

A photograph of a middle-aged couple walking along a sandy beach at sunset. The man, on the left, is balding with a receding hairline, wearing a light grey turtleneck sweater and dark trousers. The woman, on the right, has short dark hair and is wearing a green jacket over a dark sweater with white horizontal stripes. She is carrying a striped tote bag. They are both smiling and looking towards the right. The background shows the ocean, a distant shoreline with hills, and a bright sunset sky with lens flare effects.

Livongo Health

**Empowering All People with Chronic Conditions
to Live Better and Healthier Lives**

Jenna Bollyky, MD
VP Clinical Research & Analytics
September 20, 2018

Overview

The Problem

- Current approach to chronic condition management isn't working
- Health status of US population with diabetes and pre-diabetes
- Cost of diabetes in the US

Clinical and Financial Benefits of Well-Managed Diabetes

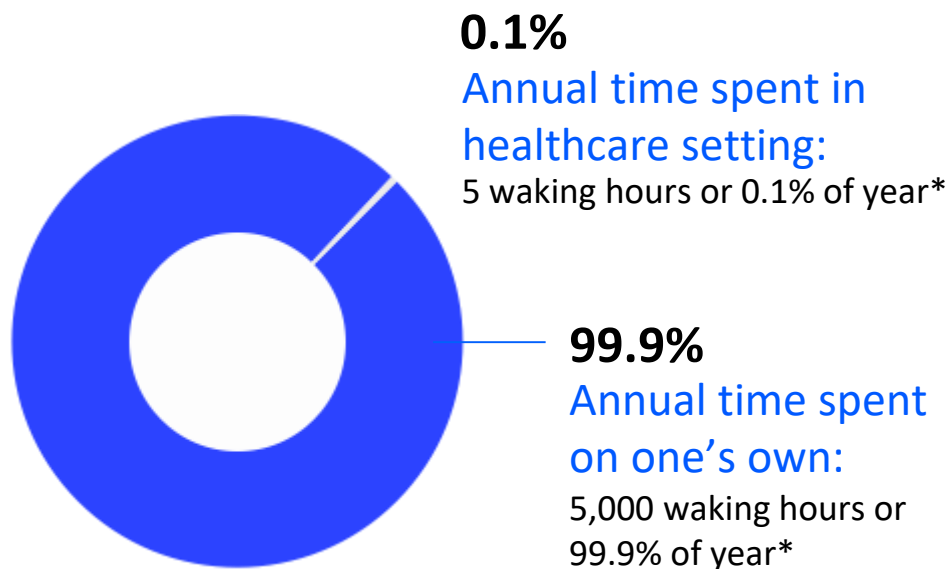
- Decreased clinical complications (DCCT, UKPDS)
- Decreased medical spending (Fitch 2003)

The Livongo Solution

- Overview
- Clinical Outcomes
- Cost savings

Today's Approach To Diabetes Management is Not Working

Traditional acute care model doesn't fit a 24/7/365 chronic disease like diabetes



* Diabetes Hands Foundation

Diabetes management is filled with hassles



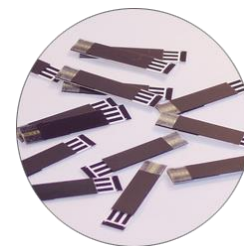
Data is disconnected and out-of-date



People with diabetes self manage without support

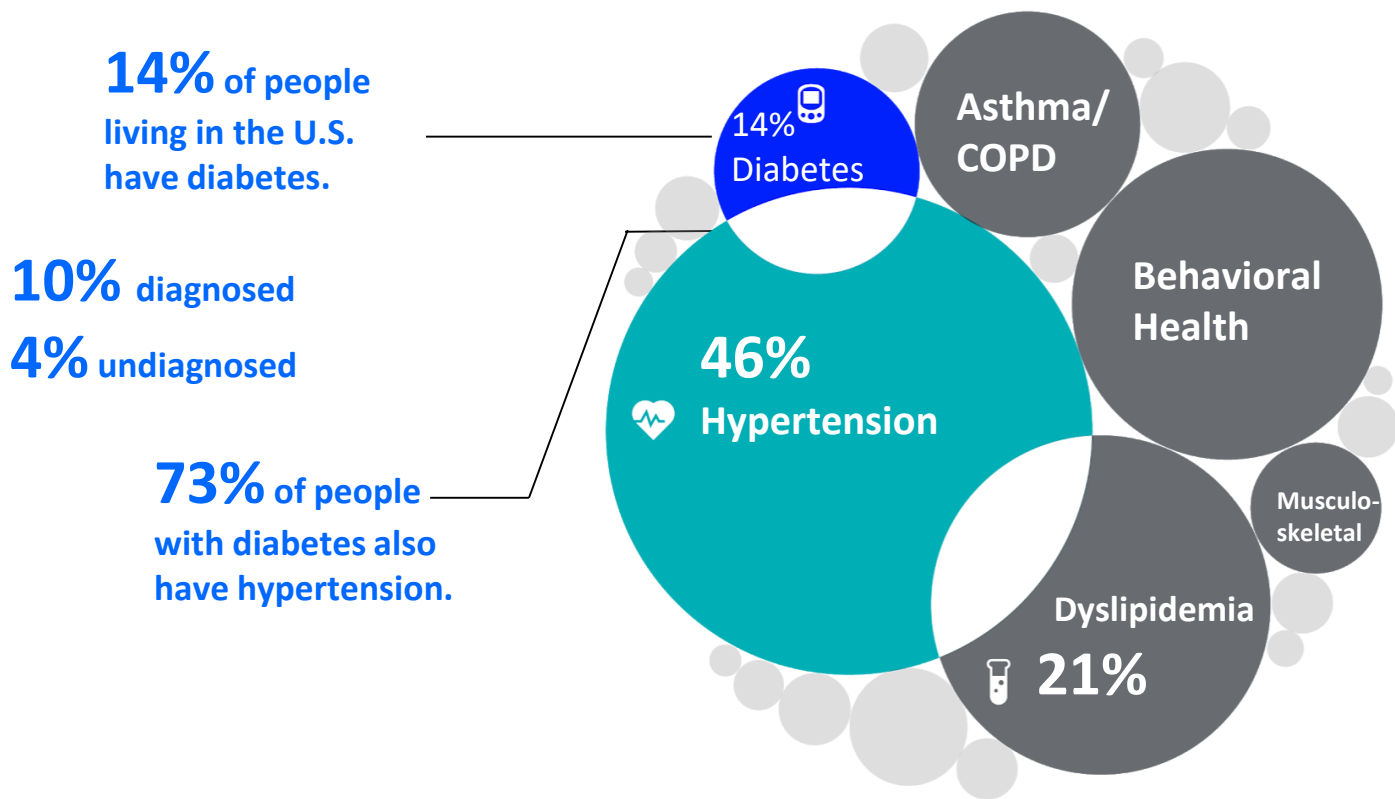


Healthcare providers are overwhelmed & under-resourced



Cost of strips can inhibit testing

Diabetes is Pervasive, Costly and Often Involves Other Chronic Conditions



#1

Diabetes is the number one cost driver*

\$327B

Cost of diabetes**

\$131B

Cost of hypertension***

* [US Spending on Personal Health Care and Public Health, JAMA, 2016](#)

** [Statistics About Diabetes, American Diabetes Association, 2018](#)

*** [Vital Signs: ...of Uncontrolled Hypertension \(MMWR\), CDC, 2012](#)

High Overlap Between People with Diabetes and Hypertension

2x

Risk of cardiovascular disease with diabetes and hypertension¹

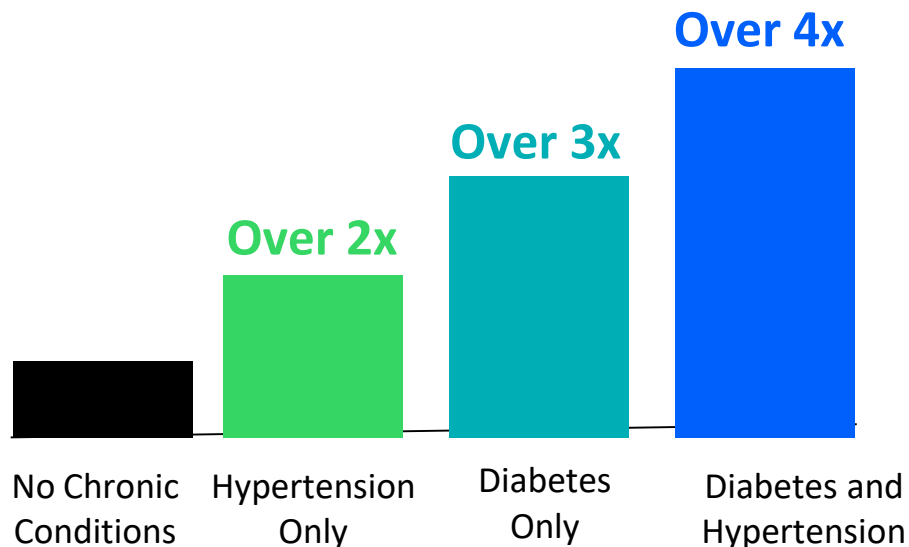
\$131B

cost of hypertension²

\$176B

cost of diabetes³

Costs for Multiple Chronic Conditions⁴



1. American Heart Association. August 2015. Available at http://www.heart.org/HEARTORG/Conditions/More/Diabetes/WhyDiabetesMatters/Cardiovascular-Disease-Diabetes_UCM_313865_Article.jsp#.WdVSNhOPJZU.

2. Vital Signs: Awareness and Treatment of Uncontrolled Hypertension Among Adults — United States, 2003–2010. American Heart Association. 2012. Available at https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6135a3.htm?s_cid=mm6135a3_w

3. Calculate What Diabetes Costs Your Business. Center for Disease Control. 2016. Available at: <https://www.cdc.gov/diabetes/diabetesatwork/plan/costs.html>

4. French MT. The cost of medical care for patients with diabetes, hypertension and both conditions: does alcohol use play a role? J Intern Med. 2005 Jul;258(1):45-54. Available at <https://www.ncbi.nlm.nih.gov/pubmed/15953132>.

Clinical Benefits of Well-Managed Diabetes

Diabetes Control and Complications Trial

N = 1441 T1DM

Intensive
(≥ 3 injections/day or CSII)

vs.

Conventional
(1-2 injections per day)

The New England Journal of Medicine

©Copyright, 1993, by the Massachusetts Medical Society

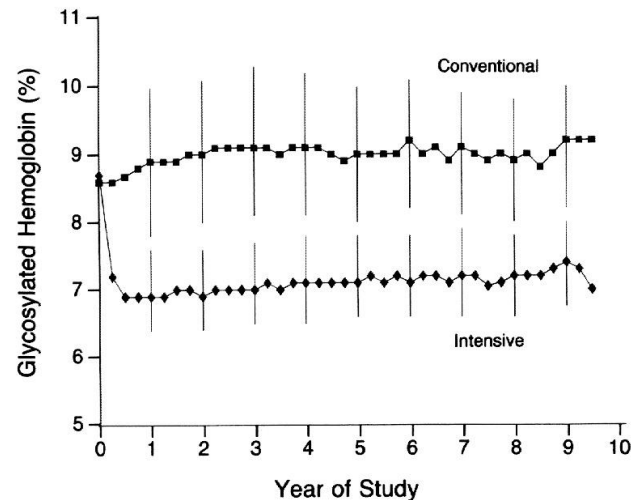
Volume 329

SEPTEMBER 30, 1993

Number 14

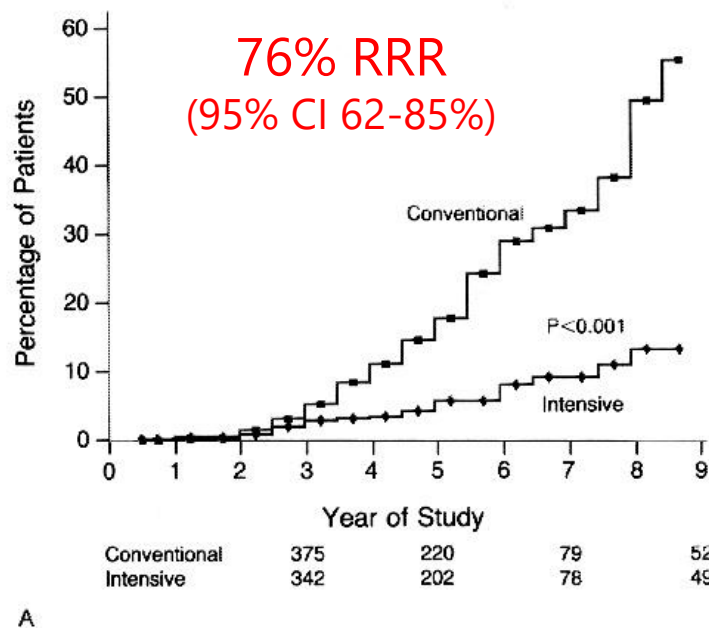
THE EFFECT OF INTENSIVE TREATMENT OF DIABETES ON THE DEVELOPMENT AND PROGRESSION OF LONG-TERM COMPLICATIONS IN INSULIN-DEPENDENT DIABETES MELLITUS

THE DIABETES CONTROL AND COMPLICATIONS TRIAL RESEARCH GROUP*

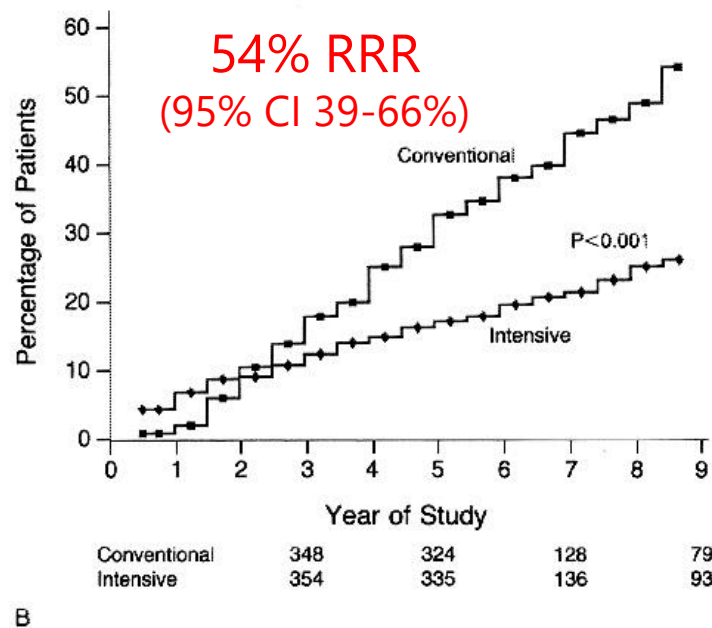


DCCT: Reduction in Retinopathy

Primary Prevention



Secondary Intervention

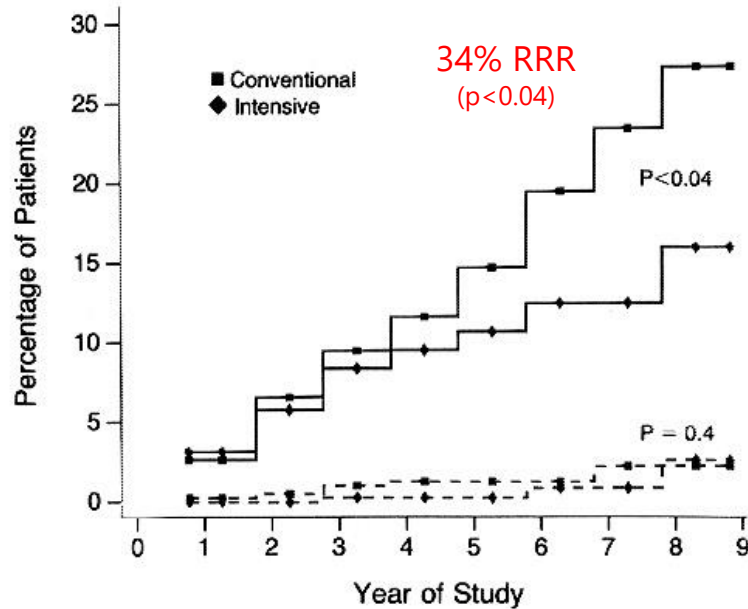


The Diabetes Control and Complications Trial Research Group. N Engl J Med 1993;329:977-986.

RRR = relative risk reduction CI = confidence interval

DCCT: Reduction in Albuminuria

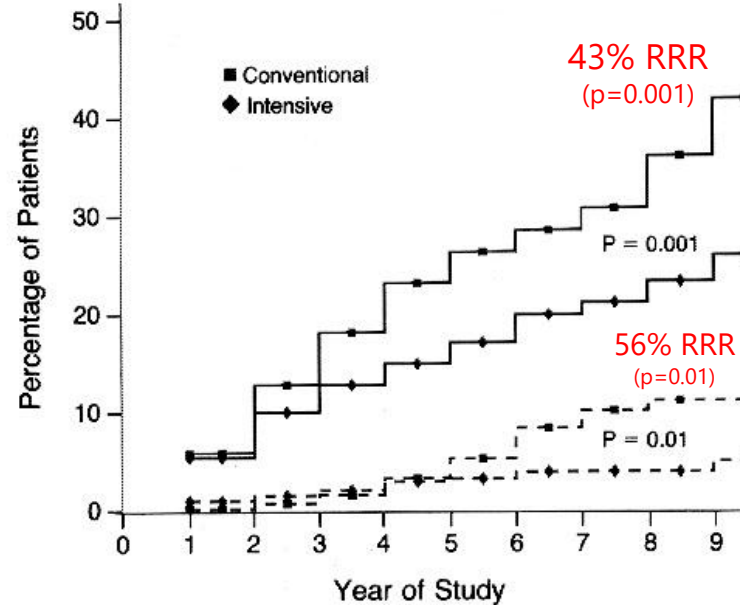
Primary Prevention



A

— Solid line = risk of developing microalbuminuria
- - - Dashed line = risk of developing macroalbuminuria

Secondary Intervention

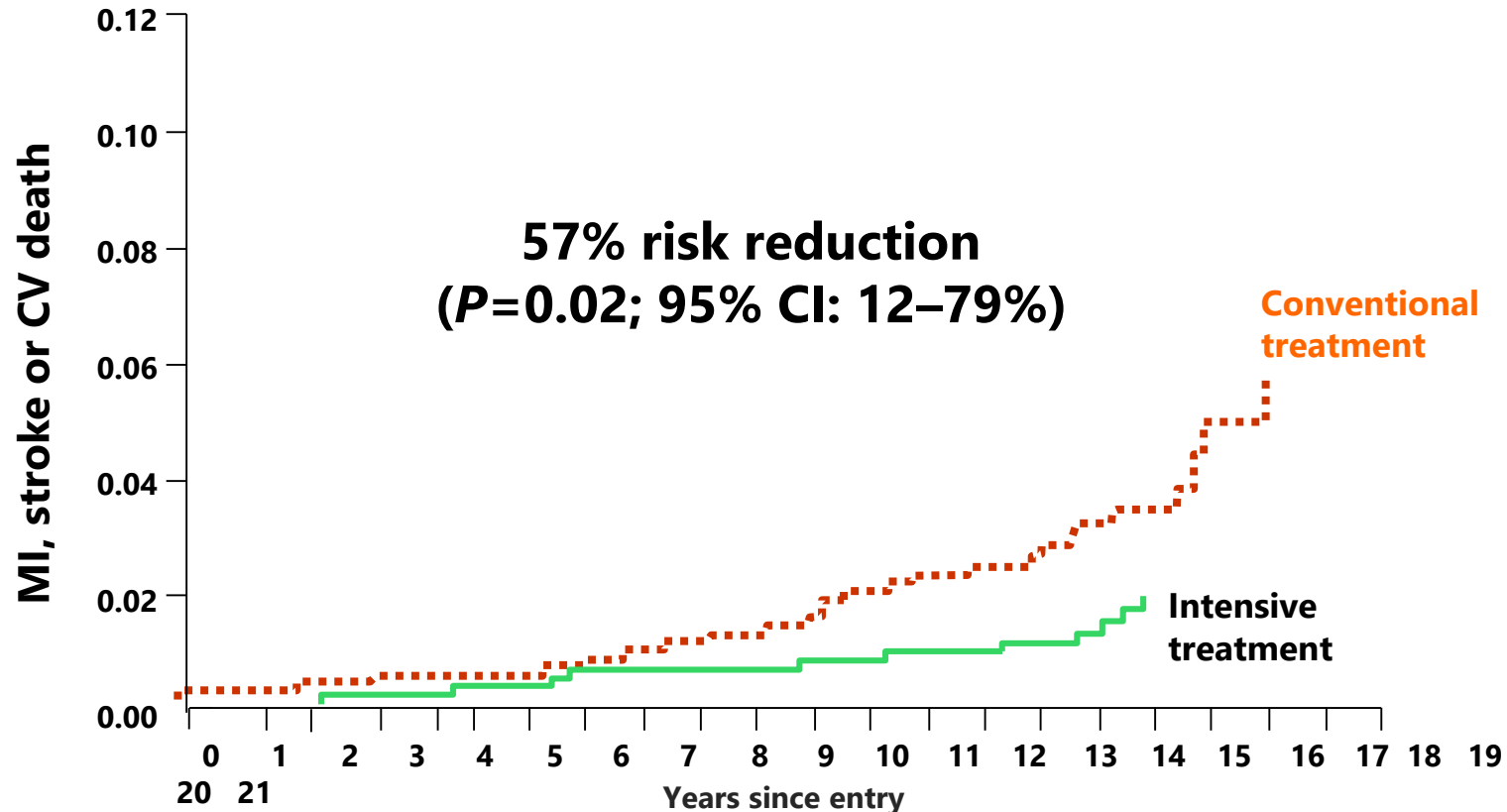


B

RRR = relative risk reduction
CI = confidence interval

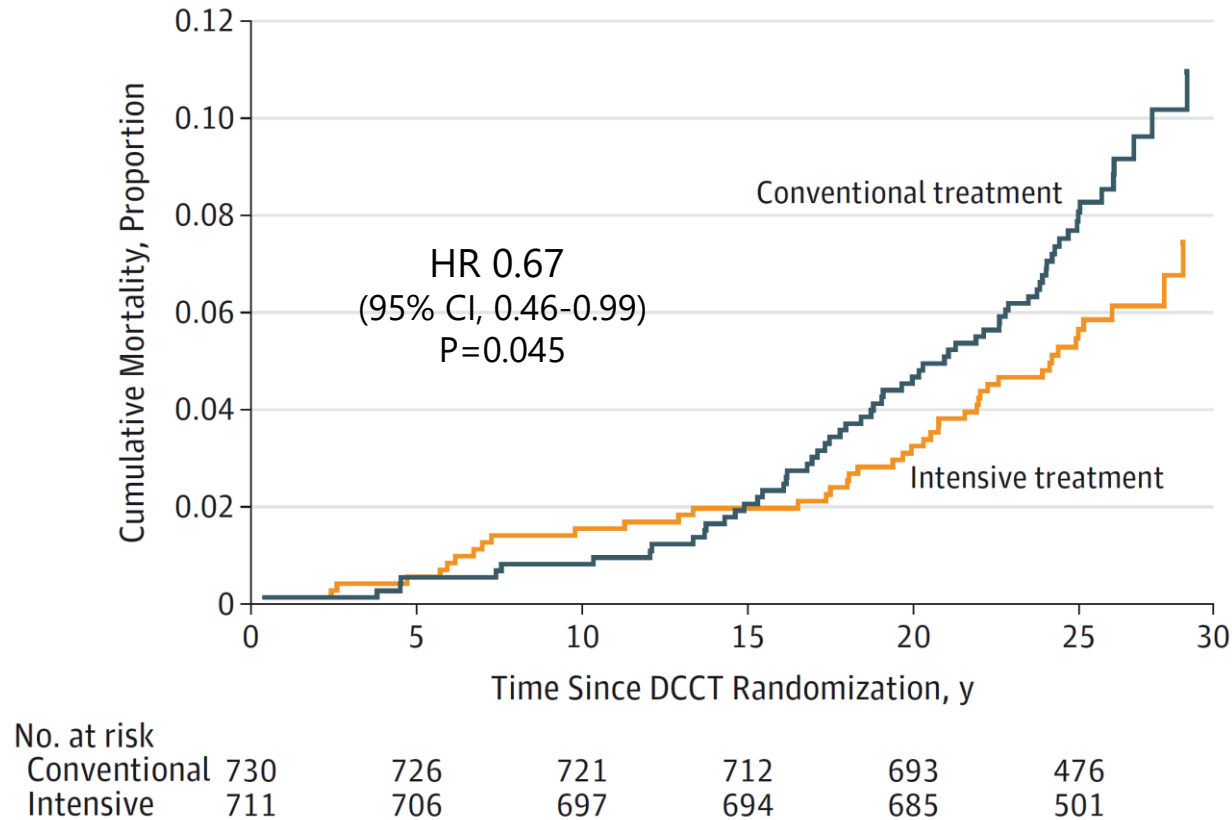
The Diabetes Control and Complications Trial Research Group. N Engl J Med 1993;329:977-986.

DCCT/EDIC: Early intensive glucose control leads to long-term reduction in nonfatal MI, stroke or CVD death



DCCT/EDIC Study Research Group. *N Engl J Med* 2005;353:2643–2653.

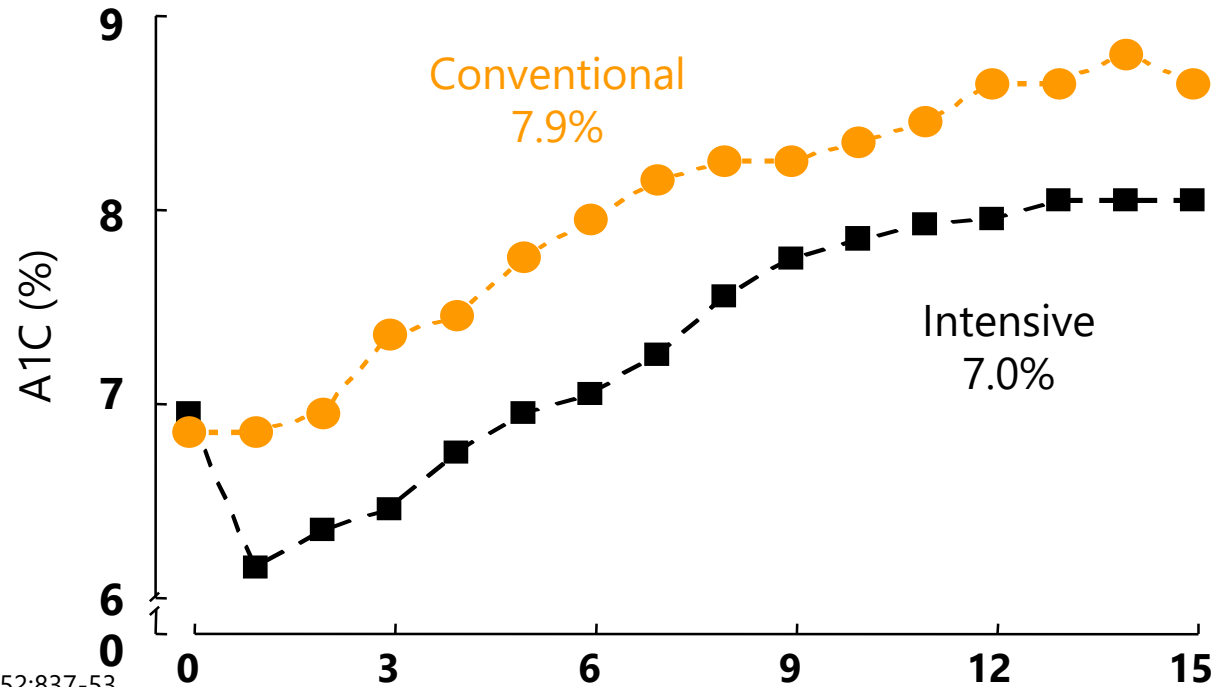
DCCT/EDIC: Early intensive glucose control leads to long-term reduction in mortality



DCCT/EDIC Research Group. JAMA 2015;313:45-53.

UKPDS: Intensive glucose control with sulfonylureas or insulin in type 2 diabetes

N = 3867 Recent Onset T2DM



UKPDS Study Group. Lancet 1998;352:837-53.

UKPDS: Legacy Effect of Early Intensive Glucose Control

2007: After total of 20 years follow-up

Aggregate Endpoint

	1997	2007
Any diabetes related endpoint	<i>RRR:</i> 12% <i>P:</i> 0.029	9% 0.040
Microvascular disease	<i>RRR:</i> 25% <i>P:</i> 0.0099	24% 0.001
Myocardial infarction	<i>RRR:</i> 16% <i>P:</i> 0.052	15% 0.014
All-cause mortality	<i>RRR:</i> 6% <i>P:</i> 0.44	13% 0.007

Holman R, et al. *N Engl J Med* 2008;359.

Livongo: The Leading Consumer Digital Health Solution



The Only Comprehensive Chronic Condition Program

Diabetes, DPP, and hypertension: 24/7 personalized coaching, connected devices including blood glucose meter, blood pressure cuff, and scale, as well as Livongo mobile app, my.livongo.com



Proven Clinical and Financial Outcomes at Scale

Reduced HbA1c 0.8 points and sustained over three years while reducing hypoglycemia 15%, 87% reduced their BMI by >1 and 78% sustained weight loss over 12 months, \$83pppm savings



Putting Data Science to Work on the Largest Real-World Health Data Set

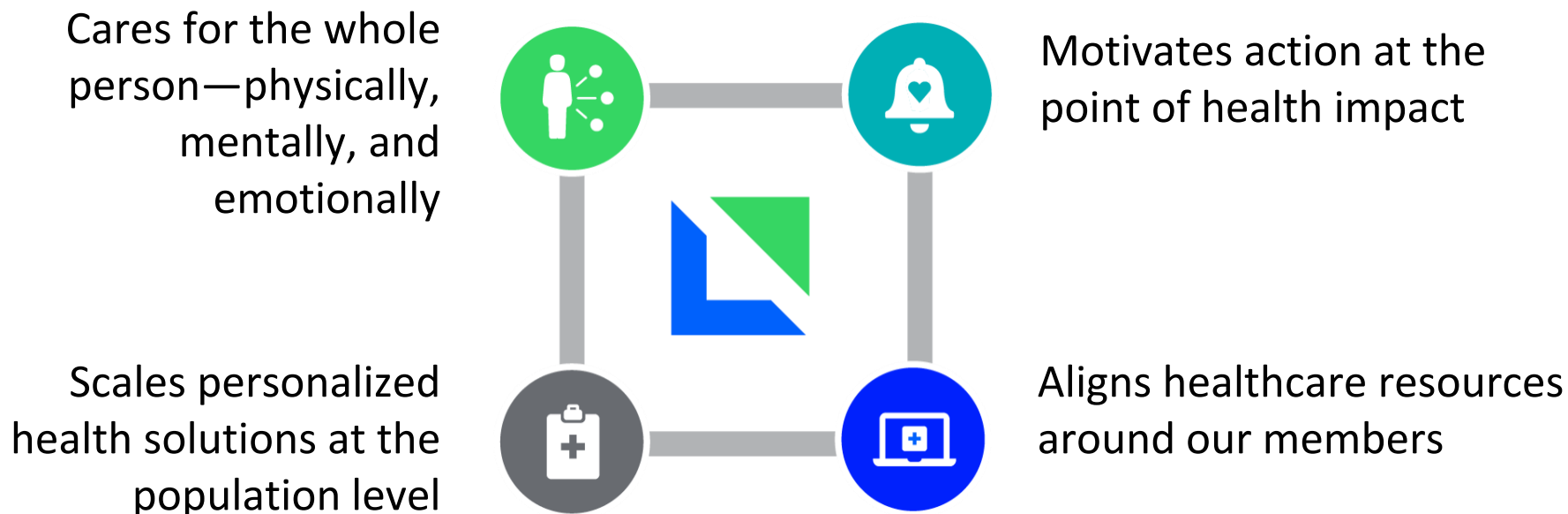
105,000,000 health data points, 20,000 personalized messages, A/B testing, clinical improvements from reinforcement learning

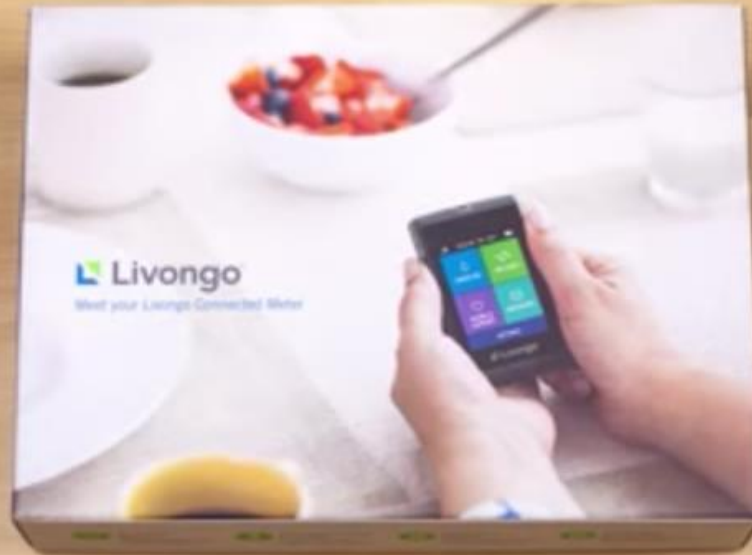


Most Scaled Digital Health Company

350+ clients, four of seven largest payers, providers, and two of three largest PBMs

What Livongo Stands For Every Day





Welcome Video

▶ WATCH VIDEO



Livongo is a New Approach to Diabetes Management



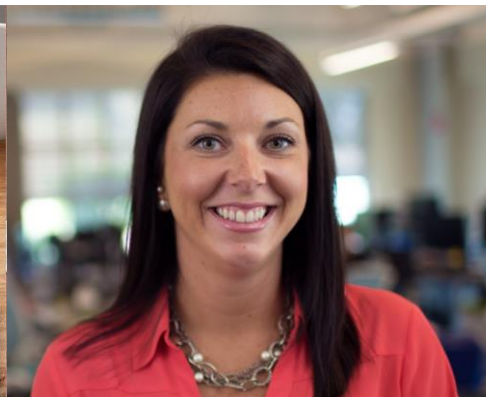
Cellularly-enabled blood glucose meter

- FDA-cleared with touchscreen
- Provides personalized insights
- First meter with remote software upgrades



Real-time data analytics

- Clinical data analytics drive behavior change
- Personalized rules engine provides insights and educational content



24/7/365 insights and real-time support

- Personalized coaching and trends management
- Live interventions triggered by acute alerts



Free unlimited supplies

- Strips and lancets shipped directly to member
- Automated reordering based on usage

Livongo Cares For The Whole Person



PERSONALIZED COACHING

AADE7 and AHA Guidelines



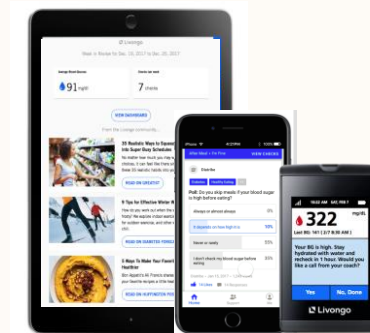
MULTIPLE TOUCHPOINTS

Meter, Cuff, Scale
App, My Livongo,
Text, Phone



COMMUNITY SUPPORT

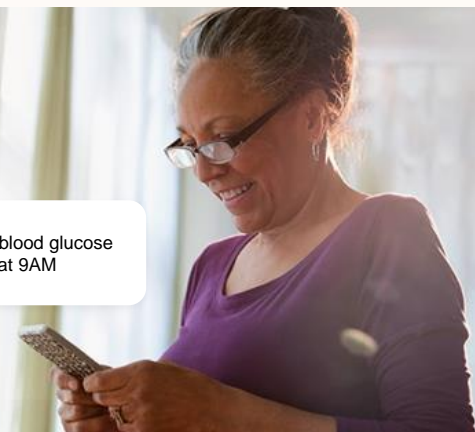
Peers, Coaches, Articles, Polls



REAL-TIME ALERTS

With notifications
to loved ones

Joe has submitted a blood glucose
reading of 65 on 9/5 at 9AM

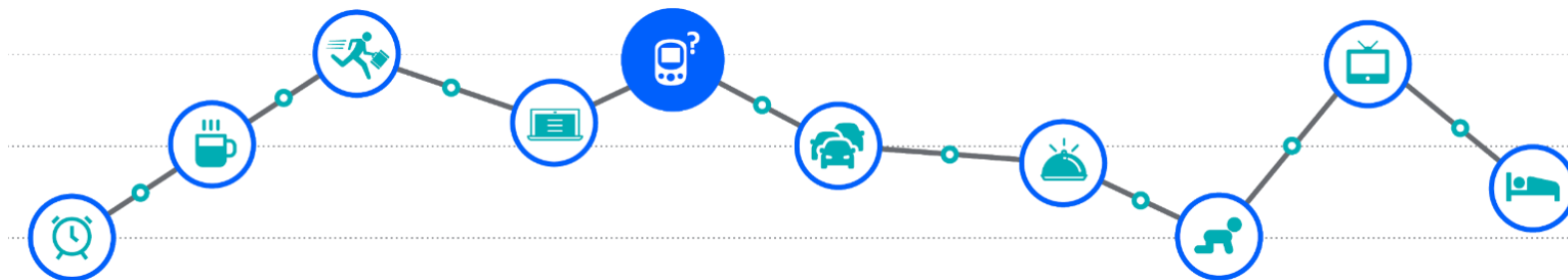


To Drive Change, We Must Understand Each Person

Maria



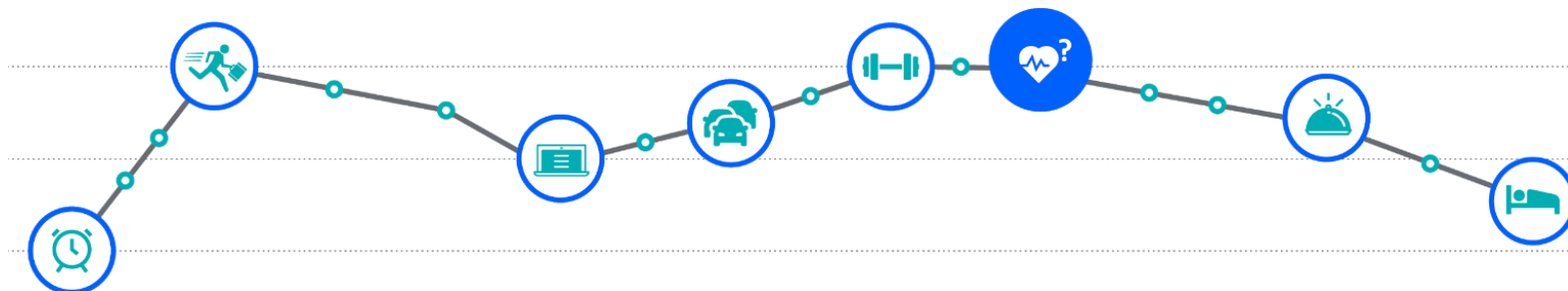
Age: 61
HbA1c: 8.0
LDL: 98
Blood Pressure: 125/81
Medication: Metformin
Engagement: High
Annual Cost: \$15,232



John



Age: 53
HbA1c: 8.0
LDL: 156
Blood Pressure: 148/92
Medication: Insulin
Engagement: Low
Annual Cost: \$21,343



Livongo Provides Personalized, Relevant, and Timely Support

Member



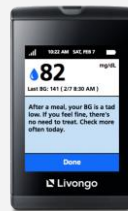
Maria (51) T2D

Enrollment & Onboarding



Focus:
Coaching

Ongoing Engagement



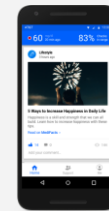
Real-time Tips



Coaching:
Nutrition



Personalized
Newsletter: Exercise



Mobile App



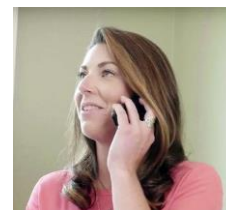
John (53) T2D



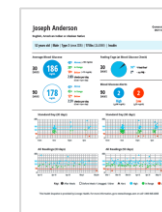
Focus:
Free Strips



Low Blood
Glucose Alerts



Alert Coaching



Coaching:
Blood Glucose
Review



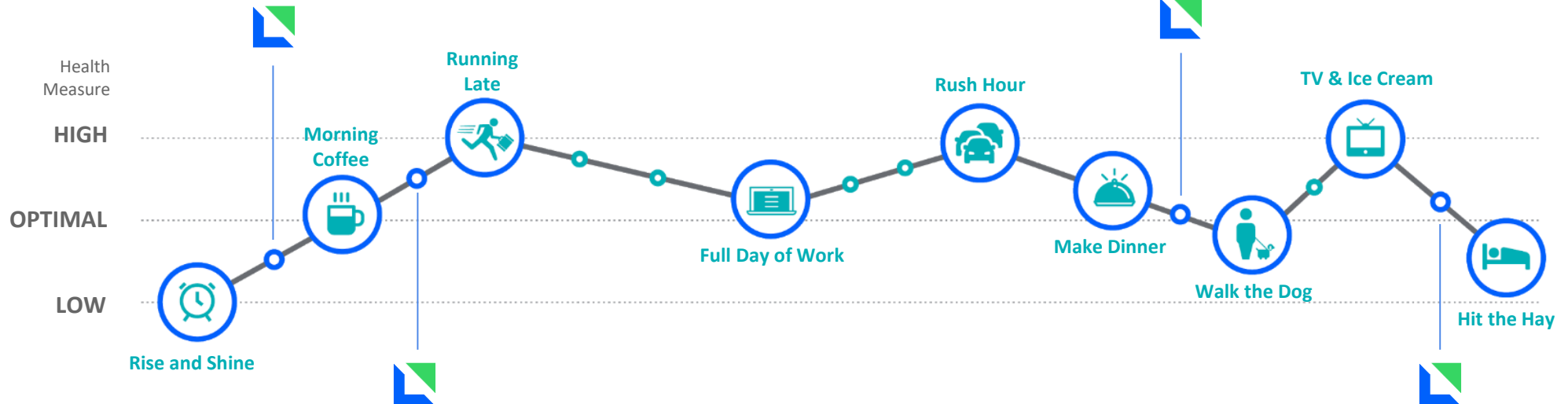
Text Campaign:
High Fasting Blood
Glucose

Livongo Motivates Action At The Point Of Health Impact



Insight: Eating protein in the morning, like cheese or eggs, helps start the day with smooth blood sugar levels.

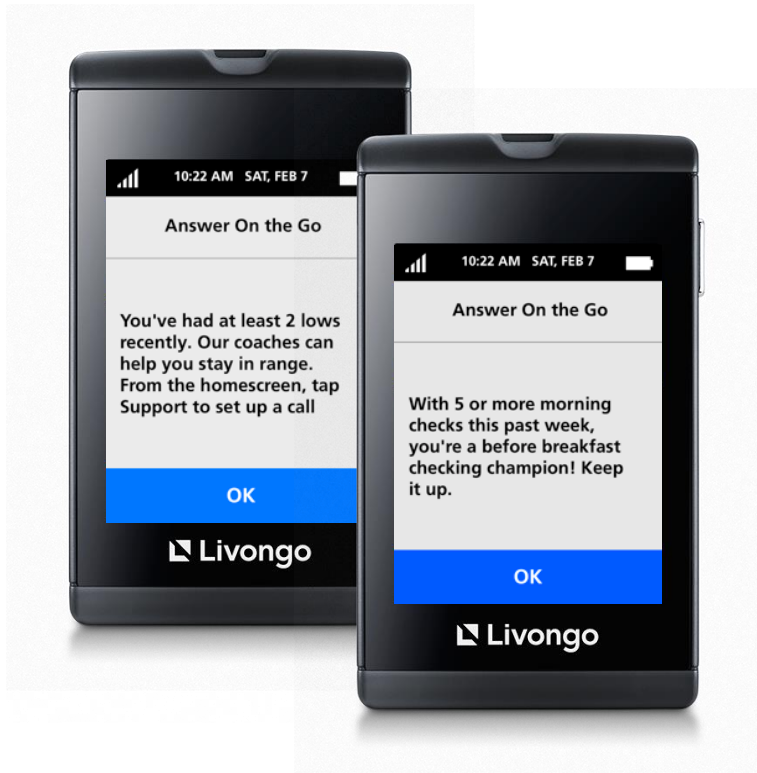
Text Reminder: Taking your evening medications will help your blood pressure be in goal range.



Alert: Call from Livongo Coach, "I noticed your blood sugar was high."

My Livongo: Try using Goals like "Wake and Check" to better understand diabetes.

Nudges Use Machine Learning to Change Behavior by Focusing on Engagement and Taking Healthy Actions



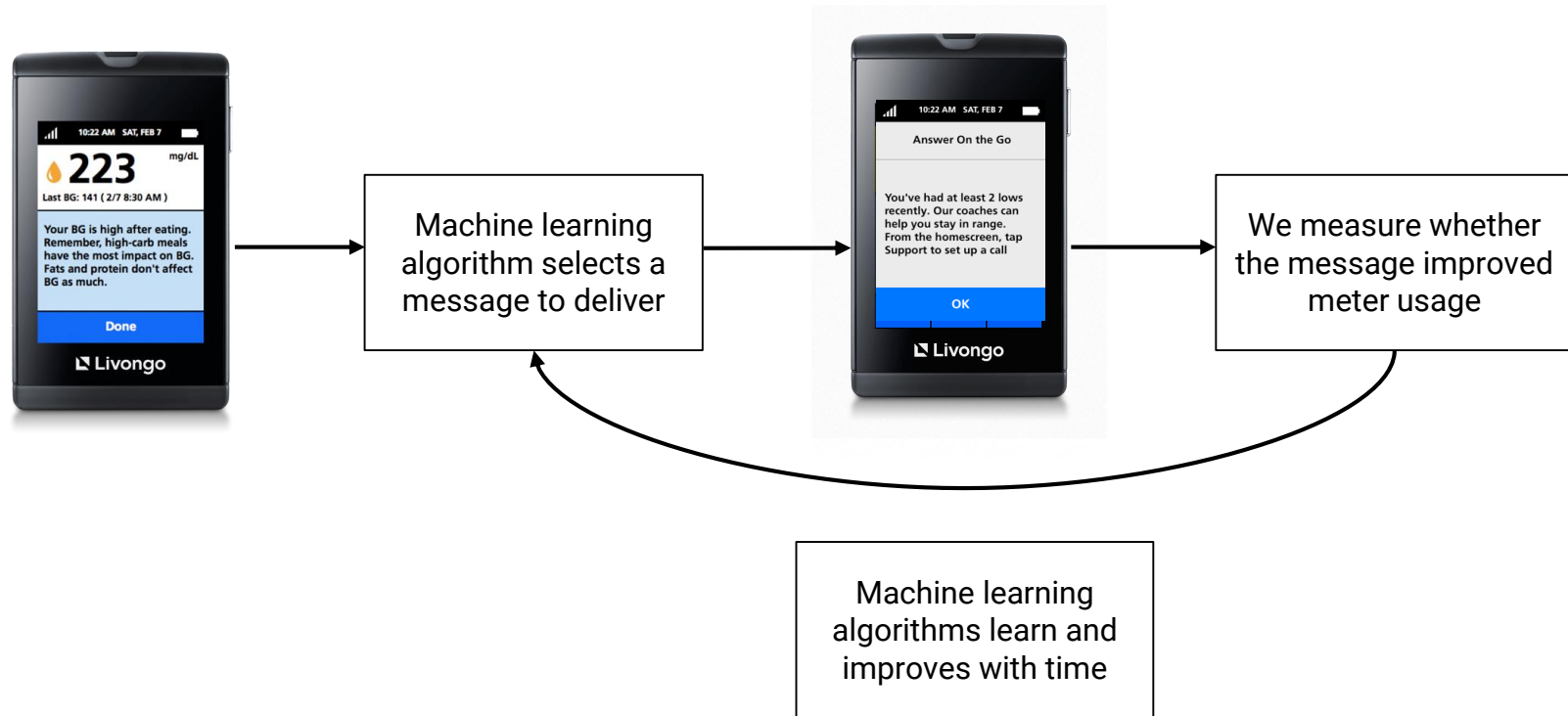
Personalized and Actionable Messages

- Deliver compelling messages to 'Nudge' members to engage with our features and celebrate progress
- Members get a 'Nudge' every 3 days based on their readings, trends, health profile, and feature usage

Powered by Machine Learning

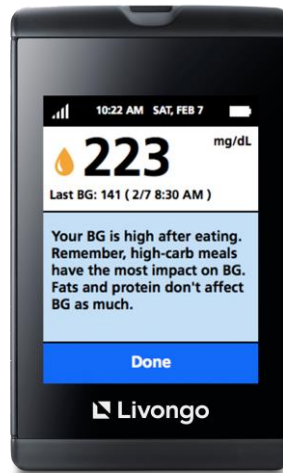
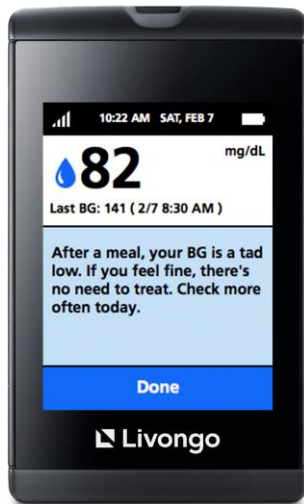
- We measure who took action and use machine learning to send the effective messages more often

Nudges Provide Real-Time Personalized Messages that Use Machine Learning to Improve Over Time

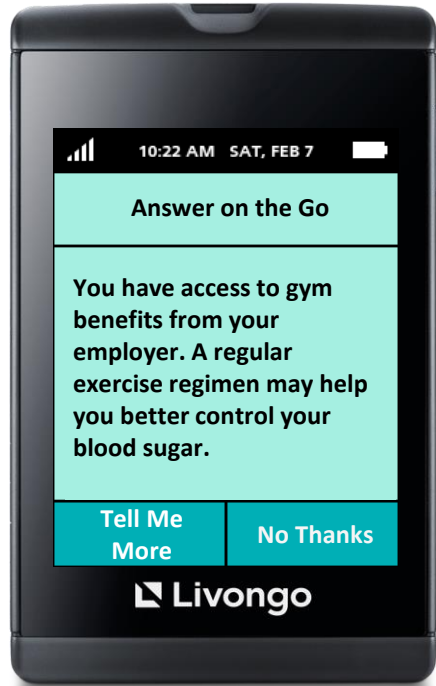


Real-time Personalized Messages Following Each Blood Glucose Check

Context Aware Messages: Our messages are selected based on a member's current and past readings, their health profile, and 10,000+ factors from our rules engine.



Livongo Meter Messages Drives Optimal Benefits Utilization and Care Coordination



Promote Wellness and Health Benefits

Remind members of benefits they can take advantage of in-network benefits that lead to cost savings:

- Medications: Mail order prescriptions
- Outreach: Telehealth services, mental health, etc
- Other: Gym memberships

Education on Preventive Care Benefits

Share ways members and their clinicians can stay informed and be proactive on maintaining or improving their health:

- Medical Tests: HbA1c, cholesterol, BMI, etc
- Medical Exams: Eye, foot, annual physical
- Other: Flu shots, quitting smoking, etc

Recognition for Our Coaching and Educational Content



AHA Network Innovation Member

- Educational content
- Driving discussion on key topics and issues that can improve health outcomes



AADE Coaching Program Accreditation

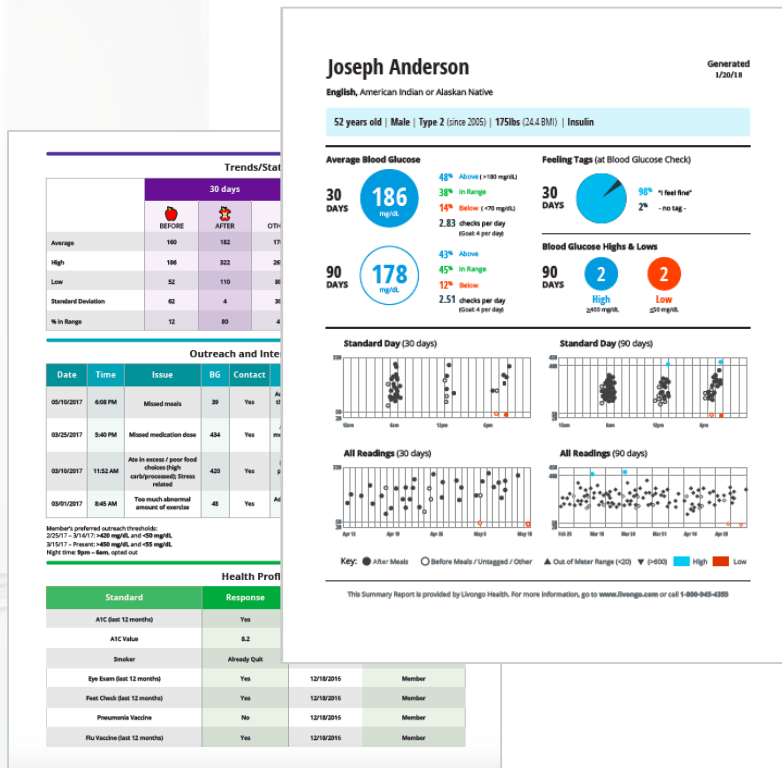
- **First** technology-based program to receive recognition through AADE



ADA Excellence Recognition

- Selected for excellence in self-management education and clinical outcome improvements

Livongo Facilitates Better Care Team Conversations by Providing Health Summary Reports with Trends and Insights



Livongo Delivers Results That Matter



Members Love The Livongo Experience

88% Positive Experience*

75% Feel More Confident*

+65 Net Promoter Score**
Vs. Average Health Plan NPS of
+12 and Amazon NPS of +69

* Livongo Clinical and Financial Outcomes Report, June 2016

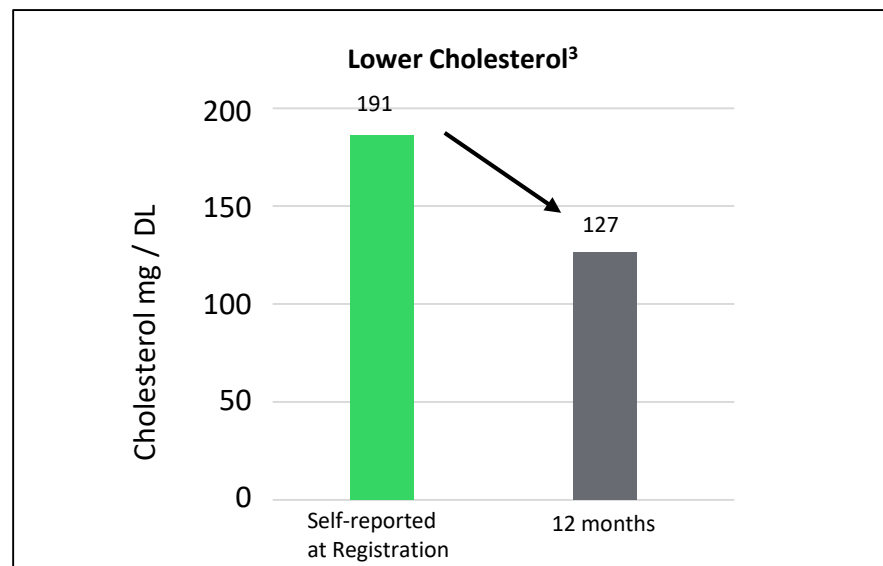
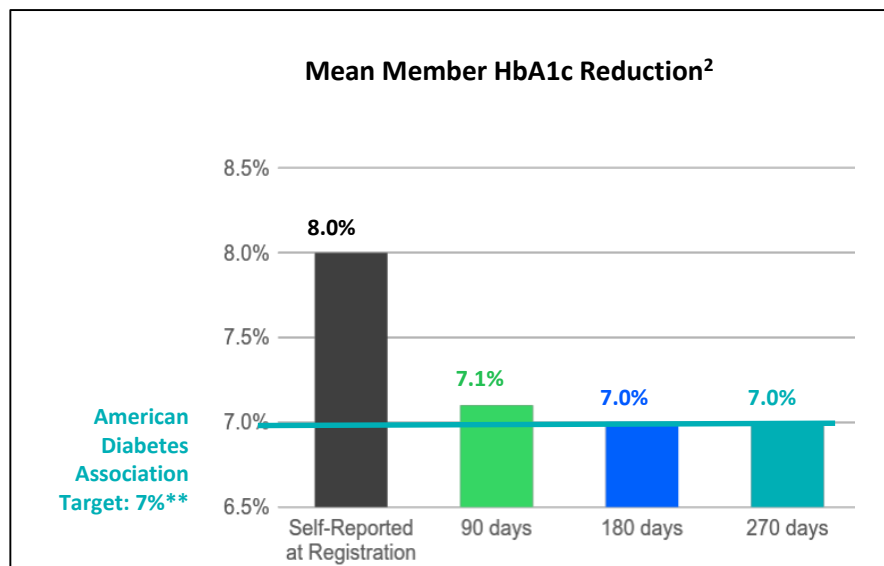
** Livongo NPS from Member Satisfaction Survey, December 31, 2017

"The program put me in charge so that I could choose what worked for me. Frankly, I was tired of being told how to manage my hypertension."

- Livongo Member

Clinical Outcomes

Livongo keeps members in the target blood glucose range, reduces mean HbA1c over time, and impacts other metabolic markers to improve health and drive financial savings.



1 - Livongo Return on Investment Model, April 2017.

2 - Livongo Clinical and Financial Outcomes Report, June 2016

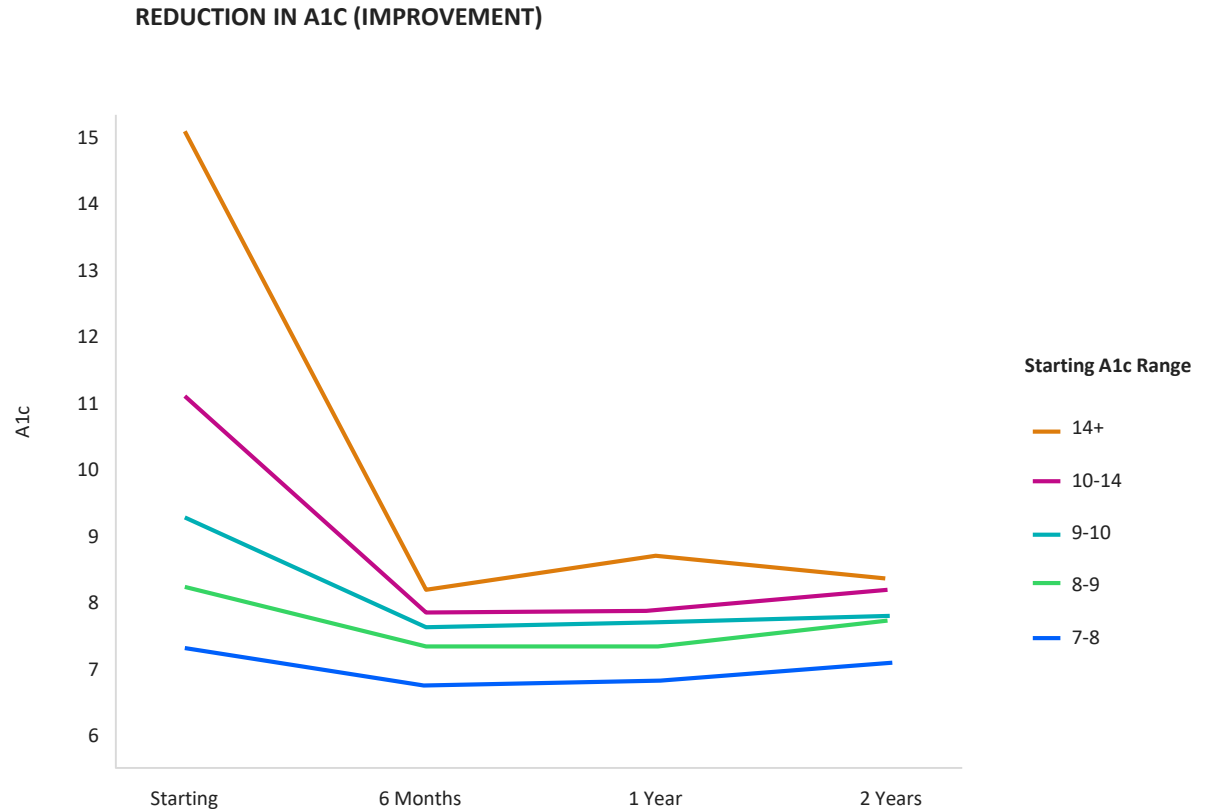
3 - Oral presentation, 2017 ADA Scientific Sessions, June 2017

A1c Reductions by Starting Value

Livongo book of business analysis conducted in June 2018 showcases A1c improvement by cohort, stratified by starting A1c range.

Populations with starting A1c greater than 14 reduced A1c nearly 7.0pts.

The entire population improved A1c within six months, and over two years all cohorts were closer to the ADA recommended target of 7.0



Clinical Improvements Drive Cost Savings

**Better management of HbA1c,
blood pressure, and lipid levels
impact cost savings:**

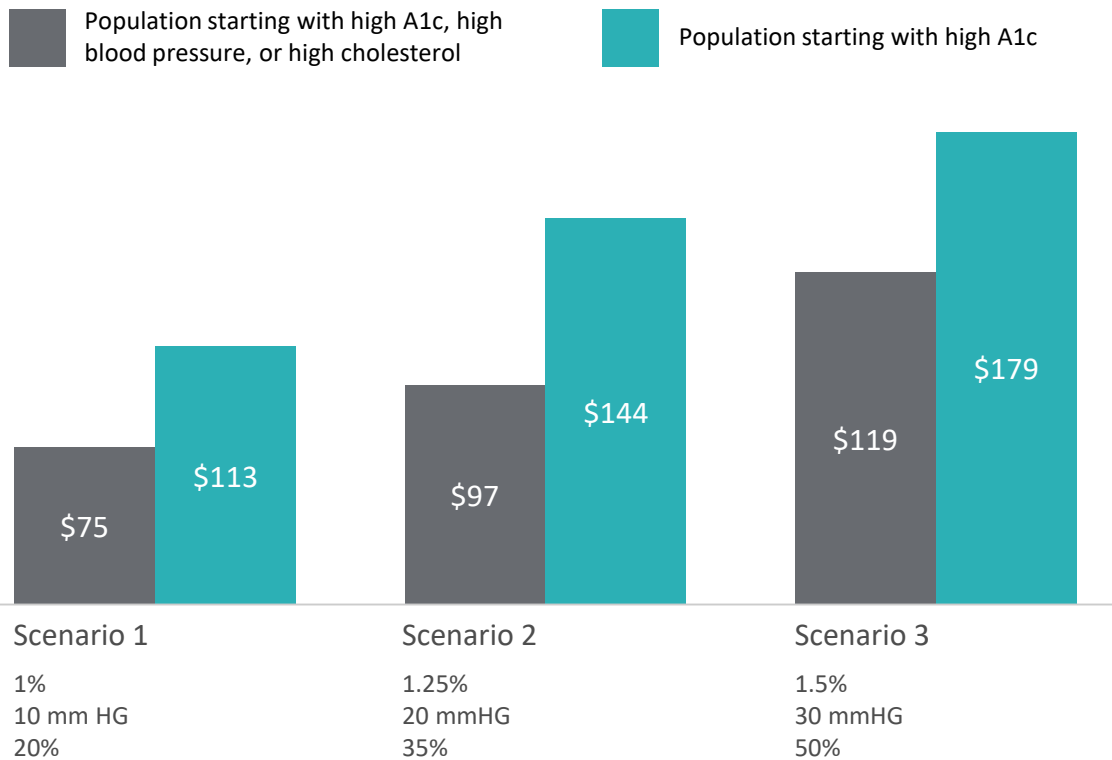
\$75 - \$179_{PPPM}

1 - Fitch K. Medical Claim Cost Impact of Improved Diabetes Control for Medicare and Commercially Insured Patients with Type 2 Diabetes. September 2013:1-16.

2 - Livongo Clinical and Financial Outcomes Report, June 2016

3 - Livongo Return on Investment Model, April 2017.

HbA1c Reduction
Blood Pressure Reduction
Decrease Total Cholesterol



Our Growing Community Of Over 350 Leading Organizations



Iron Mountain Case Study: Reducing Costs Through Better Utilization



"The costs of going to Livongo is neutral, plus, you have the return on investment of having a healthier group of people trying to manage their diabetes."

"Any large employer that is self-insured and looking for new ways to impact the cost of providing health plans to its employees should absolutely look at Livongo."

-- Scott Kirschner
Director of Benefits Strategy

Cost Savings

▼ **8%** Reduced rate of cost increase

Improved Utilization

▼ **19%** Reduced rate of ER visits

▼ **59%** Decreased inpatient admissions



Independently Validated By Mercer: Livongo Drives Down Costs



Diabetes-Related Medical Costs

▼ **4%** Decreased diabetes-related medical costs



Doctor Visits

▼ **20%** Decreased diabetes-related office visits

▼ **21%** Reduced rate of non-emergent ER visits

▼ **9%** Decreased total office visits



Medication Adherence

▲ **3%** Increased diabetes-related prescription utilization

Source: Five-client difference-in-difference study of two years medical and prescription claims data, analyzed by Mercer.

Ask More Than 350 Current Clients. Livongo Delivers.

Two Large Self-Insured Employers

Livongo saved two large self-insured employers \$83.06 per participant per month on healthcare costs for Livongo members, compared to people with diabetes not using Livongo during the same time period.

Over 2 years, comparing before and after Livongo launched.

3,474 against **12,065**

Livongo Members

People with diabetes not on Livongo

▼ **\$83** PPPM

Savings per participant per month

▼ **5%**

Decrease compared to non-Livongo members.



Presented at the 77th annual American Diabetes Association's scientific sessions

Livongo's Evolving Portfolio and Pipeline

Clinical Focus	Program	Evaluation	Development	Beta Release	Full Market
Cardiometabolic	Diabetes				
	DPP				
	High Blood Pressure				
	High Cholesterol				
	Congestive Heart Failure				
Respiratory	Asthma				
	COPD				
Behavioral Health	Depression				
	Anxiety				



Thank you!

Debunking the Hype About “Diabetes Reversal”

1

Lower Population Effectiveness: Dramatically lower enrollment combined with higher program drop-off¹

2

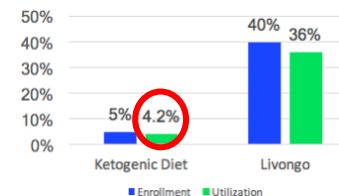
Difficult to Maintain: Regimented diet that is 75% fat, 20% protein, and 5% carbs (~30g of carbs daily)

*“It is **hard to follow** and it can be heavy on red meat and other fatty, processed, and salty foods that are **notoriously unhealthy**.“*

-Dr. Marcelo Campos, Harvard Health Publishing²

3

No Net Savings in Year 1: Savings do not include the cost of the program which is \$400/month



Program Cost	\$4,800
Year 1 Savings ³	\$4,252
Net Savings	(\$548)

1. Livongo Book of Business, July 2018.

2. <https://www.health.harvard.edu/blog/ketogenic-diet-is-the-ultimate-low-carb-diet-good-for-you-2017072712089>

3. <https://www.virtahealth.com/organizations>

Member Information

Joseph Anderson

English, American Indian or Alaskan Native

Generated
05/11/15

52 years old | Male | Type 2 (since 2005) | 175lbs (24.4 BMI) | Insulin

Average Blood Glucose



Feeling Tags (at Blood Glucose Check)



90 DAYS

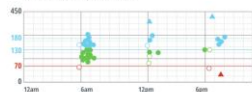
178 mg/dL

43% Above
45% In Range
12% Below
2.51 checks per day (Goal: 4 per day)

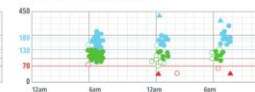
Blood Glucose Alerts



Standard Day (30 days)



Standard Day (90 days)



All Readings (30 days)



All Readings (90 days)



Key: ● After Meals ○ Before Meals / Untagged / Other ▲ Alert ● High ● In Range ● Low

This Health Snapshot is provided by Livongo Health. For more information, go to www.livongo.com or call 1-800-945-4355

Trends/Stats

	30 days			90 days		
	BEFORE	AFTER	OTHER	BEFORE	AFTER	OTHER
AVERAGE	160	182	178	160	182	178
HIGH	180	250	200	180	250	200
LOW	52	110	80	52	110	80
STANDARD DEVIATION	62	4	30	101	20	64
% IN RANGE	12	80	4	12	80	4

Alerts & Intervention

Date	Time	Issue	BG	Contact	Education	Action
05/10/2015	6:08 PM	Missed meals	39	Yes	Advise to eat regularly throughout the day or carry nutritious snacks with them to avoid low BG.	Contact info verified; Member is taking measures to bring BG up.
04/26/2015	5:40 PM	Missed medication dose	454	Yes	Advise on importance of taking medications regularly as prescribed by doctor.	Member is taking measures to bring BG down.
04/12/2015	11:52 AM	Ate in excess / poor food choices (high carb/processed); Stress related	420	Yes	Educate on effect of high carb / processed food on blood glucose and promote healthy diet.	Contact info provided; Member is taking measures to bring down BG; Diabetes Education Provided.
03/01/2015	8:45 AM	Too much abnormal amount of exercise	48	Yes	Advise on the effects of exercise on BG levels.	Member is taking measures to bring BG up.

Health Profile

Standard	Response	Date	Source
A1C (last 12 months)	Yes	12/18/2014	Member
A1C Value	8.2	12/18/2014	Coach
Smoker	Already Quit	12/18/2014	EHR
Eye Exam (last 12 months)	Yes	12/18/2014	Member
Feet Check (last 12 months)	Yes	12/18/2014	Member
Pneumonia Vaccine	No	12/18/2014	Member
Flu Vaccine (last 12 months)	Yes	12/18/2014	Member
High Cholesterol	No	12/18/2014	Member
High Blood Pressure (>140/90)	Yes	12/18/2014	Member

Health Profile

Standard	Response	Date	Source
A1C (last 12 months)	Yes	12/18/2014	Member
A1C Value	8.2	12/18/2014	Coach
Smoker	Already Quit	12/18/2014	EHR
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Pneumonia Vaccine	No	12/18/2014	Member
Flu Vaccine (last 12 months)	Yes	12/18/2014	Member
High Cholesterol	No	12/18/2014	Member
High Blood Pressure (>140/90)	Yes	12/18/2014	Member

All In Touch Readings (30 days)

Date	Time	BG Value (mg/dL)	Meal	Feeling	Carbs	Insulin
Sat 4/25	7:42AM	216	Before Breakfast	Feel Fine		
Sat 4/25	1:36PM	83	Before Lunch	Feel Fine		
Sat 4/25	4:52PM	75	No Meal	Feel Fine		
Sat 4/25	7:32PM	137	Before Dinner	Feel Fine		
Sun 4/26	9:51AM	88	Before Breakfast	Feel Fine		
Sun 4/26	2:59PM	110	Before Lunch	Feel Fine		
Mon 4/27	8:44AM	238	Before Breakfast	Feel Fine		
Mon 4/27	1:07PM	63	Before Lunch	Feel Fine		
Mon 4/27	4:39PM	335	After Lunch	Feel Fine		
Mon 4/27	7:26PM	65	Before Dinner	Feel Fine		
Mon 4/27	5:44PM	264	No Meal	Feel Fine		
Tue 4/28	7:43AM	262	Before Breakfast	Feel Fine		
Tue 4/28	12:46PM	147	Before Lunch	Feel Fine		
Wed 4/29	12:52PM	182	Before Lunch	Feel Fine		
Wed 4/29	7:33AM	278	Before Breakfast	Feel Fine		
Thu 4/30	7:52AM	250	Before Breakfast	Feel Fine		

The alerts and intervention section reflects the interaction with a Livongo Coach when BG values were very high or very low.