



24 Hours Pharmacy



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However, other active sports like swimming/badminton/ tennis/ cycling are encouraged in younger & healthier people as they burn more calories as compared to walking.

An ideal exercise regimen would be a mix of activities for 4 days and walking for 3 days of the week.

Young healthy diabetic patients should be encouraged to work out regularly with weights and other muscle building exercises.



Are yoga and meditation good for diabetics?

Yoga and meditation are recommended for mental relaxation, mind power control and improving body tone and flexibility. However, they should not be substituted for weight loss exercises.



“

Today's fast paced lifestyle has put human beings on the hitlist of different lifestyle disorders. Diabetes is one of the common problems people are facing. Almost six percent of the total world population today is affected by diabetes. Indians are genetically at high risk of developing diabetes. At least 50% of all people with diabetes are still unaware of their condition. This alarming rise in the diabetic population is a matter of grave concern that needs to be addressed without delay. Hence, the need of the hour is to make people aware. We at SevenHills provide care and treatment for all problems related to diabetes with quality healthcare by compassionate medical professionals, accessible and affordable to all. ”

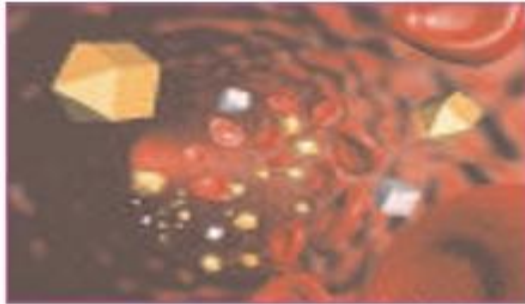
FACTS ABOUT DIABETES

- Every minute twelve people develop diabetes and six people die of diabetes-related causes.
- India will have largest number of diabetic patients in the world by 2015 (approximately 6 crore). Almost 50% of these patients are likely to be in the age group of 35 to 45 years.

DIABETES MELLITUS

What is Diabetes ?

Diabetes is a metabolic disorder. Metabolism refers to the way our bodies use food for energy and growth. Most of what we eat is broken down into glucose



(principal source of fuel for our bodies). Insulin – which is produced by the pancreas breaks this glucose further to generate energy required by the body. Sometimes this breakdown is not performed proper and the blood glucose levels increase (hyperglycemia). This may be either due to inadequate production of insulin by the pancreas or ineffective usage of the insulin produced. This condition is called Diabetes Mellitus - often referred to simply as Diabetes.

What are the types of Diabetes?

Type-I:

- This has been previously called as juvenile or Insulin Dependent Diabetes.
- It usually begins before the age of 30, but may strike at any age.
- It occurs due to complete absence of insulin production by the pancreas.
- These patients need to take insulin injections daily lifelong and omitting even a single dose of insulin can be life threatening.

Which exercises are suitable?

Walking is the simplest exercise and suitable for people of all ages.



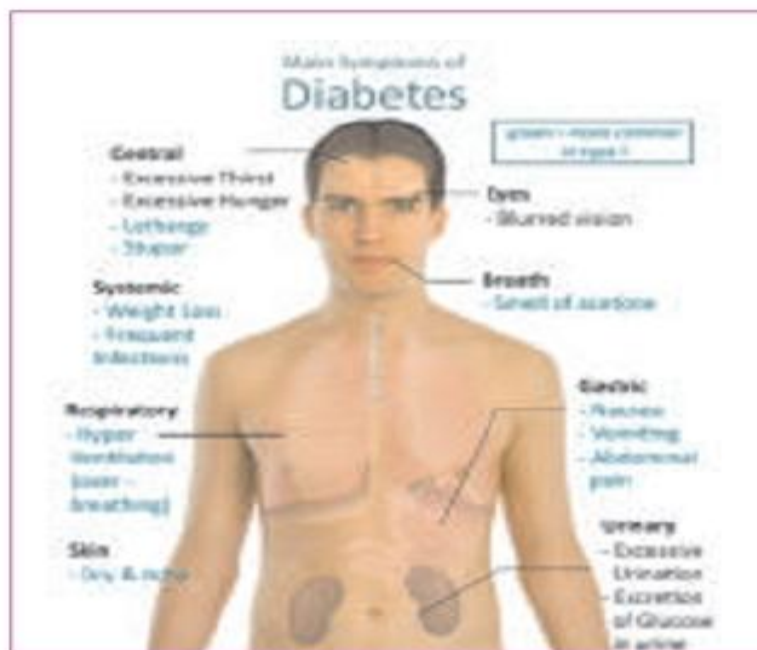
Secondary Diabetes :

This refers to diabetes caused by some virus, drugs, surgery, infections or genetic syndromes.

Who should be screened for Diabetes?

- Anyone >30yrs of age
- Habitual physical inactivity
- Obesity: Waist circumference -
(>80cm in F)
(>90cm in M)
- High BP
- Abnormal lipid levels (HDL<40, TG>150)
- Positive family history for Diabetes
- Women who have delivered baby weighing >4 kg
- Women with polycystic ovary syndrome

What are the symptoms of Diabetes?



DIABETES DIET

What to Eat?

- ✓ Eat small and frequent meals
- ✗ Remember "No Fasting, No Feasting"
- ✓ Use artificial sweeteners
- ✗ Avoid sugar honey, jaggery
- ✓ Eat whole grains like wheat, bajra, ragi, jowar, brown rice, ukda chawal, oats, brown bread, poha, upma, whole pulses, dals, sprouted pulses
- ✗ Avoid sabudana, maida & bakery products
- ✓ Cut down on rice
- ✗ Avoid basmati rice
- ✓ Eat two fruits daily
- ✗ Avoid banana, grapes, mango, chikoo, custard apple and sugar cane.
- ✓ Eat plenty of all green leafy vegetables & salad
- ✗ Avoid starchy food vegetables like suran, ratalu, whole potato, arbi
- ✓ Cut down on ghee, butter, malai, cheese, etc.
- ✗ Avoid fried food
- ✓ Use seasoning like lemon, zeera powder, dhania, pudhina to add flavour
- ✗ Limit the intake of salt and its products like papad, pickle, coconut and groundnuts
- ✓ Egg whites, deskin chicken and grilled fish are healthy non-vegetarian dishes, if used in moderation
- ✗ Avoid red meat, mutton, egg yolk, butter chicken, etc.

The common problems are:

- **Coronary Artery Disease:** Angina, Myocardial infarction, Sudden death.
- **Cerebro-Vascular Accidents:** Transient ischemic attacks (TIA), Stroke
- **Peripheral Vascular Diseases (PVD):** Ulcers, Gangrene

DIABETIC FOOT

The most common and threatening complication in diabetes is a DIABETIC FOOT. The maximum number of hospital admissions in diabetics is due to foot problems.



What are the causes of diabetic foot?

- **Uncontrolled blood sugar levels:** Sugar is a good medium for growth of bacteria due to which infections occur rapidly. A person with high sugar levels is more prone to infections.
- **Vasculopathy (Impaired blood circulation):** Diabetes affects the blood vessels thereby decreasing the blood supply. This leads to delayed wound healing, dead cells & tissues, gangrene of the foot and finally amputations, if prompt medical intervention is not provided.
- **Peripheral Neuropathy (Impaired nerve function):** This is one of the most important and commonest causes of diabetic foot. 60 to 70% of diabetics suffer from neuropathy, many of which are asymptomatic. Diabetes affects nerves and causes in loss of sensations. As a result of this, the patients do not feel the pain of minor wounds and tend to ignore minor infections, ulcers and pus formations. This



What are the types of Insulin?

There are mainly 4 types of insulin. Each one differs in their actions in terms of:

- Onset of action(when they start to work)
- Time of peak action (when they work maximum)
- Duration of action(how long they work)

Type of Insulin	Onset	Peak	Duration	Waiting periods	Type
Short acting (regular acting)	30-60 mins	2-4 hrs	4-8 hrs	20-25 hrs	Clear/ watery
Intermediate acting (NPH)	2-4 hrs	4-10 hrs	10-20 hrs	20-25 mins	Cloudy
Long acting	2-3 hrs	None	24	No reaction to meal	Clear/ watery
Rapid acting (analogue)	10-20	1hr	3-4 hrs	within 5 minutes	Clear

Now a day's premixed insulin is also available in the market. The combination of 30/70 means 30% of short acting insulin or 30% of regular acting insulin with 70% of intermediate acting insulin.

Your doctor will decide the type of insulin that suits you the best, depending on your blood glucose level, work schedule, meal timing and exercise habits.

How do you take Insulin?

Insulin can be taken in different forms:-

- Syringes and needles
- Insulin pen(easy and convenient to use)
- Insulin pumps

Route of administration for insulin injection:

- Abdomen
- Thighs
- Buttocks
- Arms



HYPOGLYCEMIA

What is hypoglycemia?

Hypoglycemia means a low blood glucose level i.e below 60mg/dl.

Low blood glucose levels are classified into 3 types:

- Mild: Blood glucose < 60 mg/ dl
- Moderate: Blood glucose < 50mg/ dl
- Severe: Blood Glucose < 40mg/ dl

What causes hypoglycemia?

- Delaying or skipping snacks/ meals
- Doing more exercise than usual
- Excessive medication
- Lack of carbohydrates in the diet
- Over indulgence in alcohol

Are there any symptoms of hypoglycemia?

- Hunger
- Sweating
- Dizziness
- Headache
- Lightheadedness
- Blurred Vision
- Irritability & Shakiness
- Loss of co-ordination

Other symptoms like nausea\vomiting, confusion, nightmares, crying out during sleep, palpitations, tingling or numbness in the lips or tongue may occasionally be present.

In such conditions, one may temporarily raise the blood sugar levels by selective intake of the following:

- 1 tablespoon of sugar/ honey
- A handful of raisins
- 2-3 glucose biscuits
- A cup of fruit juice
- 2 pieces of chocolate



Contact your doctor to adjust your medication.

Hypoglycemia and driving

- Plan your trip after having a snack.
- Keep plenty of snacks (fruits/ snack bars/ juice handy in your car.
- At the onset of any symptom, stop and park your car.
- Check blood glucose levels if feasible.
- Have something sweet (sugar/ chocolate) to eat and follow with a complex carbohydrate snack like fruit.
- Recheck your sugars after 15min, if more than 80mg%, its safe to start driving back.
- Wait till you are comfortable and your symptoms have subsided completely before you start driving.

How to prevent hypoglycemia?

- Regularly check your blood sugar levels.
- Regularly eat your meals on time.
- Avoid excessive alcohol intake & eat something after the drink.
- Eat some carbohydrate-rich food before you do any exercise.
- All diabetics should always carry a container of sugary fruit juice or a candy bar / chocolate so that they are readily available if symptoms are felt.
- Let your friends, colleagues and family members know - if you are susceptible to attacks of hypoglycemia. Explain them what the signs are and what should be done.

REGULAR TESTS FOR DIABETICS

Regularly monitoring of following test is very important for people with diabetes.

- Blood sugar (Fasting and Post-meal)



- Lipid profile
- HbA1c
- Urine Microalbumin
- Eye checkup for Retinopathy
- Thyroid test (for type-1 diabetes)

TARGETS FOR GOOD CONTROL



- Fasting Blood sugar (FBS) : <100
- Post Lunch sugar (PLBS) :- <140
- HbA1c:- <7% (<6.5% if young and no complications)
- Blood Pressure (BP) :- <130/80 mm Hg
- Lipids: - LDL <100mg%
- TG: - <150mg%
- HDL :- >40mg% in males and >50mg% in females

INSULIN THERAPY

What is Insulin Therapy?

Insulin helps to control the blood glucose level in the body. All type-1 diabetes patients must take insulin. Most type-2 diabetes patients are on oral hypoglycemic drugs. However, in some patients insulin is required to maintain good glycemic control.



aggravates the problem finally leading to limb amputations.

What are warning signs?

- Redness
- Swelling
- Pain
- Cramps in calves
- Discoloration of toe nail or skin
- Corns & Callosities
- Tingling, numbness or burning sensation.

How to protect yourself from a diabetic foot?

- Wash your feet daily with lukewarm water.
- Dry your feet properly with a cotton cloth or towel, especially in the web spaces to avoid fungal infections.
- Cut/trim your nails regularly.
- Avoid massage or hot/cold application
- NEVER walk bare feet.
- Wear comfortable foot wear. Even the slightest rubbing or misfit can cause a never healing blister.
- Avoid slippers and chappals. Wear sandals with back support or shoes.
- Wear a fresh pair of cotton socks every day.
- Apply moisturizing cream or lotion on base of the feet. Do not apply in-between the toes.
- Daily examine the foot for any uneven signs.
- Get periodic foot examination done, to prevent unnoticed foot complications.
- Last but not the least, control your blood sugar.



Insulin works best when injected into the fat layer just beneath the skin. Hence, the rate of insulin absorption is highest on the abdomen and least on arms. So it is preferable to take the injection on abdomen with rotation.



How do you rotate your injection site?

- Move the place of your injection by about a fingers width from the place you used last time.
- There are site rotation guides available to help you rotate your injections.

What are the injection related precautions?

- Store the insulin in a cool place away from direct sunlight. (E.g. Lower compartments of the refrigerator, never store in a freezer)
- Cold insulin injection is painful.
- Roll but do not shake the vial.
- Clean the skin, not the needle.
- Inject vertically or at an angle of 45°.
- When mixing insulin, draw the short acting insulin in the syringe first.
- Do not rub the area after injection.
- Use a new syringe for every injection.
- When using conventional insulins like Actrapid, Huminsulin R, Mixtard, Huminsulin 30/70, before meals, wait for 30min after injecting. Newer insulin like Novomix, Novorapid, Humalog, Apidra do not require the waiting period after injections.

BUT - REMEMBER 50% PATIENTS WILL NOT HAVE ANY SYMPTOMS AND ARE DETECTED ONLY ON ROUTINE BLOOD TESTS

COMPLICATIONS

High Blood glucose can lead to many Diabetes related complication which depends on duration of diabetes, degree of blood glucose control, association with smoking and hypertension.

Major prevalent Micro-vascular complications:

- **Neuropathy:** Involvement of sensory nerves can cause burning feet, pain and cramps in feet worse at night and loss of sensations in advanced cases. Involvement of motor nerves cause muscle weakness and foot deformities all of which predispose to foot ulcers and amputations
- **Retinopathy:** Uncontrolled diabetes can damage the nerves and blood vessels of the retina of the eye leading to blindness. Infact, diabetes is the leading cause of new onset blindness.
- **Nephropathy:** Uncontrolled diabetes affects the protein filtration of the kidneys leading to kidney damage. It can also predispose to recurrent urine infections which again can damage the kidneys.

Macro-vascular Problems:

People with diabetes are more likely to have heart diseases because, it increases their tendency to develop clogged and hardened blood vessels (atherosclerosis). Diabetes is also associated with high blood pressure (hypertension) and cholesterol abnormalities.

What to drink?

- ✓ Use cow milk and its products
- ✗ Avoid buffalo milk and its products
- ✓ Drink plain water, buttermilk, coconut water, dal water or vegetable soup
- ✗ Avoid cold drinks, alcohol, sharbat & all fruit juices

An Ideal Diabetic Diet

Breakfast	8:00 am – 9:00 am
Mid-morning snack (Fruit/ buttermilk/coconut water)	11:00 am
Lunch	1:00 pm – 2:00 pm
Evening snack (Sandwich/kurmura/sprouts/ dry bhel/chana with husk)	5:00 pm
Dinner	8:00 pm – 9:00 pm
Bedtime snack (Milk/fruit)	Atleast 1 hour after dinner

Oil Intake	
1 Person	½ litre per month
A family of 4	2 litres per month

WORKOUT FOR DIABETES

Why should you exercise?

All diabetic patients should exercise regularly as exercise has been proven to:

- Burn Calories
- Better utilization of glucose
- Better response to drugs and insulin
- Improve circulation
- Improve mental health

All leading to better blood glucose control



Type-II:

- It is generally adult onset diabetes & accounts for 90-95% cases.
- Type 2 diabetes occurs because of insulin resistance i.e. your body is not able to properly use the insulin produced by the pancreas. Hence, high levels of glucose build up in your blood.
- It occurs because of a combination of genetic influences (like a positive family history) and lifestyle factors i.e. faulty eating habits, increasing obesity and less physical activity.
- It is preventable.
- These patients are managed with a combination of diet, exercises and tablets.
- Most type 2 diabetic patients require insulin by 8-10 yrs of their diabetes onset.
- However maintaining good blood glucose control can delay the need for insulin.

Gestational Diabetes:

- It refers to diabetes during pregnancy.
- Gestational diabetes develops in 2-5% of all pregnancies and settles when the pregnancy is over.
- Tight glucose control is necessary as high blood levels can cause birth defects, increased weight of babies, and sudden foetal deaths.
- Such women have an increased risk of developing type 2 diabetes later in life.



What precautions should a diabetic take before starting exercises?

- Always start exercises gradually
- Wear comfortable well fitting shoes with cotton socks, when exercising outdoor
- Get an eye and cardiac check up before starting strenuous exercises like treadmill and weights
- Always have a small snack ½ hr before exercise

What about food and insulin?

- If you use insulin, exercise after eating, not before. Test your blood sugar before, during and after exercising.
- If you're not an insulin user, test your blood sugar before and after exercising, if you take pills for diabetes.

Don't exercise when your blood sugar is more than 240mg/dl, if you are sick, short of breath, having ketones in your urine or experiencing any tingling, pain or numbness in your legs.

Final Check List



Blood Sugar Control



Healthy Eating



Personal Care
& Hygiene



Physical Activity



Regular Medication



Regular Health
Screening