

# MANAGING DIABETES STATUS IN DIABETIC PATIENTS

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Ravi, V. Nathan

Richards, Jennifer

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**Background:** About 422 million people worldwide and over 29 million Americans have diabetes. The prevalence of diabetes is increasing and an important cause of blindness, amputation, kidney failure, and one of the leading causes of premature death. Diabetes is associated with significant costs. In the US in 2013 the direct medical costs of diabetes were \$176 billion with an additional \$69 billion in reduced productivity. However, with early detection of diabetes and adequate diabetes management people with diabetes can live long, productive, and healthy lives. This requires technologies enabling accurate diagnosis of the diabetes condition and improve diabetes management. The latter is especially true for diabetes patients where correlation with glucose levels alone is not sufficient. Researchers at Washington University in St. Louis have addressed this unmet need with a new technology to better monitor and manage the glycemia status in diabetic patients.

**Technology Description:** In diabetes the body fails to control blood glucose levels which can result in high blood glucose levels. This leads to more non-enzymatic glycosylation (glycation) of proteins, which in turn leads to complications typical for diabetes. Hence, in current diabetes management it is common to only determine the HgA1c (glycosylated hemoglobin) concentration as a diagnosis of diabetes or as measure of adequate blood glucose levels. The team led by Professor Ravi has discovered that inorganic phosphate levels in blood modulate glycation reactions (see adjacent figure) and found that lowering blood phosphate levels will decrease glycation regardless of the blood glucose level. The invention encompasses a method to monitor and manage glycemia status in diabetic patients considering HbA1c, glucose, and inorganic phosphate levels. Comparison of these values to reference values enables better assessment of how adequately glycemia is controlled. If needed, the glycemic level can be adjusted by administering one or more agents that decrease serum glucose and/or inorganic phosphate concentration.

## Key Advantages:

- Enables better diagnosis of diabetic condition
- Monitor glycemia and phosphate status in diabetic patients for better diabetes management
- Manage diabetes in patients where correlation with glucose levels alone is inadequate
- Helps control treatment-altering glucose levels, inorganic phosphate levels, or both
- Assays can be marketed as a kit