

Africa Institute for Project Management Studies



Assignment 3

PGD004 - Post Graduate Diploma in Human Nutrition

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1. Discuss the relationship between nutritional status and immunity

Malnutrition has an effect on immune parameters in patients. This increases the tendency to infections, and also fastens the atherosclerosis. These factors are the most important ones in determining the mortality and morbidity in patients. Pupim et al showed that nutritional status of chronic heart disease patients predicted mortality independent of concomitant presence or absence of inflammatory response Pupim et al, (2004).

- Deficiencies can cause immuno-suppression and dysregulation of immune responses
- Can impair phagocyte function (innate) cytokine production (acquired) as well as adversely affecting aspects of humoral and cell-mediated immunity
- Protein-energy malnutrition (PEM) is the most common nutritional problem Causes are insufficient intake of protein or energy (developing world) Industrialized nations PEM is due to chronic disease in certain subgroups, elderly and those hospitalized interferes with nutrient metabolism in diseases such as inflammatory bowel, chronic renal failure and cancer PEM affects cell-mediated immunity (thymus atrophy))
- Malnutrition affects the number of circulating T cells and decreases responsiveness of the memory cells to antigen (opportunistic infections)
- **Malnutrition** compromises host defense, **infection** can aggravate a previous existing deficient malnutrition state triggering malnutrition through disease pathogenesis
- Malnutrition facilitates pathogen invasion and propagation
- A consequence of health issues such as gastroenteritis, chronic illness especially HIV/AIDS pandemic, and/ diabetes , Diarrhea and other infections can cause decreased nutrient absorption and intake of food, increased metabolic requirements and direct nutrient loss
- Parasite infection also causes malnutrition such as in giardiasis (Giardia lamblia) and helminthic infections
- There is a relationship between malnutrition immune suppression and infection complex Infection can contribute to malnutrition; in gastrointestinal infection leading to diarrhea, or chronic infections that cause cachexia and anaemia, intestinal parasites (hookworms, malaria) can cause anemia and nutrient deprivation (protozoa and helminth)
- Pneumonia and malnutrition are two of the biggest killers in childhood disease

Food-derived substances incorporated into the body via various routes modulate immune functions. Taking into consideration that malnutrition or calorie restriction causes reduced activity in immune functions, nutritional condition is indispensable for the development of the immune system. Generally nutrient deficiencies are associated with impaired immune responses.

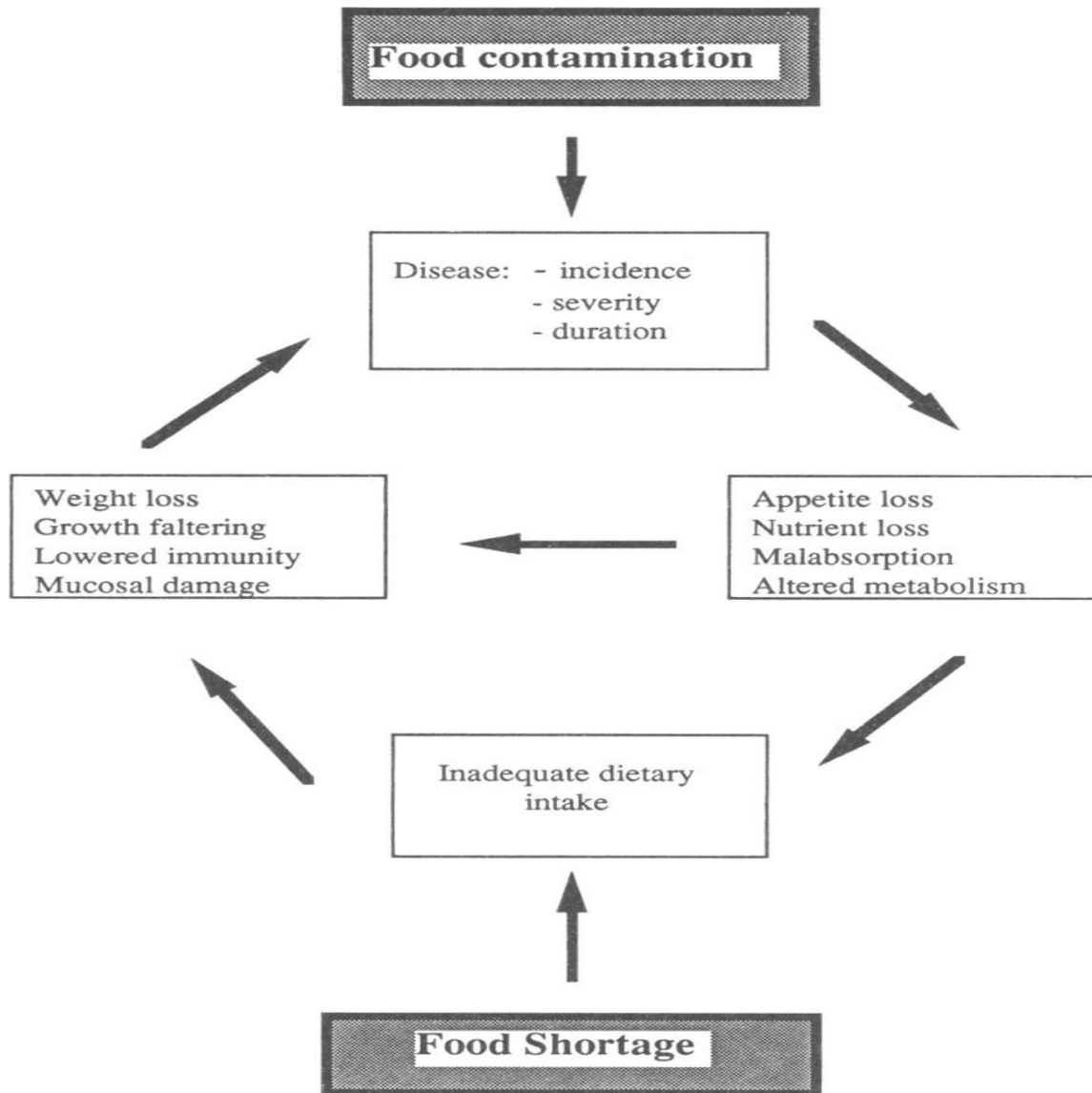
Chronic uremia is often accompanied by depressed cellular and humoral immunity. Actually, it is difficult to define whether the altered immune response is associated mainly with uremia rather than with the induction of malnutrition or the dialysis therapy.

Anthropometric measurements revealed an increased rate of malnutrition in common variable immunodeficiency patients, particularly in those with low CD4 and undetectable IgA Muscaritoli M et al, (2001).

Effects of iron overload include decreased antibody-mediated and mitogen-stimulated phagocytosis by monocytes and macrophages, alterations in T-lymphocyte subsets, and modification of lymphocyte distribution in different compartments of the immune system.

The poor ability of lymphocytes to sequester excess iron in ferritin may help explain the immune system abnormalities in iron-overloaded patients Walker EM et al, (2000).

2. Using illustrations, show describe the malnutrition-infection cycle



Nutrition and infection and disease interact in a complex. The nutritional status of an individual will affect the incidence, severity and duration of infection.

Infection can induce malnutrition by interrupting food intake through anorexia or modifying nutritional requirements. Nutrition can modify the complex array of host responses aimed at eliminating infectious organisms.

Some diseases are nutritionally related either through excess or deficiency of certain nutrients. This unit will provide the basic knowledge that one needs to understand how nutrition, infection and disease relate to each other. The unit also describes what can be done in order to break the Nutrition – infection cycle.

Now let's see the Relationship between Nutrition and Infection

There is a very important relationship between nutrition and infection, which particularly affects children as illustrated in the Figure above, Poor nutrition lowers the resistance of the whole body to infections.

A malnourished child is more likely to get infections more often and more seriously than a well-nourished child.

- To treat a malnourished child, it is important to treat any infection that the child may have. However, it is better to prevent the malnutrition by immunizing against the infections.

Infections cause fever, loss of appetite, diarrhea and vomiting, all of which interfere with the intake and absorption of food, and malnutrition follows. Fever and the repair of damaged cells also increase the need for food. Therefore, with less intake and greater need for food, the infected child with poor reserves is easily tipped into a state of malnutrition.

Loss of appetite, known as anorexia, is another factor in the relationship between infection and nutrition. When a child is ill with an infectious disease he often has a poor appetite and therefore reduced food intake.

Because most infections lead to undernutrition, and under-nutrition, in turn, makes a child more susceptible to infections, a cycle of infection / undernutrition frequently develops with disastrous results.

It is quite clear that infections make malnutrition worse, and poor nutrition increases the severity of infectious diseases.

- Nutritionally relevant infections and infestations are
 - a. Bacterial: TB, Whooping cough, Infective diarrhea, enteric fever, rheumatoid arthritis, pneumonia, tonsillitis.
 - B. Viral: measles, common cold, influenza, pneumonia, diarrhea, chicken pox.
 - c. Parasitic: malaria, helminthes infections like ascariasis and ankylostomiasis
- Bacterial infections increase the requirements for proteins and other nutrients. Gastroenteritis causes high mortality among malnourished infants preschool children. Those who survive develop severe forms of malnutrition such as kwashiorkor or marasmus. Another condition known as 'weaning diarrhea' is caused by bacteria which is not ordinarily pathogenic in a well-nourished child. 'Weaning diarrhea' occurs extensively among weaned infants in the developing countries and is responsible for enhancing the occurrence of kwashiorkor or marasmus in malnourished children.

- Viral infection: Measles causes high mortality among malnourished children. Those who survive develop severe PEM. Malnourished children who suffer from frequent attacks of influenza are prone to develop PEM. Parasitic infections: Malarial parasites cause hemolytic anemia and depletion of proteins. Hookworm infection causes constant loss of blood and hence anemia. Ascariasis interferes with the absorption of nutrients...
- Antibody formation: deficiency of vitamin B complex, vitamin A, vitamin C and proteins along with a grossly inadequate diet- all have shown to interfere with antibody formation. 2. Phagocytic activity: severe under nutrition or protein depletion in experimental animal leads to atrophy of liver, spleen, bone marrow and lymphoid tissue from where phagocytes originate. There is also evidence that deficiency of vitamin A, ascorbic acid, pyridoxine, folic acid, thiamine and riboflavin reduce the activity of phagocytes. 3. Tissue integrity: dietary inadequacy decreases resistance of the tissues to infection by causing pathological changes in epithelial and other tissue.
- Calories: when there is infection there is loss of appetite, dislike and even intolerance to the food is very common. Further, fever increases the BMR and increases the total calorie requirements. Another cause of decreased calorie intake during infection is faulty food intake e.g., starchy food and starchy gruel is given to the sick and avoid giving them milk and other protein rich foods. The intake of calories, proteins and other nutrients on such diet are very low. Gross underfeeding of sick children for long period is one of the most important causes for the widespread prevalence of PEM among preschool children.
- Protein: infection causes an increase in nitrogen excretion in urine leading to the negative Nitrogen balance. Negative N balance has been reported to occur in common cold, fever, TB, rheumatoid arthritis, pneumonia, measles, chicken pox etc. Even less severe infections such as tonsillitis, abscess also cause an excess urinary N excretion. Absorption of protein is seriously affected in diarrheal disease. Frequent infection in a malnourished child receiving a protein deficient diet will deplete the child's protein reserve and precipitate the development of PEM among them
- Vitamins: in severe infection blood level of vitamin A is decreased. Xerophthalmia and keratomalacia have been found to be precipitated by infection if malnourished children receiving diet deficient in vitamin A. Diarrheal disease interferes in the absorption of vitamin present in the diet. Pneumonia and malaria have been reported to precipitate beriberi in Japanese prisoners of war during World War II. 4. Minerals: Hookworm infestation causes blood loss leads to anemia even iron intake is normal. Malaria causes hemolysis of RBC and hence leads to anemia. TB increases loss of calcium and phosphorus in urine and stool. Diarrheal disease interferes with absorption of dietary
- Lipids: loss of fat in stool occurs in influenza and pneumonia and probably in many other infections. Absorption of fat is also decreased in intestinal infections which provoke diarrhea.
- Carbohydrate: marked reduction of blood glucose level occurs in infectious diseases. This may probably be secondary to reduced calorie intake and low glycogen stores in liver.

3. Suggest some suitable meals for burn patients - children and adults.

A burn is damage to the body's tissue caused by heat, chemicals, electricity, sunlight or radiation.

The three types of burns include first, second and third degree, according to Medline Plus. A first-degree burn has damaged only the outer layer of skin, while a second-degree burn has damaged the outer layer of skin and the layer underneath. Third-degree burns damage or destroy skin and cause damage to the underlying tissue. Third-degree burns require special diets to promote healing.

Nutrition is a major component of recovery for the burn patient, Burn patients require high amounts of calories and protein for wound healing, weight maintenance and infection prevention. Adequate nutrient intake will spare lean body mass and protein stores and aid in recovery after burns.

Carbohydrates

Carbohydrates provide the bulk of the calories for the burn patient, according to the University of Rochester. Burn wounds require the glucose from carbohydrates for healing. Carbohydrates also prevent the use of muscle protein as a source of fuel. Carbohydrate food choices for a burn patient may include bread, cereal, rice, pasta, crackers, potatoes, beans, sugar, peas, corn, fruits and juice.

Protein

Burn patients have very high protein needs because of increased protein losses through the burn wound and the need to provide enough protein to prevent the breakdown of muscle.

Fat

Fat is needed in the diet after burns to provide essential fatty acids and additional calories. The University of Rochester Medical Center recommends no more than 30 percent of calories from fat because too much fat can weaken the immune system. Sources of fat include butter, cream, oil, salad dressing, nuts, avocados and oily fish like salmon and sardines.

Vitamins and Minerals

Vitamin and mineral needs increase five to 10 times above normal needs in patients with burns, according to Nutrition411.com. A multivitamin is usually recommended and ordered by a physician. Additional vitamin A and vitamin C may be recommended because of the role they play in collagen synthesis.

4. Discuss the nutritional management of fevers

Fever is an elevation of temperature above normal range, outcome of an imbalance between the heat produced in the body and the heat eliminated from the body. The normal human body temperature is 37 degree centigrade (98.6-degree Fahrenheit). It is lowest in the morning and rises in the evening. A person can develop fever due to varied causes like infection (viral, bacterial or fungal), infestation, immune mediated, malignancy, drugs etc.

The dietary recommendation are;

1).Fluids:

The diet should be more of fluid and at frequent intervals during the first two to three days of fever. The fluid intake must be liberal to compensate for the losses from the sweat and to permit adequate volume of urine for excreting the wastes. Milk, glucose water, soups, fruit juices and water can be included to meet this demand.

2).Calories and Fats:

The calorie requirement may be increased as much as 50% if the temperature is high. It may be difficult to meet the calorie needs during the peak of the fever but a high calorie diet with frequent feeding should be given as soon as fever is controlled. The carbohydrate should consist of glucose, sucrose, and starch.

Glucose, which is less sweet and readily absorbed into the blood stream, is preferred. For starch, cereal and cereal grains cooked into gruel and pudding to be given to the patients. Fats in the form of butter, ghee, vegetable oil, and fried food should be avoided during fever.

3).Proteins:

Protein intake is also increased to 50% in excess of the daily requirement due to the increased loss of tissue proteins during fever. The protein should be of high nutritive value and easily digestive such as milk, egg, and moong dhal. High protein beverages are preferred to the regular meals.

4) Vitamins and minerals:

Fever increases the requirement for vitamin A, ascorbic acid, calcium, phosphorous, sodium and B complex vitamins.

Foods rich in Vitamin E and Vitamin C should be consumed.

Nuts and seeds are great vitamin E sources. It is important to regularly have some nuts and seeds like almonds and hazel nuts. Another common source of vitamin E is the tomato. Having raw tomatoes along with the food will certainly help gain vitamin E in the body.

Foods that should be included

Fruit juices	Glucose water	Milk	Coconut water
Barley water	Custards	Thin dhals	Eggs
Gruel's	Vegetable juices	Soups, Cereal preparations	Tender meat, baked fish

Foods that should be avoided

Butter	Ghee	Vegetable oil	Irritating fibrous foods
Fried foods	Rich pastries	Rich puddings	Highly spiced preparations
Strongly flavored beverages	Cream soups		

Healthy Diet during Fever for Adults

Though the condition may be common in both adults and children, the kind of diet will differ to a certain extent. A healthy diet during fever for adults would include the most of what is said above; however certain additions include:



- Eggs can be consumed. The eggs could be raw, boiled or fried.
- Over the counter medication is also recommended; however it should be taken after consultation with the doctor
- Ginger or garlic can be added to the broth.

5. Discuss the dietary management of the following liver diseases (a) Hepatitis

Diet for Acute Hepatitis

the diet used during acute hepatitis infection must provide the following:

1) Appetite stimulation

Appetite stimulation to overcome anorexia - this is probably one of the most difficult challenges facing anyone who is trying to assist a hepatitis patient who may feel so ill and debilitated that they flatly refuse to eat.

Offer the patient his or her favorite fat-free or low-fat foods (see below for tips on selecting a low-fat diet), for example, fruit juices, energy drinks (Glucoside, Powerade, Energade or Game diluted with cold water), fat-free milk shakes or smoothies (make from fresh or canned fruit, fat-free milk or yoghurt to which you can add flavoring, honey and fat-free milk powder to boost the protein and energy content), 'Slush-puppies' and sorbets made from pureed fruit and sugar which is then frozen, custard made with fat-free milk, jelly and jelly-Ideal Milk desserts, low-fat ice cream, clear soups (chill overnight and remove the fat that coagulates on top of the soup), dry crackers and rusks, bland porridges with fat-free milk and sugar to boost energy intake, hard or boiled sweets, and any other food that the patient is prepared to eat.

Tips to improve food intake:

Serve the above mentioned foods and beverages chilled as this helps to overcome nausea. Let the patient eat a dry biscuit or rusk before eating other foods as this can assist with food aversion. Add slightly more flavoring to milk shakes, smoothies and custard to overcome loss of taste

sensation. Serve patient with small quantities more often so that they don't get discouraged if they are only able to drink or eat small portions at a time.

2) Use of liquid meal replacements

Nowadays there are many high-energy, high-protein meal replacement products available from pharmacy, for example, Ensure, or Nutrient Optimum and Nutrient Fiber which are made by Nestle, or Resubbing ProvideXtra and Fresubin Original Sip Feeds produced by Fresenius-Kabi.

3) Vitamin, mineral and electrolyte supplements

Discuss what types of vitamin and mineral supplements that can be given to the patient with the treating doctor. The doctor may prescribe supplements that protect liver function such as

Patients suffering from dehydration because of repeated vomiting need to drink an electrolyte mixture. In serious cases the patient may have to be put on a drip to replenish body water and electrolytes. Monitor the patient's liquid intake and if you suspect dehydration, contact the doctor immediately.

4) Foods to exclude

Foods that should be avoided

Alcohol – No brainer. The most important change for anyone diagnosed with hepatitis is the complete elimination of alcohol from his or her life.

Wheat and Gluten – Gluten can be highly inflammatory; thus adopting a gluten-free diet can be beneficial to the liver. The inability to properly digest and process gluten creates a chronic state of inflammation which leads to “leaky gut” syndrome.

Tap Water –The tap water may contain more than you bargained for, including heavy metals, chlorine, fluoride, inorganic chemicals and compounds that the liver is not able to process.

Junk Foods – These are our favorite foods but the name fits. Junk is junk, meaning worthless. Our body does not get a good source of nutrition from junk foods and, most often, they are full of all the things we need to stay away from – including fats, sugars, empty calories, chemicals and additives. Our poor livers don't need this added stress.

White Flour (unless it is organic and unbleached) – Bleached white flour has been chemically processed.

Hydrogenated Oils – Hydrogenated (they are refined) oils are another product that is hard for the liver to handle. This includes any type of oil or fat that hardens when cold. A better choice would be flaxseed oil or virgin olive oil.

Dairy Products – Dairy foods are extremely hard to digest. Because those with liver disease (especially cirrhosis) are more susceptible to small intestine bacterial overgrowth than those with a healthy liver, they are also more likely to experience the symptoms of lactose intolerance...

Fruit Juices – These beverages are high in concentrated sugar. Sugar is a shock to the liver, stresses the digestive process, stresses the pancreas, and it feeds the Hepatitis C virus.

Artificial Sweeteners – The first word gives you the first clue: artificial. These sweeteners are extremely hard for the liver to process, adding additional burden to the liver.

Processed Foods – We all know processed foods contain unnatural substances, preservatives, fillers and chemically treated substances. Commonsense tells us this is not healthy for us.

(b) Liver Cirrhosis

This liver is severely scarred but there are enough healthy cells in the liver to perform all of its functions adequately – you may feel quite well.

It is important to have a well-balanced diet to ensure you are getting enough carbohydrate, protein, fat, vitamins and minerals.

Some people with cirrhosis may develop bone thinning (osteopenia / osteoporosis). This is diagnosed by bone density scanning (DXA scan). If the scan shows you have this condition, it is likely that the doctor will provide you with supplements of vitamin D and /or calcium to reduce the risk of bone fracture⁹.

Eating tips for people with cirrhosis

Diet and Nutrition

If you have cirrhosis, ask the health care provider for a referral to a registered dietitian, who can create a diet specific to the needs. Cirrhosis can lead to other problems:

- Ascites (fluid buildup in the abdomen)
- Hepatic encephalopathy (mental confusion)

Cirrhosis refers to the replacement of damaged liver cells by scar tissue. Too much scarring prevents blood flow through the liver. This causes even more damage and loss of liver function. Cirrhosis can hinder the body's use of nutrients and can lead to malnutrition.

Many patients with cirrhosis tend to hold onto (or retain) water. This often is shown first by swelling in the ankles, particularly after walking. The swelling may move up the legs to the abdomen. Water buildup in the abdomen is called "ascites" (pronounced "ah-is-tee").

Sodium (salt)

Too much sodium (or salt) in the diet can make the situation worse, because sodium encourages the body to retain water. The doctor will tell you if you need to limit sodium in the diet. Usually this means restricting sodium intake to about 2,000 mg a day or less.

If that need to restrict sodium, here are some tips that can help:

- Avoid salty foods, salt in cooking, and salt at the table. Anything that tastes salty (such as tomato sauce, salsa, soy sauce, canned soups) probably has too much salt. Spice things up with lemon juice or herbs, instead of salt. Fresh foods usually are a better bet than processed foods.
- Read food labels when shopping. Check the amount of sodium in the foods you are buying.
- Avoid fast-food restaurants. Most fast foods are very high in sodium.
- Go easy on meats, especially red meats, which are high in sodium. When possible, consider vegetarian (meat-free) alternatives.

A dietitian can inform you about other products, such as antacids, that also contain lots of sodium.

The more fluid you retain, the greater the need to avoid salt. The doctor may prescribe diuretics ("water pills") to help you urinate more. But all the water pills in the world won't help if you eat salty foods, such as anchovy pizzas.

Calories and protein

People with cirrhosis may need more extra calories and protein. They may lose their appetite and experience nausea, vomiting, and severe weight loss. This can lead to shortage of the minerals calcium and magnesium (signs include muscle cramps, fatigue, weakness, nausea, and vomiting), or a shortage of zinc (signs include reduced ability to taste, changes in taste).

It can help to eat small, frequent meals (4 to 7 times a day), including an evening snack.

When the scarring from cirrhosis prevents blood from passing through the liver, pressure increases in the veins entering the liver.

Because the rerouted blood bypasses the liver, it contains high levels of amino acids, ammonia, and toxins that normally would have been handled by the liver.

Amino acids and ammonia come from protein in the diet. Some evidence shows that patients with cirrhosis do better when they get their protein from vegetables (such as beans, lentils, and tofu) and from dairy products (eggs, milk, yogurt) instead of from meats.

Doctors can prescribe a syrup called Lactulose to push food through the bowels more quickly. This way, less food is absorbed, the liver has less work to do, and fewer toxins make their way to the brain.

Total parenteral nutrition

Use of TPN in chronic liver disease is controversial. One study concluded that small intestinal metabolism contributes to post feeding hyperammonemia which may worsen hepatic encephalopathy and in such cases parenteral nutrition may be superior to enteral nutrition. ^[37]

c. Liver Failure

Proteins normally help the body repair tissue. They also prevent fatty buildup and damage to the liver cells.

Dietary changes for liver disease may involve:

- Cutting down the amount of protein you eat. This will help limit the buildup of toxic waste products.
- Increasing the intake of carbohydrates to be in proportion with the amount of protein you eat.
- Taking vitamins and medicines prescribed by the health care provider for low blood count, nerve problems, or nutritional problems from liver disease.
- Limiting the salt intake. Salt in the diet may worsen fluid buildup and swelling in the liver.

Liver disease can affect the absorption of food and the production of proteins and vitamins. Therefore, the diet may influence the weight, appetite, and the amounts of vitamins in the body. DO NOT limit protein too much, because it can result in a lack of certain amino acids.

General recommendations for people with severe liver disease include:

- Eat large amounts of carbohydrate foods. Carbohydrates should be the major source of calories in this diet.
- Eat a moderate intake of fat, as prescribed by the provider. The increased carbohydrates and fat help prevent protein breakdown in the liver.
- Have about 1 gram of protein per kilogram of body weight. This means that a 154-pound (70-kilogram) man should eat 70 grams of protein per day. This does not include the protein from starchy foods and vegetables. A person with a badly damaged liver may need to eat less protein. Talk to the provider about the protein needs.
- Take vitamin supplements, especially B-complex vitamins.
- Reduce the amount of salt you consume (typically less than 1500 milligrams per day) if you are retaining fluid.

SAMPLE MENU

1. Breakfast

- 1 orange
- Cooked oatmeal with milk and sugar
- 1 slice of whole-wheat toast
- Strawberry jam
- Coffee or tea

2. Lunch

- 4 ounces (110 grams) of cooked lean fish, poultry, or meat
- A starch item (such as potatoes)
- A cooked vegetable
- Salad
- 2 slices of whole-grain bread
- 1 tablespoon (20 grams) of jelly
- Fresh fruit
- Milk

3. Mid-afternoon snack

- Milk with graham crackers

4. Dinner

- 4 ounces (110 grams) of cooked fish, poultry, or meat
- Starch item (such as potatoes)
- A cooked vegetable
- Salad
- 2 whole-grain rolls
- Fresh fruit or dessert
- 8 ounces (240 grams) of milk

5. Evening snack

- Glass of milk or piece of fruit

Most of the time, you do not have to avoid specific foods.

Talk to the provider if you have questions about the diet or symptoms.

6. a. Explain the differences between Type 1 and Type 2 diabetes mellitus

Diabetes is one of the oldest and yet most misunderstood diseases. There are many different types of diabetes, however, the most common ones are Type 1 and Type 2 diabetes. They differ based on how they are caused and treated. But the main similarity that Type 1 and Type 2 diabetes do share is elevated blood glucose levels. The inability to control blood glucose levels will also cause the same symptoms and complications in both.

Type 1 diabetes

Type 1 diabetes can occur at any age, but is most commonly diagnosed from infancy to the late 30s. With this type of diabetes, a person's pancreas produces no insulin. It occurs when the body's own defence system (the immune system) attacks and destroys the insulin-producing cells in the pancreas. What causes the immune system to do this is not yet completely understood, but we are funding world-class research to find out.

The only treatment for type 1 diabetes is insulin, which is usually injected or infused via a pump.

Type 2 diabetes

Type 2 diabetes is by far the most common type of diabetes – in the UK over 90 per cent of people with diabetes have type 2. Type 2 diabetes usually affects those over 40, or 25 if you're of

Type 1 Diabetes is an **autoimmune disease**. The immune system mistakes the insulin producing cells in the pancreas as “invaders” and attacks them. Once this happens, the cells can no longer produce insulin and a person is therefore insulin dependent for life in order to stay alive.

Type 2 Diabetes is a **metabolic condition**. It's when the body doesn't produce enough insulin or becomes resistant to it. The condition can sometimes be controlled with proper diet and exercise, or a drug to enhance sensitivity to the body's insulin production. But sometimes natural insulin production is insufficient and insulin injections are then needed to sustain normal blood glucose levels.

1. CAUSES

Type 1 Diabetes is an **autoimmune disease**. The immune system mistakes the insulin producing cells in the pancreas as “invaders” and attacks them. Once this happens, the cells can no longer produce insulin and a person is therefore insulin dependent for life in order to stay alive.

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production is insufficient and insulin injections are then needed to sustain normal blood glucose levels.

2. INSULIN PRODUCTION

People with Type 1 Diabetes **DO NOT** produce insulin. Insulin is a hormone that a working pancreas releases to allow glucose (sugar) from carbohydrates that's eaten to be absorbed for energy. Without this hormone, the body starves and eventually dies. This is why everyday insulin injections is necessary for survival and early diagnosis detection is so important.

Insulin is normally still produced by people with Type 2 Diabetes. In order to regain sensitivity to insulin, proper diet and exercise is recommended. In some cases, insulin injections are needed to keep diabetes in better control.

3. PREVENTION

Currently, there is no prevention for Type 1 Diabetes. Researchers are hard at work and there are preventative studies being done to find answers (<https://www.trialnet.org/>). Type 2 Diabetes is not always preventable but by staying active and eating healthy it can lower the risk of developing.

4. TREATMENT

The treatment for Type 1 Diabetes is insulin injections and constant blood glucose monitoring. There is no diet, exercise, or any amount of weight loss that will cure Type 1. Type 2 Diabetes has a few options available, ranging from lifestyle changes, oral pills, and/or insulin injections. Both require careful vigilance in order to obtain good control.

5. RISK FACTORS

Risk factors for Type 1 Diabetes include: Family history, genetics, and environmental factors (such as a virus). Risk factors for Type 2 Diabetes include: Genetics, lifestyle choices, and being overweight. Fast facts on diabetes

- Type 1 diabetes is often hereditary and unpreventable.
- Type 2 diabetes is much more common than type 1. For every person with type 1 diabetes, 20 will have type 2.
- Type 2 can be hereditary, but excess weight, a lack of exercise and an unhealthy diet increase
- At least a third of people in the U.S. will develop type 2 diabetes in their lifetime.
- Both types can lead to heart attack, stroke, nerve damage, kidney damage, and possible amputation of limbs.

7. Diet

Diet has been linked to type 2 diabetes, but early diet may also have an impact on type 1.

Type 1 has sometimes been found to be more common in those who were introduced to cow's milk at an earlier stage. This suggests that breast-feeding for longer may reduce the risk. However, more research is needed.

Type 2 tends to be common in families where obesity is also a family trait. There may be a genetic link, or this may be because families have similar eating and exercise habits.

Diets high in simple sugars and low in fiber and vital nutrients have been linked to diabetes.

8. Symptoms

The consequences of persistently high levels of blood glucose can differ between types 1 and 2, but some symptoms and warning signs are common to both types.

The most serious complications involve kidney failure, eye problems and vision loss, neurological damage and increased risk of cardiovascular problems, including heart attack and stroke.

The table below shows some signs and symptoms of possible complications.

Common physical attributes	BMI is mostly within the normal range or low.	BMI is in the overweight or obese range.
Onset	Rapid, often presenting acutely with ketoacidosis	Slow, sometimes taking years and often presenting without early symptoms
Warning signs	<p>Extreme thirst and hunger</p> <ul style="list-style-type: none"> • Frequent urination • Rapid weight loss • Extreme weakness and fatigue, Nausea, vomiting • Irritability 	<ul style="list-style-type: none"> • Extreme thirst and hunger • Frequent urination; Rapid weight loss • Extreme weakness and fatigue • Nausea, vomiting, Irritability • Blurred vision, Skin infections • Sores that heal slowly, Dry, itchy skin • Pins and needles or numbness in feet
Complications	<ul style="list-style-type: none"> • Diabetic coma or ketoacidosis, High blood pressure • Hypoglycemia, or low blood sugar • Nephropathy, or kidney disease, Blindness, Heart 	<ul style="list-style-type: none"> • Diabetic coma or ketoacidosis, due to high blood sugar, High blood pressure • Hypoglycemia, or low blood sugar • Nephropathy, Blindness, Heart attack, Stroke

	attack, Stroke, Neuropathy, Amputation, Ulcers	<ul style="list-style-type: none"> Neuropathy, Amputation, Ulcers
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b. Discuss the dietary recommendations for patients with diabetes mellitus

- People with diabetes should limit or avoid intake of sugar-sweetened beverages (from any caloric sweetener including high fructose corn syrup and sucrose) to reduce risk for weight gain and worsening of cardiovascular risk profile.
- The recommendation for the general population to reduce sodium to less than 2300 mg per day is also appropriate for people with diabetes, with additional reductions individualized for those who have high blood pressure.
- People with diabetes do not benefit from use of omega-3 (EPA/DHA) supplements for the prevention or treatment of cardiovascular disease. The recommendation for the general public, to eat fatty fish at least 2 times (2 servings) per week is also appropriate for people with diabetes. American Diabetes Association Releases New Nutritional

Diabetics Foods List: 15 Foods



Dietary Guidelines for Diabetes Mellitus

Objectives of Nutrition Management for Diabetes Mellitus

- Keep the blood sugar level, lipid profile and blood pressure level to within the normal range.
- Prevent and treat the chronic complications of diabetes.
- Promote better health through healthy food choices and physical activities.

Principles of Dietary Management

- Take small and frequent well-balanced meals regularly.
- Increase consumption of dietary fiber.
- Reduce intake of food that is high in salt, fat and cholesterol.

- Avoid alcohol intake.

Food to Avoid (Simple Carbohydrates)

- Canned fruits, Carbonated drink, cordial drink
- Chocolate, candies, ice-cream
- Sweet jam & kaya
- Sweetened condensed milk

Eat in Moderation

- Beans, Bread & biscuit
- Cereals, porridge, rice & noodles
- Milk & dairy products
- Starchy vegetables (e.g. potato & yam)

References

1. Causes of death. United States Renal Data System. *American Journal of Kidney Diseases*. 1998; 32(suppl):81–88. [PubMed]
2. Pupim LB, Caglar K, Hakim RM, Shyr Y, Ikizler TA. Uremic malnutrition is a predictor of death independent of inflammatory status. *Kidney International*. 2004; 66(5):2054–2060. [PubMed]
3. Haag-Weber M, Dumann H, Horl WH. Effect of malnutrition and uremia on impaired cellular host defence. *Mineral and Electrolyte Metabolism*. 1992;18(2–5):174–185. [PubMed]
4. Cancarini G, Costantino E, Brunori G, et al. Nutritional status in long-term CAPD patients. *Advances in Peritoneal Dialysis*. 1992; 8:84–87. [PubMed]
5. Kopple JD. Effect of nutrition on morbidity and mortality in maintenance dialysis patients. *American Journal of Kidney Diseases*. 1994; 24(6):1002–1009. [PubMed]
6. Chandra RK. 1990 McCollum Award lecture. Nutrition and immunity: lessons from the past and new insights into the future. *The American Journal of Clinical Nutrition*. 1991; 53(5):1087–1101. [PubMed]
7. Iseki K, Yamazato M, Tozawa M, Takishita S. Hypocholesterolemia is a significant predictor of death in a cohort of chronic hemodialysis patients. *Kidney International*. 2002; 61(5):1887–1893. [PubMed]
8. Fujikawa M, Yamashita N, Yamazaki K, Sugiyama E, Suzuki H, Hamazaki T. Eicosapentaenoic acid inhibits antigen-presenting cell function of murine splenocytes. *Immunology*. 1992; 75(2):330–335. [PMC free article] [PubMed]
9. Hughes DA, Pinder AC. n-3 Polyunsaturated fatty acids inhibit the antigen-presenting function of human monocytes. *The American Journal of Clinical Nutrition*. 2000;71(1 suppl):357S–360S. [PubMed]
10. Muscaritoli M, Fanfarillo F, Luzi G, et al. Impaired nutritional status in common variable immunodeficiency patients correlates with reduced levels of serum IgA and of circulating CD4⁺ T lymphocytes. *European Journal of Clinical Investigation*. 2001;31(6):544–549. [PubMed]
11. Walker EM, Jr, Walker SM. Effects of iron overload on the immune system. *Annals of Clinical and Laboratory Science*. 2000;30(4):354–365. [PubMed]
12. Dasarathy S. Nutrition and the liver. In: Sanyal AJ, Boyter TD, Lindor KD, Terrault NA, eds. *Zakim and Boyer's Hepatology*. 7th ed. Philadelphia, PA: Elsevier; 2018:chap 55.
13. Högenauer C, Hammer HF. Maldigestion and malabsorption. In: Feldman M, Friedman LS, Brandt LJ, eds. *Sleisenger and Fordtran's Gastrointestinal and Liver Disease*. 10th ed. Philadelphia, PA: Elsevier Saunders; 2016:chap 104.