

Commonly asked Questions in Diabetes

Smt. Kalyani Vibhakar Vachhrajani
Dr. Vibhakar Vachhrajani

Publisher



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COMMONLY ASKED QUESTIONS IN DIABETES

by Smt. Kalyani Vibhakar Vachhrajani &
Dr. Vibhakar Vachhrajani
Navbharat Sahitya Mandir
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Dedicated to



Late Smt. Hansalaxmi Pankajbhai Desai

And

Our spiritual GURU Shri Shri Ravisankarji



Introduction of 1st edition

In 2011 we had a thought of writing a book on commonly asked questions by diabetic patients. When diabetic patients consult any speciality for different types of ailments they have so many questions related to diabetes. In 2011, sitting in Sri Sri ravisankar Banglore ashram I started writing the 1st Gujarati edition of this book. From 2011 to 2019 so many patients referred this book, appreciated and gave many suggestions. Patient requested for Hindi and English version of this book. To prevent the burden of diabetes in the society awareness is the only answer, so we came out with the 2nd edition in Gujarati. We are happy to come out with the 1st English edition for non Gujarati patients.

I am happy to publish a book in English after 10 years of my experience as a diabetes educator. In last 10 years dialogues and discussion with patients and the relatives have taught me many things. I thank the patients of diabetes for the same.

I wish please rotate this book amongst more and more diabetic patients which will educate the mass thereby reducing the burden of complications and cost to the society.

Smt. Kalyani Vibhakar Vachhrajani

Introduction of the Authers



Smt. Kalyani Vibhakar Vachhrajani

She is a daughter of a teacher father. She studied in Navjivan girls' highschool, Dahod. She completed her graduation (B.Sc) in science from Dahod. She did her B.Ed. from Godhra and after completing B.Ed. she was appointed as a science teacher in her own parent institute i.e navjivan girls' high school.

She taught science and mathematics to so many students. She was appointed as an incharge of a science center in renowned school Kadvibai Virani Kanya Vidylaya in Rajkot. Her husband Dr. Vibhakar Vachhrajani needed her help to do counseling and to give education to diabetic patients. So, she left her job and took a training of 1 year as a diabetes educator from world renowned V. mohan's institute of diabetes- Chennai. She also took training under very senior physician and diabetologist-Dr Vidyut Shah from Rajkot.

She has been working with Dr vachhrajani hospital since last 10 years. She does counseling for diet, exercise and diabetes. She also helps in the solution of social and family problems of the patients by way of counseling.

He is working as a surgeon since last 36 years. After passing MBBS and MS from M.P.Shah medical college, Jamnagar, He worked at Chotila referral hospital as a surgeon and at Government medical college Surat as an assistant professor of surgery. Then he selected Rajkot as his KARMABHUMI and joined H J Doshi Hospital as a fulltime surgeon. He is having his own nursing home since 1991.



Dr. Vibhakar Vachhrajani

He was interested in managing diabetic foot wounds so since 2002 he stopped doing all other operations except foot related wound and other non healing wounds. He took training under his honorable teacher Dr Arun Bal at Raheja hospital, Mumbai. He visited Kings college London, luthern general hospital and Dr Williams scholl college of podiatry, Chicago, America. He has delivered more than 100 educative lectures for doctors as well as patients in more than 100 villages and towns as a part of social service across Gujarat. Patients of diabetes are suffering from foot and other problems due to lack of knowledge. To prevent amputations and to educate patient he had a thought of writing this book. He has treated more than 50,000 diabetic

patients with foot problems. Dr vachhrajani is a born teacher so he thought of writing an educative book like this.

It will be a great social service if diabetic patients and the relatives read and understand this book and educate other people to prevent complications of diabetes.

Opinion



I have had the pleasure and privilege of knowing Mrs. Kalyani Vachhrajani and Dr. Vibhakar Vachhrajani personally and professionally for many years now. Yet I never cease to be amazed at his relentless commitment to the field of diabetes and diabetic foot management. Dr. Vibhakar Vachhrajani is pioneer in the field of diabetic foot management in Gujarat.

This book covers very important and relevant questions related to diabetes and its management. It is written in very simple language which is very easy to understand for any patient. It will be definitely useful to all the patients with diabetes and their relatives.

Dr. Nilesh Detroja
MD Medicine
DNB Endocrinology, Rajkot

Opinion



Diabetes treatment will never complete without giving knowledge of what is diabetes and how it affects various organs. Various studies have been done across the world which suggest that poor outcome of diabetes is because of lack of understanding disease and many wrong believes.

I believe this short handbook will resolve all queries and give guidance regarding diabetes to patients and relatives to live healthy life. This book has covered what is diabetes and basics of diabetes very well

in simple language.

Food management is the integral part of diabetes treatment. Which type of oil, food, fruits are consumed is very important.

Various types of treatment modalities including insulin technique have been covered. Only doing sugar checkup is not sufficient.

We know prevention is better than cure. How to prevent and treat diabetic foot problems is also summarized with pictures by legend diabetic foot surgeon Dr Vibhakar Vachharajani.

I congratulate Mrs. Kalyani Vibhakar Vachhrajani and Dr. Vibhakar Vachhrajani for helping diabetic patients to manage diabetes to live a healthy life. I believe that common man should take benefit of it and help Dr Vachharajani for completing mission of “Transforming India from the world’s Diabetes Capital to Diabetes Care Capital”.

Dr. Pankaj M. Patel

Endocrinologist & Diabetologist, Rajkot

Thanks

We thank all the patients, all the staff member of our hospital, especially Dr. Payal Khakhkhar for helping to prepare this book.

Smt. Kalyani Vibhakar Vachhrajani

Dr. Vibhakar Vachhrajani



A request- Pustak Parab

This book is for the knowledge of diabetic patients. The more we impart this knowledge to diabetics, the more we can reduce the patient's suffering and prevent amputation. You are requested to read this book and give it to another diabetic patient to read.

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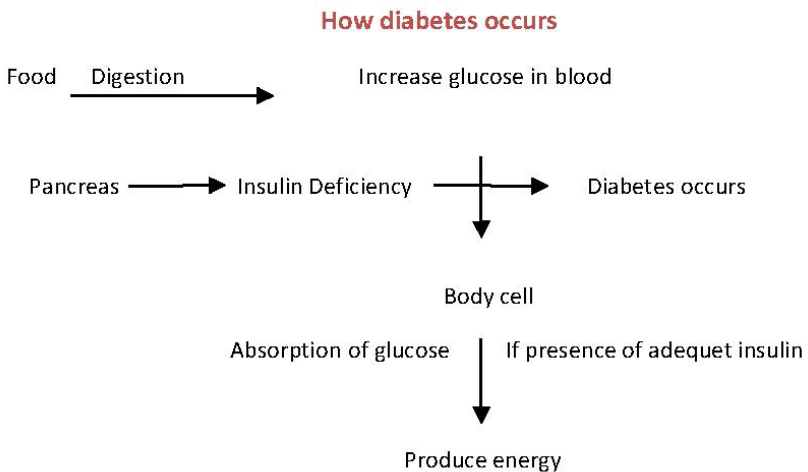
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1 Common questions on diabetes

1. What is diabetes?

Diabetes means more of sugar level in blood. It may be that urine may or may not have sugar in it.

Pancreas is an organ which produces insulin hormone in our body. Insulin works to control normal levels of blood sugar when pancreas cannot produce adequate insulin or even if pancreas produces adequate insulin but it cannot work properly then the blood sugar remains high, we know this as diabetes.



2. Can there be a possibility of diabetes in a person eating more sugar?

No. It is not so. A person doesn't get diabetes even if he eats more sugar if there is no family history of diabetes and if he/she does regular exercise and takes precautions in diet. But it so happens that a person eating more sugar starts getting obese, and obese person has got more chances of developing diabetes.

3. Who can develop diabetes?

A person with strong family history of diabetes, obese person, living sedentary lifestyle, a person under stress, person with irregular food habits, consuming more junk food are prone to develop diabetes. It cannot be predicted who will develop diabetes.

4. What are the causes for developing diabetes?

Diabetes is caused due to heredity, obesity, mental stress, type of diet (high calorie diet), lack of exercise, sedentary life style, etc.

5. How many types of diabetes are there?

- a) Type 1- insulin dependent diabetes (Juvenile diabetes). This is seen in children
- b) Type 2- non insulin dependant diabetes. This occurs after the age of 20 years.
- c) Diabetes of pregnancy (Gestational diabetes)

6. What is type 1 diabetes?

Diabetes detected before the age of 20 years is known as type 1 diabetes or juvenile diabetes.

7. What is type 2 diabetes?

Diabetes detected in elderly patient above the age of 20 years is known as type 2 diabetes. In the society 90% to 95% of patients are of type 2 diabetes.

8. What are the symptoms of diabetes?

- a) Frequency of passing urine, desire for frequent urination, large quantity of urine formation. In children there is history of frequent bed wetting.
- b) More thirst
- c) Weight loss inspite of good diet
- d) More appetite
- e) Tingling and numbness in hands and feet
- f) Pain in leg/calf muscle
- g) Weakness and tiredness
- h) Irritable nature
- i) Frequent infection/boils
- j) Delay in healing of wounds
- k) Dimness of vision and frequent change of numbers of glasses

- l) Itching in genital area
- m) Heart problem and paralysis in young age
- n) History of frequent abortions and birth of immature or handicapped baby
- o) Delivery of overweight baby

Sometimes it so happens that for some other disease when we get the blood report done we find presence of high blood sugar in blood. It is advisable to do regular blood sugar report if there is a positive history of diabetes in the family.

9. Can diabetes be cured?

No, one cannot be cured of diabetes but a patient can have well- controlled diabetes and can live a normal healthy life. If a patient does regular exercises, maintains healthy diet and takes proper treatment by monitoring blood sugar level regularly, he can live a long life without complications

10. How useful is the knowledge regarding diabetes?

Diabetes is a lifetime disease. To control diabetes and prevent complication education and awareness regarding diabetes is essential. One should know the role of diet, exercise and medication. By keeping awareness, one can prevent the long-term complications and live healthy life. Education prevents excessive financial burden on your family.

11. Why diabetes is known as a silent enemy?

Diabetes enters the body without knowledge of a person and for many years there are no symptoms and patient does not know that he has diabetes. Many times when there is heart attack, vision problems or blindness, paralysis, and damage to kidney then only diagnosis of diabetes is done. Thus it silently enters the body and damages different organs so it is known as silent enemy.

12. What is the reason of ups and downs of blood sugar levels in diabetes?

The food we eat daily is not constant. The thickness of the bread, thickness of the dal, is not constant daily. In addition daily activity and exercise also varies. This is the reason that blood sugar levels are not constant. Mental stress aids to the problem and doesn't allow the smooth control of sugar.

13. What are the main principles of treatment of diabetes?

The basic treatment of diabetes is education, diet restriction, exercise, and oral medicines and insulin. For control of diabetes patient awareness and education is very important.

14. Why is diabetes compared to pest?

The pest infests the wood but from outside we may not see the extent of damage inside. The whole wood gets eroded from within. When we cut the wood then only we can see

the damage done by the pest. In diabetes we look at the blood reports only but at cellular level diabetes damages the organs like pest. The main damage is to heart, eyes, kidney and feet. This is the reason why it is compared with pest.

15. At which age, diabetes is possible?

Type 1 or juvenile diabetes can be at any early age. Even at birth the child can have diabetes. Type 2 diabetes usually starts after 20 years of the age. Rarely a person develops diabetes type 2 after the age of 50 to 60 years.

16. At what young age diabetes occur?

The youngest can get diabetes at any age but we know the youngest is a 6 months baby who has diabetes. Some babies develop diabetes at birth.

17. Can any medicine cause diabetes?

Steroids and thiazides are the medicines if taken for a longtime can cause diabetes. These types of medicines should be taken as per the advice of a doctor.

18. Does any operation cause diabetes?

If pancreas is infected and by operation it has to be removed, there are chances of diabetes. Some patient even develop diabetes after some operation performed on abdomen.

19. What precautions should one take to prevent diabetes?

Self-control and discipline are very important and one should know this. Person should avoid high calorie food. One should do daily and regular exercises. One should be active, joyful, and stress free. In short, to prevent diabetes one should take regular nutritive food and be active with regular exercises.

20. How diabetes is to be treated when one has to undergo some operation?

In case of a small operation with well controlled diabetes patient can continue oral medication which he/she is taking. In case of major operations where patient is not allowed food for a long time or for many days, insulin is the right treatment. Certain oral medicines produce toxic substances in peri-operative period so such oral medicines need to be stopped. In short, choice of insulin and oral medicines are decided by the doctor

21. Is there a possibility of diabetes during pregnancy?

Yes, sometimes diabetes is detected for the first time during pregnancy. This type of diabetes many times disappears after birth of a baby. Some patients need to continue treatment of diabetes even after delivery.(Control of diabetes is very important during pregnancy to prevent foetal abnormalities)

22. What happens if there is increase in sugar level in diabetes?

Except very sensitive and intelligent patient, one does not appreciate high sugar level in blood. Sometimes there are symptoms like increase frequency of urination and weakness, reduction of weight, irritability of nature, pain in abdomen, nausea and vomiting. The symptoms of poisonous diabetes are breathlessness, sweet smell of ketone in breath and dryness of mouth. (Diabetic ketoacidosis). If patient is not treated in time, he may become unconscious.

23. What are the causes of increase in sugar level in diabetes?

If the patient is careless in his diet, if he doesn't take regular medicine and do exercise, his sugar will increase. In addition, stress, feeling of fear, illness or death of close relative and any kind of infection in the body, certain kinds of medicine, during pregnancy, or certain types of diseases are responsible for increasing sugar.

24. What happens if there is low sugar level?

When there is low sugar level, there are symptoms like giddiness, weakness, uneasiness, perspiration, increase heartrate, headache, dimness of vision- if blood sugar level still goes down then patient can become unconscious. The symptoms are different in different patient.

25. What are the reasons for decrease in blood sugar level?

Blood sugar level decreases if the patient does not take food after taking insulin and medicines. In addition daily exercise on empty stomach, diarrhea and vomiting, over dose of insulin and medicine, and poor kidney function are the causes of decrease in blood sugar level.

26. What is the effect of stress and irregularity on diabetes?

Stress increases the secretion of hormones which works against insulin, so effect of insulin is reduced and there is increase in blood sugar levels. Long-term stress is responsible to invite diabetes. It is very difficult to control diabetes in a patient with irregular lifestyle, as regular diet, exercise and medicines are the main principle and treatment of diabetes. One should live stress free and joyful life.

27. What is the normal blood sugar level?

On empty stomach it should be 70-110mg/dl. After food it should be 70-140mg/dl.

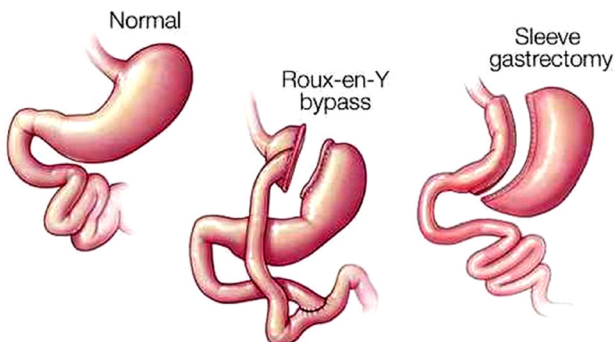
28. Is there any relation of body weight and diabetes?

Obesity plays a major role for development of diabetes. The amount of fat in the body increases the requirement of insulin. In addition to increase in insulin requirement, the cells of the body become resistant to insulin. Mortality in diabetes is also related to obesity.

29. Is there any operation which can cure diabetes?

There is extensive research going on, one of them is transplantation of insulin secreting β -cells of pancreas. Stem cell therapy (cells from umbilical cord of a new born baby) is a developing science. More clinical trials are programmed to produce insulin. More clinical trials and follow ups of patients are required to understand the long term effect. This treatment is costly. It cannot be recommended to all and that is effective only for 4 to 5 years then again it needs to be repeated

30. Is there any operation to control diabetes?



Some operations are done to reduce the weight of a patient. They are known as bariatric surgeries. This operation is done on stomach and intestine. It prevents absorption of food and reduces appetite, thereby helping to reduce weight. Plastic surgeons even do operations to remove extra fat from the body. Weight reduction subsequently helps to reduce the dose of medicines and helps in smooth control of resistant diabetes in some patients. Diabetes can be controlled without medicines after these types of operations.

31. What are the changes in diabetes when there is some illness?

Any illness invites stress which is responsible for increase in blood sugar levels. When a patient has diarrhea or vomiting, he cannot take medicines, so there are chances that his diabetes becomes toxic. Sometimes there can be reduction in blood sugar levels also. During illness, dose of insulin and medicines needs to be adjusted. During illness appetite goes down, so insulin requirement reduces but as the health improves, appetite increases and so is the requirement of insulin. This is the reason why hospitalized patients need frequent monitoring of blood sugar levels.

32. What is the risk of any operation in a diabetic patient?

As such any operation has a high risk. In diabetic patient, heart is usually weak so cardiac risk is more in any operation of a diabetic patient. High blood sugar levels are responsible for wound infection in any operation but inspite of all these, if it is required, operations can be done in a diabetic patient.

33. What is the possibility if a patient of diabetes becomes unconscious? How to treat?

A patient of diabetes can become unconscious if there is very low blood sugar and also if there is very high blood sugar. If machine is available, first thing to do is blood sugar measurement. If blood sugar test is not possible, then give juice, sugar, glucose powder, or any sweet thing available. The patient will start getting consciousness in minutes if it

is a case of low sugar. If unconsciousness is because of high blood sugar then patient will not improve and needs to be shifted to a hospital and treated by a physician. Hemorrhage or blood clot in the arteries of brain can cause stroke. A patient can become unconscious because of that also. It is a right decision to shift a patient to a hospital if he does not gain consciousness in 5 to 10 minutes.

34. Is it a good sign if uncontrolled diabetes suddenly comes under control with the same medicine that the patient is taking?

No, it is not a good sign. Some patients are happy to know that medicine requirement is decreased to control diabetes. If kidney damage increases, this is observed. As the kidney damage increases, blood sugar goes down and may not require treatment of diabetes, or may need less medicines to control diabetes.

35. Is there damage to the fetus in diabetes during pregnancy?

Diabetes needs to be well controlled during pregnancy. A lady with poor diabetic control may give birth to a handicapped, over weight baby with a big head (hydrocephalus). There is a strong possibility of death of the baby during or after delivery. Diabetes during pregnancy can be managed by medicines and insulin. It is not so that every child delivered to a diabetic mother will have diabetes.

36. What is the relation between diabetes and blood pressure? Is there difficulty in controlling diabetes if blood pressure remains high?

There is no direct relation between diabetes and blood pressure. Anyone can have high blood pressure. But it is important to keep diabetes and blood pressure under control. Diabetes damages kidney, eye and heart and blood pressure if uncontrolled, increases the damage. That is the reason that both should be kept under control.

37. If parents have diabetes, does the child have type 1 diabetes?

No, type 1 diabetes is not inherited. Some sudden changes in chromosomes during pregnancy can cause diabetes.

38. What is artificial sweetener? How much can it be taken?



Artificial sweetener is a drug used in place of sugar/ jaggery which gives sweetness to food but doesn't increase calories. It is available in tablet or powder form. It can be mixed with milk or food to make it sweet. 6 to 8 tablets can be taken everyday.

39. Can artificial sweeteners be given to children?

The children more than 8 years age can take artificial sweeteners. 2 to 4 tablets can be given in a day. Don't give sugar and jaggery. Sweetener cannot be given to small children. Artificial sweeteners can also be taken during pregnancy.

40. Can diabetic men and women get married?

Type 2 diabetes is a hereditary defect and this defect is caused due to chromosomes. Therefore, If both the man and woman have diabetes, then the chance of the child getting diabetes are 90%. Even if one of two has diabetes, then chances are 40%. Also their sex life becomes difficult after long time. Type 1 diabetes is inherited, these patients can marry each other.

41. Can a diabetic donate blood?

Yes, Diabetes is not a contagious disease. If diabetes is under control then one can have a healthy life like a normal human being. So there is nothing wrong donating blood.

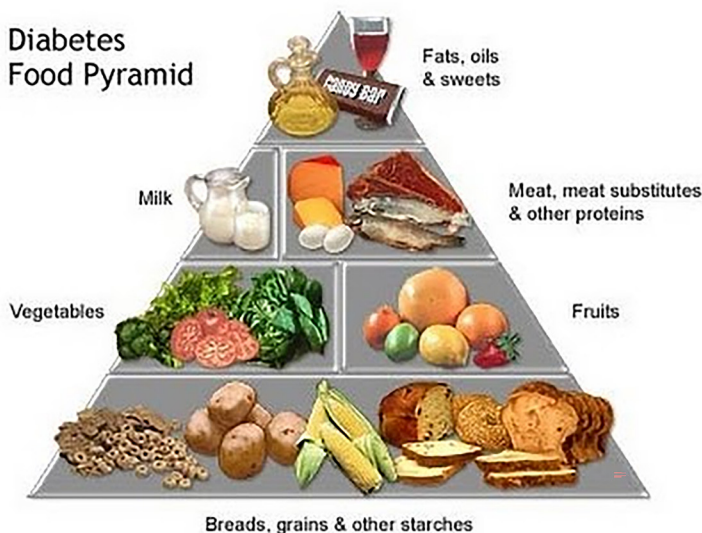
42. What should a diabetic patient take care of while going out?



The most important is don't forget to take medicines and injections with you. Maintain regularity in food intake and medication. Keep an identity card in the pocket that you are diabetic. One should keep glucose tablet in case of low sugar in an emergency. In addition, keep antiseptic cream and bandage. So that it can be applied if there is shoe bite or minor injury.

2

Diet related questions



1. What should be the diet in diabetes?

Diabetics act like a healthy person so their diet should be balanced. It should contain adequate amounts of carbohydrates (60 to 65%), proteins (15 to 20%), and fats (20 to 30%). Diet should be realistic and varied, based on one's lifestyle and preferences. Diabetics are generally advised to have 1800 to 2200 calories diet.

2. How to take diet in diabetes?

Before planning the diet of diabetic patient, his age, height, daily activity, occupation, gender, etc. are taken into consideration. Obese diabetic patients should take low

calorie and high fiber diet. A diabetic patient can consume all the food that a normal person eats, but it is important that the diet is perfectly balanced and does not exceed the prescribed calories in which it is important to eat less sugary and fried food. Instead of eating twice a day, one should have 4 or 5 small meals a day to maintain blood glucose level.

3. Why fatty foods (oil, ghee, butter) should be taken less in diabetes?

Dishes made from butter and ghee are high in calories and fat. Because of this, diabetes remains uncontrolled. It also increases fat and weight. Which increases the chances of high blood pressure and heart disease. Specially obese patient should avoid fatty foods.

4. Which kind of oil can be used?

Any type of oil is not good for diabetes. As far as their type is concerned, even doctors have different opinions. One thing to remember always is that the amount of oil is of utmost importance. Don't take any kind of oil more than 2-4 spoons a day..

5. Why can't you eat sweets in diabetes?

After having dishes made from sugar and jiggery, the blood sugar level rises very fast, due to which diabetes remains uncontrolled. There is a risk of gaining weight by consuming more sweets. In addition, sugar and jiggery do not have benefits in the body. It is just for taste. So if not taken in food, there is no harm.

6. Chickpea flour's item can be taken in diabetes?

In diabetes nuts are definitely eaten but the fried food made from chickpeas flour should be avoided. Chickpeas should not be eaten if the kidneys are not working properly in diabetes. Chickpeas are high in proteins but the fried food made from its flour contains high fat and sugar, so do not use fried food. There is no problem taking boiled chickpeas, dhokla, khandvi, etc.

7. Can fruits be eaten in diabetes? How much should be taken?

There are different opinions. According to some analysis, the fruit contains a sugar called fructose which does not require insulin for digestion. In addition, fruits contain vitamins and minerals. Fruits are high in fiber and water, which gives full satisfaction still no more calories. But do not eat more sweet fruits like mango, banana, chikoo, watermelon, papaya if diabetes is uncontrolled. The remaining fruits can be included in daily diet. It is more beneficial to eat whole fruit than fruit juice. There are no problems in taking 100 to 150 grams of fruit daily.

8. Which are the things to keep in mind in diet in diabetes?

In diabetes, the diet of the patient should be the same as the diet of common man according to the needs and physical exertion of the body. It is also important to get the right amount of nutrients. Diabetics need to follow some simple rule. Eat a small amount of food 4 to 5 times instead of 1 or 2 full meals. Don't take sweet foods. Don't consume fatty substances like oil, ghee, butter. If you don't

have kidney problems, you should take more protein rich food. Sprouted bean, chapatti, cucumber, tomato, orange, apple and green vegetables which have less glycemic index, should be consumed regularly.

9. Should a diabetic patient eat beans?

Yes, in diabetes, specially in pediatric patient beans are very good. It is essential for development of children. But when the kidneys are not working properly, the doctor refuses to eat beans. So doctor advices according to kidney report.

10. What is the importance of salad in diet?



Patients with diabetes need to eat more salad. This is because salads satisfy a full stomach and do not increase calories. Also, salads are high in fiber, which helps to reduce cholesterol and heart disease. Patient with diabetes tends to be very hungry. If he takes salads instead of eating too

much, his diabetes will not increase and his appetite will be satisfied. In addition salads are rich in vitamins and minerals. If the salad is taken before a meal, the amount of food is reduced and the sugar is kept under control.

11. What is the difference among sugar, jeggery or honey?

All these are the same. It is not advisable to use any of these in diabetes. Everything is high in calories and prevents control of diabetes.

12. How much cashew, almond, pistachio should be taken?

Apart from fig, dried fruits are also high in cholesterol, so we should take in small amount.

13. Can sugar free ice cream be taken?

Yes, but plain vanilla flavored ice cream can be taken. Ice cream with dried fruit is not advisable as it is high in cholesterol but ice cream is not a daily item. So it can be used sometimes.

14. What should diabetics not eat?

Sugar, jeggery, honey, glucose, sweets, chocolate, nuts, cheese cream, desserts, sweet drinks, condensed milk, farsan like fried items, pickles, papad, sauces, soups, raisins, corn floor, custard, pastries, cakes, jam, jellies, sweet biscuits, ice cream, ghee, butter, vegetable ghee, palm oil, bakery items, and alcohol should not be consumed.

15. What are the things a diabetic patient should eat less?

Items prepared from wheat, corn, rice, beans, milk, curd, less sweet fruits, biscuits which are not sweet, fish, white part of egg, potato, banana, mango, chiku, grapes, oil and fried food. These are the things which a diabetic patient should consume less.

16. Which are the things that a diabetic patient can consume freely?

Green leafy vegetables, amala, garlic, onion, green chillies, thin buttermilk, sprouted beans, apple, pomegranate, oranges, papaya, tomatoes, cucumber, carrots, cauliflower, vegetable soup without cream, coconut water, drinks without sugar, milk without cream are the things which can be consumed freely.

17. Which food is to be avoided in kidney disease?

Diabetic patients with kidney disease should consume less beans and minimum of fruits. Sweets are also to be avoided. Water intake should be controlled. In addition coconut water, cold drinks, fruit juice, green leafy vegetables, dry fruits, etc. should not be consumed. As such diabetic patients with kidney disease should consume more carbohydrate rather than proteins.

18. Which precautions should be taken if blood pressure is high?

Patients with high blood pressure should consume food which contains less salts. Moreover either vegetable or dal should

be consumed without salt. Pickles and other accessories which contain more salts should be avoided. Salad should be used without salt. Even buttermilk and other food items should not be added with salt. Oily food should be avoided.

19. How is fiber rich diet important for diabetic patient?

Fiber rich food is very useful. It controls diabetes and cholesterol. Because of high fiber content food stays in stomach for a longer time and it is getting absorbed very slowly. It reduces urine glucose level. It reduces appetite because it forms a bulk of our food. This controls the weight of the patient. The fibers which are mixed with food particles reduce the rapidity of absorption of digested food and so blood sugar rises slowly. In addition, the fibers in the large intestine helps in better mobile function so there are less chances of constipation.

20. What should a diabetic patient do whose main food is rice?

Those persons who are mainly rice eaters should reduce the total quantity of rice. They should add dal and vegetables in rice. In addition they can add beans and green leafy vegetables and salad in diet. Brown rice should be preferred. Kodri, bavto, etc. also can be consumed in place of rice. (Though there are differences of opinions as far as brown rice is concerned)

21. What is glycemic index?

The sugar content of a food is absorbed from intestine in the blood. The rapidity of absorption of sugar content of

the food is known as glycemic index. The more the glycemic index the more is the speed of increase in sugar in the blood after consumption of that particular food. As for example: wheat and jau have same sugar but the glycemic index of jau is 25 and that of wheat is 90. This means that instead of using wheat one can use jau where by the speed of increasing sugar in the blood will be reduced. one can even mix up and wait like this. If diet is planned according to glycemic index, post lunch and post dinner blood sugar levels can very well be controlled.

Food which contain less glycemic index

Food Beans	Glycemic index	Calo-ry/100 grams	Food Beans	Gly- cemic index	Calo- ry/100 grams
Cabbage	10	28	Chick peas	11	164
Green flat beans	11	48	Ground nut	14	586
Cucumber	19	15	Cauliflower	16	23
Brinjal	17	24	Kidney beans	19	346
Cashew nut	22	547	Tuver dal	22	335
Jav	25	352	White chana	28	164
Val	28	127	Lentil	29	116
Apricot	31	49	Mug	31	30
Milk	32	60	Apple	38	52
Pear	38	42	Tomatoes	38	18
Jardalu	39	45	Chikoo	40	98
Strawberry	40	33	Choli	42	323
Orange	42	47			
Adad dal	43	343	Grapes	46	40

Carrot	47	41	Peas	48	78
Mango	51	65	Kel	52	89
Maize	54	125	Ravo	55	348
Bajra	57	361	Black grapes	59	50
Papaya	59	39	Beetroot	61	120
Fig	61	250	Pineapple	59	50
Beet	64	44			

Food which contain high glycemic index

Food Beans	Glycemic index	Calo-ry/100 grams	Food Beans	Gly- cemic index	Calo- ry/100 grams
Water melon	72	30	Banana	75	210
Juvar	77	349	Maize flakes	80	373
Pototo	85	93	Wheat	90	339
Boiled rice	85	400	Glocose	100	400

3

Importance of exercise in diabetes



1. What is the importance of exercise in diabetes?

A patient of diabetes can control sugar and reduce fat by doing regular exercise. It will reduce the weight of the patient and also reduce the requirement of medicines and insulin. In addition exercise helps heart and reduces heart related problems. Exercise gives feeling of well being, good sleep and awareness for fitness. In early stage of diabetes if diet and exercise is understood and followed then even without medicines diabetes can remain under control.

2. Which types of exercises are advised for a diabetic patient?

For patient without foot ulcers, they can do walking, running, cycling, gardening and swimming. If the patient's age is more and if there is some physical disability or problem,

only simple walking is ok. One can have a static bicycle in the room. Even if nothing is possible, simple exercises in sitting position is also advisable. Children with diabetes can play any game including Kabaddi, hockey, football, tennis. Patients with foot lesions can do breathing exercises, hand exercises, yoga and pranayam. Patients with wounds in the foot and recent operations on foot are not advised to walk and do walking related exercises.

3. What precautions a diabetic patient should take before doing exercises?

Diabetic patients should do exercises preferably in the morning but at any time during their hours exercise can be done. Before selection of types of exercises, one must consult a doctor. Exercise should be limited as per the blood sugar level. It should not be done on empty stomach or after heavy meal or after taking insulin. The patients with cardiac problem, diabetic foot, knee problems, retinal problems and dimness of vision, kidney problems need advice of a doctor. Patients should wear loose clothes and shoes without high heel during walking. There are possibilities of getting low sugar levels at the time of doing exercise so diabetic patients should keep some sweet item in his pocket or nearby.

4. How much exercise should be done?

Exercise should be done 20 to 30 minutes a day and at least 5 days in a week. It should be regular and it should be increased gradually as per the capacity of an individual. Daily walking of 45 minutes is also an excellent and simple exercise. Walking also can be advised for those who are aged, elderly and disabled.

4

Oral medicines and insulin

1. Is it necessary to take medicines in diabetes?

Yes, in diabetes it is necessary to take medicine, from a study of lacs of diabetic patients, it is understood that if the diabetes remains under control long-term complications are prevented or they occur late. The patients who are irregular and the patients who are negligent they suffer a lot. If the patient takes balance diet, does regular exercises and even after that diabetes is not under control it is essential to take medicines. If with diet and exercise diabetes is remaining under control then there is no need to take medicines.

2. Is it so that there is only one type of medicine for diabetes?

For diabetes, there are so many varieties of medicines available. It is selected as per the age of the patient, associated diseases, level of blood sugar, pregnancy, type of operation and pre and post operative period. Some medicines work on pancreas and increases the secretion of insulin. Certain medicines are effective on the body cells and help the body cells to work better and to utilize insulin. Some group of medicines prevent the absorption of sugar containing food materials from the intestine. Some medicines prevent the effect of secretion which is preventing the insulin to work this means that it is not over the counter medicines which should be taken. Patient should consult a doctor before taking medicines for diabetes.

3. Can diabetes be prevented by some medicines or some treatment?

Obese patients with possibility of getting diabetes can be advised some medicines like metformin and glitazone which can prevent development of diabetes. Some medicines are used to reduce the obesity. There are certain operations which are done to reduce the body weight and this can prevent diabetes and sometimes it is also advisable for overweight patients of diabetes to undergo these types of operations to prevent diabetes

4. Are there any side effects of medicines of diabetes?

After so many years of research, it has been found that medicines described by a doctor for diabetes have more advantages than complications. But in case of patient with heart, kidney, liver diseases and in pregnant women doctor makes changes in the medicines that the person is taking regularly. Certain medicines are not advisable in certain conditions. One should not change the dose of medicines without doctor's advice.

5. Can diabetes medication be stopped once diabetes is under complete control?

In general, the same medication that has been used to treat diabetes should be continued for longer period of time. In rare cases, medicine is reduced. If the kidneys get damaged then the need for medicine becomes less or it has to be stopped.

6. Does the use of certain drugs increase blood sugar levels?

Yes, steroid, birth control pills, and some diuretics increase the blood sugar level.

7. Can oral medicine help to control diabetes in children?

No, children need insulin to control diabetes. But research is going on right now. In some cases there is good effect of medicine in children.

8. What is insulin?

Insulin is a type of protein and it is endocrinal secretion, a hormone. It is produced by pancreas in human body. Insulin gets entry in blood and it helps to burn sugar and produces energy. The insulin, which is available in the market, is manufactured from animal tissues. There are some insulin which are manufactured by chemical process and genetic engineering. There are many types of insulin.

9. What are the types of insulin?

Product Group	Product	Colour Name	Pantone Colour No.	Colour
Fast acting insulin	Regular	Yellow	123C	
	Regular Buffered	Red	185C	
	Hoechst Pump Insulin	Blue	072C	
Insulin Mixtures (Regular/NPH)	50/50	Grey	445C	
	40/60	Violet	253C	
	30/70	Brown	471C	
	25/75	Turquoise	313C	
	20/80	Magenta	Magenta C	
	15/85	Olive	104C	
	10/90	Blue-Green	328C	
Long acting insulin	NPH	Light Green	375C	
	Lente	Turquoise	312C	
	Ultralente	Dark Green	363C	
	Similente	Light Blue	545C	

There are three main types of insulins. Bovine insulin, human insulin and insulin analogue.

10. Which patient needs insulin injections?

Juvenile diabetic patients need insulin. In patients in whom diabetes cannot come under control with oral medicines also need insulin. Around the time of operation, insulin may required. In patients with TB, heart problem, paralysis, liver disease, kidney diseases and with severe infection somewhere in the body needs insulin. ICU patients need insulin.

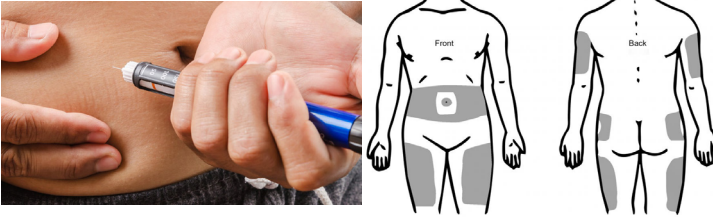
11. What are the side effects of insulin?

There are more good effects than side effects. Sometime swelling and pus at the injection site, increased appetite, increase weight and itching in skin are some of the side effects. It also can cause hypoglycemia, especially if food is not taken after injection or insulin dose is more but it is advisable to take insulin as advised by a doctor

12. Is it so that once insulin life time insulin?

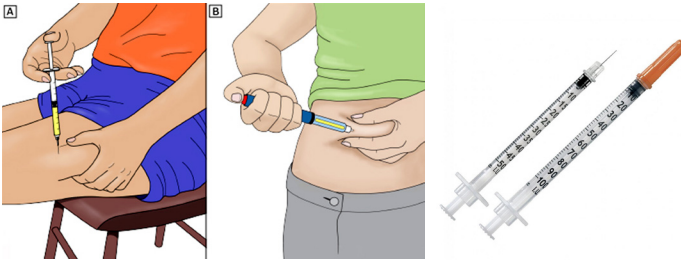
No, it is not always. Sometimes a patient may need insulin for short time around the time of operation and when a patient is serious. Afterwards patient can be switched over to oral medicines but if large doses of insulin is required to control diabetes, he/she may need lifetime insulin. Sometimes patient may need small dose of insulin in addition to medicines but the decision to continue insulin or not is taken by a doctor. Many patients may not need insulin

13. Which are the sides of our body where insulin can be taken?



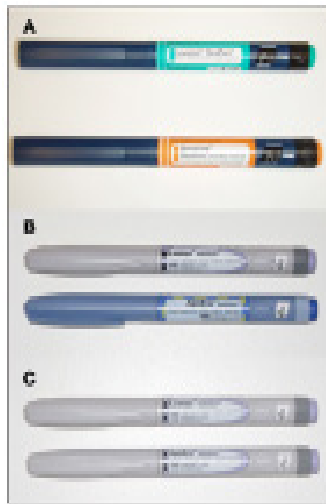
Insulin is not given in muscles. It is given in fat under the skin outer side of the thigh, outer side of shoulder, around the umbilicus in half a foot of area are the common sites where it is advisable to take insulin. When a patient is admitted doctor may give injection in vein and in glucose bottles also

14. How to take injection insulin?



Ideally around the umbilicus or outer side of the thigh is a preferred site for giving injection. One should go on changing sites of injection. At one particular point injections should not be given daily. One has to pinch up the skin and the syringe or insulin pen is inserted at 90° to skin and gently injection is pushed in. Before inserting the needle, one has to apply spirit or antiseptic on the skin. After the injection is given the site of injection is just pressed it should not be rubbed.

15. Is there any device by which a patient can take insulin of his own?



Yes, there is a device known as insulin pen. There is a calibration on it. It is like a pen when dose is adjusted it simply needs to be pressed from behind like a pen and insulin goes in. It can be carried in a pocket. It does not require refrigeration and a child and an old man can also easily use it. It is available in disposable as well as reusable forms. Reusable insulin pen needs change of cartridge after it is finished. The needle of a pen is so thin that it hardly pains. Pen is a little costly than regular insulin.

16. Where can insulin be preserved if there is no refrigerator?

If there is no refrigerator insulin should be kept in cold and dark area. It can be kept in an ice-box or in a small utensil containing cold water. It can be kept near a water storage pot but it should not be kept exposed to sunlight

17. Is there any device to decide the dose of insulin in badly uncontrolled diabetes?

There is a device known as continuous blood sugar monitoring system. In this, patient is admitted in hospital for 2 to 3 days and machine measures blood sugar every 1 to 2 minutes. Medicine and injection what the patient is taking is continued as such. Analysis is made from multiple blood sugar reports to see what is the relation of blood sugar to food from this the dose of insulin can be adjusted and diet can be planned. This device is little bit costly.

18. If we take injection insulin once in a day is that ok?

A doctor decides the requirement of insulin as per blood sugar control. Sometimes with oral medication diabetes remains under control but during some time of the day sugar remains high, so doctor may advice insulin to control that type of high sugar level but if insulin is absolutely necessary then minimum two times a day is advisable.

20. Can insulin and oral medicines be taken together?

Some patients have good control of diabetes by diet, exercise and medicines in early stage. But after certain dose of medicines if the sugar remains high then doctor advises to add insulin in addition to medicines. It might be that for sometimes insulin support is required and then with oral medicines diabetes may remain under control. But some patients need insulin in addition to oral medicine for long time. The purpose is to have good control of diabetes.

21. What is the difference in dose of insulin in ICU and at home?

The patient in ICU is serious. He needs better control of diabetes. He is given insulin by syringe pump or intravenously and more frequently. At home, it is given 2 to 4 times in a day.

22 Is there any other way of taking insulin?



At present only injection form is available. There is a research going on for pump form of insulin but inhalation and pump requires more dose and damages lung. There is lot of wastage of drug so pump has not come in market. Till new research comes, insulin is available only in injectable form.

23. Why insulin is not available in tablet form?

Insulin is a protein if it is taken in tablet form it is digested by stomach juice and intestinal juice so it becomes inactive. It cannot work like it works in injectable form. So tablets of insulin are not available.

24. Can one stop insulin if there is illness like diarrhoea and vomiting?

When there is diarrhoea and vomiting insulin requirement reduces but if one stops insulin diabetes may become poisonous, so it is better to monitor blood glucose and give

insulin accordingly. If illness lasts long one should consult a doctor.

25. Which is the right time to start insulin?

It is decided by a physician or diabetologist to start insulin. If after all oral medications diabetes still remains more than hundred 140 mg/dl then it is advisable to start insulin. Even after adequate dose of oral medication patient is not comfortable, feeling weak, then it is better to start insulin.

26. Even if diabetes is remaining low, is it so that still insulin is required?

There is nothing like low diabetes. if it is well controlled with oral medications insulin may not be required but after giving adequate oral medications if blood sugar remains more than 140 mg/dl then it is advisable to start insulin. Patients with uncontrolled diabetes have got 25 times more chances of developing kidney damage.



How does medicine work?

Where medicine works	How medicine works	Medicines
Pancreas	Increases insulin secretion	Glibenclamide, Glipizide, Gliclazide
Liver	Decreases production of glucose, reduces of resistance against insulin	Biguanides, Thiazolidinediones
Small intestine	Reduces absorption of glucose	Alphaglucoisidase inhibitors eg: Acarbose
Muscle and fat	Increases effectiveness of insulin	Biguanides, Thiazolidinediones
Large intestine	Increase insulin secretion and decrease glucose formation from liver	DPP 4 inhibitors GLP Agonists

Types of insulin

Type	Time to start the effect	Time for maximum effect	How long the effect persist
1.Short acting insulin			
Regular	30 minutes	2-4 hours	4-8 hours
Human	20 minutes	2-4 hours	4-8 hours
Lispro	5 minutes	1 hour	3 hours
2.Medium acting insulin			
NPH	2-4 hours	6-8 hours	20 25 hours
Lentus			
30/70	30 minutes	2-10 hours	18-24 hours
50/50			
25/75			
	5-10 minutes	1-3 hours	
ASPART	1-2		3-5 hours
Other types			

5

Different investigations in diabetes

1. Which reports are to be done in a diabetic patient?

A diabetic patient should do his blood sugar reports every month. In addition, he should do glycosylated hemoglobin(HbA1c) estimation every three to four months, blood urea, serum creatinine, urine microalbumin and lipid profile every year. The patient should get his feet examination, retina check-up and cardiogram done at least once in a year.

2. How many times a diabetic patient needs to do his blood sugar reports?

In a patient of type 2 diabetes, if diabetes remains under control once a month or every two months fasting blood sugar and post lunch blood sugar are enough. It is not advisable to do blood sugar level once in a day. Sometimes to see for better control of diabetes doctor advises to do blood sugar level 2 hours after dinner also. Patients of type 1 diabetes need blood sugar estimation at least 3 to 4 times in a week. When diabetes is uncontrolled or the patient is serious, blood sugar reports are done every one or two hourly

3. What is hba1c and what is its significance?



Haemoglobin is a type of protein in the blood which combines with glucose and becomes glycosylated. It is known as glycosylated haemoglobin. When blood sugar increases, more haemoglobin becomes glycosylated. In the patients of diabetes this report of hba1c gives us idea about average blood sugar level in last 3 months. It is useful for diagnosis and assessment of better control of diabetes. Normal value of hba1c is $<7\%$.

4. Is there any machine available for quick blood sugar test?



A machine known as glucometer is available in the market. It is a small handy machine which can be kept in a pocket also. It can measure blood sugar from the tip of a finger in just 5 to 15 seconds. A patient himself can do the testing. Patient does not need to go to the laboratory. This is a very useful machine for a patient in whom there is major fluctuation in blood sugar level. Many companies manufacture different types of machine and they are very useful in emergency condition.

5. Are the reports of glucometer and laboratory same?

No, the blood is taken for laboratory report is from vein when the blood is taken for glucometer report is from capillaries. So there is slight difference in the sugar report. Usually a difference of 5% to 10% is natural. We should accept this machine without taking it into account.

6. Should we take medicine on the day of blood test?

Blood tests are being done to find out how much your diabetes is under control with medications. So it is compulsory to take medicine as routine.

7. Why should microalbumin in urine be tested regularly?

Diabetes slowly damages the kidney. Kidney damage or heart diseases are more likely to occur if protein begins to pass into the urine. Kidney protection medicine can be given if diagnosed at the stage where microalbumin begins to pass. But when a large amount of protein starts to

pass into the urine, the kidneys cannot be saved and the damage gradually increases. If not taken care of, the need of dialysis arises and that treatment is very expensive. So microalbumin should be tested in the urine every year

Investigation list for diabetic patient

Numbers	investigation	How?	When?
1	FBS	Before break-fast	Every month
2	PPBS	2 hours after meal	Every month
3	HbA1c	Blood report	Every 3-4 months
4	Urine albumin	Urine report	Every 3 months
5	Urine Micro albumin	Urine report	Every year
6	Serum Creatinine	Blood report	Every year
7	Haemoglobin	Blood report	Every year
8	Serum lipid profile	Before break-fast	Every year
9	Electrocardiogram		As per need
10	Trademill	By walking on	Every year
11	Retina		Every year
12	Blood pressure		Every 15 days
13	Foot Examination	By podiatrist	Every year
14	Foot care	By Patient	Everyday
15	2D echo	By Doctor	Every year or as per need

6

Complications of diabetes

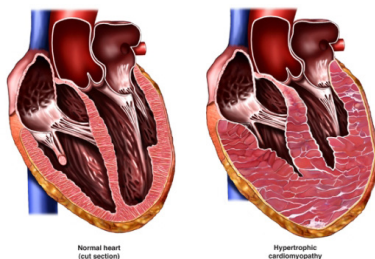
1. What are the complications of uncontrolled diabetes?

In addition to boils and infection anywhere in the body, early cataract, blindness due to retinal damage, high blood pressure, heart attack and heart failure, damage to kidney, foot infection and gangrene, reduce function of stomach and intestine are the long term complications of uncontrolled diabetes.

2. Can there be joint pain due to diabetes?

Sometimes because of high blood sugar level, shoulder pain is a complain which is known as periarthrititis or frozen shoulder. With better control of diabetes and proper exercise, this can be cured. Diabetes disturbs proteins in ligaments and joint capsule, which also contributes to joint pain.

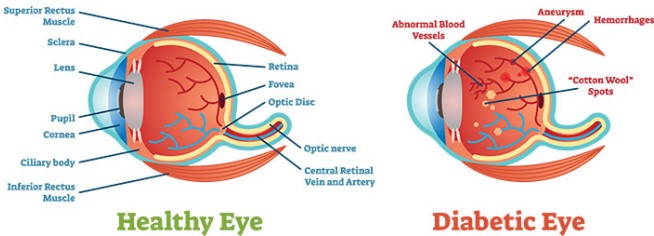
3. What damage occurs to heart by diabetes?



There is fat deposition in blood vessels of heart, so there

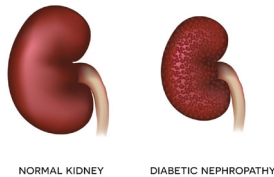
are more chances of heart attack. There is blood pressure change in sitting and standing up position which is different than non diabetic patient. Sometimes there is painless heart attack which proves dangerous as the diagnosis is delay. Delay in diagnosis causes more damage to the heart wall, in addition to decreases blood supply to the heart, the heart muscles in the heart wall becomes thickened and weak. Pumping of the heart deteriorates which is called heart failure not heart attack.

4. What is effect of diabetes in eyes?



In diabetes, cataracts appear earlier in the eye. In addition there is damage to the blood vessels of the retina. It causes blood to clot in the membrane and loss of vision. If diagnosed early, the disease can be prevented by laser treatment. Otherwise sometimes complete blindness occurs.

5. What is the effect of diabetes in kidney?



In diabetes, the blood cannot be purified properly due to the adverse effect on kidney function. As a result, the amount of toxins in the blood increases. In addition, the protein excreted in the urine by the kidneys also damages the kidneys. Control diabetes as much as you can once the damage is done, but kidney function cannot be improved. The diseased kidney eventually fails. This necessitates kidney replacement or dialysis. Which disturbs the financial condition of patient's relative.

6. Is there any relation between paralysis, heart disease and leg gangrene?

Yes, the different manifestations of diabetes are caused by blood vessels all over our body.

A heart attack occurs when blood vessels get blocked due to diabetes and age. Similarly, when the blood vessels in the brain are blocked, paralysis occurs and the problems in the blood vessels in the legs cause gangrene. Thus the disease is responsible for the dysfunction of blood vessels.

7. Is there any problem in the intestines or stomach in diabetes?

Yes, the nerves coming from the brain are damaged in diabetes due to this food stays in the stomach for a long time. There is loss of appetite, vomiting, intestine does not work properly. It is called diabetic gastroparesis.

8. Why do the feet get cracks?

Sweating in the feet stops or decreases due to nerve

problems. So the skin becomes dry. Sometimes cracks get infected and it is needed to cut toes or leg. That is why Vaseline or cream should always be applied to keep the skin smooth.

9. Why should family members of diabetic patient examine patient's feet?

Sometimes the patient cannot see the soles of his feet due to back problems and leg joint problems. So any injury or infection is not noticed in early stage. For early diagnosis of the problem, feet should be examined in early stage. Sometimes the patient does not notice until the foot smells very bad. The reason is lack of pain and lack of sensation.

10. Can a patient walk with dressing and foot ulcer?

No. Wounds of feet don't heal if patient walks. So diabetic patients with foot wounds/ulcers should do exercises other than walking like cycling, yoga, breathing exercises, hand and shoulder exercises, etc. It is not advisable to walk.

11. What precaution should a patient working in the water take?

If the feet stay in water for a long time, fungus develops between the fingers. Bacterial infection develops if the fungus is not diagnosed and treated in time. The infection between the two fingers is very harmful, as it leads to amputation of two fingers. Therefore, such patients should dry their fingers frequently, clean them between the fingers, apply antiseptic powder and keep cotton between the fingers, so that moisture does not remain between the fingers and fungus does not occur.

12. Why should sandals or shoes be worn?

Wearing sandals protects the feet from all sides. It protects against injuries which prevents so many foot problems. It maintains shape of the foot by preventing toe deformities

13. Why does the foot swell in diabetes?

Swelling of feet and legs in diabetes may be due to diabetes itself, medicines of diabetes and blood pressure, poor functioning of heart and kidney, less of blood protein. This swelling may reduce by keeping the legs elevated. One leg swelling is sign of infection, bone destruction or blood vessel blockage

14 What to do to heal foot wound early?

Proper dressing and treatment of diabetes, high protein diet, use of hematinic medications and food, help in early healing. Rest is very important. Low hemoglobin, poor functioning kidney, addiction of smoking, tobacco, alcohol, and drug resistant organisms delay wound healing.

15. Does a patient need a plaster to heal?

Yes. Sometimes a special kind of plaster which can be removed during dressing can be given. When a wound crosses a joint or is located on a muscle, we need to stop movement of that muscle or joint, which otherwise delays healing.

16. What is the emergency if the foot is infected?

The more powerful is the infective organism, the more is the emergency. Sometimes within 24 hours infection

spreads from toe to knee and below knee amputation may be required. That is why any infection should be taken seriously and treated in time.

17. Which patient has to have his leg amputated?

Patients with kidney problems and dialysis, very fast spreading infections, very toxic diabetes (ketoacidosis), addiction of tobacco, smoking, alcohol, need more amputation.

18. Can there be healing in foot of diabetic patient?

Yes. Foot wounds definitely be cured by proper treatment and precautions. If a person walks on foot with wound, it doesn't heal for a very long time. Presence of infection in bone (osteomyelitis) needs long term antibiotics. Sometime dead infected bones need removal.

19. Can there be recurrences of foot wounds?

Yes. If precautions are not taken, specialized footwear are not worn, there are chances of recurrences. Deformed feet are prone to recurrent ulcerations

20. How often should the foot surgeon examine the foot a diabetic patient?

If there is no foot problem, then every diabetic patient should consult a foot specialist doctor at least once a year. A high risk foot is one which is either operated or has a wound which is healed, should consult every 3 monthly.

21. Why special shoe require in diabetes?

Special footwear is required to keep the skin healthy, to heal wounds, to prevent recurrences of wound, and to protect against accidental injuries by thorn, nail, or any sharp objects

22. How long does it take to heal foot wounds? Why?

Usually it takes 2 to 5 months to heal. As such it all depends upon size and depth of wound, presence or absence of infection in bone, resistance of organisms to antibiotics, blood circulation, physical fitness, kidney function, and precautions taken by the patient.

23. Does the patient have any problems after amputation?

No. If the pt is mentally strong, he can walk, he can drive bicycle, scooter and car, climb steps with the help of prosthesis.

24. Is there always infection in diabetes after injury?

No. Many people don't have infection after injury. But those who develop infection suffer a lot. That is the reason a patient should take proper treatment after any injury.

25. How deep should toe nails be cut?

Toe nails, especially the great toe nail should be kept hanging over the skin. It should be at least 2mm outside the skin margin. If it is cut too deep, the corner pierces

the skin and causes infection. This is known as ingrowing toe nail..

26. Why there is a difference in healing between a diabetic and non diabetic patient?

The natural protection of the foot remains as the pain is normal which is responsible for protection in the normal patient. Organisms spread less in presence of normal blood sugar. In patients with diabetes, in addition to sugar, there is also a defect in the process of healing. In addition, there is no pain in the foot, so he becomes careless.

27. What care of foot should be taken in winter?

Use cream or oil to moist skin to prevent fissures. In addition when there is too much cold, heatpad on feet should not be applied and feet should not be kept in front of bonfire. Feet get burnt because of lack of sensations to heat.

28. What care of foot should be taken in summer?

A diabetic patient should not walk barefoot in balcony, ground, on road, hot surfaces of temple, mosk, pilgrimages to prevent unnoticed burns.

29. What care of foot should be taken in monsoon?

Diabetic patient should keep the feet dry, specially spaces between the toes (web spaces). If precautions are not taken, there are chances of web space fungal infection. Patients with wound in foot should not walk in rain water, river water as it contains many bacteria

30. What precautions should be taken when visiting places of worship?

Diabetic patient should not walk for a long distance or barefoot to go to a worship place. He should wear thick cotton socks in the temple also. One should not deep his feet in holy rivers because there can be injury by thorn or stones. During the pilgrimage tour if there even minor foot problem, one should shorten the journey and take proper treatment

31. How much to carry with you when going out of town?

Basic dressing kit should always be kept while going out on tour. If there is any injury one should shorten the tour and come back home. Some medicines like antibiotic and analgesic should be kept. Insulin and medicines for diabetes should always be taken along with. One should never forget to take sugar powder, sugar pills or some sweet items along with.

32. Can the bones of foot break without injury in diabetes?



Yes. This happens in diabetics. Sometimes no injury or trivial unnoticed injury can break weak osteoporotic foot

bones. The bones can be fractured or dislocated this is due to weakning of ligaments. This is known as charcot foot.

33. When to perform the operation in diabetes?

In presence of infection unless diabetes is not toxic(ketoacidosis), operation can be done irrespective of blood sugar level. If heart and lungs are weak, we have to settle the medical condition before operation. It is better to operate an infected foot as early as possible. Routine operation like cataract, hydrocele, hernia, etc. should be done after better control of diabetes.

34. What is gangrene?



In the body if any part dies, it is called gangrene. There are two types, wet gangrene and dry gangrene. Wet gangrene spreads fast.

35. Does gangrene occur anywhere else in the body?



Yes. Gangrene can occur in the intestines, in the appendix, in the testes, in the gallbladder, in the stomach, etc.

36. Is there any operation for less circulation in foot?

Like angiography, angioplasty and bypass operation in heart, for foot and leg also similar operations can be done. It can be open surgery or pin hole surgery.

37. What is the meaning of drying of leg veins?

There are two types of problems in leg, less of blood supply from heart and improper functioning of nerves of brain. For laymen both are same. But gangrene occurs when there is no blood supply and when there is tingling, numbness burning pain, the nerves are damaged.

38. How to decide how much to cut?

It all depends upon many factors. Type, severity of infection, spread of infection, blood supply to the part, functioning of kidney need to be considered. Control of diabetes and seriousness of general condition of the patient also helps in decision for type of operation. Sometimes, stage wise operation is required to save life of a patient.

Obesity measurement

1. By weight: value of weight by height for Indian male and female

	Height	Weight	Overweight	Underweight
Male	148	47.5	57.0	38.0
	152	49.0	59.0	39.0
	156	51.5	62.0	41.0
	160	53.5	64.0	43.0
	164	56	67.0	45
	168	59	71.0	47.0
	172	62	74.5	49.5
	176	65.5	78.5	52.5
	180	68.5	82.0	55.0
	184	72	86.5	57.5
	188	75.5	90.5	60.5
	190	77.5	93.0	62.0
Female	148	46.5	56.0	37.0
	152	48.5	58.0	39.0
	156	50.5	60.5	40.5
	160	52.5	63.0	42.0
	164	55	66.0	44.0
	168	58	69.5	46.5
	172	60.5	72.5	48.5
	176	64.0	77.0	51.0
	180	67.0	80.5	53.5
	184	70.5	84.5	56.5
	188	74.0	89.0	59.0

2. Body Mass Index (BMI):

$$\text{BMI} = \frac{\text{Weight in KG}}{(\text{Height})^2 \text{ in meter}}$$

BMI= 20.24.9- Normal Weight

25-25.9- Grade 1 obesity

30-40 - Grade 2 obesity

More than 40 - Grade 3 obesity

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