# Consistent Engagement with a Digital Health Solution Enhances the Effect of Medication Changes on Blood Glucose Control

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## Background and Objectives

- Pharmacologic management and patient self-management behaviors are both critical components of the successful care of people with Type 2 diabetes
- Changes to prescribed medications may reflect a clinician's judgment that a patient may currently be struggling with diabetes management
- Patient self-management behaviors may also be critical to realize the full benefits of medication changes
- This research explored:
  - Whether consistent engagement with a digital health solution that promotes healthy behavior may amplify the effects of medication changes on blood glucose (BG) control

### Digital Health Solution

- The study used retrospective data from users of BlueStar®, an FDA-cleared digital health solution for Type 2 Diabetes
- BlueStar is a mobile and web platform that provides automated coaching messages (motivational, behavioral, and educational) to facilitate self monitoring of diabetes management based on real-time BG values and trends
- Users can log measures relevant to diabetes management such as BG readings, medication intake, exercise, sleep, and lab results, etc.

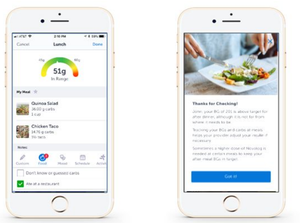

***Figure 1.*** *Screenshots of the BlueStar app.*

## Methods

### Sample and Data

- Data from 252 active BlueStar users with Type 2 diabetes who recorded at least one BG measure per month during the 3 months following initial activation
- Classified engagement into two groups:
  - **Consistent Usage:** At least 1 entry per week for 12 consecutive weeks
  - **Less Consistent Usage**: Those who do not meet the condition for consistent usage but who have recorded monthly BG information
- Classified outcome as **'good' BG control** (1) or not (0)
  - "Good" defined as average BG between 70 and 150 mg/dL in month 3

***Table 1.*** *Users are grouped /defined by their frequency of BlueStar use and medication change.*

| | No. of Less Consistent Users | No. of Consistent Users |
|---|---|---|
| Medication Change | 26 | 73 |
| No Medication Change | 51 | 102 |
| Total | 77 | 175 |

## Results

- Performed multiple regression to test the interaction between medication changes and digital engagement
- Controlled for demographics and baseline BG control
- We were intrigued by a potential interaction between medication changes and frequency of engagement (b = 1.33, p = .07), and probed further
- When there were <u>no medication changes made</u>:
  - The consistent (n = 102) and less consistent users (n = 51) were equally likely to have good blood glucose control at month 3 (68.6% vs. 63.8%), b = -.03, p = .95

## Results Cont'd

- When <u>medication changes were made</u>:
  - **The consistent users (n = 73) were significantly more likely to have good BG control at month 3 than that of less consistent users (n = 26), b = 1.35, p = .02**
  - 76.7% (n = 56) of consistent users with medication changes had good BG control compared to that of only 46.2% (n = 12) of less consistent users

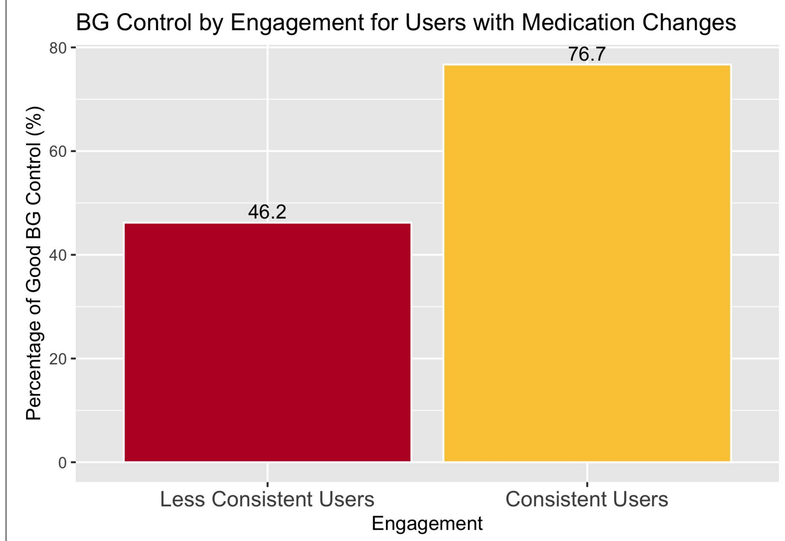


***Figure 2.*** *Proportion of Good BG control for the group with medication changes by engagement*

## Conclusion

- When medication changes are made for people with type 2 diabetes, consistent users of a digital health solution were more likely to have good blood glucose control at month 3 than that of less consistent users
- Therefore, increased engagement with a digital health solution may amplify the effects of medication changes on BG control
- Future research can further explore the mechanisms underlying this finding including medication dose, timing, and medication class changes