbidity and mortality. For example, studies in children (non-HIV) show that malnourished children suffer from more severe illness episodes (e.g. diarrhea/ARI) than non-malnourished (Pelletier & Frongillo, 2003). Many claims have been made that improving nutrition will increase HIV survival time, or increase time to treatment indication – however, these statements are based mostly on clinical experience, not clinical trials.

Breastfeeding

Breastfeeding provides total food security for infants, including those living in HIV-affected areas. Some infants become infected by HIV during breastfeeding, but because of the importance of breastfeeding for child survival, USAID supports breastfeeding as the best staple in infant and young child feeding - especially in countries where infectious diseases continue to be the leading cause of mortality among children under five year of age. HIV-exposed infants and young children who are not breastfeeding will require special supplements formulated to replace breast milk and to complement the local diet. When considering infant feeding options for mothers who test positive for HIV, replacement feeding (nutritionally complete breastmilk substitutes) should be considered only if acceptable, feasible, affordable, sustainable and safe (USAID Breastfeeding Policy, ADS 212.3.2).

Therapeutic foods (energy rich & nutrient dense)

USAID is currently developing new foods to be used in humanitarian emergencies and for rehabilitation of severely malnourished children. These same preparations, which are high in energy and micronutrients, hold great promise for improving the health of people living with and affected by HIV/AIDS. In Malawi, USAID is examining how such foods which are used in community therapeutic care (CTC), a community-based model for managing and treating acute malnutrition at home, can be used to support HIV/AIDS infected and affected individuals, households and communities. The results of research in Malawi will be used to understand whether this approach is effective for treating HIV infected children, and how it can be used for expansion to community based HIV related care in Africa (FANTA, 2003).

Nutrition management in treatment for opportunistic infections

Many HIV-related infections are accompanied by symptoms that affect appetite and food consumption. Several co-infections common in people living with HIV also have severe nutritional consequences. One of the most common and nutritionally detrimental is tuberculosis, which affects the amino acid utilization, precipitating wasting. Another common problem is chronic gastrointestinal inflammation and infection, causing reduced transit times, nutrient malabsorption, and weight loss. Nutrition management of HIV-related symptoms is an important component of holistic care, providing comfort and support during times of illness (Piwoz & Preble, 2000).

Nutrition management in ARVs

Several ARVs require nutrition management. Guidelines exist describing which drugs should be taken with food; which foods to avoid with different regimens; and other nutritional considerations for medications commonly needed by people living with HIV. Drug-food interactions consist of the effects of food on medication efficacy, the effects of medication on nutrient utilization, the effects of medication side effects on food consumption, and unhealthy side effects caused by medication and certain foods (FANTA, 2003) .

Nutritional management of HIV-related symptoms and complications is an important aspect in HIV-related care. In addition to counseling, direct food support may be needed as in comprehensive care programs.

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