
Maine AIDS Care

Maine Medical Center's

AIDS Consultation Service

Summer 1994

Nutrition & HIV

From the earliest descriptions of AIDS in the United States, weight loss has been an initial complaint of a significant number of HIV-infected persons. In 1987, the CDC included HIV wasting syndrome as an indicator disease of AIDS in the revised surveillance case definition. Prospective and retrospective investigations have shown that 91% to 100% of people with AIDS lose weight. In a report published in 1990, the Federation of American Societies for Experimental Biology (FASEB) concluded that wasting and malnutrition were common occurrences in HIV disease; however, the extent of specific nutrient deficiencies was unclear and continues to be researched¹. Decrease in body weight, percent body fat, and body mass index have been observed in patients in the early stages of infection².

The development of malnutrition in patients with HIV infection is multifactorial and is thought to be an interplay between a decrease or alteration of food intake, malabsorption of ingested nutrients, and altered body metabolism characteristic of the disease process¹.

Factors contributing to reduced food intake include anorexia, oral or esophageal lesions, nausea and vomiting, diarrhea, and neurologic or psychologic complications³. Additional factors related to reduced food intake may also include the presence and severity of fatigue and its impact on the patient's ability to obtain and prepare food; lack of money to buy food; lack of knowledge or interest in nutrition and HIV disease; and side effects of medications¹.

related to small intestine injury, but disease of other digestive organs (ie. stomach, liver, pancreas) contribute as well. Researchers have identified three categories of intestinal disease: primary HIV infection of the enterocytes, secondary involvement from systemic or otherwise disseminated disorders (ie. MAI, etc.), and a syndrome of inflammatory bowel disease that may be related to an identifiable pathogen or cancer. Patients with malabsorption do not increase intake sufficiently to compensate for lost calories. Systemic infections can also contribute to anorexia due to cytokine-mediated inhibition of appetite¹.

Persons with clinically stable HIV disease conserve lean body mass even with losses of body weight caused by decreased intake or malabsorption. However, patients with AIDS who have active disease, such as an opportunistic infection with fever, commonly are hypermetabolic and burn excessive calories, resulting in wasting. One research study reported metabolic rates 20-60% above predicted levels in HIV infected persons with acute systemic illness or with chronic infection. Another study reported that even in the absence of acute illness, persons infected with HIV had high rates of resting energy expenditure (REE) resulting in weight loss¹.

Kotler and colleagues studied the impact of malnutrition on survival of persons with AIDS and found that death from wasting in AIDS is related to the magnitude of tissue depletion and is independent of the underlying cause of wasting.

Stavudine (D4T) Approved by FDA

Stavudine (Zerit), a new reverse transcriptase inhibitor, has been approved by the FDA for treatment of HIV+ patients who can not tolerate or are not benefiting from other approved therapies (ie. AZT, DDI, DDC). It is not approved for use in combination antiretroviral therapy. The efficacy of Stavudine relative to other available antiretrovirals is still not clearly established. It is generally well tolerated, although 15-20% of patients may develop peripheral neuropathy which is usually reversible with discontinuation of the drug. The approved dose is 40 mg bid at a cost of approximately \$186.00 for 60 capsules. Bristol Meyers Squibb Co. the manufacturer, will provide the drug to patients who can not afford it through an assistance program. For more information call Bristol-Meyers Squibb at 1-800-788-0213.

**AIDS Consultation Service
Treatment Information
Hotline**

1-800-871-2701

Monday - Friday 9:00 - 4:30

Enteral vs. Parenteral Nutrition in HIV

For patients with severe malnutrition, recent research has shown that enteral nutrition is preferable to parenteral nutrition in that enteral nutrition appears to preserve the gut function and maintain gut integrity. However, studies addressing the efficacy of enteral support in HIV+ patients remain scant. Lowfat, elemental formulas seem to work better with diarrhea and malabsorption syndromes.

Parenteral nutrition may be indicated for patients who demonstrate intolerance to enteral feedings, have bowel obstruction, severe pancreatitis, copious/high volume diarrhea, intractable vomiting, or in malnourished patients who require prolonged bowel rest. It should not be used in HIV+ patients who have functional GI tracts. Total parenteral nutrition (TPN) should not be used unless the prognosis warrants aggressive nutritional intervention. Some patients with end stage AIDS might be better supported with IV dextrose and vitamins and minerals to meet hydration and basic physiological needs without aggressive nutritional support¹. A key issue in the provision of TPN to patients with AIDS is the concern about infection. TPN can lead to systemic infections, and there may be a heightened risk in the AIDS patient.

The efficacy of TPN in the restoration of lean body mass HIV+ patients is under investigation. Studies show variable results on body composition, with increased fat stores seen in the majority of patients, but increased protein mass in only a few.

¹ Flakerud, J.H. and Ungvarski, P.J., *HIV/AIDS: A Guide to Nursing Care*, W.B. Saunders Co, Philadelphia, 1992.

² McCorkindale, C., Dybevik, K., Coulsten AM, et al. *Journal American Dietetic Association*, 1990; 90.

³ Kotler, D.P. (1991) *Biological and Clinical Features of HIV Infection In Gastrointestinal and Nutritional Manifestation of the Acquired Immunodeficiency Syndrome* (ed. Kotler, D.P.) New York: Raven Press.

⁴ *Malnutrition in Acquired Immunodeficiency Syndrome: Causes and Treatment*, Mead-Johnson, 1994.

⁵ Watson, Ronald R. (ed.) *Nutrition and AIDS*. Ann Arbor: CRC Press 1994.

Nutrition & HIV Cont. from pg.1

They concluded that attempts to maintain body mass could prolong survival in persons with AIDS¹.

In AIDS patients, the disease related abnormalities in immune function make it difficult to interpret the effects of malnutrition on immune function in isolation from disease-related effects. However, deficiencies in essential nutrients may indeed compound the immunodeficiency characteristic of AIDS, rendering patients more susceptible to infections or exacerbating the severity of existing infections. Since not all patients with AIDS suffer from repeated infections, it is thought that the impaired immune system in AIDS patients may be better equipped to withstand certain environmental pathogens in the absence of malnutrition.

Numerous micronutrient deficiencies have been observed in HIV-infected patients. In one study of the prevalence of abnormalities of plasma vitamin and trace element concentrations in 30 HIV infected patients, one or more abnormalities were found in the majority of patients. There have been reports of low serum zinc, selenium, and vitamin B12 levels. The prevalence of folate deficiency is variable and depends on the dietary habits of individual patients. Deficiencies of vitamins A, E, B₆, C, choline, and carotenes have also been noted⁴.

These numerous micronutrient deficiencies may have detrimental effects on various organ systems, including the immune system, even in otherwise healthy individuals. It can thus be speculated that the deleterious effects of the immune system may be even greater in HIV infected persons, who already have a defective immune system from viral activity alone.

Some effects of malnutrition on immune functions are direct, while others are secondary, resulting from effects on other organ systems having immune regulatory functions or from the negative effects on all cellular metabolism, including cells of the immune system. Virtually all components of the immune system may be affected by malnutrition, including cell-mediated and humoral immunity, the complement system, the production of cytokines, and phagocytosis¹.

Because of the multifactorial nature of malnutrition in HIV disease, and because of the wide-ranging effects of malnutrition on the immune system, early monitoring, detection, and intervention regarding the nutritional management of HIV infected persons is essential. Each nutritional care plan should be individualized to meet the specific needs of the patient. It is imperative that the patient have an active role in the plan in an effort to optimize commitment and compliance.

Efforts to improve oral food intake are an important first step. These include providing nutritional counseling and education as soon as HIV disease is diagnosed, emphasizing adequate protein and calorie intake (high protein / high carbohydrate) and encouraging the appropriate servings of the four food groups. Supplementing the diet with multivitamin and mineral preparations containing 100% of the recommended daily allowance for all micronutrients is also appropriate. Although there is no scientific evidence that megadoses of any vitamin or mineral will alter the course of AIDS, much attention is being paid currently to so-called anti-oxidant therapies. We encourage careful scrutiny of these therapies, as further clinical trials are needed to confirm their efficacy and identify adverse side effects.

In addition to assuring adequate food intake of HIV-positive patients, development of rational strategies should be a high priority in their over-all care. It is imperative to rule out any and all causes of wasting, and to treat those underlying causes with drug or other appropriate therapy, while at the same time giving consideration to the best and most important nutritional strategies for that individual patient at that point in time.

If you have questions or concerns regarding HIV and Nutrition, the AIDS Consultation Service's Nutritional Consultant, Pamela Perkins is available for questions by calling the AIDS Information Hotline at 1-800-871-2701.

Clinical Strategies in Provision of Nutritional Support for Persons with HIV

I. Assessment of Nutritional Status

- A. Regular chart of weight.
- B. Consider referral to registered dietitian for complete assessment.
- C. Key lab values to follow: albumin, cholesterol, triglycerides, H&H

II. General Principles of Nutrition for HIV

- A. Encourage high calorie, nutrient dense foods.
- B. Increase number and size of meals.
- C. Use calorie containing condiments and add calorie containing supplements as needed.
- D. Encourage daily multivitamin with 100% daily recommended allowances.

III. Other Strategies to Increase Calorie Intake in Patients with Weight Loss

- A. Rule out opportunistic infection if low CD4 count (MAI, enteric parasites/bacteria)
- B. Rule out depression if low calorie intake. (*Refer to article on Depression & HIV*)
- C. Consider enteral supplementation
 - 1. Intact formulas (Protein derived from sodium & calcium caseinate, soy protein isolate, such as Ensure, Jevity, or Osmolite HN)
 - 2. Specific formulas
 - Fat malabsorption : (Modified fat such as Lipisorb)
 - Elemental: (Free amino acids such as Vivonex, Tolerex)
- D. Consider appetite stimulation
 - 1. Megesterol acetate *Megace* (800 mg/d)
Note high cost and relatively small associated increase in lean body mass.
 - 2. Dronabinol *Marinol* (5 mg/day)
Note high cost and relatively small associated increase in lean body mass.

Common Medications Used in the Treatment of HIV That May Affect Appetite and Nutrition

Medication	GI Side Affects	Interventions
AZT	nausea, diarrhea (Common with high dosages early in treatment)	Take with food Symptoms often improve with time Consider decreasing dosage if persistent symptoms
DDI	occasional nausea, diarrhea pancreatitis (rare)	For minor GI symptoms, can consider switching between tablet and powder formulations.
DDC	Nausea (occasional) Mouth ulcers (rare)	Take with food.
D4T	Nausea (uncommon)	Take with food.
Bactrim	Nausea, diarrhea Stomatitis (rare) Glossitis (rare)	Consider change from qd to 3x/week dose for pneumocystis prophylaxis
Dapsone	Nausea (rare)	Consider change Options Include: 50 mg/d 100 mg/qod 200 mg/q week
Rifabutin	Nausea, anorexia (rare)	Take with food. Consider split dose (ie. 150mg bid) for mycobacterium avium prophylaxis.

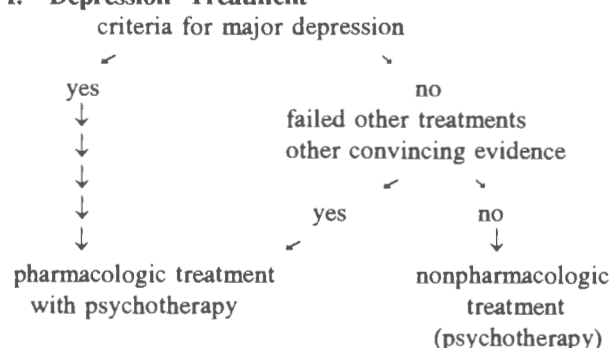
***The AIDS Consultation Service's AIDS Information Hotline Pharmacist
is available Monday - Friday 9:00 am - 4:00 pm
to answer any questions you may have regarding medications
used to treat HIV/AIDS and their side affects.
1-800-871-2701***

Treatment of Depression In HIV

In the evaluation of the patient with poor nutrition, depression should be considered. Depressive symptoms are not uncommon among HIV/AIDS patients. Depression may be initially manifested by weight loss and fatigue, which are common complaints of HIV disease. The challenge is to tease out symptoms that are an appropriate reaction to the disease from those that are due to HIV itself, and to determine whether or not a major depressive disorder is present. Some of the symptoms to consider are decreased mood, general anhedonia, significant weight loss or gain, insomnia or hypersomnia, motor agitation or retardation, fatigue, feelings of worthlessness, lack of concentration, recurrent thoughts of death, and over reaction to health issues. While considering these, it is beneficial to keep in mind that this patient may have had a predisposition to depression before the HIV/AIDS diagnosis, and to obtain careful history of previous mood disturbances, etc.

The following charts from AIDS Clinical Care provide a suggested approach to the treatment of depression in patients with HIV.

I. Depression Treatment



III. Failed Drug Trial for Depression

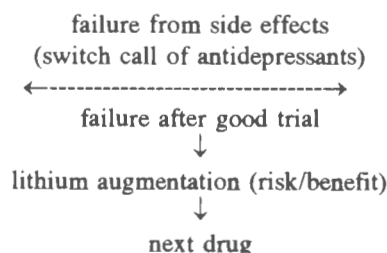
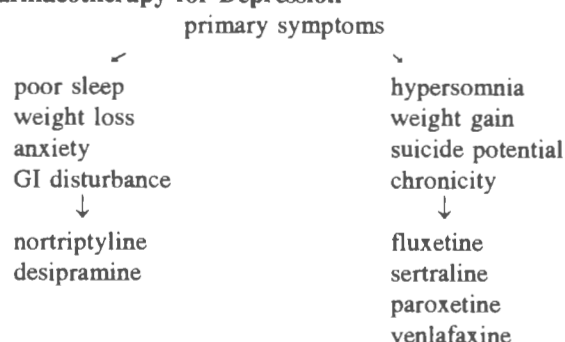
principles: choose by side effects, case profile,
what has failed, long-term plan

next drugs

bupropion	benzodiazepine augmentation
trazodone	Ritalin augmentation
alternate tricyclic	Cytomel augmentation
serotonin specific reuptake inhib.	sleep deprivat. augmentation
monoamine oxidase inhibitor	phototherapy
mood stabelizer augmentation	electroconvulsive therapy
neuroleptic augmentation	

On-Going Clinical Trials at AIDS Consultation Service

II. Pharmacotherapy for Depression



Delavirdine In Combination with AZT or DDI

Maine Medical Center's AIDS Consultation Service is enrolling in these two clinical trials of a new anti-retroviral drug, delavirdine, which is used in combination with AZT or DDI. Patient enrollment is expected to continue for 6 months. All antiviral medications, study related laboratory costs, and research clinical visits are provided at no cost to the patient. Physicians interested in referring patients for inclusion in this 2 year study should call the AIDS Consultation Service at 1-800-871-2701.

Open Label, Triple Antiviral Combination Drug Study (AZT, DDI or DDC, plus delavirdine)

Patients with progression of disease in the 2 studies noted above may, after 6 months on double combination therapy, enroll in this open label triple combination therapy trial. Antiretroviral medications, laboratory, and research visits will be free to the patient as in the other 2 delavirdine studies. The open label trial will continue for 2 years.

World AIDS Cases 2,500,000*
US AIDS Cases 361,509
US AIDS Deaths 220,871
Total US cases and deaths reported through 12/31/93

Maine AIDS Cases 530
Maine AIDS Deaths 279
Total Maine cases and deaths reported through 06/30/94

**Estimated*

Upcoming HIV/AIDS Education

September 6, 1994 8:00 - 9:00 am	Outpatient Management of Grand Rounds... <i>Family Practice Grand Rounds</i> at Maine Medical Center Presented by - Robert P. Smith, M.D. (207)871-2099
September 23, 1994 9:00 - 10:00 am	Pain Management in the Cancer and AIDS Patients... <i>NE Osteopathic Association</i> (207)474-2357 Presented by - Owen Pickus, D.O.
September 23, 1994 2:30 - 3:30 pm	HIV/AIDS Update for Physicians..... <i>NE Osteopathic Association</i> (207)474-2357 Presented by - David Loughran, D.O.
September 26 & 27, 1994	HIV 101 & Care of PWA's at Home... <i>Hospice of Maine</i> Presented by - Sandra T. Putnam, RN, MSN, FNP (207)871-2099
September 27, 1994	Update from the International Conference on AIDS: Yokohama, Japan... <i>Sponsored by New Eng. AIDS Ed. and Training Center</i>
October 6, 7, 8, 1994	HIV/AIDS in the Dental Setting... <i>Sponsored by New Eng. AIDS Ed. & Training Ctr - Maine</i> at the Comfort Inn, Augusta, Me.
October 16, 1994	Women's Health Care Issues Across the Life Span... <i>Sponsored by University of Southern Maine</i> at the Ramada Inn, Portland, Maine
November 2, 1994	Community Advocacy & Family Connections Contemporary Practice with HIV/AIDS... <i>Sponsored by</i> <i>USM and ACS</i> at Holiday Inn by the Bay, Portland, Me.
November 28, 1994 8:00 - 10:00 am	Psychosocial Issues & HIV... <i>University of New England, Biddeford, Maine</i> Presented by - Jane K. O'Rourke, LCSW (207)871-2099

If you are providing an HIV/AIDS related educational session, please let us know at (207)871-2099

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AIDS Consultation Service
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