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Use of CGMS in reducing glycaemic variability and morbidity in patients with CKD

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Diabetes is no doubt one of the most difficult health problems of the 21st century. It is a leading cause of CKD worldwide and its increasing prevalence may explain much of the increase in prevalence of kidney failure. Diabetic patients with chronic kidney disease present an additional risk for the presence of the glycaemic variability due to insulin resistance. Several studies indicated that this glycaemic variability seems to be an independent cardiovascular risk factor and has more deleterious effects on endothelial function compared to sustained hyperglycemia, especially due to oxidative stress activation. Glycated hemoglobin (HbA1c) is considered the gold standard for the assessment of glycaemic control. In CKD patients, there are many factors which could lead to false and misleading values of HbA1c. Among the factors that lead to falsely low HbA1c values are: reduce erythrocytes lifespan, hemolysis, iron deficiency, repeated transfusions and erythropoiesis stimulating agents. Falsely high HbA1c levels are induced by hemoglobin carbamylation. Also HbA1c is not able to identify glycaemic variability. Therefore it is necessary to identify methods to assess glycaemic excursions in CKD patients. Commonly used antidiabetic drugs are renally excreted and have a prolonged half-life in patients with CKD, predisposing them to the risk of episodes of hypoglycemia. Furthermore, the predialysis glycaemic control is also a determinant of both mortality and progression of diabetic complications for patients on continuous ambulatory peritoneal dialysis (CAPD).

Continuous glucose monitoring system may represent a useful tool that allows glycaemic variability quantification and also efficient discrimination between the sustained chronic hyperglycemia and acute glucose fluctuations.

The use of CGMS gives potential insights both into overall glycaemic control (mean glucose) and variability of such control over the full 24-hour period.

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