1. 1. What is diabetes?

- Diabetes is a disorder of metabolism where blood glucose (blood sugar) remains too high due to insufficient insulin production or inadequate action of available insulin.

2. What are the types of diabetes?

- Diabetes is a disorder of metabolism where blood glucose (blood sugar) remains too high due to insufficient insulin production or inadequate action of available insulin.
- (* All diabetics may require insulin for treatment in special situations).
- There are two other conditions:
    - Pre-diabetes is a condition when a person's blood glucose levels are higher than normal but not high enough to be called Type 2 DM. These blood sugar of such patients may go into the diabetic range during periods of stress.
    - Gestational Diabetes (GD) mellitus resembles Type 2 Diabetes in most aspects but manifests during pregnancy. It may improve or resolve after childbirth but a small percentage may convert to type 2 diabetes with increasing age.

3. What are the common symptoms of diabetes mellitus?

- Type 2 DM, which forms the largest number diabetics is largely asymptomatic and detected incidentally during
- Routine investigations of a health check-up
- Investigational work-up for a surgical procedure
- Investigational work up during admission for any other condition, specially end-organ damage (brain stroke, myocardial infarction and/or chronic kidney disease)
- However, these patients can present with

- Recurrent infections (commonly skin and/or urinary)
- Delayed healing of wounds following injuries (usually foot infections)
- Frequent change of glasses (due to blurring of vision)
- Numbness of legs
- Only type 1 diabetics (those with absolute insulin deficiency) present with typical symptoms of Increased thirst (Polydipsia), frequent micturition (polyuria), increased appetite (polyphagia) and/or weight-loss (more than 10% of body weight over a short period of time). Sometimes (during periods of stress) all diabetics can have these symptoms, when they need to consult their treating doctors immediately.

4. What are the risk factors for diabetes?

- There is no single risk factor for Diabetes. Apart from genetic predisposition (which is also polygenic like hypertension), a host of acquired factors can contribute to development of diabetes mellitus:
    - Advancing Age (> 30 years)
    - Obesity
    - Lifestyle factors such as
        - Lack of Physical inactivity (sedentary lifestyle)
        - Stress
        - Excessive consumption of simple carbohydrates (including sugar), excessive fat (especially trans-fat)
- Alcohol consumption
- Certain hormonal disorders etc.

5. What are the risk factors for diabetes?

- Complications can affect various organs and systems. It mainly effects eyes (Diabetic retinopathy), kidneys (Diabetic nephropathy), numbness of feet (Neuropathy), Diabetic foot, Cardiovascular diseases and even death.

6. What are the risk factors for diabetes?

- At least two abnormal values
    - Fasting plasma glucose; ≥ 7.0 mmol/L (126 mg/dl),
    - Post prandial glucose ≥ 11.1 mmol/L (200 mg/dl),
    - HbA1c; ≥ 6.5% (48 mmol/mol) for diabetes,
    - Random blood glucose in the presence of signs and symptoms of diabetes; ≥ 11.1 mmol/L (200 mg/dl) for diabetes.

7. What are the treatment modalities available?

- Type 1 diabetes is to be always treated with insulin replacement therapy.
- Lifestyle and diet management are required for all types of diabetes mellitus.
- Medicine for treatment of diabetes is available under all systems, modern medicine as well as traditional systems such as ayurveda, homeopathy, unani and siddha. Choice between systems is for an individual to decide, but always in consultation with the attending physician.
- Regular screening and treatment to avoid or delay complications.

8. How can I modify my diet if I am a diabetic so that blood sugars stay within a normal range?

- Please remember that human body does not like severe changes in blood sugar levels (highs as well as lows), it appreciates and responds best to blood sugar levels (when ever they stay in a narrow range of 100 – 150 mg/dl.
- Any dietary intervention should be aimed at preventing highs as well as lows (hypoglycemia).
- Eat a maximum of three meals a day with enough spacing between them. This will ensure enough time for digestive and metabolic processes to be complete before the next meal.

- Frequent eating (every 2-3 hours) is likely to cause frequent release of insulin from pancreas, predisposing to the side effects of frequent episodes of hyperinsulinemia, that may include hypertension as well.
- Spread your meal over 20-30 minutes, chewing every morsel 10-20 times. This would reduce the glycemic index of food we eat. Also eating slowly ensures lasting satiety (which is achieved over 20-30 minutes and not by the amount of food intake).
- Don't eat direct glucose/sucrose (sugar). There is no difference between glucose, sucrose (sugar), honey and or jaggery in terms of their impact on blood glucose. Impact of fructose (sugar in fruits) on blood glucose is relatively better.
- Don't eat processed food, as it always has sugar as well as salt as preservative and taste enhancer. Also, most products available may not display the sugar and salt content accurately and correctly.

9. What is Glycemic Index of Food and How much should I worry about it?

- It is a value assigned to food based on how fast and how high it can raise the blood glucose levels.
- Foods with a lower glycemic index (those which raise blood glucose values slowly and to a lesser extent) are good for diabetics as well as non-diabetics.
- Calculating glycemic index of food is not easy as it can be affected by number of factors. Therefore, available information about glycemic index from different sources can be highly variable.
- There are some food factors which can affect glycemic index, and they are listed below:
    - Natural/raw food has a lower glycemic index (e.g. salad vegetables have a lower glycemic index than cooked vegetable; fruits have a lower glycemic index than fruit juice)
    - Simple sugars and carbohydrates have a high glycemic index.

        - Cooking/Preserving/Re-heating/Processing of food increases the glycemic index.
        - Speaking of grains, coarser products have a lower glycemic index than fine and refine products.
        - Mixing of food (taking two items together, e.g. Dal/Pulse and Rice lowers the glycemic index.
    - The simplest way to lower glycemic index of food is to chew it properly, so that food that reaches stomach and intestines is adequately mixed with saliva.

10. Can the above-mentioned eating habits prevent/cure diabetes as well?

- It is rare for diabetes to disappear by itself without dietary and therapeutic interventions.
- The above-mentioned dietary principles can delay if not prevent the manifestation of high blood sugars despite genetic predisposition.
- These dietary changes can surely help a diabetic in achieving a better control of glucose, with any medication (including insulin) from any System of Medicine that he uses for treatment of his diabetes.
- In addition, a healthy lifestyle with adequate sleep and exercise, meditation, and work-life balance, will help you manage your blood sugar within normal range.

11. I have diabetes. What fruits can I take?

- Fruits high in fiber and low in sugar and sodium content have a significantly lower glycemic index.
- Fruits with high glycemic index include watermelon, other melons, raisins, pineapple, mango, ripe banana, and cranberries (76 – 60)
- Fruits with low glycemic index include cherries, berries, grapefruit, pears, apricot, orange and pomegranate (25 – 35)
- Kiwi, Apple, Custard apple, grapes and Sapota (Chiku) have a moderate glycemic index (40 – 55)

- Dried fruits generally have a higher glycemic index than fresh and are best avoided.
- Fruit juices (even freshly made) have a higher glycemic index than fruits.
- Packed juices (with no added sugar) also have a significant amount of sugar in juice concentrate and should not be consumed.

12. Why do I feel numbness in my feet? How should I look after my feet to prevent complications like Diabetic foot?

- Sensory and Motor nerves get affected in diabetes get we. One may not be able to perceive hot and cold sensations and may feel numbness. There can also be needle prick like sensations (abnormal positive sensations) in the hands and feet.
- You must take good care of your feet even if you don't feel any numbness.
- Do's and Don'ts of Footcare

Do's	Don'ts
Dry feet gently, especially space between toes after every bathNever let the feet remain wet, after bath or because of sweating	Never let the feet remain wet, after bath or because of sweating

Check feet everyday for redness, swelling, soreness, cuts, blisters, corns/calluses	Never walk barefoot
Use comfortable footwear, like – preferably shoes with broad toes	Never use footwear with narrow toes
Use cotton socks as far as possible	Avoid using synthetic socke

13. What if I have blurring of vision?

- Frequent and extreme changes in blood sugar can cause blurring of vision. However, there can be other serious issues like glaucoma, and retinal problems that can cause complete loss of vision.
- Please consult with your treating physician as well as an ophthalmologist for any such problems.

14. I am receiving regular treatment for diabetes, there are times when I feel extremely hungry, what should I do?

- Check your blood sugars, whenever this happens.
- You may be having episodes of hypoglycemia (or low blood glucose), consult your treating physician for a possible reduction in doses of drugs and/or insulin.

15. Being a diabetic, what kind of exercise will be good for my well-being?

- At least 150 minutes/week of aerobic exercise is recommended for you.

- Best exercise for you would be brisk walking, yoga (under supervision), racket sports, cycling and swimming

16. Do I have to take insulin injections lifelong for control of diabetes?

- If you are a type-1 diabetic, the answer is 'YES'
- In other types of diabetes, insulin may be required only during periods of stress

17. What if I have episodes of ghabrahat, palpitation and/or sweating?

- While ghabrahat, palpitation, and/or sweating could be because of low blood glucose, they could also signify accompanying heart disease or angina, which could be without pain in a diabetic.

18. Is diabetes mellitus caused by eating excessive sweets or sugar?

- Taking in excessive sweets and/or sugar leads to frequent increase in blood sugar values which requires insulin secretion and episodes of hyperinsulinemia. This can over a period of time contribute to increase in weight (obesity), insulin resistance as well as diabetes mellitus.

19. Can we replace sugar with sugar free?

- For taste, while one may replace sugar with sugar free, but all sugar substitutes have side effects, that could be harmful. It is best to avoid sugar

20. Can DM be prevented absolutely?

- It may not be easy to prevent diabetes mellitus, when associated with a very strong family history, but a healthy life style (as mentioned in the section on hypertension) can help delay the onset to a large extent.

21. What are the risk factors for DM?

- Family History of diabetes
- Obesity
- Sedentary life style

22. Will I develop DM if my parents (one or both) have it?

- If one or both parents have diabetes mellitus, there is a fair chance of your developing diabetes mellitus. However, you can delay the onset by avoiding direct simple sugar and sweets and following a healthy life style

23. What are the complications of untreated DM?

- Untreated diabetes mellitus can result in numerous acute and/or chronic complications, outlined below:

Acute Complications	Chronic Complications
• Infections of a) Skin b) Genital c) Urinary d) Tuberculosis • Coma due to high sugar • Coma due to low sugar (hypoglycemia) • Acute loss of vision	• Retinopathy • Peripheral Neuropathy • Infertility • Nephropathy (Renal failure) • Increased atherosclerosis resulting in stroke (both cardiac and cerebral) • Hypertension

- Most of the above-mentioned complications can result in potentially fatal events.

24. Will I still have complications even after taking regular treatment for DM? And if my BSL is in control?

- Complications can occur despite taking treatment but they will be delayed and milder than without treatment.

25. How often should we check BSL? – If I am not diabetic (without and with risk factors), prediabetic, Diabetic?

- If you are not a diabetic and without any family history of diabetes, tests once a year after the age of 30 years should be adequate.

- If you are a diabetic, on insulin regular monitoring of blood glucose 3-5 times a day and at least 3 times week will be required.,
- For a diabetic, who is on oral medicines, checking of HbA1c once in 3-6 months should be adequate.
- A pre-diabetic (lady with gestational diabetes, patient with previous history of abnormal blood glucose) should have his blood sugar values checked every 6 months.

26. Is there any difference in readings of BSL on glucometer and in lab? Which one is more accurate and reliable or preferred?

- Glucometer checks capillary blood glucose, which can be up to 15% higher than venous blood glucose measured at the same time.
- While monitoring by glucometer becomes mandatory, when on insulin, it is not required, when patient is on oral drugs, unless there are symptoms suggestive of hypoglycemia and/or ketoacidosis.

27. What are alarming readings of BSL? (Lower and higher) What to do in case I have alarmingly low or high readings?

- A blood glucose level of less than 60 or more than 250 mg/dl should be considered alarming
- Re-check in case of same values
- In case same values persist on re-checking, consult your doctors immediately.

28. What is insulin resistance?

- When action of insulin on tissues is inadequate, it is termed as insulin resistance.

29. Why Do I crave for sweets even if my blood sugar is high?

- Craving for sweets in a diabetic is because of episodes of hypoglycemia and/or hyperinsulinemia.

30. What changes (inclusions and exclusions) are needed in diabetes? Does stopping intake of sweets suffice?

- Sweets/direct sugar has to be stopped completely. However, many other changes are required to be made in the diet. These have been outlined in a previous question as well.

31. How does exercise affect blood sugar level—in diabetes and in non-diabetic?

- Exercise decreases blood sugar level, both in diabetics and non-diabetics. However, diabetics are more at risk of having low blood sugar after exercise.

32. What is SMBG? What is CGM?

- SMBG is Self-monitoring of blood glucose. This is required only for diabetics who are using insulin for treatment.
- CGM is continuous glucose monitoring. It is required only in patients with brittle diabetes (those with rapidly fluctuating glucose levels). This will also mostly be required by diabetics on insulin therapy or certain conditions such as pregnancy and post kidney transplant.

33. Is it mandatory that all diabetics have glucometer?

- It is not mandatory for all diabetics to have blood glucose. But all diabetics who need to do self-monitoring of blood glucose as mentioned above need to have a glucometer.

34. Can high blood sugar affect cognition, mental health?

- It is more common for diabetics to have mental health problems such as depression. Hypoglycemia can affect cognition.

35. What is the role of family and friends in DM management?

- Family and friends must be aware of the disease and its complications specially hypoglycemia and its symptoms, when they will be required to take an emergency action to prevent hospitalization, even death

36. What is glycosylated Hb? What is the significance?

- Glycosylated hemoglobin is a test that has been used for monitoring blood sugar control in diabetes mellitus.
- It is an investigation that helps a physician know about glucose control over 12 weeks. I an individual less than 70 years, it should be maintained at around 6.5 or less. However acceptable values at 70 years or more, acceptable values are 10% of age (7 at 70 years, 7.5 at 75 years, 8 at 80 years, 8.5 at 85 and so on). HbA1c is best monitored and interpreted by a treating physician

37. How do I diagnose and manage diabetes in young children and adolescents?

- Diabetes in children and adolescents is usually type 1, that is insulin requiring.
- These patients typically present with the classical triad of polyphagia, polydipsia and polyuria.
- Some patients present with serious complications, especially ketoacidosis. Patients with ketoacidosis have pain abdomen, vomiting, feeling of moderate or severe weakness; if ignored patients have difficulty in breathing (labored breathing) and may go into shock and collapse.
- Children and adolescents are in a phase of growth, therefore dietary restrictions are to be maintained at a relatively lower level; instead, insulin therapy should be altered to match food intake, as per growth requirement.

38. How to manage diabetes in elderly with other illnesses and treatments?

- Elderly patients with diabetes may have two peculiarities. Firstly, they have multiple health issues requiring polytherapy, with a risk of multiple drug interactions. Secondly, these patients are very prone to two complications
    - Hypoglycemia with hypoglycemic drugs and insulin
    - Dehydration due to hyperglycemia resulting in a life threatening hyperosmolar state because of hypernatremia. (increase in sodium)

39. What is the effect of stress (mental and physical) on BSL in normal persons and in diabetic individuals?

- Physical stress, like exercise, will reduce blood sugar levels.
- Mental stress can increase secretion of cortisol and/or adrenaline to marginally increase the blood sugar values, both in normal individuals as well as in diabetics.
- There are no major changes in blood sugar during stress of minor surgeries and/or minor injuries. However, if there is a major injury (RTA) or/and if individual has to undergo major surgeries, increase in blood sugar values are anticipated and these times usually require insulin/or escalation of antidiabetic treatment.

40. What is the effect of sleep on DM and vice versa?

- Adequate, restful sleep is part of a healthy life-style, essential for management of all life-style diseases.
- However, diabetes can have a profound effect on sleep. Low blood sugar (hypoglycemia) occurring during sleep can cause nightmares and restlessness in sleep. Such patients may also complain of early morning headaches.
- Uncontrolled hyperglycemia related metabolic changes can have a negative effect on the quality of sleep, which can vary from insomnia to early morning awakening. Further these patients may not feel fresh after getting up
- At times, high carbohydrate intake does cause drowsiness, and laziness during day time

41. Is taking advice from dietitian mandatory? Any diet prescription required?

- Learning about and managing one's diet is essential for management of diabetes. However, a dietary prescription is not mandatory.
- Diet of any individual is not to be changed completely for treatment of diabetes. Changes should be suggested within the usual diet options for the patient, and that also address the working hours of the patient.

42. How to manage diet and medicines while travelling?

- Diet and medicines are easily manageable during short travels. Longer travels may require greater adjustments.
- Some things that may help include:
    - Avoid long gaps and/or missing meals
    - Ensure adequate hydration
    - Carry snacks with themselves at all times
    - Avoid taking insulin in case a meal is likely to be delayed for unavoidable reason.

43. How to manage diabetes during prolonged fasting as during Navratri and/or Ramadaan?

- Diabetics on insulin should not fast
- If possible, all diabetics should refrain from fasting
- Type 2 diabetics on treatment should consult their physician while deciding on the dose and timing of their drugs

44. Can I modify medicines when I happen to eat too much/little? How?

- Modification of doses of insulin can be done by an individual, based on pre-meal and post-meal SMBG
- Modification of oral drugs is not required.

45. How do other minor illnesses (infections, minor injuries, etc.) affect DM? What precautions are needed?

- Minor illnesses and/or injuries do not affect diabetes mellitus, if its adequately managed or controlled.
- No precautions are required except that it is best to avoid injuries by being careful, because even a minor injury on the foot can turn into serious diabetic foot.

46. As I am on many restrictions my social life gets compromised?

- Ordinarily, there are not many restrictions, and diabetes mellitus does not affect social life of any individual, it is mostly a perception that needs to be addressed during a discussion with peers and one's physician.

47. Can I stop medicine when my blood sugar is in normal range?

- It may be possible to reduce medication in a type 2 diabetic but generally not possible in a patient using insulin.

48. What to do when I miss my dose of medicine?

- Missing an occasional dose is not detrimental but regularity of medication must be ensured.

49. How to check BSL while on treatment? With or without medicines?

- Self-monitoring as well as laboratory testing is to be done with medicines.

50. Does it mean that I have serious condition if I am started on insulin? Is it true that once insulin is started, it will be there for lifelong?

- Type 1 diabetic will require insulin for life.
- Type 2 diabetics require insulin intermittently during periods such as stress, infections, surgery etc. but can go back to their oral medication once periods of stress are over.

51. Does taking bitter guard juice help?

- It may be of help, but bitter gourd as a treatment for diabetes should not be taken without consultation with an Ayush practitioner, as even such treatments have side effects