Complicated Tests for Diabetes Complications Made Easy

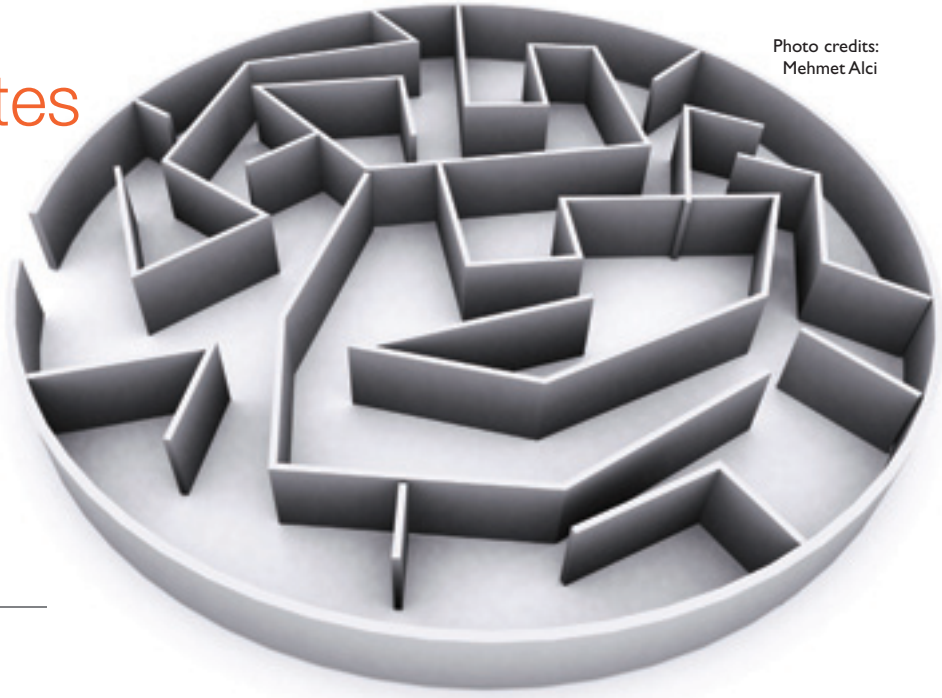


Photo credits: Mehmet Alci

Early detection is key to preventing complications associated with diabetes. But the tests you need to take may seem more complicated! Let Praveen Kaur and Rathi Jayabalan, Diabetes Nurse Educators, Diabetic Society of Singapore, guide you through the maze of screening tests to be safe and not sorry.

Diabetes is a common health problem in Singapore. One out of 11 people aged 18 to 69 has diabetes. A 2001 survey on primary medical care in Singapore showed that diabetes was the fifth most common medical condition diagnosed. In 2005, diabetes was the eighth most common cause of death, accounting for 3.1% (an increase from 2.3% in 2003) of all deaths.

Diabetes is a chronic disease, and if not managed well, can deteriorate steadily to cause devastating complications such as blindness, nerve damage, kidney failure, heart disease and limb amputation. Studies show that about half of patients already have diabetes-related complications at the time of diagnosis.

Screen Tests

Early detection is essential to prevent any complications later. It is therefore very important to begin screening as soon as possible. There are several diabetes complications screening tests:

- HbA1c
- Cholesterol Screening
- Microalbuminuria Test
- BMI Test
- Blood Pressure Check
- ECG
- Diabetic Foot Screening
- Diabetic Retinal Photography
- Education on Patient Self-care
- HbA1c

Diabetes patient need to maintain good blood sugar control. If you have a blood sugar meter, you can do the test yourself as it can provide real time information about your blood sugar level. A HbA1c test is a test done by your doctor to check your glycosylated haemoglobin level. This test is recommended once every three months. It is a good gauge of your general diabetes control. One's risk for complications from diabetes can be shown from a HbA1c test.

Cholesterol Screening

Most people with diabetes are at risk for cardiovascular diseases such as heart attack and stroke. Hence, a cholesterol check should be done at least once a year or as recommended by your doctor.

There are five components in the cholesterol screening. These are TC, HDL, LDL, TG and also the total cholesterol to the HDL ratio. HDL which is the high density lipids is usually referred to as "healthy" cholesterol.

Higher levels of HDL can reduce cardiovascular risks. LDL which stands for low density lipoproteins is usually known as the "lousy" cholesterol. A high level of LDL has the opposite effect from HDL which is to increase the risk of cardiovascular risk. A level of LDL <2.6 is recommended in all diabetes patients (Ministry of Health, 2006).

Last but not least, the ratio of total cholesterol to HDL is done to measure the cardiovascular risk an individual has. This is obtained by dividing the total cholesterol by the HDL.

A cholesterol check is recommended once a year. But, if the cholesterol is higher or lower than normal, the doctor or diabetic nurse educator may recommend the test to be done once every six months.

Microalbuminuria Tests (MAU) Screening for Diabetic Kidney Disease Diabetes is the leading cause of end-stage renal disease in Singapore. It accounted for nearly half (47.2%) of the cause of end-stage renal disease (ESRD) in Singapore in 2000.

The development of microalbuminuria highlights the potential development of renal complications. Screening for albuminuria should begin five years after the diagnosis of Type 1 diabetes; it should, however, begin immediately with the diagnosis of Type 2 diabetes. Thereafter, screening for albuminuria should be done annually.

Fast Facts >>>>>>>>>>>>>>>>

Without adequate insulin replacement, people with type 1 diabetes will see their blood sugar levels rise and the body will start to burn up its fat stores. This might lead to a life-threatening condition called diabetic acidosis.

BMI (Body Mass Index)

BMI, which stands for body mass index, is a unit of measurement to describe weight in relation to height. This measurement will classify you under the underweight, normal, overweight or obese range. The Health Promotion Board of Singapore has recommended that the BMI for Asians be kept between 18.5 and 22.9. Keeping your BMI within the normal range will help you to control your blood sugar, cholesterol and blood pressure. This will also minimise your risk of cardiovascular disorders.

Blood Pressure Check

Most diabetes patients have high blood pressure too. This puts them at a high risk for cardiovascular attacks as the condition may cause damage to the blood vessels and makes the heart work faster (Canadian Diabetic Association, 2007). High blood pressure is also a risk factor for other complications of diabetes, such as diabetic eye disease and kidney disease. Maintaining a normal blood pressure is critical to your management of diabetes.

ECG Test

In 2005, 18.1% of deaths in Singapore was caused by ischemic heart disease and 4.0% was caused by other heart problems.

People with diabetes are at risk of heart disease especially if the blood sugar level is not well-controlled. Coronary artery disease is the most common form of heart disease in diabetes.

Over time, high blood sugar levels clog and harden blood vessels, affecting blood flow and causing blood clots creating circumstances for heart disease and also stroke. Therefore, an ECG (Echocardiogram) test should be done as a form of baseline during the initial phase of diabetes. This is done to measure the electrical activity of the heart and to detect any abnormalities. Subsequent ECG tests can be done periodically as ordered by your doctor.

Diabetic Foot Screening

"Foot ulcers and amputations are a major cause of morbidity and mortality in people with diabetes. In Singapore, approximately 700 lower extremity amputations (LEA) are performed in diabetic patients annually." (MOH, 2006)

Fortunately, steps can be taken to prevent diabetic foot complications or limit its progression. Several studies showed that lower limb amputations could be reduced by up to 85% through early detection, regular health screening, diabetic education and timely treatment at the primary and acute care level. This can be achieved through an annual screening of the feet, which involves risk identification, treatment and patient education appropriate to the level of risk.

Diabetic Retinal Photography

Persons with diabetes are 25 times more likely to become blind compared to those without diabetes. Currently, an estimated 2.5 million people worldwide are blind from diabetic retinopathy. In Singapore, retinal conditions, including diabetic retinopathy, are leading causes of blindness in adults.

It is therefore vital for an eye examination to be carried out yearly. A patient with type 1 diabetes should be examined three to five years after diagnosis once he/she is aged 10 years or older, and at least once a year subsequently. As for patients with tType 2 diabetes, an eye examination should be done immediately after diagnosis and at least once a year subsequently.

Patient Self-care Education

Patients should be educated about their condition and encouraged to take an active role in the management of their own condition. Life-long compliance is required from the patient and hence, self-care forms the cornerstone of treatment.

These tests are crucial in your steps to prevent complications related to diabetes. Doing the tests does not just stop there. Working towards keeping the results as normal as possible is important as well. If you do have a diabetes-related complication, treatment can be effective, with early diagnosis. Ensure that you work with your diabetes health care team to achieve good results and maintain a healthy and happy lifestyle.

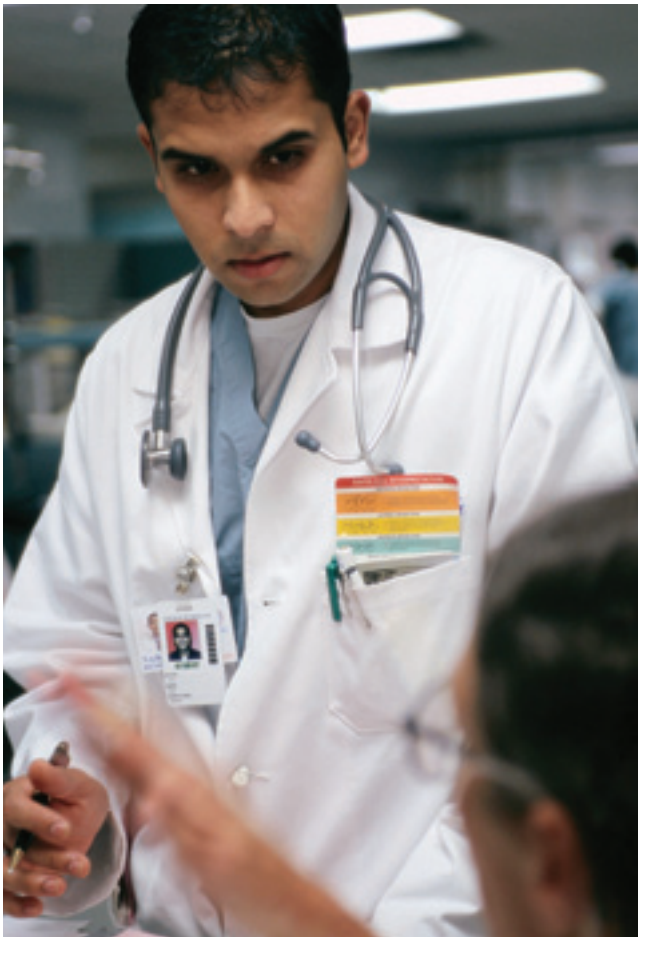
REFERENCES

The First National And Regional Conference On Diabetic Foot Problems (2004) http://www.moh.gov.sg/mohcorp/speeches.aspx?id=1894

Health Facts Singapore, Ministry of Health
http://www.moh.gov.sg/mohcorp/statistics.aspx?id=5526

MOH Clinical Practice Guidelines 3/2006 by Ministry of Health, Singapore
http://www.moh.gov.sg/cpg

Canadian Diabetic Association (20052007) retrieved from
http://www.diabetes.ca/, 6 June, 2007.



Insulin is an essential hormone which the body needs to control or properly use glucose (sugar) – one of its main supplies of energy.

Fast Facts >>>>>>>>>>>>>>>>