

I chose continuous glucose monitoring for my diploma thesis, based on the importance to improve diabetes care and to reduce the risk of the development and progression of complications. The worldwide prevalence of Diabetes Mellitus has risen dramatically over the past decades. The Centers for Disease Control and Prevalence (CDC) estimated that 366 million individuals would have diabetes by the year of 2030.

Diabetes Mellitus is a multi-factorial disease, which requires intensive metabolic control to avoid the chronic complications, and this metabolic control includes the continuous glucose monitoring system (CGMS) in comparison to conventional methods of metabolic control, such as glycohemoglobin (HbA1c), capillary and venous glucose determinations, lipidogram and insulin levels controls.

Devices for continuous blood glucose monitoring are currently used and they measure the glucose in the interstitial fluid (ISF) that is in equilibrium with blood glucose. These devices provide retrospective glucose values or even real time glucose values. (In this way) continuous monitoring will give multiple glucose measures not just during the day but also during the night and with possibility to predict the glucose values in the future. One of the important functions of this devices is the alarms that notify the patient if the blood glucose falls to hypoglycaemic range or if increase to hyperglycaemic range.

Until very recently, self-monitoring of blood glucose was achieved by multiple capillary blood glucose. This measurement just provides a snapshot blood glucose concentration at that moment without predicting future glucose levels. Food and Drug Administration (FDA) in the U.S and also by the CE marking in Europe approved five continuous glucose monitor (CGM). These devices can measure blood glucose in a minimal invasive method by a sensor in the subcutaneous tissue or in a noninvasive method of electromagnetic radiation through the skin. The CGMS enables the identification of physiological phenomenon such as Somogy and asymptomatic hypoglycemia that other methods cannot detect.