Hi, I am Craig

AADE 2015- August 7, 2015

Craig Bobik, MPH
T1D Exchange
cbobb32@gmail.com
T1D for 33 years

Disclosure to Participants

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Where have we been?

Glucose Meters

Insulin Pumps: 1963+
Pumps 2015
Dana Diabecare
Asante Snap
Accu-check
Animas
Medtronic
Omnipod
Tslim
V-Go

Continuous Glucose Monitors

T1D Exchange Clinic Registry
Participant Characteristics
N=26,300

T1D Exchange Clinic Network

Most adults and children with T1D do not achieve ADA’s HbA1c goals
Frequency of home blood glucose monitoring is strongly associated with lower HbA1c levels.

Lower HbA1c with Increased SMBG Frequency
(excludes current CGM users)

Insulin Pump Use

Lower HbA1C in Pump Users

CGM Use Is Increasing But Still Low

0-2 3-4 5-6 7-9 ≥ 10
SMBG # Per Day

Child (< 18 Years)
Adult (≥ 18 Years)

0% 10% 20% 30% 40% 50% 60% 70% 80%

Overall <6 6-<13 13-<18 18-<26 26-<50 ≥50
Age (years)

<6 6-<13 13-<26 ≥26
Mean HbA1c %

Injection Insulin Pump

<13 13-<26 ≥26
Age, years

0% 10% 20% 30% 40% 50% 60% 70% 80%

<6 6-<13 13-18 18-<26 26-<50 ≥50
Age, years

Overall <6 6-<13 13-<18 18-<26 26-<50 ≥50
Age (years)
Mean HbA1c by CGM Use

Excellent versus Poor Control

Excellent control group (HbA1c <7.0%) differed from poor control group (HbA1c ≥9.0%) in:
- more often using insulin pumps
- more frequent self-monitoring of blood glucose
- missing fewer insulin doses
- bolusing before meals rather than at the time of or after meal
- using meal specific insulin:carbohydrate ratios

Device Downloading

P=0.001

P<0.001

P<0.001

P<0.001
Data is only useful if:

- Someone is looking at it
  - Patient
  - Healthcare provider
- It is displayed in a manner that is helpful and understandable
- It is applicable to real-life situations
- There is a perceived benefit to review it
- The burden of accessing it is low

What needs to happen:

- Data needs to be at our fingertips (both the provider and the patient)
- EMR companies need to share connections with disease specific 3rd party vendors for seamless data transmissions

What needs to happen:

- Interactions between visits
  - Efficient
  - Documented
  - Payable
- Devices need to communicate with each other (cell phone is the hub).
- Applications need to be useful and efficient

REDUCE THE BURDEN!!!!

References


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  - Consultant - Dexcom
Tidepool

Open source. 
Stewards of your data. 
Proudly non-profit. 

Brandon Arbiter 
VP, Product and Biz Dev 
brandon@tidepool.org

A new approach to diabetes technology

Patient voices matter. 
Open source. 
Proudly non-profit. 
Stewards of your data.

The Tidepool Team

Howard Look, CEO 
Uncle living with type 1 
Living with type 1 since 2011

Kent Quirk, VP Engineering 
Uncle living with type 1 
Living with type 1 since 2011

Steve McCanne, part-time CTO 
15 yr old daughter living with type 1 
Living with type 1 since 2005

Sara Krugman, Interaction Design 
Living with type 1 since 1991 
Living with type 1 since 2005

Ian Jorgensen, Developer 
Living with type 1 since 1990 
Living with type 1 since 2005

Jana Beck, Data Visualization 
Living with type 1 since 2005 
Living with type 1 since 2005

The problem

Even if people are motivated to engage with their data, they can’t.

- Long term complications: nerve damage, kidney failure, blindness
- Short term dangers: seizure, coma, death

Blood Glucose (mg/dl)

Noon 1pm 2pm 3pm 4pm

Reduction in Burden

now Time

Reduction in Burden

now Time
Only 6% of device wearers download data monthly.

**The problem**

Data is trapped in proprietary silos. Software is hard to use.

**So what can we do NOW?**

- **Access to Data**
  - Increase choice.
  - Reduce the burden.

**Interoperability**

**Devices**
A thought experiment: Digital Cameras

Access

View

Canon

Olympus

JPEG

Kodak

A thought experiment: Digital Cameras

Access

View

Canon

Olympus

Kodak

How do you access the data?

How do you view the data?

This is my disease.

And that is my data.

This is my disease.

And that is my data.

And I should get to choose:

• What tools I want to use to access my data.

• Who else gets to see my data.

• What other devices I want to use to manage my diabetes.

Your choice

Access

View

Your choice
Access + Interoperability = Ecosystem

A Diabetes Application Ecosystem

- T1D + Fitness Data
- Apps that make dosing easier
- Research Apps and Interfaces
- Apps for Clinical Decision Support
- Apps for Pregnant Moms with T1D
- Apps for Remote Monitoring
- Apps for Kids
- Apps for Teens

A Diabetes Application Ecosystem

Extensible Apps and Platform

- Research Apps
- 3rd Party Apps
- Device Maker Apps
- Blip
- Blip Notes
- Sonar
- Artificial Pancreas Telemetry
- REST APIs
- Messaging and Notification APIs
- EHR APIs
- Visualization
- Data Authentication and Validation
- Cloud APIs
- Research APIs

Tidepool Uploader

Development made possible by Medtronic CareLink Compatible

- Tidepool Uploader
- Data Authentication and Validation
- REST APIs
- Visualization Cloud
- Data APIs
- Research APIs
- EHR APIs
- Messaging and Notification APIs
- 3rd Party Apps
- Device Maker Apps

Doug Bobik
T1D Exchange
Tampa, FL

Brandon Arbiter
VP Product and Biz Dev
Tidepool
San Francisco, CA

Doug Kanter
Founder
Databetes
Brooklyn, NY
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Hi, I'm Doug

AADE15 – August 7, 2015
Doug Kanter @dougkanter
doug@databetes.com

“Your type of diabetes will be cured in the next 5 years, 10 years tops.”

- my first endocrinologist
“Your type of diabetes will be cured in the next 5 years, 10 years tops.”

- my first endocrinologist 1994

Can a different approach to data help me live healthier?

**Databases**

testing my ideas with a year of self-tracking
the healthiest year of my life

Superbowl Sunday
high carb

low carb

low carb, high stress

Insulin on Board
Thanks!

Doug Kanter
@dougkanter
doug@databetes.com

Databetes