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Diet during fevers

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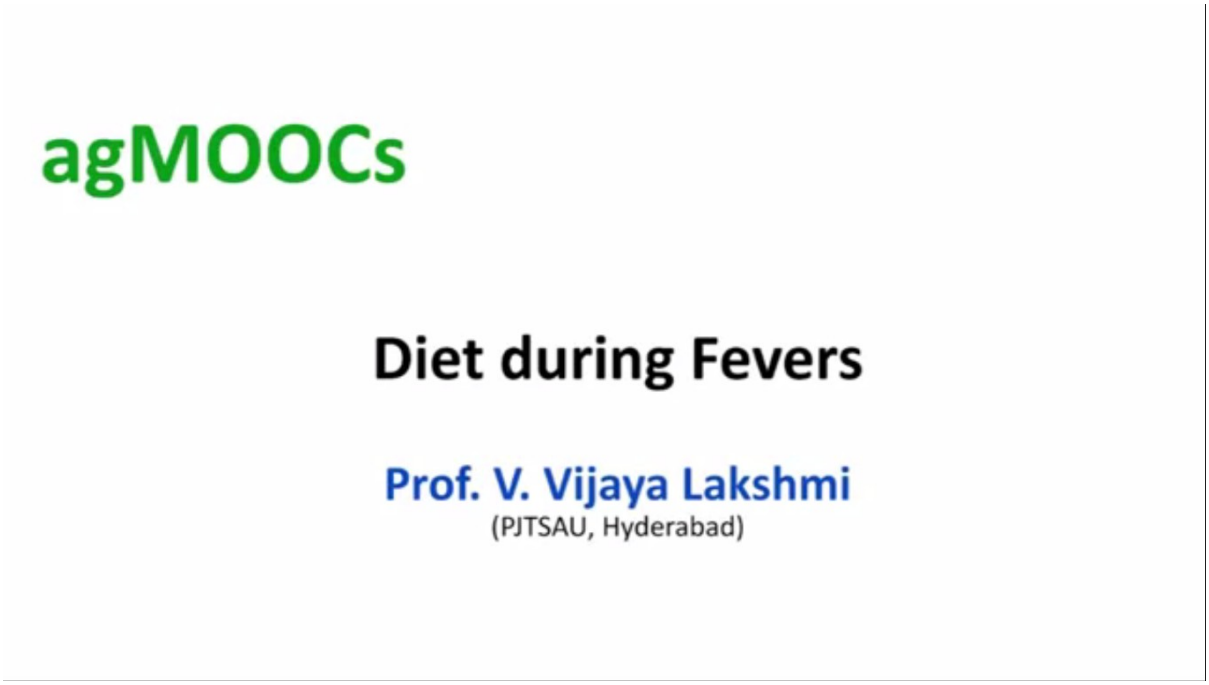

We have started the therapeutic nutrition part, and we have seen what are the therapeutic nutrition, what principles you have to follow in therapeutic nutrition.

Now let us go to each of the disorder or disease condition where we will see how to modify the diet starting from the diet during fevers.

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So we will see in terms of a fever what are the causes, what types, what are the dietary guidelines to be followed in fevers.

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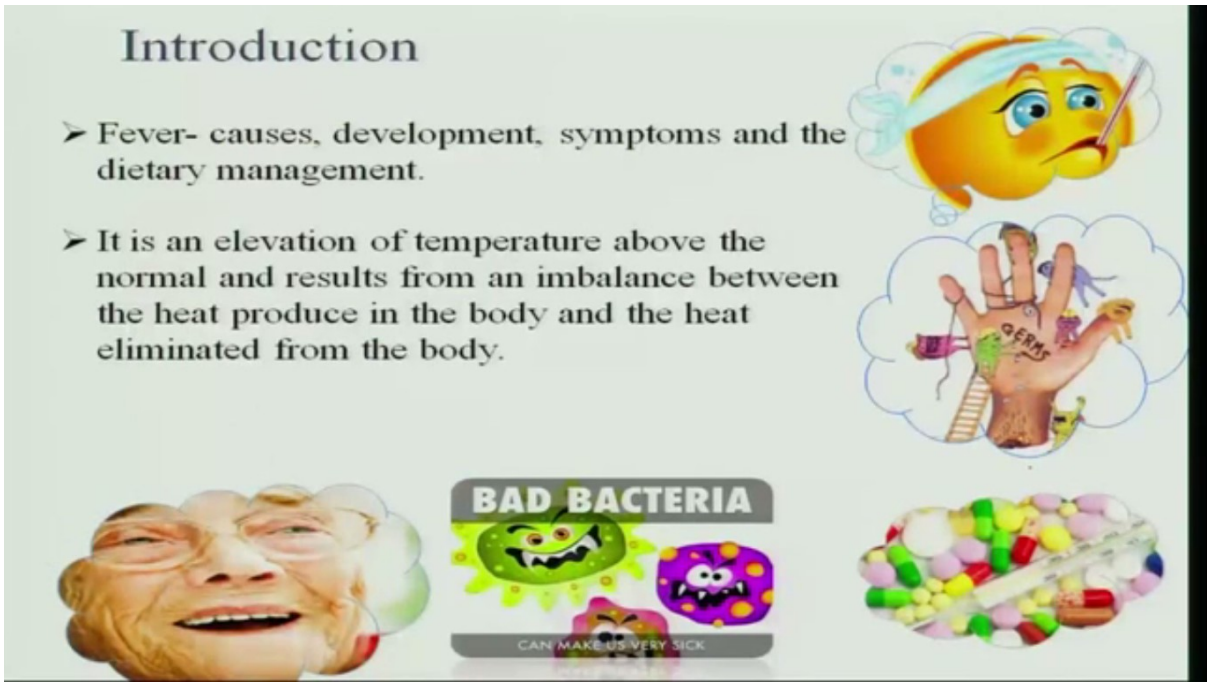

Fever is nothing but an elevation of the body temperature above the normal temperature, and this results from an imbalance between the heat produced in the body and heat eliminated from the body. So this results in increasing in the body temperature and resulting in fever. And this may be caused because of germs, because of some medicines, because of some bad bacteria etc.

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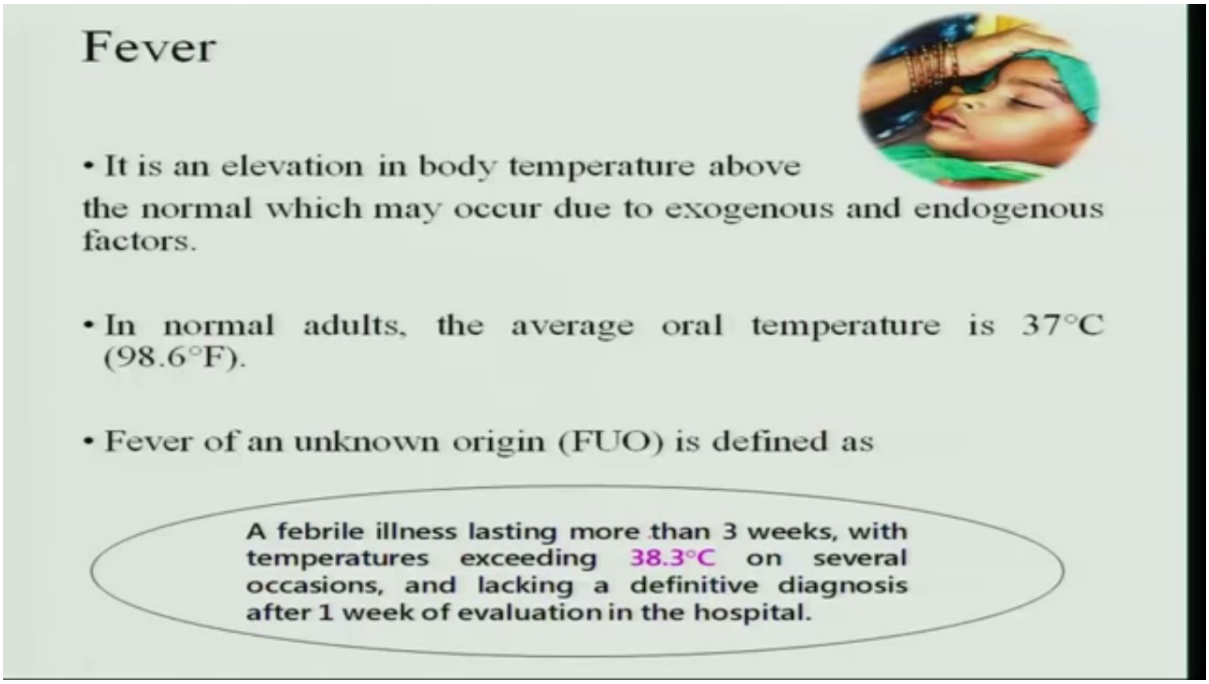

Now fever as I said is an elevation in the body temperature above normal which can occur due to exogenous or endogenous factors. It can be because of environmental factors or because of some disturbance that is going within the body.

So in normal adults, the average oral temperature is 37 degree centigrade, which is 98.6 degrees Fahrenheit. This is the normal temperature of the body in an individual and generally, we see the temperature in the mouth. So oral temperature is 98.6 degrees Fahrenheit.

And fever of unknown origin is defined as a fever which is lasting for more than 3 weeks with temperature exceeding 38.3 degree centigrade and on several occasions lacking a definitive diagnosis. We are not able to diagnose what is the reason for this fever, and after one week of evaluation also you are not able to diagnose. That is fever of unknown origin.

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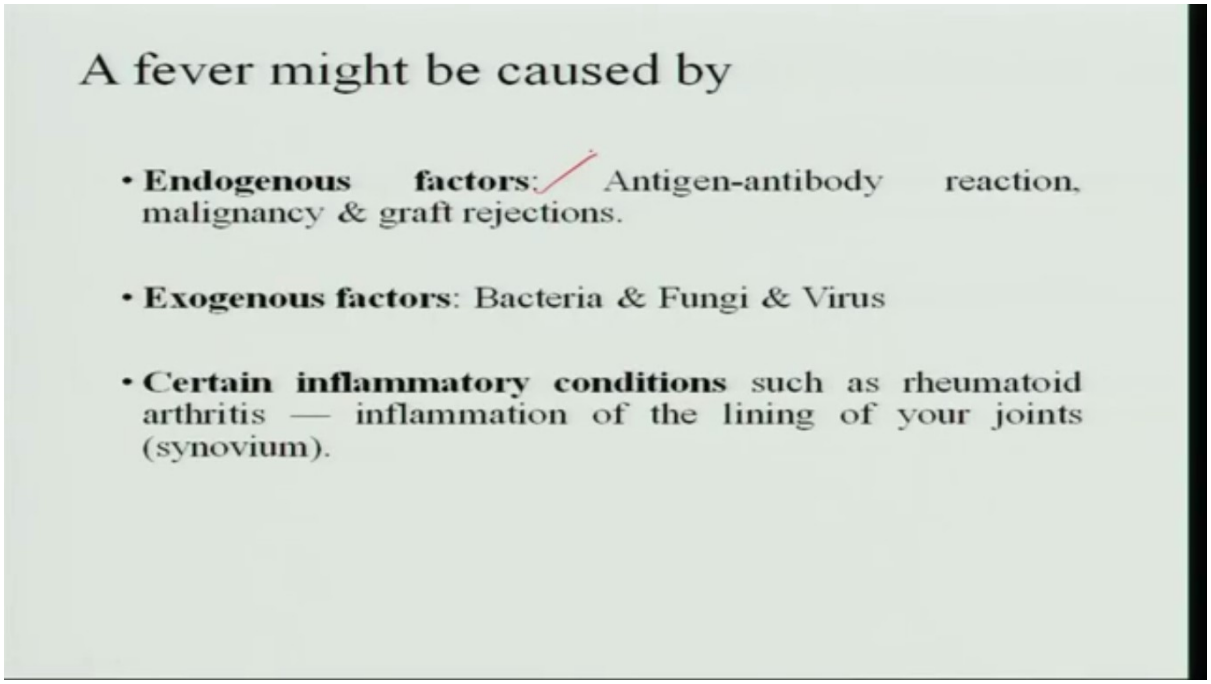

Now a fever may be caused because of endogenous factors either because of any antigen-antibody reaction in the body or because of malignancy or graph rejection. A body generally does not except any other graph from the other body or sometimes even within the body it cannot accept. So this rejection will cause fever.

Then exogenous factors, like bacteria, fungi and virus. And there are certain inflammatory conditions where -- such as rheumatoid arthritis where the joints of the lining are inflamed. So, because of the synovial fluid that is present in the joints is insufficient there is inflammation, and this also results in fever that is because of the inflammatory condition.

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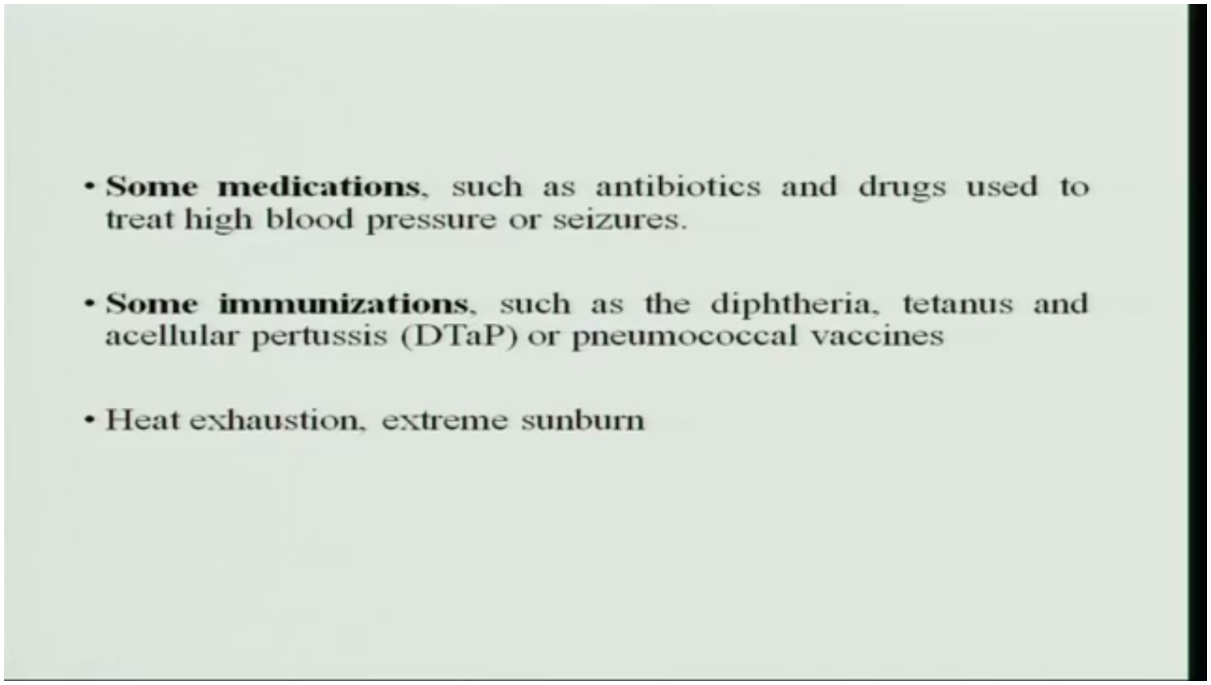

Now medications. Some of the antibiotics when we take for relieving some other symptom in the body also may cause fever and drugs that are used to treat high blood pressure or seizures, these also may cause fever in an individual.

And some of the immunization vaccines like especially in children, whenever they are given vaccine for diphtheria or tetanus or acellular pertussis, the pneumococcal vaccines, you see the child gets fever immediately after the vaccine is given. It stays for one or two days and then subsides. So this is because of the immunization.

Then sometimes heat exhaustion. In summer also people get fever because of the heat exhaustion and extreme sunburn, which is called the sunstroke.

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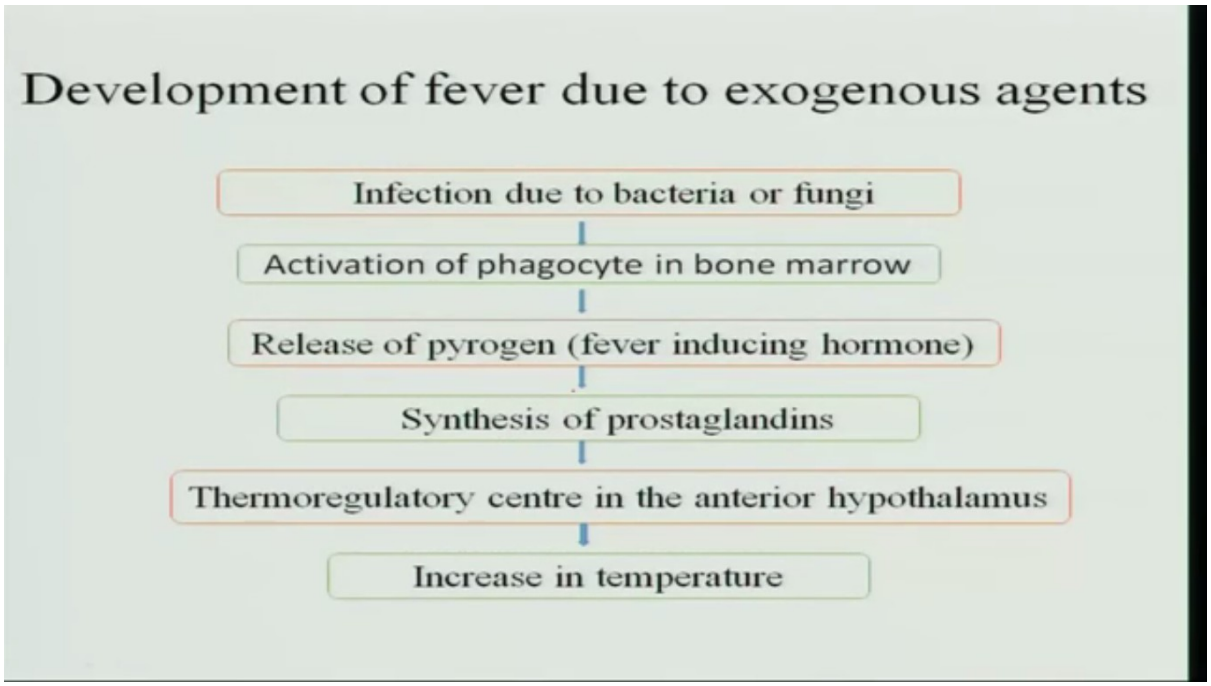

Now how is a fever developed from the exogenous agent? First of all, there is an infection due to bacteria or fungi. So this will activate whenever any bacteria that reaches into the body, the WBCs of the blood become very active because they have the phagocytic nature.

Phagocytic nature is they go and engulf the bacteria and kill them. So activation of the phagocytes in the bone marrow occurs and then release of the pyrogen that is fever inducing hormone so that it has to fight against the infection. So it releases a pyrogen. Then there are synthesis of prostaglandins and the thermoregulatory centre in the anterior hypothalamus is activated so which results in increase in temperature.

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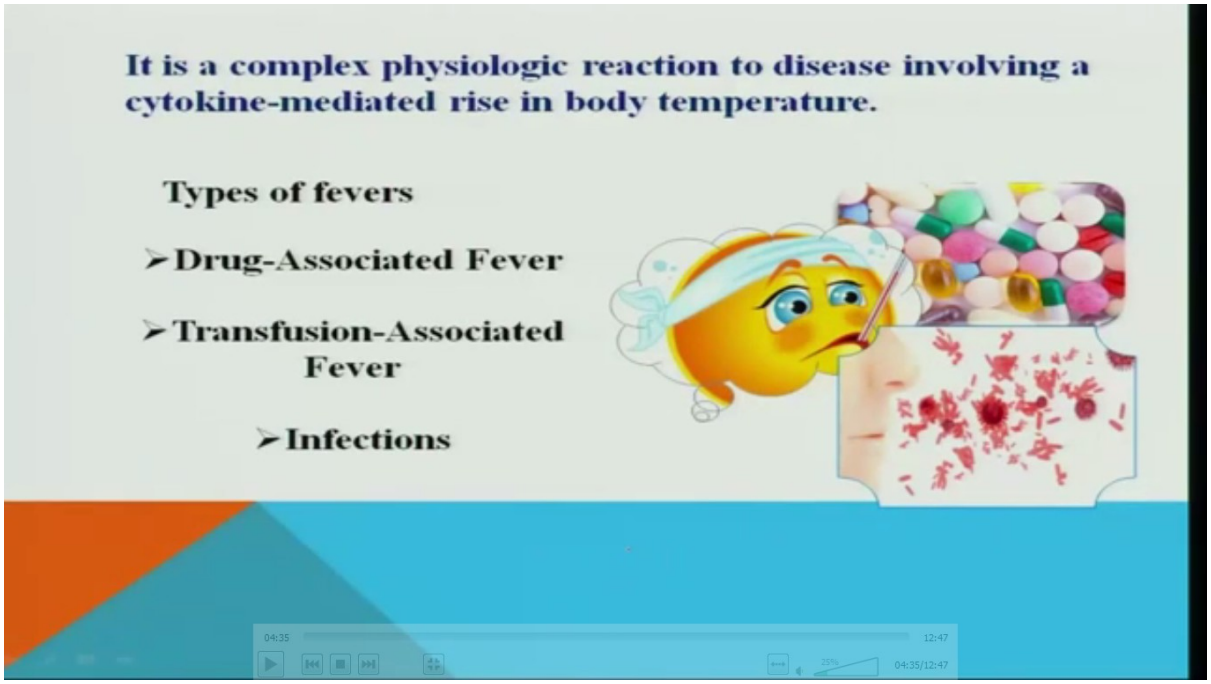

So it is a complex physiological reaction to disease involving cytokine-mediated rise in body temperature. Now there are different types of fevers. One is drug-associated fever. Because of intake of certain drugs you get fever. Then transfusion-associated fever. When sometimes when there is a transfusion of blood or platelets, that also may induce fever and infections cause fever.

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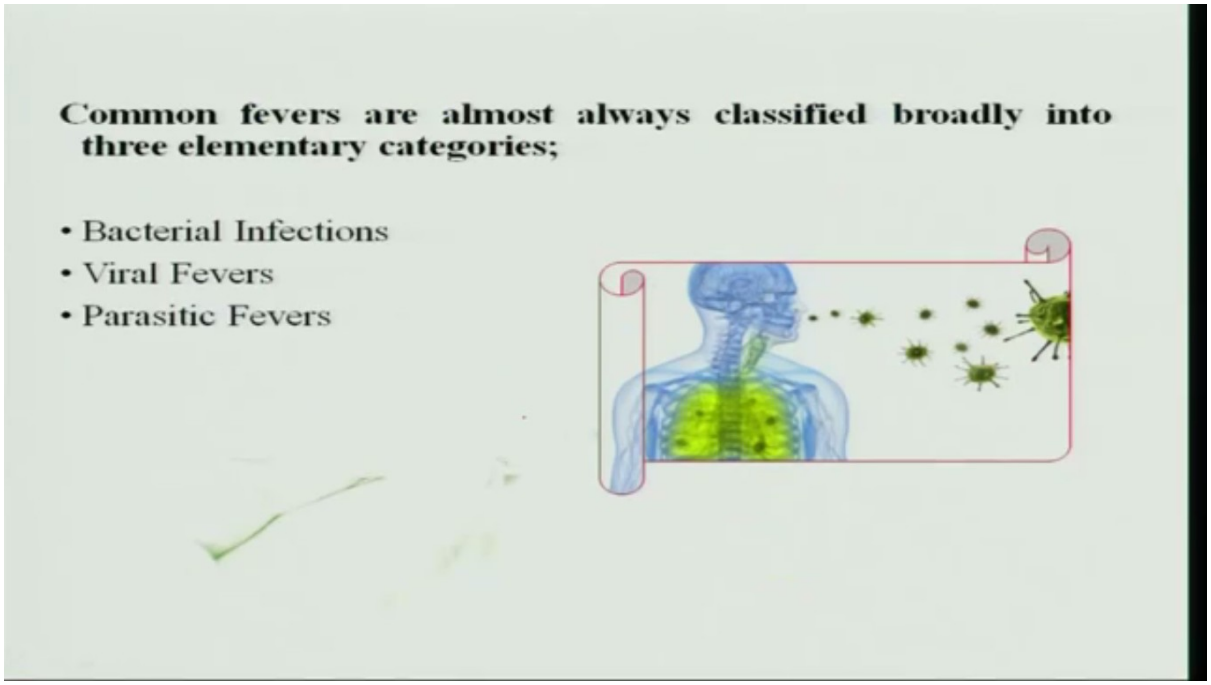

Now common fevers, they are almost always classified broadly into three elementary categories while the fevers which are caused because of bacterial infections, fevers caused because of viral infections and fevers caused because of parasitic infections. So different types of fevers are you have influenza, malaria, then typhoid, measles, chickenpox, rheumatic

fever, meningitis, dengue fever, then smallpox, and the latest is the chikunguniya, and the dengue fever, and viral hepatitis or jaundice.

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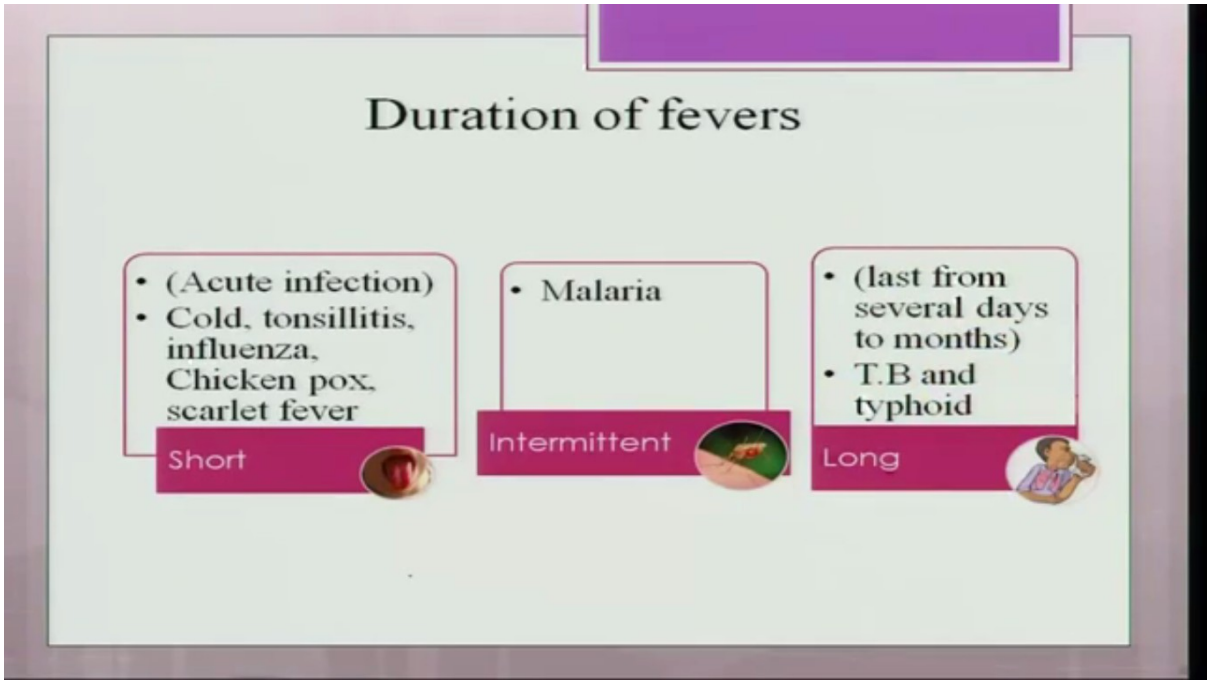

Now the duration of fever is, again, it can be short, it can be intermittent or it can be long duration. So short duration fever is always because of acute infection. It may be caused because of cold, tonsillitis, or influenza, chickenpox and scarlet fever. All these are a short duration fever that is the fever remains for two or three days and then subsides.

Then malaria is an intermittent fever. You see whenever malaria is there, one day you will have fever. Then you do not have fever. Then again it recurs. So recurring fever occurs, which is an intermittent fever.

Then long duration fever is it lasts for several days to several months. There is always a low-grade fever for several days or month. It is generally seen in tuberculosis where there is a low-grade fever for a long period and typhoid where you have a high-grade fever where the temperature goes up very high and this also takes a longer period to subside.

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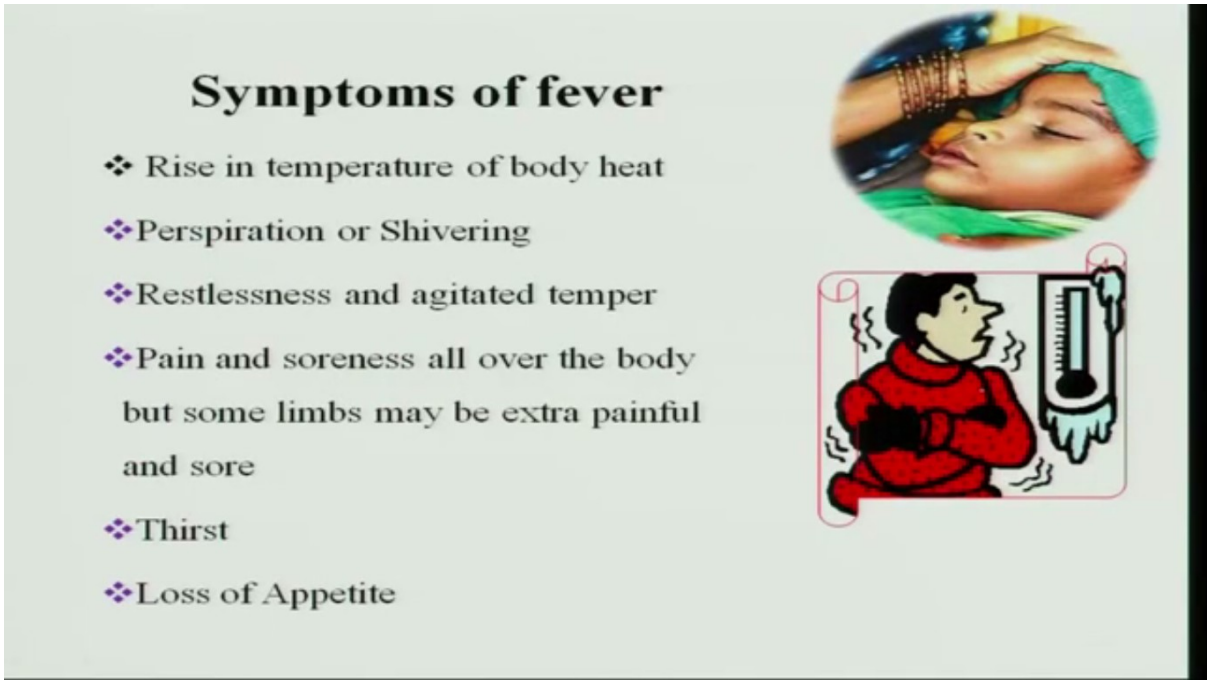

Symptoms of fever. For the first symptom, how we recognize fever is there is a rise in body temperature above the normal. Then there is perspiration or shivering because the body has to tolerate the heat that is produced. Therefore, it undergoes shivering.

Then restlessness and agitated temper. The person is not able to bear the high temperature that is being released from the body. Therefore, there is a restlessness and pain and soreness of the all over the body because of the action of the bacteria or the virus or the parasite. And some limbs, they may be extra painful and sore. So they may be the body has lot of pain and it becomes sore in nature. There is lot of thirst because lot of heat is eliminated from the body. Therefore, the individual undergoes dehydration. The thirst centres are stimulated and the person has thirst.

Then there is loss of appetite. Because there is bacterial infection and inflammation in the body, the individual do not feel as if he does not feel like eating food. Therefore, loss of appetite is there.

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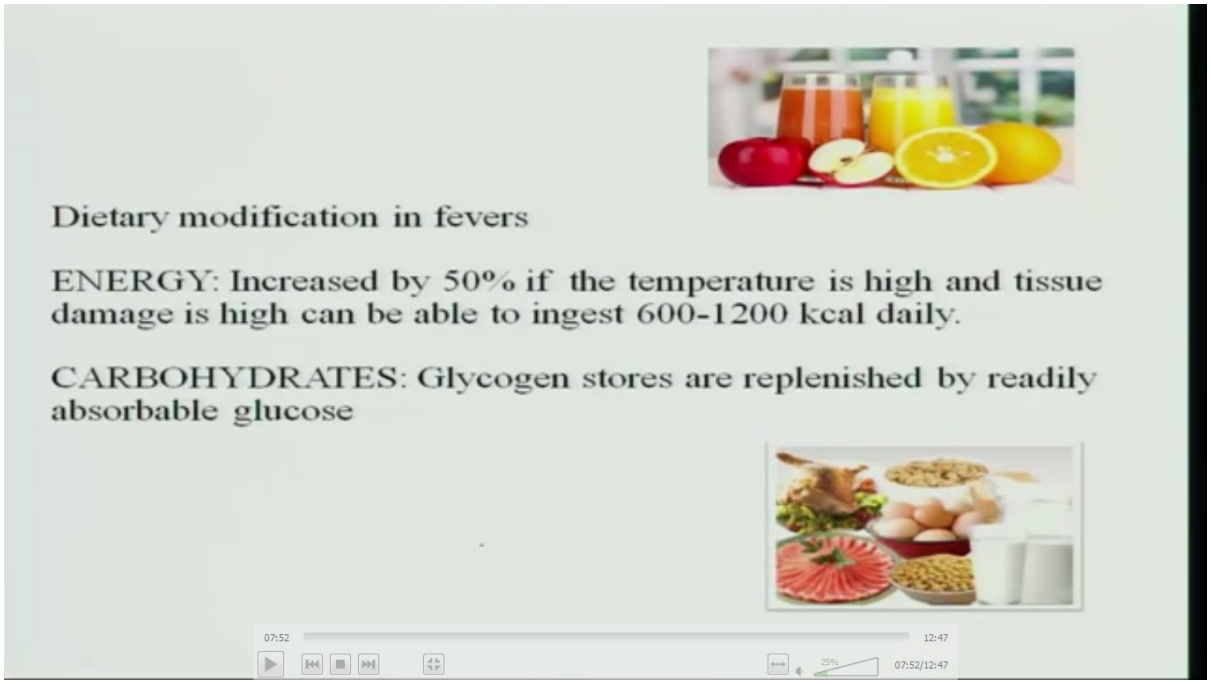

Now dietary modification in fevers. Actually, when the fever is there, there is an increase in the energy requirement by 50% and the temperature is high. So for every degree rise in temperature, there is an increase of the energy requirement by 7%. So 7% for every degree rise in temperature. So if the patient has the temperature of 104 degree, imagine what is the amount of increase in energy. So it will increase by about 7 into 7, that is 49% increase is there. So that means almost the normal requirement suppose it is 2,000, you have to give him 3,000 kilocalories.

But generally, what we do is during fevers, the amount of energy that is given is reduced. The patient is kept on starving. You don't give him any food. Therefore, already lot of heat is eliminated, and there is no food given to the patient. The muscle wastage is there by the time the fever subsides. On the other way, we have to give him extra amount of energy at least up to 600 to 1200 kilocalories of extra energy should be given to the patient so that he can maintain his nutritional status well in the stage of fever also.

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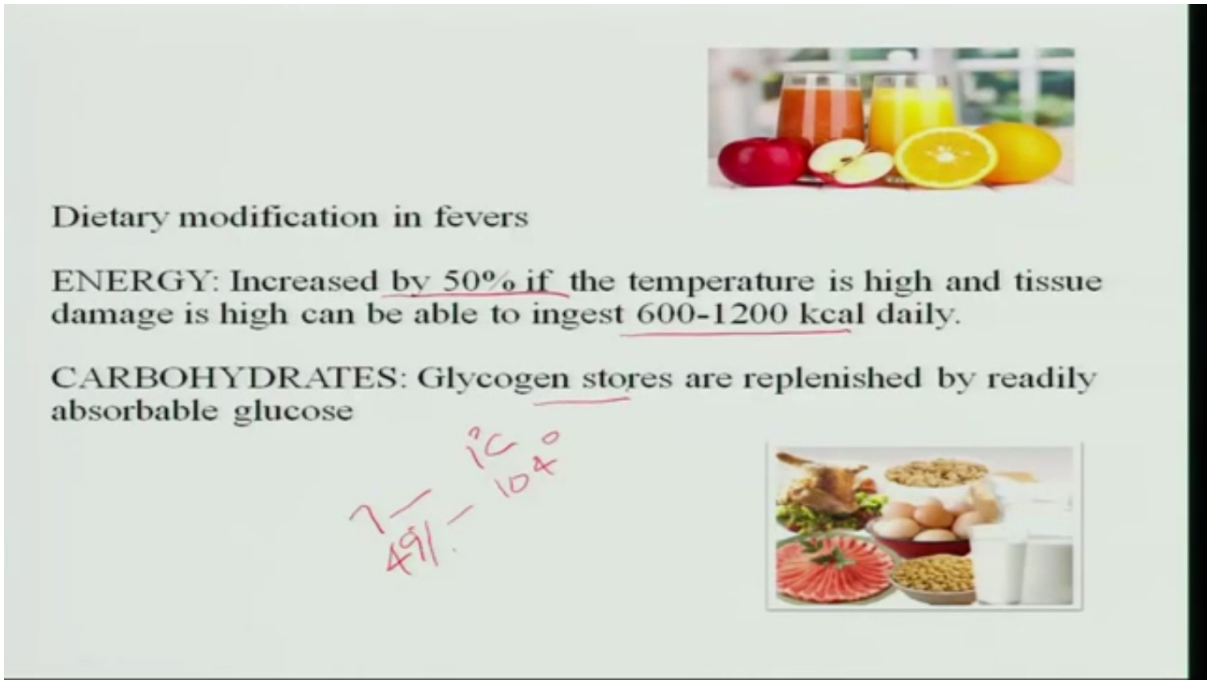

Now carbohydrates, the glycogen stores are replenished by readily absorbable glucose.

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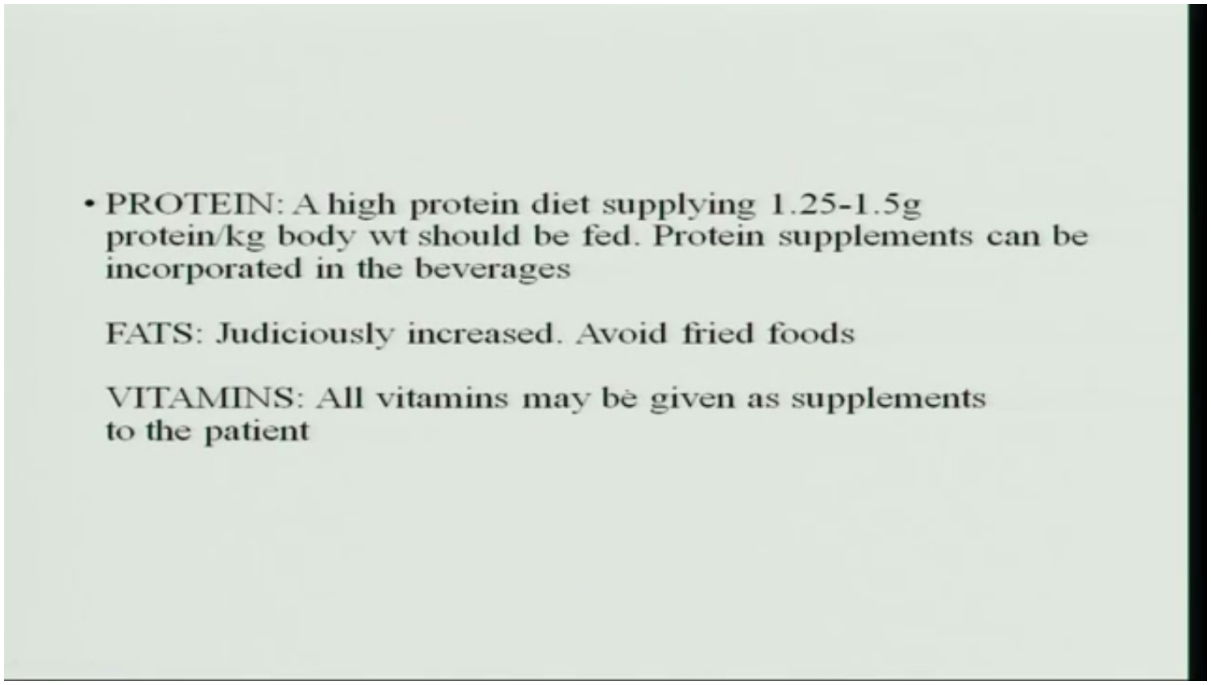

And protein, a high protein diet is required. Normally, the protein requirement is 1 gram per kg body weight of an individual. But during fever, the protein requirement is 1.25 to 1.5 grams per kg body weight. And the protein supplements, since we cannot supply this much of protein through the diet that the individual needs because of loss of appetite, protein supplements can be given along with the diet.

Then fats you can judiciously increase because the amount of energy that we have to supply is increased by 50%, and it is very difficult to give energy dense foods. Therefore, fats can be judiciously increased to increase the energy content, but avoid fried foods.

Now vitamins, all vitamins may be given as supplements to the patient because these vitamins are the protective foods. So you have to supplement vitamins so that the individual is not prone to other infections.

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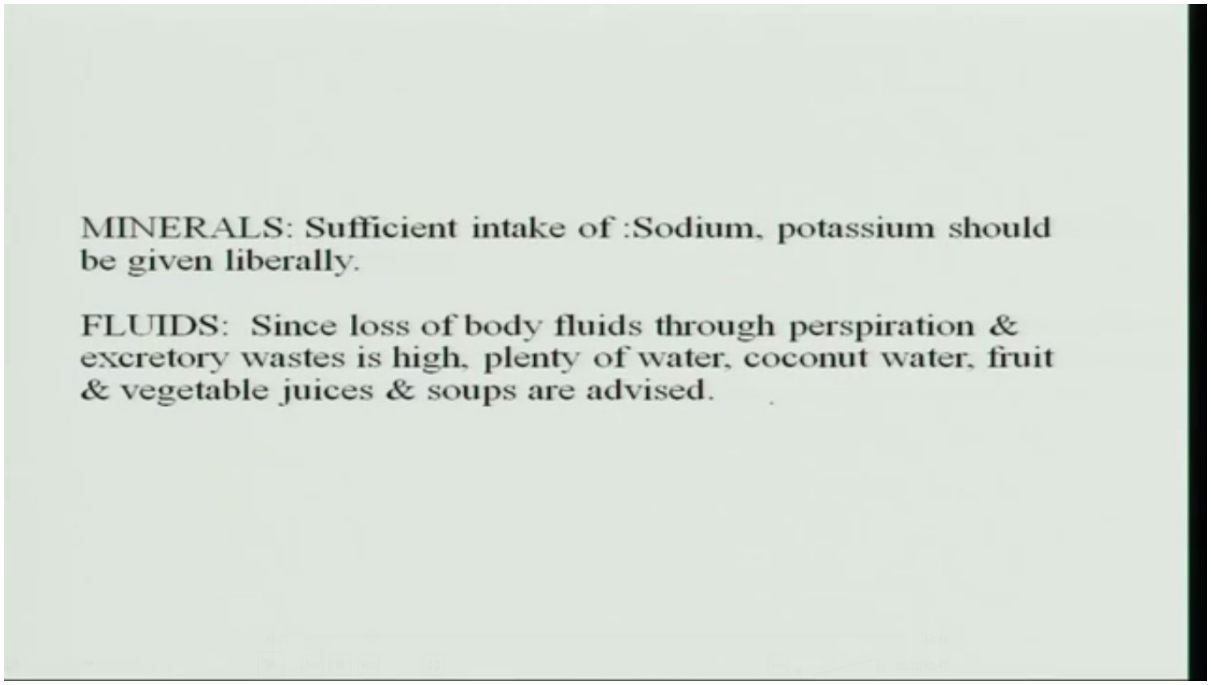

And minerals, sufficient amount of sodium, potassium should be given liberally so that the fluid balance is maintained, the acid-base balance is maintained and electrolyte balance is maintained so that the patient does not go into other conditions.

And fluids, since the loss of body fluid because of high perspiration is there, and excretory waste also is high, there is lot of excretion of water through the body. So the body starts getting dehydrated. Along with the heat that is eliminated, there is lot of wastage of water through the body. Therefore, the person should be given lot of fluids in the form of plenty of water, coconut water, fruit and vegetable juices, and hot soups can be given to make the individual hydrated.

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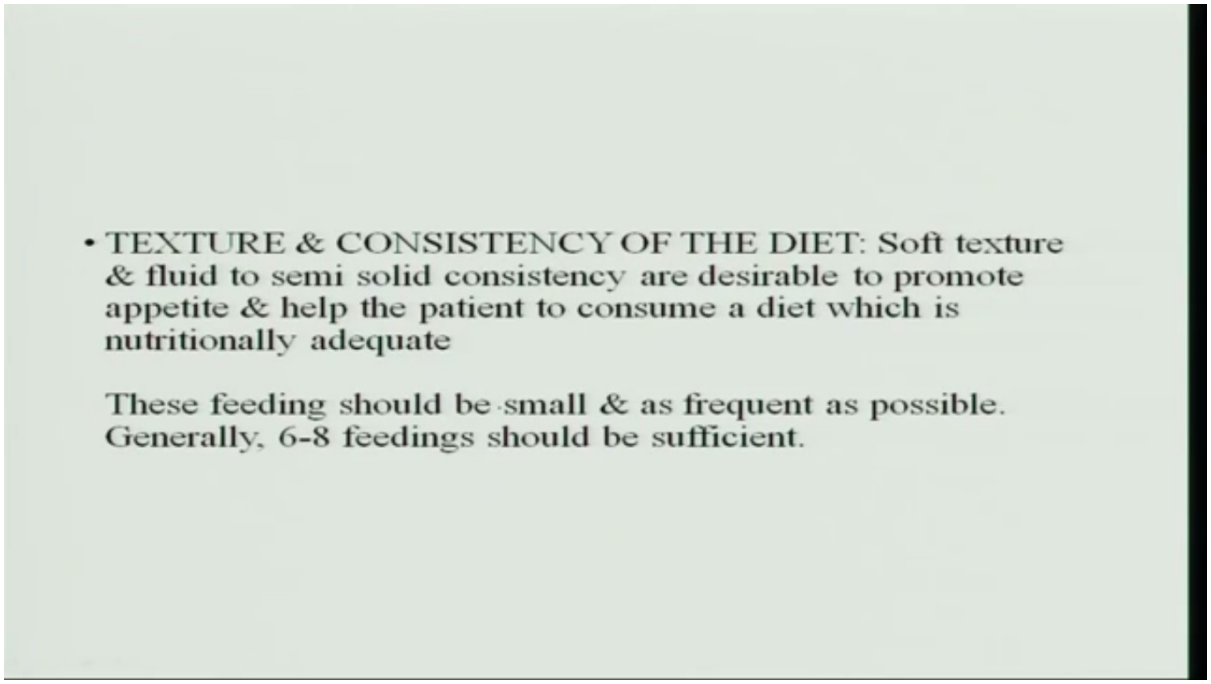

Then the texture and consistency of the food since the digestive system is irritable, and you can give soft texture and fluid to semi-solid food so that the patient's appetite is increased, and it also helps the patient to digest the food very easily and assimilate it so that we can give the nutrition adequate to the individual and maintain the health status in a normal status.

These feedings should be small and as frequent as possible because the amount of energy and protein we are increasing cannot be consumed by the large meals. So you give very small frequent meals so that the individual takes in lot of food and maintains the normal nutritional status. So, generally, we give them six to eight feedings so that it will be sufficient to the needs of increased nutrient requirements.

So this is how the diet should be maintained in the fever so that after a 10-day period of fever, the individual should not come back to a very poor nutritional status. So when the shift of the individual from fever to a normal state should be so smooth that there should not be any deficiencies of nutrition in during fever.

Thank you.