

Acquired Immunodeficiency Syndrome (AIDS)

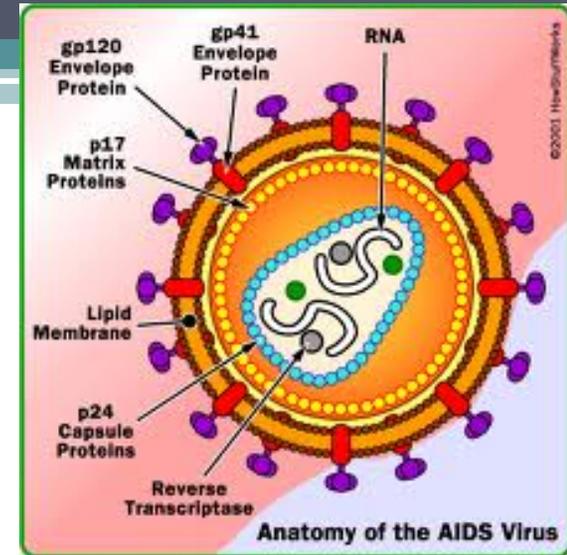
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HIV and AIDS

- HIV is a retrovirus that targets immune cells and transforms them into HIV-producing cells
- Progression to the symptomatic form, AIDS, can lead to the patient becoming immunocompromised
- Nutritional status is affected by HIV infections

Pathophysiology



- HIV is a retrovirus that attacks CD4 immune cells
- HIV is transmitted through blood, intercourse, blood transfusions, intravenous needle sharing, and perinatally
- The virus targets many cells: gastrointestinal, organ, and immune cells

World Health Organization: Categories of HIV and AIDS

Categories	Criteria
Primary HIV Infection	Acute antiretroviral syndrome, but no complications, infections, or immune dysfunction
Clinical Stage 1	Asymptomatic
Clinical Stage 2	Weight loss of less than 10% of body weight; bacterial infections present
Clinical Stage 3	Weight loss of more than 10% of body weight; persistent symptoms (fever, diarrhea); oral candidiasis; pulmonary tuberculosis; acute necrotizing ulcerative gingivitis
Clinical Stage 4	HIV wasting syndrome (more than 10% weight loss with chronic diarrhea, weakness, fever) and events described in stage 3



Nutritional Problems with HIV/AIDS

- Restoration & maintenance of nutritional status is essential for management of disease
- Poor clinical outcomes with malnourished patients
- High protein turnover rate
- Weight loss during opportunistic infections
- Possible malabsorption

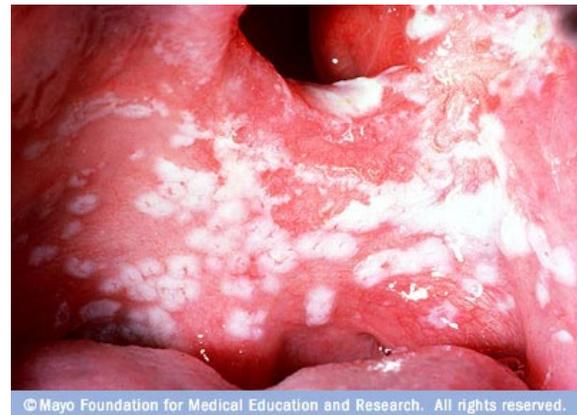


HIV Infects Many Systems

- Cardiac: patient is at risk for CHF and MI
- Neurologic: pain, weakness, hypersensitivity to touch, impairment of cognitive function
- GI Tract: immature enterocytes, reduced enzyme production, malabsorption, diarrhea
- Immune: increased threat of opportunistic events
- Oral: candidiasis, herpes, oral pain, taste changes, dry mouth
- Musculoskeletal: fatigue and muscle weakness
- Renal: end stage renal disease

Oral Candidiasis

- Candidiasis (thrush) is a fungal infection that can occur in many cavities in the body
- Oral thrush can cause white lesions on the tongue or cheeks of the mouth
- Lesions are painful and may bleed if irritated
- Likely to occur in people with compromised immune systems





Antiretroviral Therapy & Probiotics

- Supplementing 200 ml of yogurt with the strain of *Lactobacillus rhamnosus* reduced GI problems associated with antiretrovirals
- Probiotic yogurt consumers reported having more energy to work, lower fever incidence, and meeting vitamin A, B, and calcium requirements

Case Study

- Terry Long
- Age: 32
- Gender: Male
- Occupation: Currently on disability, previously worked as a nurse at a dialysis center
- Ethnic Background: African American
- Household Members: Father age 69 and mother age 66





Case Study

Chief Complaint:

“I was diagnosed with HIV 4 years ago when I was living in St. Louis. I just recently moved back home because I am not able to work right now... I feel exhausted all the time-I have a really sore mouth and throat. I have lost a lot of weight. I think I’ve just been denying that I may have AIDS. But a lot of people I know are doing okay on drugs, so I came to this new physician. The case manager at the Health Department set it up for me. Dr. Fremont thinks I may have pneumonia as well, so she admitted me for a full workup.”



Case Study

Patient History:

- Seropositive for HIV-1 confirmed 4 years previously.
 - Etiology of contraction is unknown
 - Pt was employed at a high-risk environment
 - Intercourse with multiple partners, but no same-sex partners
- No previous treatment for HIV
- Quit smoking 5 years ago
- Family History:
 - CAD, HTN-Father

Case Study

- Nutrition History:
 - Pt reports okay appetite, but not normal
 - Picky eater his whole life
 - Takes multivitamin, Vitamin E , Vitamin C, ginseng, milk thistle, Echinacea, and St. John's Wort daily
 - Pt reports dislike of beef, coffee, and vegetables
- No previous nutrition therapy
- Medical DX: AIDS, clinical category C2 with oral thrush; no clinical evidence of pneumonia; HAART regimen initiated with indinavir, stavudine, and didanosine

Assessment

- Height: 73”
- Weight: 151 lbs
- BMI: 20.0
 - underweight
- IBW: 184 lbs
- UBW: 160-165
 - 91% UBW



Dietary History

Usual Intake	
Breakfast/Lunch	Cold cereal (1-2 cups) 1/2 cup whole milk
Supper	Meat- 2 pork chops or other meat; mashed potatoes; 1 cup rice or pasta; tea or soda
Dinner	Pizza, candy, or cookies with tea or soda 1-2 beers or glasses or wine



24 Hour Food Recall

- Sips of apple juice
- Pudding
- 1 cup rice and gravy
- Iced tea with sugar- sips throughout day

Assessment: Labs

Lab	Normal	Patient's
Albumin	3.5-5	3.6
Prealbumin	16-35	15
Bilirubin	Less than .3	.9
LDH	208-378	710
HDL	Greater than 45	42
% Lymph	19.6-52.7	3

Assessment

- Energy and Protein Requirements:

$$\mathbf{EER: 66.5 + 946.7 + 927.1 - 217.6 = 1722.7}$$

$$1723 \times 1.3 = 2240 \text{ kcal} + (5\% - 17\%) = 2352 - 2620 \text{ kcal/day}$$

$$\mathbf{Protein: 68.6 \text{ kg} \times 1.2 \text{ g/kg} = 82 \text{ grams}}$$

In people with HIV infection, there was a reported increase in resting energy expenditure, as much as 5-17% compared to healthy controls (Grade II) (Jacobson, et al, 2003)



Diagnosis

- Inadequate oral food and beverage intake (NI-2.1) related to newly diagnosed AIDS as evidenced by weight loss, poor appetite, and mouth sores.
- Increased energy expenditure (NI-1.2) related to newly diagnosed AIDS as evidenced by weight loss.



Intervention

- Meals and snacks (ND-1) modify patient diet to mechanical soft
- Meals and snacks (ND-1) add supplement Ensure to each meal
- Nutrition related behavior modification therapy (C-1) strategy is self-monitoring to address patient's appetite and weight
- Coordination of nutrition care (RC-2) referral to community program for AIDS support group

Studies regarding nutrition counseling reported improved outcomes related to weight gain (Grade I) (Fitch KV, Anderson EJ, et al, 2006)

Goals for Terry

- Outcome Goals
 - patient consumes at least 75% of meals while in hospital
 - restore patients usual body weight within 1 year
 - patient increases food and beverage intake after discharge
- Action Goals
 - Terry will increase fruit and vegetable consumption to 5 servings per day
 - Terry will increase protein consumption by adding a protein supplement once daily
 - Terry will continue his use of a multivitamin daily
 - Terry will consume at least 200 ml of probiotic yogurt a day

Micronutrient deficiency is common in patients with HIV/AIDS. There is an increase in morbidity and mortality in those who do not take a vitamin supplement (Grade II) (Hendricks, et al, 2007)

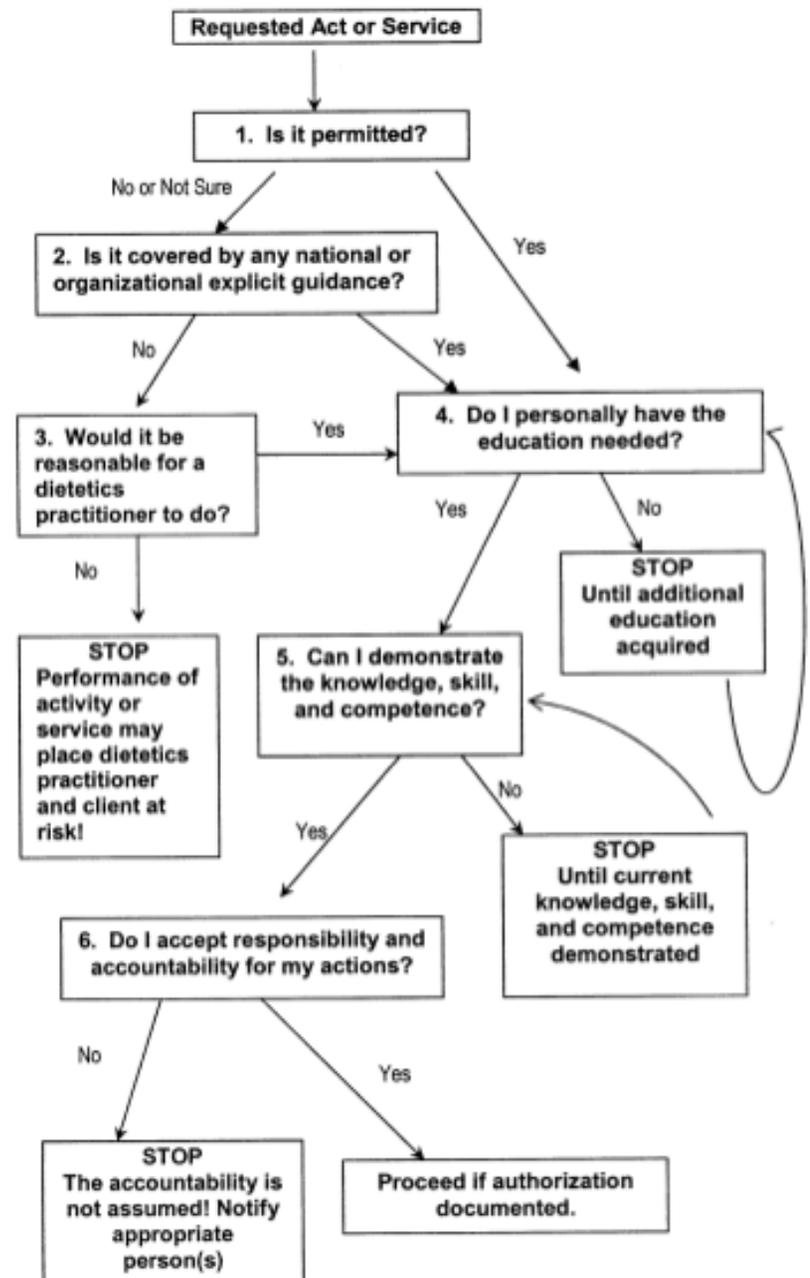


Drug/Nutrient Interactions

- Stavudine: no food restrictions or interactions
- Didanosin: take on empty stomach
- Indinavir: take with lots of water on an empty stomach

Decision Tree

- Inadequate oral food and beverage intake (NI-2.1) related to newly diagnosed AIDS as evidenced by weight loss, poor appetite, and mouth sores.
- Increased energy expenditure (NI-1.2) related to newly diagnosed AIDS as evidenced by weight loss.





Monitoring and evaluation

- Monitor Terry's appetite and new mechanical soft diet
- Check in with Terry about nutrition counseling/education
- Monitor Terry's HDL levels

References

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