

DiabetesAgent.org: Development and evaluation of a dashboard to improve diabetes patient appointment efficacy

DIABETES AGENT BETA



[My Dashboard](#) [Logout](#)

Real People

Real Concerns

Real Answers

Real Resources

My Diabetes Dashboard



Type of diabetes: **Type 2** Age diagnosed: **1986** Current age: **42** Weight: **200**
Blood pressure: **147/86** Pulse: **64** Most recent glucose reading: **280**

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Appointments

Issues

Notes & Bookmarks

Remember. Prepare. Debrief.
Appointments matter. We can help.

Diabetes is about management. And, a key part of management is
regular visits with your health care provider. Time is short in these



Next Appointment

No appointments

[Manage appointments >](#)

How Do I Prepare for my Next Appointment?

Use this checklist to help:

[Appointment Preparation Checklist >](#)

*Richard Goldsworthy, PhD, MEd , Academic Edge, Inc., Bloomington, IN
David Marrero, PhD , Director, Diabetes Translational Research Center,
Endocrinology & Metabolism, Indiana University School of Medicine, Indianapolis
Paul Whitener Jr., BA , Academic Edge, Inc., Bloomington, IN
Erin O'Kelly Phillips, BA , Indiana University School of Medicine, Indianapolis, IN
Brian Kaplan, BA , Academic Edge, Inc., Indianapolis, IN*

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Disclosures

The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose

Diabetes Public Health Issue

Diabetes remains one of the most common chronic diseases in the U.S., affecting over 24 million individuals.

Although our understanding of diabetes management has improved considerably over the past two decades, patient implementation of optimal management lags far behind the ideal.

PPCEs are Suboptimal

Patient-Provider Clinical Encounters (PPCEs) are the key interaction between diabetes patients and their medical support, yet they are often inefficient or ineffective....

- x Patients forget to bring key resources to the provider**
- x Patients forget questions they wanted to ask the provider**
- x Patients forget things they discuss with the provider**
- x Patients are unclear about how to do things provider's suggest**
- x Patients and providers lack time to address myriad issues**

Improving the PPCE

We asked:

- ? Can tools be made to address these problems?**
- ? Will patients use such tools and find them beneficial?**

Objectives

- *To develop and formatively evaluate tools that would assist patients with inter-visit management of their diabetes, especially as it relates to preparing for a clinical encounter and recording and understanding what occurs during the encounter.*
- *To integrate these tools in a mobile friendly diabetes management support portal, including a dashboard for managing clinical encounters*

Methods

Development

- **Iterative, user-centered development processes**
- **Behavioral change theory**
- **Extensive input from nationally respected diabetes care experts and healthcare providers**

Evaluation activities

- **subject-matter-expert review**
- **mixed-methods single-subject usability sessions**
- **pilot multi-site efficacy field trial**

Results

Created paper-based Patient Appointment Readiness and Patient Visit Journal forms.

Migrated to electronic, interactive versions.

Created video segments and case studies (Real Issues and Real People)

Topics ranging from medication adherence to glucose monitoring, to lifestyle change.

Integrated into a patient dashboard, mobile friendly

Preparing for the PPCE



PREVISIT FORM
www.DiabetesAgent.org



Please record your:

Appt date: / / Time: : am / pm Doctor:

1. Have you monitored your glucose since you last visit? Yes No *Please describe:*

2. Have you experienced any low blood sugar events since your last appointment? Yes No
Please describe:

3. Do you have an up to date list of your medications? Yes No
If no, please list your current medications and how you take them.

4. Have you had any issues related to your medications since your last appointment? Yes No
Please describe the issues

5. Do you think your medications are working? Yes No *Please describe why/why not:*

6. Have you experienced any situations where you have not taken your medications as prescribed?
 Yes No *Please describe:*

7. Have you experienced anything you suspect might be a side effect of the medications you are taking?
 Yes No *Please describe:*

8. Have you experienced anything unusual or different about your body or health since your last visit?
 Yes No *Please describe:*

9. Is there anything else you would like to discuss with your health care provider?



Please remember to bring: this form the diabetes appointment journal
 your glucose meter and/or logbook or journal your list of current medications
 any other logs, journals, or notes

Capturing/ Debriefing the PPCE



APPOINTMENT JOURNAL

www.DiabetesAgent.org



Please record your:

Appt date: / / Time: : am / pm Doctor:

So, you just saw your doctor. Did he/she:

1. Change your medication?

- Add a new medication? Which medication and how should you take it?
- Change how you take a medication? Which medication and what is the change?
 - Change time I take it Take with food Reduce dose for a while & build back up Other:
- Do something that reduces side effects you are experiencing? What should you do differently?

Notes:

2. Change how you monitor your blood glucose?

- Test more frequently How frequently?
- Test at a specific time When?
 - fasting after meals when I take a med bed time before meals

Notes:

3. Identify new problems you are having with your diabetes?

- eye disease kidney disease erectile dysfunction (ED)
- heart disease nerve disease Other:

Notes about complications or steps discussed to reduce them:

4. Suggest ways to reduce risk/improvement management of your diabetes?

- Change your diet Increase your physical activity Reduce/eliminate substance use
- Quit smoking Reduce drinking Other:

Notes:

Other notes regarding the appointment:

In Between Appointments

We also created some resources to support patients to manage diabetes between visits, including

1. Educational Resources
2. Video-based Case Studies
3. Issue/Question Capturing Tools



[Diabetes Agent](#) > [Common Concerns & Issues about Diabetes](#)

Monitoring Glucose



Sore fingers, endless test strips, drops of blood... you might dread or resent monitoring your glucose for these or other reasons. But glucose testing is one of your best allies in your diabetes management. It gives you the up-to-the-minute feedback you need to make excellent choices that make you feel better. Think of this step as the gratification for all the work you're putting in. Monitoring is still the best way to avoid hypoglycemia and to see how effective your therapy is.

It's essential to monitor and manage your glucose: good control of blood glucose will prevent significant complications of diabetes that lead to a poor quality of life, or even death. Diabetes is unique – it requires a high degree of patient involvement to get into therapy.

Explore these links and videos to get strategies for optimal glucose monitoring.

Jump to: [Videos](#) | [Tools & Resources](#) | [News](#)

Videos

[Gene Monitoring Glucose](#)



Gene discusses how he has chosen not monitor his glucose as often.

[Watch Video »](#)

[No Comments »](#)

[Carlos Monitoring Glucose](#)

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Featured FAQ

[What is pre-diabetes?](#)

[It seems like so many people have diabetes today. What are the real numbers?](#)

[But there's medicine to treat diabetes now. So is it really that big a deal if you get it?](#)

[Are there different types of diabetes?](#)

[If my blood glucose number is so important, how do I control it?](#)

KwikZips: The High Glucose Edition Podcast



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[What is Diabetes?](#)

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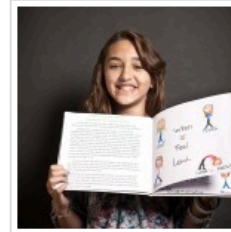
[Diabetes Agent](#) > [Real People](#)

Real People: Amber

Select a case ▾

Amber, 12, was diagnosed with Type 1 diabetes in 2009 when she was nine. She has used her experience with diabetes as a personal journey of education and empowerment for herself and others. Her younger brother was diagnosed with Type 1 several years before she was, when he was two years old, so Amber had a working knowledge of what it might mean to be diagnosed at such a young age.

Since her diagnosis she has embarked on a path of diabetes advocacy through performance. She has written a song about diabetes and a book, which she also illustrated.



Amber's Activism



Amber uses her book "My New Normal" to spread information about diabetes.

[Watch Video »](#)[No Comments »](#)

Amber's Concerns for the Future



Amber discusses chasing blood sugar perfection and how she handles specific fears about her future.

[Watch Video »](#)[No Comments »](#)

Amber Coping with Diagnosis



Amber talks about learning the basics of diabetes care and adjusting to her new condition.

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Featured FAQ

[How does exercise affect my blood sugars?](#)[Should children be screened for prediabetes?](#)[When to Check Blood Sugar](#)[I hate to exercise. Can I just eat right and skip the exercise to avoid diabetes?](#)[Is a cure for diabetes on the horizon?](#)

KwikZips: The High Glucose Edition Podcast



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Priscilla's Concerns for the Future

Hesitant to Set Goals



Priscilla is hesitant to set goals because she's afraid she'll never be able to manage.



Add to your appointment reminders ✕

Ask Doc

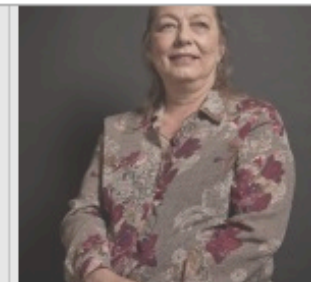
URL:

Title:

Notes:

Priscilla, 61, was diagnosed with Type 2 diabetes about her struggles with diabetes, depression, and finding treatment that worked for her. She has struggled with finding the right medications, relationships with doctors, losing weight, and changing her dietary habits.

She finally saw changes in her test results when she found medication that worked for her. She finds hope in stories of relatives who lived with diabetes into their 90s.



Next Appointment
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[Manage appointments](#)
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Evaluation

SME Review—iterative and ongoing

Single subject usability sessions

Field trials

- RCT of 54 adults with diabetes (Type 1 & Type 2)
- Randomly assigned to either exposure to Diabetes Agent or usual care

Sample

54 subjects, mean age: 49.13

29 intervention; 25 control

Gender: 31 females, 23 males

65% married, 17% single, the rest “other”

Work status: 48% working full time

Income: Median household income; between \$50 – 75 thousand

Education:

22% HS education

27% some college

22% college grads

27% advanced degree

Utilization

After initial exposure use was relatively low:

- **48% were regular users**
- **8% used the system at least twice**
- **The remaining were sporadic**

Usability and Usefulness

- **93% of regular users felt that DiabetesAgent had the right amount of information, activities, and was of appropriate length**
- **100% felt the site was credible, accurate, and professional**
- **80% felt the site was engaging and 20% that it was somewhat boring**
- **Overall rating of the site:**
 - 28% excellent
 - 50% good
 - 7% fair

3 Month Data

	Intervention	Control
Take my medications	53% extremely important 27% very important	100% extremely important
Changed attitudes about skipping doses	0% not at all 7% somewhat 27% very much 47% extremely	50% not at all 10% somewhat 10% very much 30% extremely
Perception of self monitoring of BG	15% not at all 46% somewhat 15% very much 15% extremely	44% not at all 33% somewhat 22% very much 0% extremely

Discussion

- **DiabetesAgent generally well received and found to be useful and usable, and was actually used.**
- **Lower than expected utilization**
 - Current use is pegged principally to preparing and debriefing from appointments therefore not surprising that use was limited to 1-2 times since 3 mos period typically includes at most 2 clinical visits (one of which was intake for the study)
 - may be enhanced with reminders and more ongoing release of information
 - Longer study period
- **No ecologically valid measures**
 - As an efficacy trial, we established that a patient readiness dashboard is useful, useable, and would in fact be used, and did lead to changes in attitudes as compared to control
 - However, future studies should include other measures of affect on real world outcome variables such as glucose monitoring, A1C, provider metrics regarding patient engagement and readiness, etc.

Conclusions & Next Steps

- ✓ **Diabetes management is a recalcitrant problem.**
- ✓ **Clinical inertia and care continuity gaps can be partially mitigated by activating patients and providing them with relatively simple dashboard-integrated tools**
- ✓ **The two paper and electronic readiness forms and the video case studies were particularly well received.**
- ❑ **Need to create more tools to link with patient provided data. Currently, only some questions on forms have associated tools and resources (development limitation)**
- ❑ **Need to conduct longitudinal study across many clinical encounters and with ecologically valid measures (evaluation limitations)**

Acknowledgement

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Richard Goldsworthy, PhD, MEd
Academic Edge, Inc., Bloomington, IN
rick@academicedge.com

David Marrero, PhD , Director, Diabetes Translational Research Center, Endocrinology & Metabolism, Indiana University School of Medicine, Indianapolis

Paul Whitener Jr., BA , Academic Edge, Inc., Bloomington, IN

Erin O'Kelly Phillips, BA , Indiana University School of Medicine, Indianapolis, IN

Brian Kaplan, BA , Academic Edge, Inc., Indianapolis, IN

The project may be accessed at diabetesagent.org.