# Dietetics and Therapeutic Nutrition (Major Core)

## B.A. VI semester (NEP 2020)

## Unit III

## Diet during Fevers

### DIET IN FEVER

Fever is an elevation in body temperature above the normal of 98.4$^{o}$ F, which may occur in response to infection, inflammation or unknown causes. The duration of fever may be 1) Short as in acute fevers of colds, influenza 2) Chronic as in tuberculosis or 3) intermittent as in malaria

### CAUSES

Fever can be caused due to 1) exogenous agents such as bacteria or fungi or 2) endogenous factors such as antigen - antibody reactions, malignancy or graft rejection.

### METABOLISM IN FEVERS

The metabolic effects of fevers is proportional to the elevation of body temperature and the duration

1. An increase in the metabolic rate amounting to 13 percent for every degree celsius rise in the body temperature (7 percent for each degree farenheit); an increase is also due to restlessness and hence a greatly increased caloric need.
2. Decreased glycogen stores and decreased stores of adipose tissue.
3. Increased catabolism of proteins especially in typhoid fever and malaria places an additional burden upon the kidneys.
4. Accelerated loss of body water due to increased perspiration and excretion of body wastes.
5. Increased excretion of sodium and potassium.

## DIETARY CONSIDERATIONS

The diet in fever depends on

1. The nature and severity of the pathologic conditions and
2. Length of convalescence.

It should meet the body's need for the following nutrients.

### Energy

The caloric requirement may be increased as much as 50 percent if the temperature is high and tissue destruction is great. Restlessness also increases the caloric requirement.

### Protein

About 100g of protein or more is prescribed for the adult when fever is prolonged. This will be efficiently utilized when the caloric intake is liberal. High protein beverages may be used as supplements to the regular meals (eg. Milk)

### Carbohydrates

Glycogen stores are replenished by a liberal intake of carbohydrates. Glucose - a simple sugar, which is less sweet and readily absorbed into the blood stream is preferred.

### Fats

The energy intake may be rapidly increased through the judicious use of fats, (about 35 g of fat). Fried foods may retard digestion.

### Minerals

A sufficient intake of sodium chloride is accomplished by the use of soups and liberal sprinkling of salt on food. Fruit juices a relatively good source of potassium should be included.

### Vitamins

B complex vitamins are needed at increased levels proportionate to the increase in calories. Fevers increase the requirement for vitamin A and ascorbic acid.

### Fluid

The fluid intake must be liberal to compensate for the losses from the skin and to permit adequate volume of urine for excreting the wastes. Daily 2500-5000 ml is necessary in the form of soups, fruit juices and water.

### Ease of digestion

Blended, readily digestible foods (well cooked) should be used to facilitate digestion and rapid absorption. The food may be soft or of regular consistency.

### Intervals of feeding

Small quantities of food at intervals of 2 to 3 hours will ensure adequate nutrition.

## Diet in fevers of short duration - Typhoid

Typhoid is an infectious disease with an acute fever of short duration and occurs only in humans. *Salmonella typhi* causes typhoid. Faeces and urine of the patients or carriers of the disease are the source of infection. Infection is acquired by ingestion of food or water contaminated with faeces from patients or persons recovered from the disease. House flies help in the transfer of the bacteria from faeces to food.

### Symptoms

1. The disease is characterized by:
    2. Continued, high inflammation of the intestine
    3. Formation of intestinal ulcers
    4. Haemorrhage and enlargement of spleen.
    5. Peyers patches of lymphatic tissue situated in the small intestine are a seat of infection in typhoid fever. The patient may complain of diarrhoea or constipation and severe stomach ache.

### Principles of diet

A high calorie, high protein, high carbohydrate, high fluid, low fat, low fibre and bland diet is recommended for typhoid patients.

At first clear fluid diet is given followed by full fluid and soft diet. Liquid diets may not meet high calorie and high protein requirements. As the patient improves a soft diet can be given. Liquid diets are helpful in meeting water and electrolyte requirements. Because of intestinal inflammation, fiber and spices must be eliminated in the diet.

## Diet in intermittent fevers - Malaria

Malaria is transmitted from human to human by the bite of the infected female *Anopheles* mosquitoe. Induced malaria occurs due to congenital transmission or blood transfusion.

### Symptoms

Typical malarial attacks show sequentially.

Over 4-6 hours shaking chills (the cold stage) fever to 41°C or higher (the hot state) and the sweating stage. Associated symptoms include

1. Fatigue
2. Headache
3. Dizziness
4. Gastrointestinal symptoms, anorexia, nausea
5. Slight diarrhoea
6. Vomiting
7. Abdominal cramps
8. Dietary management - same as in fevers.

## Diet in chronic fevers as in tuberculosis

Tuberculosis is an infectious disease caused by the bacillus *Mycobacterium* tuberculosis. It affects the lungs but may also be localized in other organs such as the lymph nodes or kidneys.

### Symptoms

Pulmonary tuberculosis is accompanied by wasting of tissues, exhaustion, cough and fever. In the acute phase high fever and increased circulation and

respiration are present. The chronic phase, is accompanied by low-grade fever. Because of the prolonged illness considerable wasting of tissues may be present.

As the disease progresses the patient begins to exhibit loss of appetite, pain in chest, fatigue, weight loss, sweat and a persistent worsening cough. If the blood vessel is eroded in the lungs, the sputum may be streamed in blood. Death ultimately results when sufficient damage has occured in the lungs and other vital organs.

There is increased catabolism of tissue proteins and increased loss of sodium chloride and potassium salt from the body.

## Modification of nutrients

### Energy

In order to achieve desirable body weight and meet the increased energy demands, a high calorie diet of 2500 - 3000 k.calories per day is recommended.

### Protein

A protein intake of 80 to 120 g helps regenerate the serum albumin levels which are low.

### Minerals

Calcium is needed to promote healing of the tuberculosis lesions. At least one litre of milk should be taken daily. Iron supplements may be needed if there has been hemorrhage. Calcium, iron and phosphorus help in regeneration of cells, blood and fluids.

### Vitamins

Carotene is poorly converted to vitamin A hence the diet should provide vitamin A. Weekly inclusion of liver and dietary supplementation with vitamin A is essential. Ascorbic acid deficiency is present and additional amounts of citrus fruits and ascorbic acid supplementation is essential for regeneration purposes. Supplements of vitamin B-6 are also recommended.

### Principles of diet

A high calorie, high protein, diet is prescribed. Fluid diet may be given at first progressing to the soft and regular diets when improvement occurs.

### Dietary management / guidelines

1. Food should be bland in flavour, non-stimulating and easily digested.

2. Since patients have poor appetite, food must be appetizing
3. During the acute stage a high calorie fluid and soft diet are prescribed followed by high calorie soft regular diet.
4. Initially small quantities of fluid diet should be given once in three hours. When the fever decreases the interval can be increased to 4 hours.
5. Good quality protein like eggs should be given.
6. Fatty foods, highly fibrous foods and spicy foods, which are hard to digest should be avoided.