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WORLD HEALTH DAY CELEBRATED BY Dr. MOHAN'S DIABETES SPECIALITIES CENTRE

World Health Day is celebrated on 7th April every year to mark the founding of World Health Organization (WHO). Every year, the WHO selects a priority area of global public health concern. This year the theme chosen is “Diabetes” and this is being promoted through their slogan “Beat Diabetes!” Through this slogan WHO aims to increase awareness about the rising epidemic of diabetes, its staggering social and economic burden



Release of Booklet on “Diabetes is preventable – We all have to work together” by **Dr. A. Muruganathan**. Also in photo (left to right): **Dr. T. N. Ravi Shankar, Ms. Aswathy Dilip, Dr. Anand Moses, Mr. Cyril Alexander, Dr. R. M. Anjana, Dr. V. Mohan, Dr. Ranjit Unnikrishnan, Ms. Prachi Kathuria, Ms. Sudha Vasudevan**

and its health consequences in developing countries like India. Currently it is estimated that 425 million people had diabetes in 2015 globally and this number is projected to increase to 642 million by 2040. Over 75% of people with diabetes are in low and middle income countries.

As a WHO Collaborating Centre for Non communicable diseases (NCDs) - Prevention and Control, Dr.Mohan's Diabetes Specialities Centre, organized a series of screening camps, quiz programmes and healthy cooking demonstration. The highlight was a Panel Discussion entitled “**Prevention of diabetes needs a multisectoral approach**” on 7th April 2016 to commemorate World Health Day.

The panel discussion was moderated by **Dr. V. Mohan**, Chairman, Dr. Mohan's Diabetes Specialities Centre and a distinguished panel consisting of several prominent people from various sectors and walks of life to discuss the role of Prevention of Diabetes. The eminent panelists included: **Dr. A. Muruganathan**, Dean – Indian College of Physicians (ICP), **Dr. Anand Moses**, President of Research Society for the Study of Diabetes in India (RSSDI), Tamil Nadu Chapter, **Dr. T. N. Ravi Shankar**, Chairman, Deepam Hospital, Chennai, **Ms. Aswathy Dilip**, Architect-Urban designer, Institute for Transportation and Development Policy, Chennai, **Ms. Prachi Kathuria**, Project Officer, HRIDAY, New Delhi, **Mr. Cyril Alexander**, Executive Director, Mary Anne Charity Trust (MACT), **Dr. R. M. Anjana**, Vice President and Head, Physical Activity Research, Madras Diabetes Research Foundation, **Dr. Ranjit Unnikrishnan**, Vice Chairman, Dr.Mohan's Diabetes Specialities centre and **Ms. Sudha Vasudevan**, Head, Food and Nutrition Research, Madras Diabetes Research Foundation, Chennai.

These activities were conducted under the auspices of WHO and supported by Healthy India Alliance (HIA), for prevention and control of NCDs, Indian College of Physicians (ICP), Indian Medical Association (IMA) and Research Society for the Study of Diabetes in India (RSSDI). On this occasion, we also released a booklet on “**Diabetes is preventable – We all have to work together**”.



FOURTEENTH MDRF-UAB-FIU INTERNATIONAL SEMINAR ON PREVENTION & CONTROL OF NON-COMMUNICABLE DISEASES

Non-communicable diseases (NCDs), including diabetes, cardiovascular disease, cancers, chronic respiratory diseases, and mental illness, are now the major cause of death in India and thus represent an important health care and economic threat to the country. There is an urgent need for enhanced clinical research training and capacity building in NCD prevention and control.

With this in view the current programme on “Strengthening Indian NCDs clinical research and training capacity” was taken up by the **Madras Diabetes Research Foundation (MDRF)**

along with **Dr. Mohan's Diabetes Specialities Centre (DMDSC)**, for the fourteenth successive year. MDRF is supported by the Florida International University (FIU), USA, the University of Alabama at Birmingham (UAB), Birmingham, USA, and University of Minnesota, Minnesota, USA. The Principal Investigator from the USA is **Dr. O. Dale Williams**, Professor and Chair, Department of Biostatistics, Robert Stempel College of Public Health and Social Work, Florida International University, Miami, Florida and he is assisted by **Dr. Cora Lewis**, Professor and



Presentation of 11th MDRF-UAB-FIU Gold Medal Oration Award to Dr. Soumya Swaminathan by Dr. Mahen Wijesuriya. Also in Photo (left to right): Dr. Dale Williams, Dr. Sanjay Mehendale, Dr. V. Mohan, Dr. R. M. Anjana.



Associate Director for Research, Division of Preventive Medicine, University of Alabama at Birmingham, Birmingham and **Dr. Myron Gross**, Professor, Department of Laboratory Medicine and Pathology, University of Minnesota, USA. **Dr. V. Mohan**, President of MDRF is the Principal Investigator for India and assisted by **Dr. R. Guha Pradeepa** and other colleagues from MDRF. This programme is supported by the National Institutes of Health (NIH) U.S.A. under the Fogarty International Center (FIC) NCD Life Span Programme.

Over 3000 young researchers, epidemiologists and community health specialists from all over India and neighbouring countries have been trained through our Seminars. The primary objective of the programme is to encourage capacity building in India and to develop strategies for prevention of NCDs in general and diabetes and cardiovascular diseases in particular. In order to plan strategies for prevention at the national and international level, the 14th International Seminar on 'Prevention and Control of Non-Communicable Diseases (NCDs)' and 12th Intensive training program was conducted at MDRF from 3rd - 7th February 2016.

The **intensive interactive training programme** on '**Clinical Research Methods**' was conducted at

MDRF from 3rd to 5th February, 2016. The two-day Intensive training programme on clinical research methods included in-depth training on designing studies and risk factor analysis. Over 40 students from all over the country participated in this programme.

The **Fourteenth International Seminar on 'Prevention and Control of Non-Communicable Diseases (NCDs)'** conducted at MDRF from 5th to 7th February, 2016. Over 100 delegates from 20 institutes and Medical colleges all over the country were trained in preventive and control aspects of NCD's at the seminar this year.

The Seminar was inaugurated by **Dr. Soumya Swaminathan**, Secretary, DHR & Director General, ICMR, New Delhi. **Dr. Sanjay M. Mehendale**, Director, National Institute of Epidemiology, Chennai and **Dr. Mahen Wijesuriya**, Secretary, Diabetes Association of Sri Lanka and Honorary Director, National Diabetes Centre, Sri Lanka were the 'Guests of Honour'. During the occasion, **Dr. Soumya Swaminathan**, was conferred the '**11th MDRF-UAB-FIU Gold Medal Oration Award**' for her significant contribution in the **field of Medicine and Pediatrics** in general and **Tuberculosis and AIDS** in particular.



Hearty Congratulations

To
Our Chairman Dr. V. Mohan

For being honoured with “Excellence in Healthcare and contribution to Healthcare sector of the State award” by Times of India and FICCI with the support of Government of Tamil Nadu. He has also been conferred with the following awards recently.

1. **Dhanvantri Oration Award** by PSG Institute of Medical Sciences and Research, Coimbatore,
2. **K. Venkatanarayana TANKER Foundation Awareness Award** by Tamilnadu Kidney Research Foundation, Chennai,
3. Invited lecture at International Conference on Cardiovascular Translational Research and International Society for Heart Research, at IIT, Chennai



Dhanvantri Oration Award from PSG, Coimbatore



TANKER Foundation Awareness Award



Invited lecture at International Conference on Cardiovascular Translational Research and International Society for Heart Research, at IIT, Chennai.





Hearty Congratulations



To

Our Joint Managing Director
Dr.R.M.Anjana



For being conferred with the Tamil Nadu Young Scientist Award
by the Science City, Govt. of Tamil Nadu.

Healthy Recipe – Sprouts Avalakki

Ingredients

Red rice flakes – 100g Mustard seeds – 1 tsp
Green Gram sprouts – 30g Green Chillies – 2
Onion – 50g Turmeric powder – ¼ tsp
Tomato – 50g Curry leaves – a sprig
Green peas (boiled) – 25g Oil – 1 tbsp
Carrot (grated) – 25g Salt – to taste
Groundnut (roasted) – 10

Method

Soak rice flakes in two cups of hot water adding turmeric and salt. Heat oil in a pan and add mustard seeds. When mustard

seeds crackle, add onion, tomato, carrot, green chillies and curry leaves. Fry for a minute. Add sprouts and cook for two minutes. Add boiled green peas, salt and rice flakes. Stir for a minute, add groundnuts and serve hot.



Nutritive Value

Calories – 124 Kcal Fat – 5.1g
Carbohydrate – 24.9 g No. of serving – 4
Protein – 3.9 g Portion Size – 1 bowl



Dr. Mohan's Brown Rice flakes A healthy replacement for refined rice flakes



*Dr. S. Shobana,
Scientist,
Food & Nutrition Research,
MDRF*

&

*Mrs. V. Sudha,
Head & Senior Scientist,
Food & Nutrition Research,
MDRF*



Diabetes and cardiovascular diseases are increasing exponentially in India. According to latest estimates, more than 69 million people in India have diabetes. In addition, more than 77 million people have “pre-diabetes” and are therefore at risk of developing diabetes in the near future. While it is true that we Indians are genetically predisposed to develop diabetes, faulty dietary practices and sedentary lifestyle are also key drivers of the recent epidemic of diabetes.

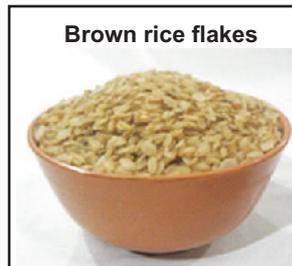


Refined rice flakes

Due to industrialization and urbanization, traditional Indian dietary habits are rapidly being displaced by diets are high in calories, carbohydrates,

sugar, fat (energy dense diet) and salt. In south India, the bulk of carbohydrates and more than 50% of the daily calories are derived from polished white rice and other refined flour based foods. Our studies have shown that consumption of excessive refined grains increases one's risk for type 2 diabetes and metabolic syndrome. During rice milling, paddy is shelled to prepare brown rice (unpolished rice, a whole grain which contains 100% bran and germ loaded with lot of nutrients). Further polishing of brown rice leads to the production of white rice, with the

loss of bran and germ, and consequently its dietary fibre, proteins, vitamins, minerals and other health beneficial phytochemicals. Consumption of white rice-based food preparations as staple choices leads to higher dietary glycemic load (GL) and glycemic index (GI) (a scale which ranks carbohydrates containing foods based on the blood glucose raising potential upon consumption relative to the GI of glucose set to a scale of 100). Foods



Brown rice flakes

high in GI and GL elicit higher insulin responses and subsequently lead to insulin resistance, type 2 diabetes and worsen glycemic control in those with

diabetes. Our previous research has shown that commonly consumed white rice varieties such as sonamassuri, ponni and surti kolam are high in GI.

Whole grain cereals with intact dietary fibre contain higher levels of unavailable carbohydrates (non-starchy polysaccharides) compared to refined/polished grains. Such whole grain-based foods are helpful in reducing the GL of diets. Switching over to low GL and lower GI foods are highly beneficial in the prevention and management of diabetes and obesity.

Rice is consumed in a variety of forms



across India. Apart from plain cooked rice, it has been utilized for the preparation of idli, dosa, popped rice (nel pori in tamil), expanded rice (pori in tamil), rice flakes (aval in tamil), sevai (string hoppers), and grits/rava. Among these, flaked rice is one of the most important rice based products. It is mainly consumed in the form of upma/poha in southern, eastern, north eastern and western regions of the country.

Brown rice flakes upma



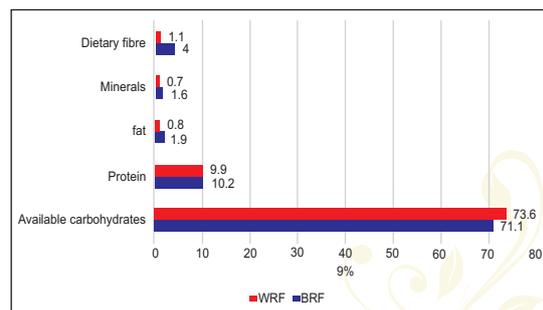
commonly available and consumed in India are highly refined.

Roller flakers offer the convenience of flaking brown rice without removal of bran. Experiments were carried out at MDRF to prepare flaked brown rice in roller flakers. For this, brown rice was suitably processed; roller flaked to desired thickness and dried at controlled conditions. Flaked brown rice prepared by this unique process is known to have a lower GI as compared to that of market refined rice flakes. Apart from this, it has good sensory properties, cooks to soft texture and is a convenience product. It is versatile and finds application in all rice flake-based preparations like flakes upma/poha. It has a promising application in convenience foods as the cooking time is considerably lower as compared to brown rice. It can be dry roasted and seasoned with spices to prepare a ready-to-eat snack. Development of brown rice flake-based snack is already in progress at MDRF.

Our studies have shown that brown rice (unpolished rice) in the form of plain cooked rice and also in some of the traditional south Indian preparations (sambar rice, kitchidi, idli, dosa etc.) elicits lower glycemic responses as compared to white rice. Brown rice is versatile and could be a functional ingredient in whole grain-based health foods. It can be a healthy replacement for white rice in many traditional preparations such as idli, dosa, string hoppers, adai etc. Currently available white rice flakes are fibre depleted and flaked brown rice is scarce in the Indian market. Hence efforts were undertaken at MDRF to flake brown rice suitably and its physico-chemical and glycemic properties were evaluated.

Flaked brown rice may be a healthier option to conventional refined rice flakes as it contains

Nutrient composition of flaked brown rice and refined rice flakes



In India, the traditional process of flaking involves soaking paddy in excess water, roasting and flaking either by pounding the paddy in a wooden mortar and pestle (traditional method) or in an edge-runner. In both the processes, the husk and the outer bran, gets separated simultaneously and the internal grain becomes flattened. Like rice polishing, during this process also, the outer bran which is rich in dietary fibre and many other phytochemicals are lost thus resulting in a fibre depleted product. Hence, flakes that are

higher levels of dietary fibre as well as bran-associated nutrients and phytochemicals. Adoption of whole grain-based products like flaked brown rice in the diet helps in improving the quality of diet.





BARRIERS TO COMPLIANCE

Ms. Vidyulatha Ashok

Psychotherapist, Dr. Mohan's Diabetes Specialities Centre, Chennai

“Where should I go?” asked Alice. “That depends on where you want to end up,” replied the Cheshire Cat; this witticism from Lewis Carroll, mathematician turned writer, of the famous book, *Alice in Wonderland*, quite aptly sums up what the patient expects by complying with the regimen when he/she has diabetes.

Diabetes is chronic in nature, due to which, non compliance can prove to be a major barrier to effective treatment, besides leading to poor health outcomes. According to WHO, the non-adherence rates for chronic illness regimens and for lifestyle changes is close to 50%. Non compliance with the diabetes regimen can lead to increase in symptoms, disability, complications, (especially nerve damage and kidney), and even mortality.

Although the doctor and prescribed treatment play an important role in diabetes management, without the patient's participation, it is like “2 people working towards different goals.” Patients often feel a sense of permanence and powerlessness due to the demands of

diabetes, besides multidimensional care required to keep the sugars under control. Compliance with diabetes regimen encompasses four factors, viz. healthy diet, exercise, regular medication and blood glucose monitoring. Lifestyle changes that have to be made to keep the sugars in check can be challenging and frustrating for some.

Despite wide spread awareness and education regarding diabetes, non-compliance continues to be a matter of concern, due to several reasons:

1. Social factors: Social support plays an important role in diabetes management. Family members and spouses could be more understanding and less critical when the patient is not complying, to find out the reasons for their non cooperation. Being authoritative makes the patient more resistant and defiant, and leads to social isolation.

2. Cultural and religious factors: Attitudes and health beliefs are often influenced by culture and religion. People have faith in indigenous medicine due to its therapeutic value, and comes highly



recommended by the elders in the family, whose advice they do not want to reject. Food habits, in general, and fasting and feasting at festival time, are also governed by the same factors.

3. Psychological factors: Psychological problems such as depression, anxiety and eating disorders aggravate metabolic control. Apart from these, even high stress levels and maladaptive coping strategies lead to non compliance. Hence, identification of the above mentioned problems, addressing the issue, as well as stress management techniques, will lead to better adherence.

4. Personal factors: Personal qualities of patients such as forgetfulness (to take the medication), lack of will power and discipline, and low motivation levels affect compliance. Sometimes, patients adopt a passive, defeatist role as they feel no obvious 'benefits' by complying. Quite often, the treatment regimen does not make sense to them; this is especially true in the case of insulin, which they feel will lead to 'insulin addiction' and like a drug, is best avoided.

5. Socio economic status: Low socio economic status, financial constraints and low education levels leads to poor adherence.

6. Misconceptions: There is a general misunderstanding about the chronic nature of the disease, as diabetes is mainly asymptomatic. Patients do not feel the

need for adherence to the treatment regimen until it is too late. Deterioration in health and symptoms are seen as a separate issue unrelated to diabetes. Hence, they look only for alleviation of symptoms at the time. Traditional medicines are preferred as people are convinced that they come without side effects. Hence, it would be helpful to the practitioner to be informed regarding alternate treatment, to avoid adverse drug interactions.

Last, but not least age also plays an important role with regard to compliance. Young people may not comply with their regimen, as they do not feel 'unhealthy', and because they do not want to change their present lifestyle, and seem different from their friends. On the other end of the spectrum, old people may also not comply due to failing memory, physical handicaps and lack of social support. Young and old people are likely to comply if supported by their family and friends.

These psychosocial issues should be taken into consideration, as they are barriers to good metabolic control, and better quality of life. From an individual point of view, the patient will probably benefit from four factors, viz., readiness to change, self motivation, a sense of personal choice and control, when it comes to diabetes management, and use of problem – solving techniques, for positive health outcomes.



PREVENTION AND MANAGEMENT OF COMPLICATIONS OF DIABETES



Dr. V. MOHAN

Chairman & Chief Diabetologist

Dr. Mohan's Diabetes Specialities Centre, Chennai

&

Dr. R. GUHA PRADEEPA

Sr. Scientist & Head, Research Operations

Madras Diabetes Research Foundation, Chennai



Although by definition, diabetes is characterized by elevated glucose concentrations, the impact of diabetes on both the health of individuals and on the health care systems, is almost entirely due to the long term “complications” of diabetes affecting almost every system in the body including eyes, kidneys, heart, feet and nerves. Complications of diabetes can be either acute or chronic.

ACUTE COMPLICATIONS OF DIABETES

Acute complications include hypoglycemia, diabetic ketoacidosis and hyperosmolar hyperglycemic state.

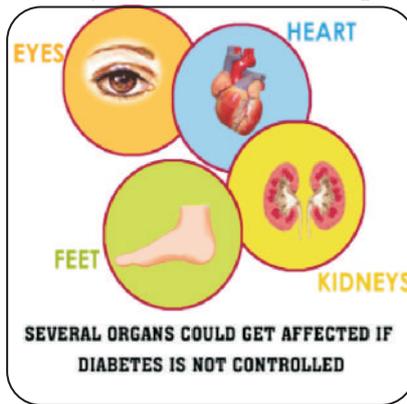
Hypoglycemia

Hypoglycemia or low blood sugar is an acute complication of diabetes and happens most commonly due to excessive dosage of anti diabetic medications or undue delay in the intake of food. The symptoms of low sugar are usually non-specific and patients may feel some discomfort, sweating, palpitations, weakness and giddiness. In neglected cases, the patient may even go into coma due to low sugar.

Diabetic ketoacidosis

Some patients, particularly children and

adolescents, may present with ketoacidosis or coma as the first manifestation of the disease. As insulin deficiency worsens, ketoacids (formed from the breakdown of fat) build up in the blood and are excreted in the urine and breath. They cause shortness of breath and abdominal pain, lethargy, muscular cramps, disturbed consciousness, vomiting and severe dehydration. High blood sugar, acidosis and dehydration together cause a condition known as diabetic ketoacidosis or DKA. If diabetes is not diagnosed and treated promptly with insulin and sufficient intravenous fluids at this



stage, the individual can lapse into a life-threatening diabetic coma.

Hyperosmolar hyperglycemic state

Hyperosmolar hyperglycemic state (HHS) is a serious metabolic derangement that occurs in patients with diabetes and can be a life-threatening emergency. It is less common than the other acute complication of diabetes. HHS most commonly occurs in patients with type 2 diabetes who have some concomitant illness that leads to reduced fluid intake. Infection is the most common preceding illness, but many other conditions can cause altered mentation,



dehydration, or both. HHS has also been reported in patients with type 1 diabetes, in whom ketoacidosis is more common.

CHRONIC COMPLICATIONS OF DIABETES

Chronic complications related to diabetes can be broadly classified as:

- a) Microvascular (small vessel) complications – affecting the inner part of the eye called the retina (diabetic retinopathy), kidney (diabetic nephropathy) and the peripheral nerves (diabetic neuropathy).
- b) Macrovascular (large vessel) complications –which affect the heart (cardiovascular disease), brain(cerebro- vascular disease) and the peripheral arteries (peripheral vascular disease).

Many people do not discover that they have diabetes until they develop serious complications that substantially increase the morbidity and mortality associated with the disease and reduce the quality of life.

Diabetic retinopathy (diabetic eye disease)

Of all complications of diabetes, loss of sight is perhaps the one most feared by people with diabetes. The most distressing effects of diabetes in the eye with regard to visual impairment are in the retina (inner layer of the eye) called as diabetic retinopathy. One in five diabetic individuals may develop diabetic retinopathy according to the CURES Eye study conducted by us. The risk of developing retinopathy is higher for patients who have diabetes for a long time and have poor control of diabetes. Diabetic retinopathy can be

basically divided into two stages, two types – non-proliferative and proliferative. In early stage of diabetic retinopathy, there are small balloon like sacs called microaneurysms or dot haemorrhages in the eye. In the next stage, these sacs start leaking and water logging of the retina can occur. In early stages of diabetic retinopathy usually no specific treatment for the eyes is required. However it is the warning sign that more serious stages may follow if diabetes is not controlled very tightly. Hence, the patients should take extra precautions to control diabetes very carefully and intensify the treatment with frequent blood sugar estimations. The two sight threatening forms of diabetic retinopathy are Diabetic Macular Edema (fluid accumulates in the macula) and Proliferative diabetic retinopathy (“New Vessels” formation/bleeding in the retina). As individuals with sight threatening retinopathy may not have any symptoms, life- long dilated retinal screening is a valuable and necessary strategy for early detection of diabetic retinopathy.

To prevent diabetes related visual impairment, the treatment must be appropriately timed and rigorous. Timely treatment can prevent up to 98% of vision loss from diabetic retinopathy. Laser Photocoagulation has been the single greatest hope of the century for patients with diabetic retinopathy. Laser therapy is a simple out-patient procedure. It is usually a painless procedure.

Screening schedule for diabetic retinopathy		
Test to be done	First screening – when?	Subsequent screening
<ul style="list-style-type: none"> •Retinal screening – Ophthalmoscopy / fundal photography •Visual acuity 	<ul style="list-style-type: none"> • At diagnosis for type 2 diabetes • Within 5 years after diagnosis for type 1 diabetes 	Annually



Diabetic nephropathy (diabetic kidney disease)

Diabetic nephropathy is a complication of diabetes, which tends to develop after many years and results in progressive loss of ability of the kidneys to function. This condition is a leading cause of end-stage renal disease (final stage of nephropathy), accounting for nearly one third of all newly detected diabetic individuals. Diabetic nephropathy usually progresses slowly through several stages including 1) leakage of tiny amounts of protein – called microalbuminuria into the urine, 2) increasing proteinuria leading to loss of large amounts of protein, causing 'nephrotic syndrome' a condition defined by fluid retention and swelling due to low amounts of protein and 3) the kidneys become less able to remove 'poisons' from the blood resulting in a build up in the levels of various chemicals such as urea and creatinine. This is known as 'chronic renal failure' or 'end stage kidney disease' (ESRD).

During the early stages of diabetic nephropathy people are usually without any symptoms. As the condition progresses, individuals with diabetic nephropathy may present with swelling of the feet and legs and later throughout the body (edema), increase in blood pressure, larger amounts of protein leaking into the urine (macroalbuminuria) and elevated levels of fats (cholesterol and triglycerides) in the blood. Once the kidneys are more severely damaged, blood sugar levels may drop because the kidneys retain insulin in the body. Other symptoms may occur as nephropathy worsens. Screening for nephropathy or its earlier stage, microalbuminuria, is important because it is associated with high risk of progression to

more advanced nephropathy. Intensive management of diabetes and its symptoms, including tight control of blood sugars and blood pressure, can slow the onset and progression of diabetic nephropathy.

Screening schedule for diabetic nephropathy		
Test to be done	First screening – when?	Subsequent screening
• Microalbuminuria – spot urine	<ul style="list-style-type: none"> • At diagnosis for type 2 diabetes • 5 years after diagnosis for type 1 diabetes 	Annually

Neuropathy (diabetic foot disease)

Diabetic neuropathy (nerve damage) is one of the commonest complications of diabetes and certainly one of the most distressing leading to a loss of sensation in several parts of the body. Diabetes damages the nerves in two ways: a) poor control of diabetes can damage the outer lining or insulating layer that protects the nerve cells, b) it can also attack the tiny blood vessels which supply oxygen and other essential items to the nerves. In either case, the nerve cells may die or fail to function properly.

Diabetic neuropathy may cause a number of complications including damage to the nerves in the feet, which along with poor circulation, can lead to ulcers and even the dreaded gangrene leading to amputation of feet. But it is not only the feet that are vulnerable-diabetes-related neuropathy can affect any organ in the body including the digestive tract, heart, and sex organs. The symptoms of diabetic neuropathy are numbness and loss of sensation in the feet, some patients complain of pins and needles, pricking sensation, burning of feet or even severe pain in both feet. The best way to prevent neuropathy is to keep blood glucose levels as close to the normal range as possible.



Maintaining safe blood glucose levels protects nerves throughout your body.

Screening schedule for diabetic nephropathy		
Test to be done	First screening – when?	Subsequent screening
<ul style="list-style-type: none"> • Foot examination • Assess protective sensation in feet (Semmes-weinstein 10g monofilament) • Biothesiometry • Plantar pressure measurement 	<ul style="list-style-type: none"> • At diagnosis for type 2 diabetes • As clinically appropriate for Type 1 diabetes 	Annually

Cardiovascular Disease (CVD)

Unlike type 1 diabetes, type 2 diabetes has a higher risk for cardiovascular disease, the prevalence of which is estimated to be 2 – 4 fold higher compared to non-diabetic individuals. This is because type 2 diabetes is a component of the metabolic cluster, which is associated with other risk factors like insulin resistance, high lipids, high blood pressure, abdominal obesity and prothrombotic state. Diabetes accelerates thickening of arteries leading to increased risk of heart attacks, especially if the patient is a smoker or has high blood pressure and cholesterol. Individuals with diabetes can have heart attacks even without any of the usual symptoms like chest pain, sweating etc., because the nerves are affected first. This means that careful checkup of the heart should be done even in the absence of symptoms. Control of blood sugar and lipid levels like cholesterol and triglycerides and blood pressure along with weight reduction and life style modification is mandatory to reduce the risk of heart disease in diabetic individuals.

Screening schedule for coronary artery disease		
Test to be done	First screening – when?	Subsequent screening
<ul style="list-style-type: none"> • ECG 	<ul style="list-style-type: none"> • At diagnosis for type 2 diabetes • As clinically appropriate for Type 1 diabetes 	Annually

Peripheral vascular disease (PVD)

Diabetes is a major cause of peripheral vascular disease. Peripheral vascular disease is the medical term for problems associated with poor circulation to the toes, feet and legs. The prevalence of PVD is several folds higher in patients with diabetes compared to non-diabetic patients. Regular screening by physical examination and doppler examination is necessary to identify people with PVD.

Exercise can help circulatory problems. The muscles of the legs have a massaging effect on the blood vessels and help maintain normal passage of the blood. Adequate exercise which is appropriate to a person's general health and age will do much to benefit the entire circulatory system. Satisfactory blood sugar control, cessation of smoking and normalization of blood pressure and serum lipids are essential prophylactic and therapeutic measures. Surgery may be useful in a small number of cases suitable for bypass grafting.

Screening schedule for peripheral vascular disease		
Test to be done	First screening – when?	Subsequent screening
<ul style="list-style-type: none"> • Examine pedal pulses, auscultate for bruits • Peripheral doppler – ankle brachial index 	<ul style="list-style-type: none"> • At diagnosis for type 2 diabetes • As clinically appropriate for Type 1 diabetes 	Annually

Recent studies have now shown that intensive diabetes control designed to achieve normal blood sugar level has a significant impact on lowering the risk for developing microvascular complications. For prevention of macrovascular complications, a multipronged approach with tight diabetic control, adequate control of blood pressure and lipid lowering along with life style modifications (diet and exercise) would probably be needed.



Frequently asked questions



1. What types of treatments are there for diabetes?

The aim of diabetes treatment is to maintain the blood sugar (glucose) levels as close to normal as possible. The food one eats and level of physical activity plays an important role in controlling blood sugar. So does medicines one takes. People with type 2 diabetes have different options of medicines. Apart from taking medicines by mouth, injectable medicines are also used. Insulin is currently not available in pills, and hence it must be injected. There are also noninsulin medicines that are injectable. There are many delivery devices for injectable insulin such as needle and syringe and insulin pumps. Insulin is mandatory for people with type 1 diabetes. Type 2 diabetes is usually treated by oral medicines but they may also be prescribed insulin injections when the diabetes is not controlled.

2. When should blood glucose be monitored more frequently?

There are times when one wants to check the blood glucose more often than usual. Blood glucose should be monitored frequently also:

- ❖ During stress, illness, or surgery.
- ❖ When pregnant.
- ❖ When low blood glucose is suspected.
- ❖ When there are changes made in your treatment program — such as a change in medication doses, meal plan or activity.

❖ When taking new medications, like steroids.

3. It is said that diabetes comes through genes & also by our life style? In which way it attacks more?

A person's lifestyle and environment play a crucial role in the development of type 2 diabetes. We inherit more than just genes from our parents; we also inherit their lifestyle. Poor eating habits and lack of exercise are behaviors that children can pick up from their parents. So the parents should be good role models by adopting healthy lifestyle, which can help in preventing diabetes in the offspring's also.

4. What care should one take at the 'Glucose Intolerance' stage to prevent from becoming a diabetic individual?

Impaired glucose tolerance (IGT) is an intermediate stage in the natural history of diabetes. The glucose levels are above normal but below the level that is diagnostic for diabetes. Patients with impaired glucose tolerance have a significant risk of developing diabetes and may prevent the disease by making changes in lifestyle that include increased exercise, modest weight loss and good dietary habits. There is strong evidence that a structured program of diet and exercise can reduce the risk of progression to type 2 diabetes by up to 58% in patients with IGT. Moderate-intensity physical activity, such as brisk walking or biking, for 30 minutes per day and modest weight loss of 5-7% of body weight is recommended. Dietary modifications should include reduced intake of total calorie, inclusion



of coarse cereals, complex carbohydrate and frequent low glycemic food choices, modified fat both in quantity and quality, generous use of vegetables, pulses and sprouts and adequate dietary fibre consumption.

5. Can you give few tips on how to prevent diabetes?

The risk of developing diabetes can be reduced by:

- ❖ Maintaining a healthy weight
- ❖ Doing regular physical activity (30 mins/day for 5 days a week)
- ❖ Eating a healthy diet (include more whole

grains, legumes, nuts, fish, fruit and vegetables and less refined carbohydrate, simple sugar and processed meat)

- ❖ Quitting tobacco & limiting alcohol consumption
- ❖ Checking blood sugar, blood pressure and blood lipids regularly
- ❖ Getting 6-8 hours of peaceful sleep every night.
- ❖ Reducing stress by practicing yoga, relaxation techniques and meditation.

Dear Readers,

We would like to inform you that from this year onwards, *Diabetes Monitor Magazine* will be published twice in a year. We also invite your contributions to 'Diabetes Monitor' in the form of Diabetes related queries, anecdotes or personal experiences.

Please send / email:

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