

Monitoring Methods in Diabetes Management

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Opinion Article

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DESCRIPTION

Diabetes refers to a group of metabolic conditions that if untreated will cause abnormally high levels of the sugar glucose to accumulate in the blood. Diabetes mellitus type 1 is caused by the pancreas no longer producing a significant amount of the hormone insulin typically as a result of the pancreatic beta cells autoimmune death. Contrarily, diabetes mellitus type 2 is currently believed to be caused by insulin resistance or autoimmune attacks on the pancreas. A person with type 2 diabetes may have a pancreas that produces normal or even abnormally high levels of insulin. Other types of diabetes mellitus such the many types of young adult diabetes with maturity onset may be caused by a combination of insulin resistance and insufficient insulin production. A person with type 1 diabetes may also have some degree of insulin resistance. The fundamental objective of managing and controlling diabetes is to return the metabolism of carbohydrates to the normal level. Insulin replacement therapy which is administered by injections or an insulin therapy is necessary for those with an extreme insulin shortage to reach this goal. Adversely, dietary changes and exercise can be used to treat insulin resistance. Preventing or treating the numerous problems that can arise from both the disease itself and its treatment are other objectives of diabetes care.

A glucose meter is used to monitor blood sugar levels and the results are shown either in mg/dL (millimoles per liter in Canada and Eastern Europe) or mmol/L (milligrammes per deciliter in the US) of blood. Patients who are managing their diabetes optimally should monitor and record their own blood glucose levels. Patients can change their lifestyle to manage their diabetes by keeping a note of their blood glucose readings and recording how food and exercises affect them. Patient participation is crucial in establishing optimum dose and timing for people using insulin.

Monitoring

While mild to moderate hyperglycemia rarely develops as noticeable symptoms in people with hyperglycemia or hypoglycemia, hypoglycemic symptoms is typically insufficient. Other factors include the fact that insulin injection can drop blood sugar levels for 24 hours or more whereas meal takes several hours to digest and absorb (depending on the nature of the insulin preparation used and individual patient reaction). The onset and duration of an oral hypoglycemic agent's effects also differ from one type to the next and from patient to patient.

Personal (home) glucose monitoring: Patients should regularly check their blood glucose levels using home glucose meters to control and improve outcomes for both type 1 and 2 diabetes. The cost of the consumable test strips contributes significantly to the expense of glucose monitoring. Patients typically change their lifestyles after receiving training from a clinician.

HbA1c test: The measurement of blood HbA1c levels is a helpful test that is often performed in a lab. This is the proportion of total haemoglobin to glycated haemoglobin. The percentage of these molecules increases when plasma glucose levels are persistently elevated. These tests assess the average level of diabetes control during an interval that was first believed to be 3 months (the usual lifetime of a red blood cell). HbA1c levels in non-diabetics range from 4.0% to 6.0%; diabetes mellitus patients with HbA1c levels under 6.5% are seen to have satisfactory glycemic control. The HbA1c test is not acceptable if diet or treatment modifications have been made within less than six weeks or if there is a hemoglobinopathy or a disturbance of red cell ageing (such as recent haemorrhage or hemolytic anaemia) (e.g. sickle cell disease). The alternative fructosamine test is utilised in these situations to show average control over the previous two to three weeks.

Continuous glucose monitoring: The Gluco watch biographer was the first CGM device made to consumers in 1999. The promotion for this product is over. Instead of being a live gadget, it was retrospective. Since then, a number of live monitoring devices have been created, providing continuous, automatic monitoring of glucose levels throughout the day.