CLINICAL AND THERAPEUTIC NUTRITION

- **NUTRITIONAL CARE IN IMMUNE DEFICIENCY DISEASES:**

PREVELANCE

- HIV infection , which may results in AIDS is a major global public health problem . UNAIDS estimates that 33.2 million people in the world were living with HIV infection in 2007 and over 2.5 million were newly infected that year, while another 2.1 million died of the disease , whom 2,70,000 were children.
- Poor nutritional status and micro nutrient deficiencies are commonly associated with HIV infection . HIV infection attacks the immune system directly and complicates the scenario by increasing risk of other infections in the host . Increasing evidence supports and important role of nutritional supplementation in improving therapeutic response to drug treatment for such infections.

HIV

HIV

- HIV is a retrovirus that is the causative agent of AIDS. Two strains of HIV have been identified
- HIV 1, the predominant isolate in clinical AIDS found in Central Africa and other regions of East Africa ,Asia and Europe.
- HIV 2, which has not demonstrated the virulence of HIV 1 and is mostly confined and limited to West Africa.
- HIV is transmitted through:-

- Person to person from sexual contact.
- Following transfusion of infected blood or blood products.
- From mother to child in utero, intrapartum or during breastfeeding.
- By percutaneous injection with contaminated needles or other devices.

- **HIV does not spread through:-**
  - Skin to skin contact.
  - Hugging , shaking hands, or kissing.
  - Air or water.
  - Sharing foods or drinks.
  - saliva, tears or sweat.
  - Sharing toilet and towels or bedding .
  - Mosquitoes or other insects.

HIV INFECTION AND IMMUNE SYSTEM

- Infection with HIV causes a dramatic impact on body's immune system . The virus infects and kills CD4 + and CD8+ cells which plays a crucial role in the immune response. HIV specific Cyto-toxic T cells are generated which kill the infected cells while the neutralizing antibodies that are produced limit the spread of cell free virus, leaving the host's immune system over activated and exhausted . The immune system finally collapses and the host is left in a state of severe acquired Immuno deficiency.

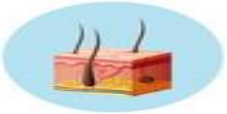
Symptoms of HIV infection

- severe headaches

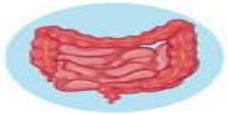
- swollen lymph nodes

- ulcers in the mouth

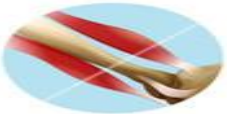
- enlargement



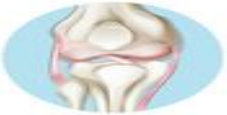
- body rash



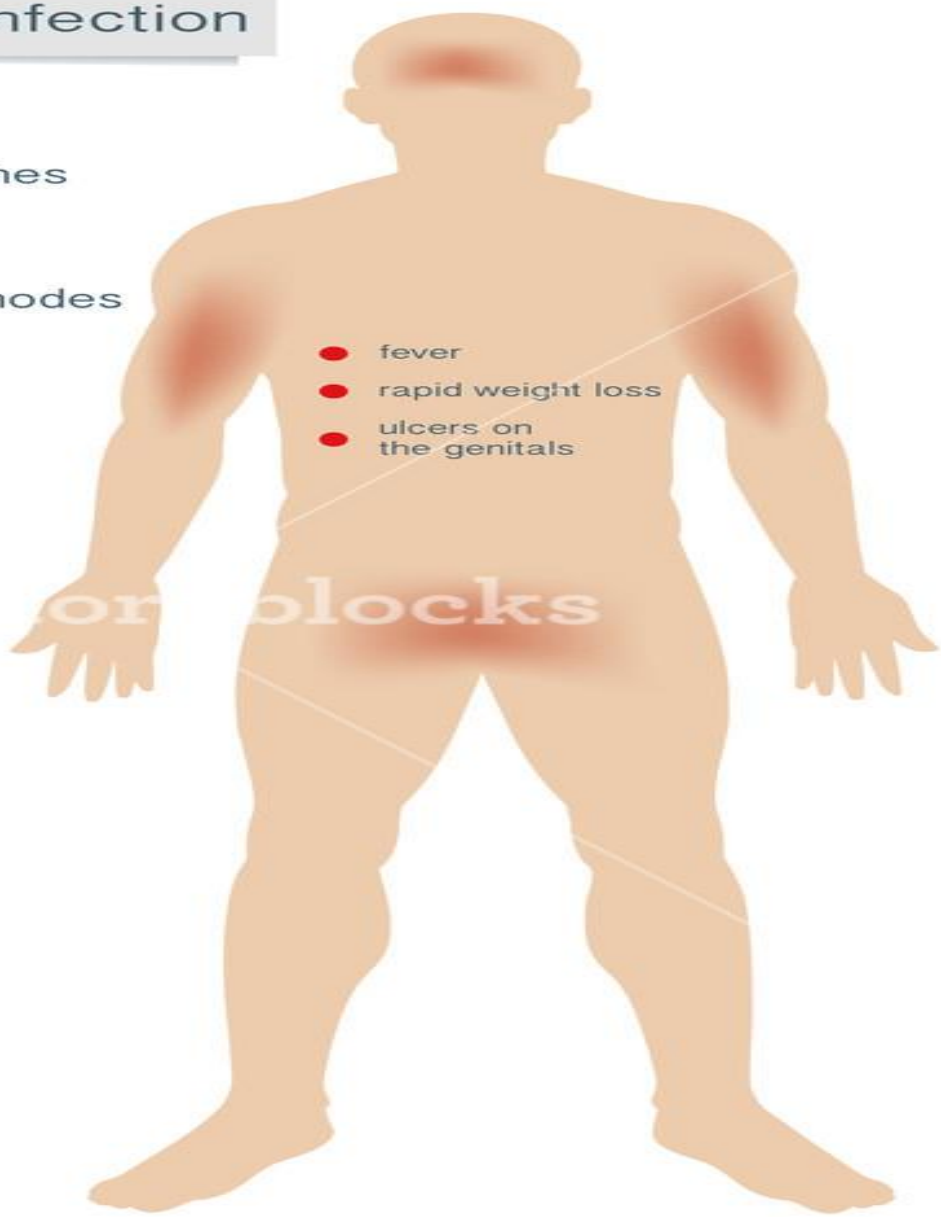
- nausea
- vomiting
- diarrhea



- muscle aches



- joint pain



3 Things To Know *about* HIV Treatment

HIV medicines can't cure HIV, but they help people with HIV live longer, healthier lives.

People with HIV take a combination of HIV medicines every day. The HIV medicines prevent HIV from advancing to AIDS.

HIV medicines reduce the risk of HIV transmission. But people with HIV should still use condoms during sex.

For more information, visit: aidsinfo.nih.gov

AIDSinfo

TREATMENTS

- Treatment should begin as soon as possible after a diagnosis of HIV.
- The main treatment for HIV is Antiretrovital therapy ,a combination of daily medications. This helps protect CD4 cells, keeping the immune system strong. It also helps keep HIV from progressing to AIDS and reduce the risk of transmitting HIV to others.

AIDS

- AIDS is a disease that can develop in people with HIV. It's the most advanced stage of HIV. It destroys the cells of the body which fight against infection(WBCs).

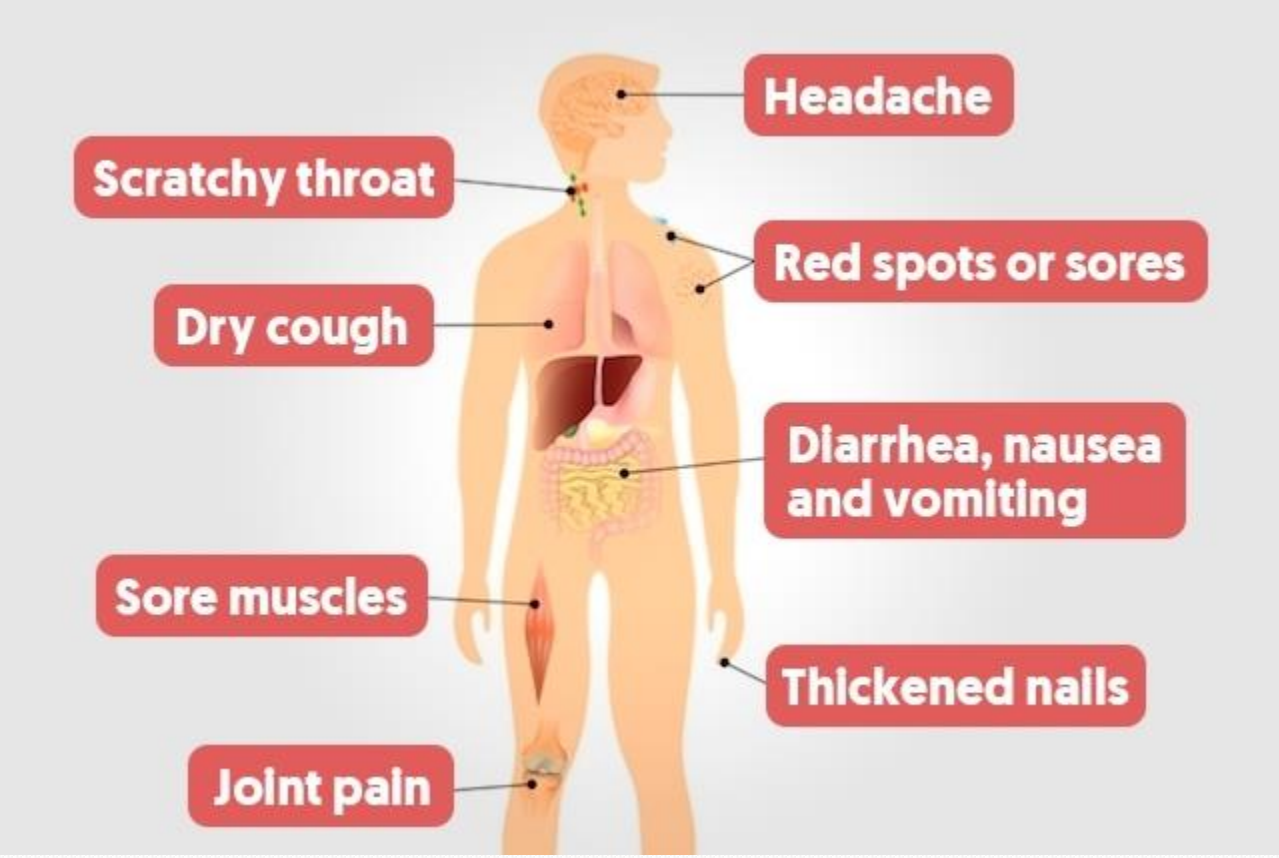
- HIV kills CD4 cells. Healthy adults generally have a CD4 count of 500 to 1500 per cubic millimeter. A person with HIV whose CD4 count falls below 200 per cubic millimeter will be diagnosed with AIDS.

Causes of AIDS

- Eventually most HIV infected individuals develop AIDS with progressive failure of immune system and death may occur from opportunistic infections or from malignancies . A compromised immune system presents opportunities for pathogens to infect the host. These infections caused by pathogens that do not usually cause a disease in individuals with a healthy immune system. The most common infections are :
- Pneumocystis (pneumonia)
- Mycobacterial infections
- Kaposi's sarcoma

- AIDS related complex is seen in many individuals who are HIV positive and may eventually develop into clinical AIDS.

SYMPTOMS


Headache
Scratchy throat
Red spots or sores
Dry cough
Diarrhea, nausea and vomiting
Sore muscles
Thickened nails
Joint pain

PREVENTION AND CONTROL

- Surveillance is the first element (close observation to see whether the problem is increase or not.)
- Counselling and health education for high risk groups and others.
- All the blood and blood products from blood donors must be screened.
- Only disposable needles and syringes should be used.
- When exposed to blood specimens t6hey should wear gloves and gowns.

NUTRITIONAL CARE IN HIV / AIDS

- The basic principles of nutrition and HIV :-

-The basic principles of healthy eating will also serve you well if you are positive. These principles include :-

1.Eating a diet high in vegetables , fruits , whole grains, and legumes.

2.Choosing lean, low fat sources of protein.

3.Limiting sweets , soft drinks , and foods with added sugar.

4.Including proteins , carbohydrates , and a little good fat in all meals and snacks.

- Here is more specific information to get the patient started with a healthier eating plan:

1. **CALORIES:-** are the energy in foods that provide patient's body with fuel . To maintain lean body mass , may need to increase calories. To get enough calories:

- Provide 17 calories per pound of body weight if patient has been maintaining weight.
- Provide 20 calories per pound if subject has an opportunistic infection.
- Provide 25 calories per pound if subject is losing weight.

2. **PROTEIN:-** helps build muscles, organs , and a strong immune system . To get enough of the right types of protein:

- Aim for 100-150 grams a day, if patient is an HIV – positive man.
- Aim for 80-100 grams a day, if patient is an HIV-positive woman.
- If patient has kidney disease , don't provide more than 15%-20% of calories from protein; too much can put stress on kidneys.
- Choose extra lean pork or beef , skinless chicken breast , fish , and low fat dairy products.
- To provide extra protein, spread nut butter on fruit, vegetables, or toast ; add cheese to sauces, soups , potatoes , or steamed vegetables; add canned tuna to salads .

3. **CAROHYDRATES:-** gives energy. To get enough of the right types of carbohydrates:

- Eat five to six servings (about 3 cups) of fruits and vegetables each day.
- Choose produce with a variety of colors to get the widest range of nutrients.
- Choose legumes and whole grains, such as brown rice and quinoa. If the patient has a gluten senstivity whole wheat flour, oats, and barley may be ok. If the patient , stick with brown rice , quinoa and potato as your starch sources. If the patient has diabetic or prediabetic or has insulin resistance , then most of your carbohydrates should come from vegetables.
- Limit simple sugars, such as candy , cake , cookies , or ice cream.

4. FATS:- provides extra energy . To get enough of the right kind of fat:

- ✓ Provide 30% of patient's daily calories from fat.
- ✓ Provide 10% or more of patient's daily calories from monounsaturated fats. E.g nuts, seeds, avocado, fish and canola and olive seeds.
- ✓ Provide less than 10% of patient's daily calories from polyunsaturated fats. E.g fish, walnuts , flaxseeds and corn , sunflower, soybean , and safflower oil.
- ✓ Provide less than 7% of patient's daily calories from saturated fats. E.g fatty meat, poultry with skin , butter , whole milk dairy foods, and coconut and palm oils.

Nutrient	Effect on markers of disease	Clinical outcomes
Vitamin A	Deficiency of vitamin A associated with: • low $CD4^+$ cell counts • high viral loads Supplementation has: • no effect on $CD4^+$ cell counts or on viral load in adults	Deficiency of vitamin A associated with: • increased mortality Supplementation: • efficacy on clinical outcomes not known • of mothers/children reduced risk of diarrhoea, pneumonia and overall mortality • reduces risk of LBW • of HIV-positive mothers (antenatal) reduces anaemia in children
Vitamin B complex, vitamins C and E	High intakes and plasma levels associated with: • reduced risk of low $CD4^+$ cells Supplementation trials report: • protective effect on $CD4^+$ cells • marginal effects on viral load • mothers (pregnant/lactating) increase $CD4^+$ cell counts	High dietary intakes of vitamin C or E; high serum levels of vitamin E; high intakes and high levels of B vitamins associated with: • reduced disease progression Supplementation of mothers (pregnant/lactating): • reduced adverse birth outcomes (fetal loss, LBW, preterm birth) • lowered risk of diarrhoea in children
Selenium	Low selenium status associated with: • low $CD4^+$ cell counts Supplementation trials of short duration: • no effect on viral load • non-significant increase in $CD4^+$ cell counts	Low plasma levels associated with: • increased risk of mortality in adults • increased risk of vertical transmission
Zinc	Normalization of zinc levels and high dietary intakes increased $CD4^+$ cell counts	High dietary zinc intakes had harmful effects on disease progression Low biochemical levels associated with increased disease progression


THANK
YOU!