

# Continuous Reduction of Blood Glucose Average During One Year of Glucose Monitoring Using a Digital Monitoring System in a High-Risk Population

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## Introduction

Patients with a high average of blood glucose levels (above 180mg/dL) are at high risk for developing clinical complications.<sup>1</sup> Digital engagement is playing a pivotal role in the care of patients with diabetes, assisting to enhance their compliance.<sup>2</sup> The Dario Blood Glucose Monitoring System (BGMS) connects physically to a smart mobile device and automatically logs blood glucose measurements into the dedicated app. The data captured via the app is transmitted to the Dario cloud. The study looks at high risk patients' data over one year of Dario use.

### Method

An exploratory data analysis study reviewed a population of high risk active type 2 diabetic users with an initial 30 day glucose average above 180 mg/dL during a full calendar year. The study assessed the average blood glucose readings along a year of usage. The average glucose reading was calculated per user in periods of 30 day intervals from 30-60 to 330-360 days and compared to the first 30 days as the starting point baseline of analysis.



## Reduction of GM average – Full year analysis



#### Figure 1:

The graph represents the decrease in GM average vs. baseline over a year in Dario users.

### References

1. American Diabetes Association Standards of Medical Care in Diabetes - 2017 The Journal of Clinical and applied research and education.

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3. Reid Offringa, Tong Sheng, Linda Parks, et al. "Digital Diabetes Management Application Improves Glycemic Outcomes in People With Type 1 and Type 2 Diabetes" Journal of Diabetes Science and Technology, 2017.

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4. Yuan Wu; Xun Yao; Giacomo Vespasiani, et al. "Mobile App-Based" Interventions to Support Diabetes Self-Management: A Systematic Review of Randomized Controlled Trials to Identify Functions Associated with Glycemic Efficacy" JMIR Mhealth Uhealth 2017

## Results

- Overall, among 238 highly engaged T2D users (>1 daily measurement on average) whose average blood glucose level was above 180mg/dL in the first 30 days of measurements (225±45 mg/dL), there was a continuous reduction in glucose level average vs. baseline.
- Reduction in blood glucose average level was demonstrated gradually, in the succeeding 3, 6 and 12 months showing average decreases of 7%, 11% and 14% vs. baseline (first 30 days), respectively.
- Furthermore, 76% of the entire population (180 out of 238 users) improved their average blood glucose levels over a year. Those 180 users (average blood glucose 228±46) showed an average decrease of 10%, 16% and 24% in their blood glucose averages following 3, 6 and 12 months, respectively.

### Conclusions

- The use of a digital diabetes management platform in high risk patients has the potential to promote behavioral modification and enhanced adherence to diabetes blood glucose levels management in T2D patients.
- Overall, the present study supports the hypothesis that using mobile health management application facilitates improvement in several glycemic outcomes. Previous studies had shown that users of the mobile platform had lower average glucose levels compared to the control group.<sup>3</sup> Additionally, the use of mobile app-based interventions yields clinical outcomes (HbA1c reduction) among diabetes users, especially among those with T2D.4,5

5. Varun Iyengar, Alexander Wolf, Adam Brown and Kelly Close "Challenges in Diabetes Care: Can Digital Health Help Address Them?" *Feature Article by the* American Diabetes Association 2016 vol 34.