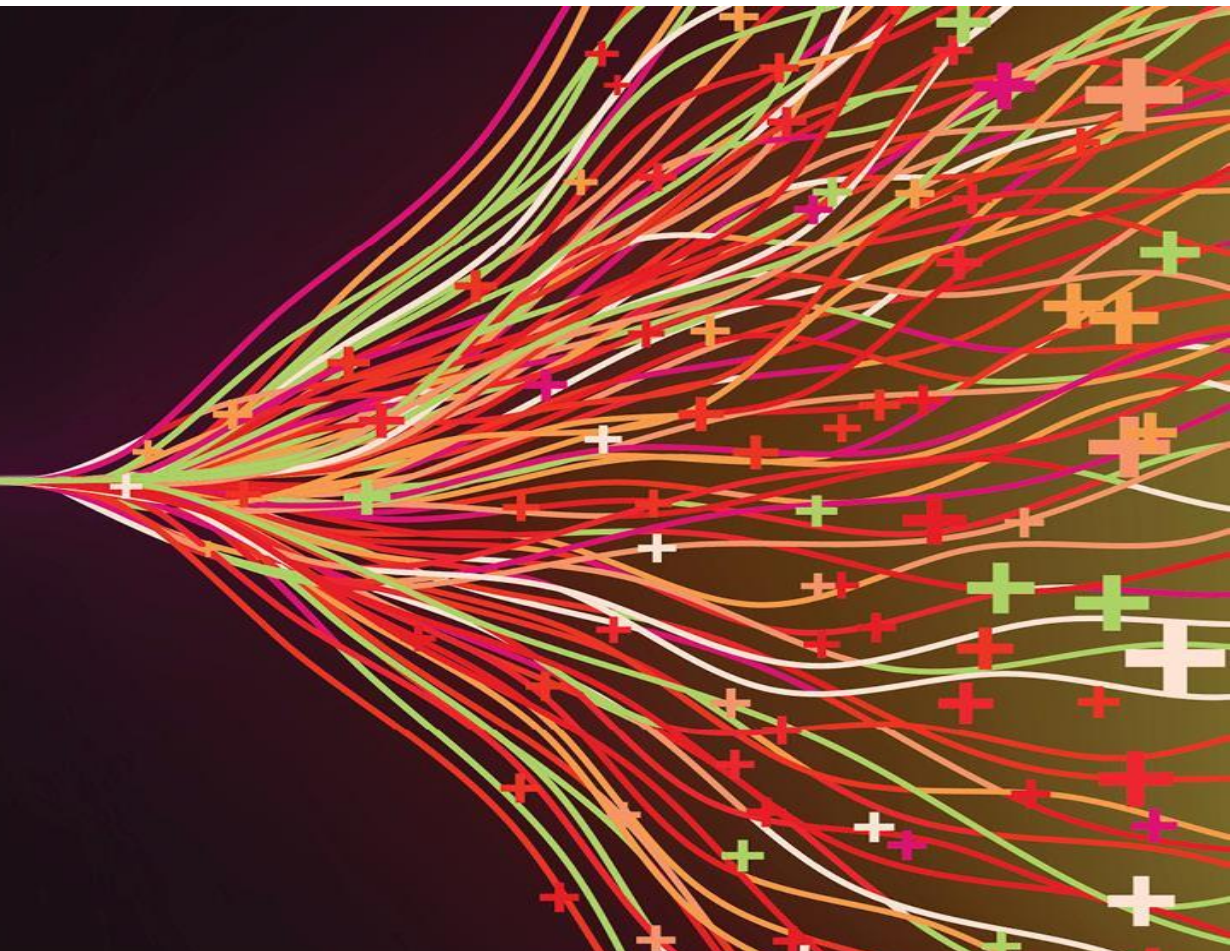


# Food as Medicine: A Path to Remission for Type 2 Diabetes

May 14, 2020



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## Some of the critical questions and issues we will be answering today

- Practical application of gut microbiome profiling for people with metabolic syndrome
- How food as medicine enables a path to remission for diabetes
- Case study: clinical outcomes and cost savings for the 5th largest health system in the US

## Today's Presenters



**Lynda Donovan**  
Director, Employee Benefits  
*Huntsville Hospital  
Health System*



**Andrea Rosler**  
Vice President, Human Resources  
*Huntsville Hospital  
Health System*



**Josh Stevens**  
President  
*DayTwo*



**Gregg Mauro**  
Program Director,  
Employee Health Care Conferences  
and Resilience Conference  
*The Conference Board*

● DAY  
▬ TWO

DayTwo is a science-based,  
food as a medicine solution  
for diabetes and other  
metabolic syndromes that  
**enables a path to remission.**

# DayTwo Member Stories



**Cynthia Towers McCombs**

Certified Wound & Ostomy Nurse  
**Huntsville Hospital System**

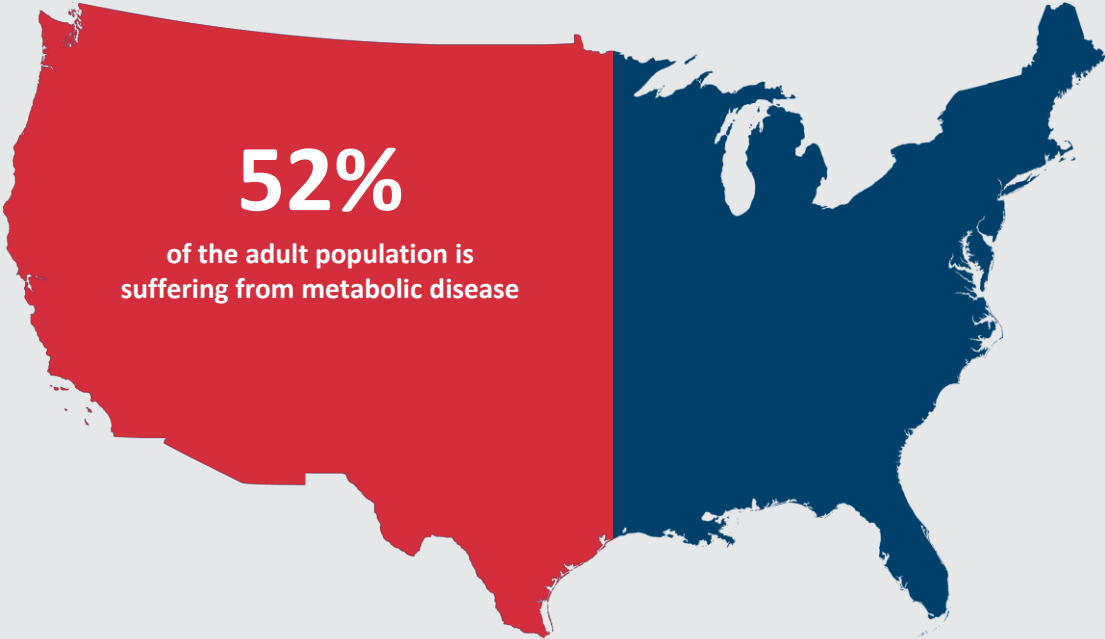


**Aleisa Cosby**

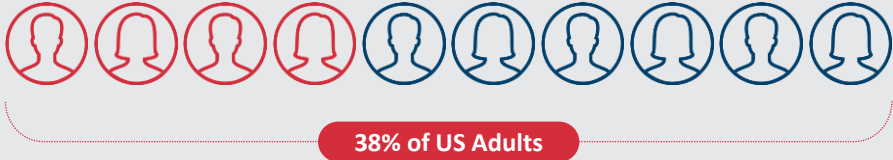
Certified Pharmacy Technician  
**Huntsville Hospital System**

# Diabetes Is A Top 3 Cost Driver For Employers

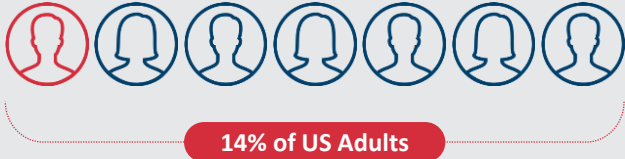
Over half of the adult population has a form of metabolic syndrome



Nearly 4 in 10 US adults have prediabetes



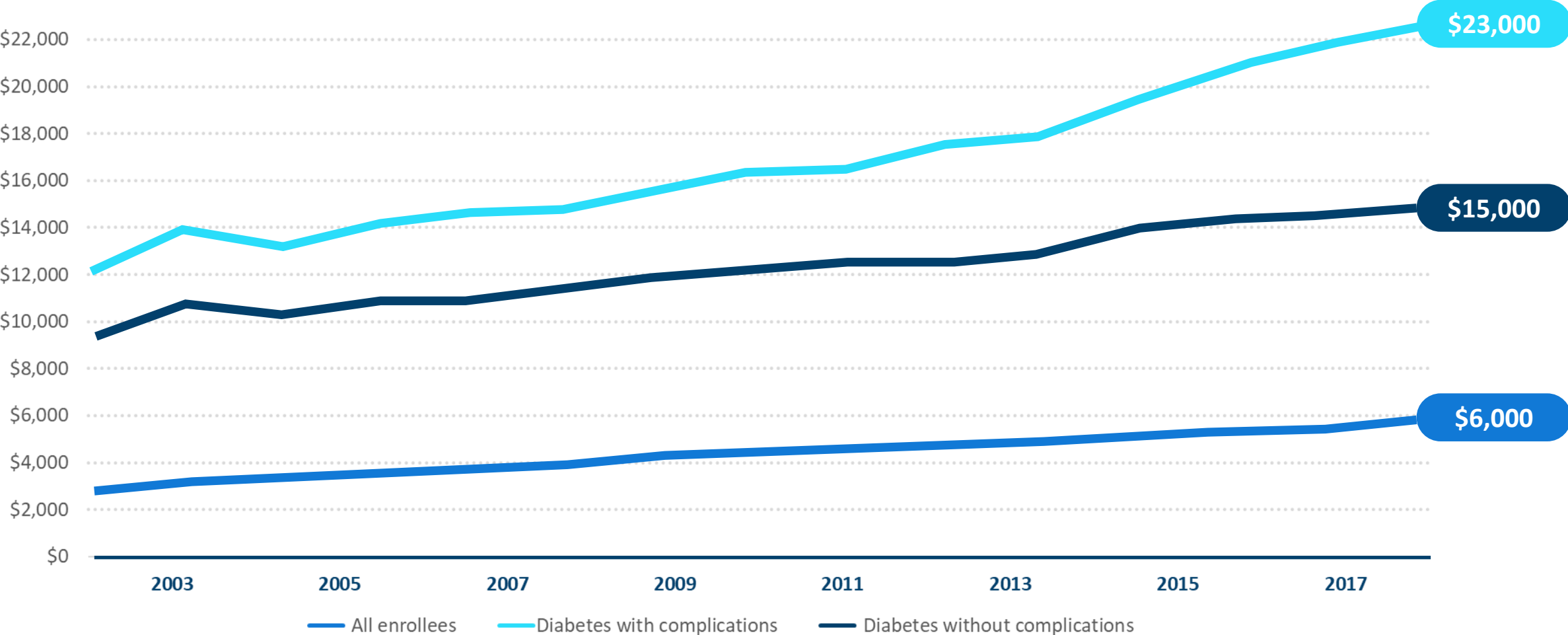
1 in 7 US adults have type 2 diabetes



Source: KFF analysis of IBM MarketScan Commercial Claims and Encounters Database, 2003-2017

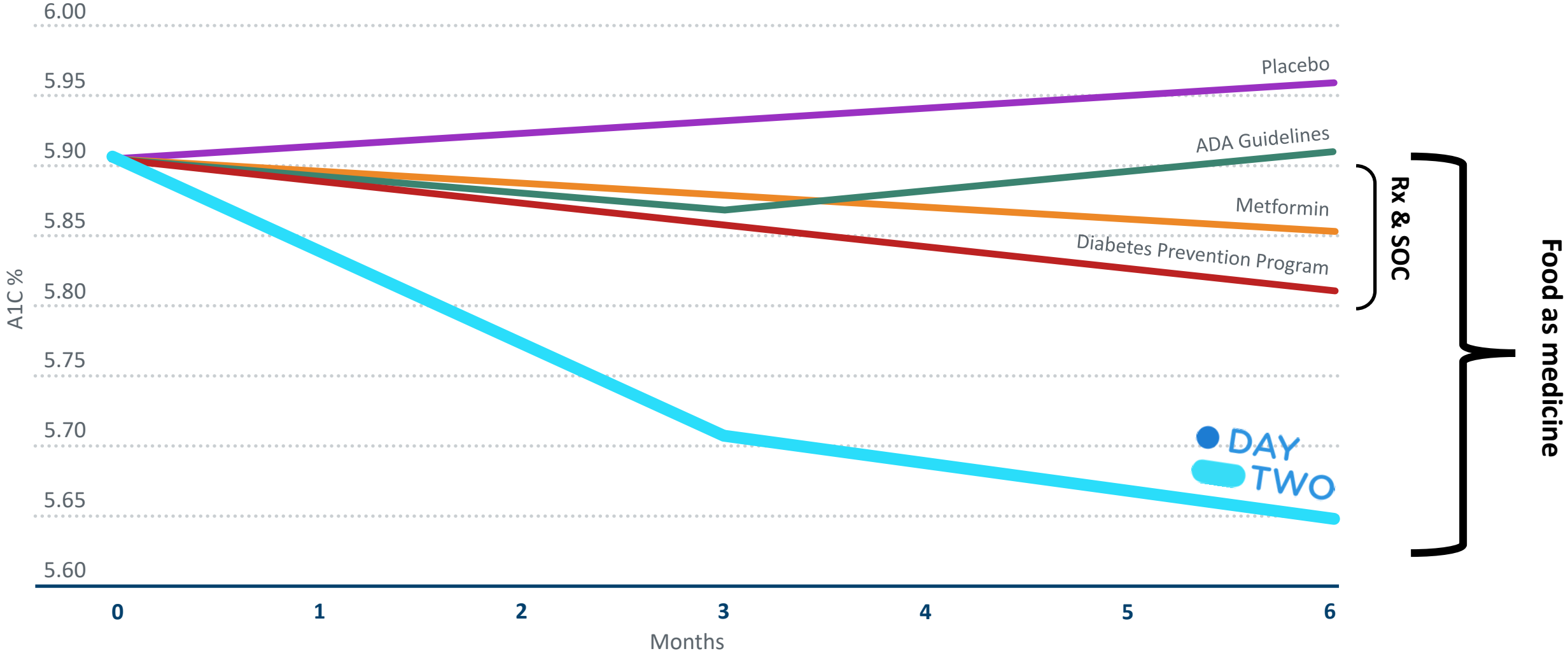


# Employees With Diabetes Are 4x More Expensive

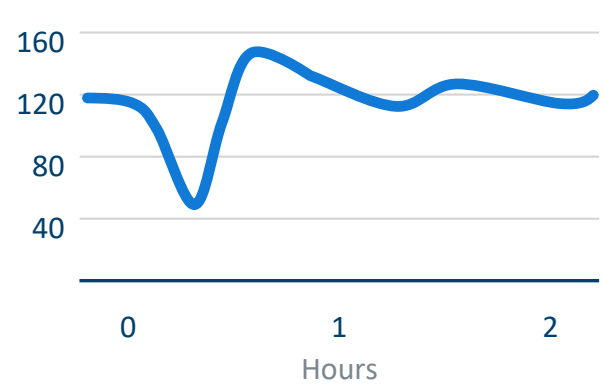
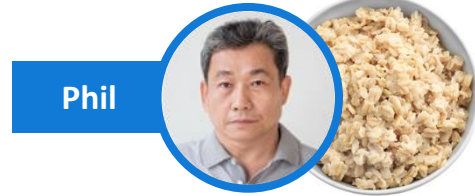
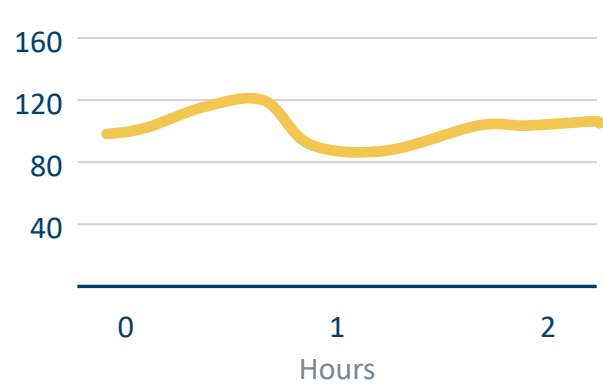
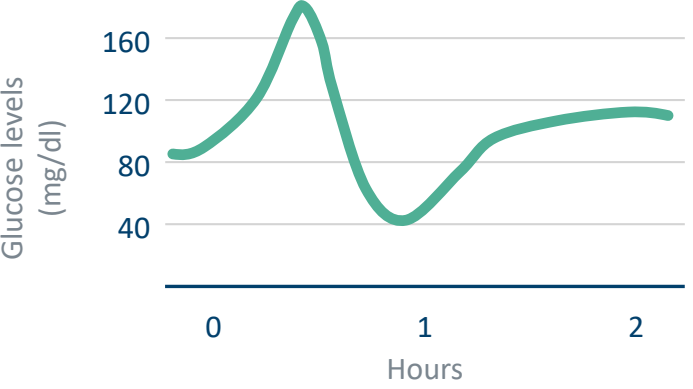


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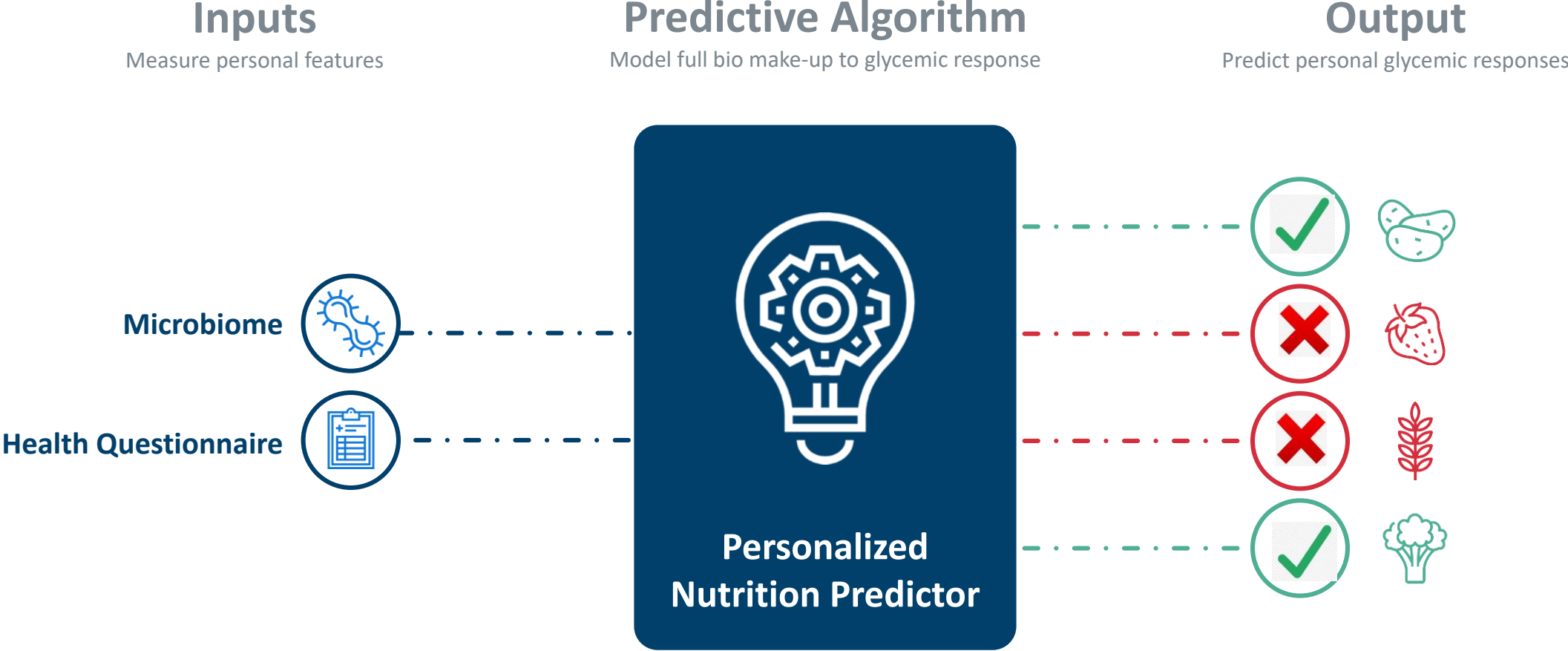
# Food Is 4x More Effective In Lowering Diabetes Costs



# People Respond Differently To The Same Food



# DayTwo Matches The Right Food To Each Person



# The Largest Food As Medicine Trials Ever Conducted

Cell

Cell  
Metabolism

nature

JAMA

The American Journal of  
CLINICAL NUTRITION

**Cell** Article

### Personalized Nutrition by Prediction of Glycemic Responses

**Graphical Abstract**

**Authors**  
David Zeevi, Tal Korem, Nir Zmora, Zemer Hazem, Eran Elinav, Eran Segal

**Correspondence**  
eran.segal@weizmann.ac.il (E.S.)  
www.segal@weizmann.ac.il (E.S.)

**In Brief**  
People eating identical meals present high variability in post-meal blood glucose responses. Personalized diets created with the help of an accurate predictor of blood glucose response that integrates parameters such as dietary habits, physical activity, and gut microbiota may successfully lower post-meal blood glucose and its long-term metabolic consequences.

**Highlights**

- High inter-personal variability in post-meal glucose observed in an 800-person cohort
- Using personal and microbiome features enables accurate glucose response prediction
- Prediction is accurate and superior to common practice in an independent cohort
- Short-term personalized dietary interventions successfully lower post-meal glucose

Zeevi et al., 2019, Cell, DOI: 10.1016/j.cell.2019.10.019  
November 19, 2019 | www.cell.com/cell  
https://doi.org/10.1016/j.cell.2019.10.019

CellPress

Personalized Nutrition by Prediction of Glycemic Responses



**Cell Metabolism** Clinical and Translational Report

### Bread Affects Clinical Parameters and Induces Gut Microbiome-Associated Personal Glycemic Responses

**Graphical Abstract**

**Authors**  
Tal Korem, David Zeevi, Nir Zmora, Zemer Hazem, Eran Elinav, Eran Segal

**Correspondence**  
eran.segal@weizmann.ac.il (A.L.L.)  
www.segal@weizmann.ac.il (E.S.)  
www.segal@weizmann.ac.il (E.S.)

**In Brief**  
Korem et al. performed a crossover trial of industrial white or artisanal sourdough bread consumption and found no significant differences in clinical effects, with the gut microbiome composition remaining generally stable. They showed the glycemic response to bread types to be person specific and microbiome associated, highlighting the importance of individual personalization.

**Highlights**

- Crossover trial shows no differential clinical effect of white versus sourdough bread
- The microbiome composition was generally resistant to dietary intervention of bread
- The glycemic response to the two types of bread varies greatly across people
- Microbiome-based classifier accurately predicts glycemic-response-inducing bread type

Korem et al., 2019, Cell Metabolism, DOI: 10.1016/j.cmet.2019.10.010  
November 19, 2019 | www.cell.com/cell-metabolism  
https://doi.org/10.1016/j.cmet.2019.10.010

CellPress

Bread Affects Clinical Parameters and Induces Gut Microbiome-Associated Personal Glycemic Responses



**ARTICLE**

### Environment dominates over host genetics in shaping human gut microbiota

**Graphical Abstract**

**Authors**  
Tal Korem, David Zeevi, Nir Zmora, Zemer Hazem, Eran Elinav, Eran Segal

**Correspondence**  
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https://doi.org/10.1016/j.cmet.2019.10.010

CellPress

Environment Dominates Over Host Genetics in Shaping Human Gut Microbiota



**JAMA Network Open**

### Assessment of a Personalized Approach to Predicting Postprandial Glycemic Responses to Food Among Individuals Without Diabetes

**Graphical Abstract**

**Authors**  
Tal Korem, David Zeevi, Nir Zmora, Zemer Hazem, Eran Elinav, Eran Segal

**Correspondence**  
eran.segal@weizmann.ac.il (A.L.L.)  
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Korem et al., 2019, JAMA Network Open, DOI: 10.1001/jamaopen.2019.4000  
November 19, 2019 | www.jamaopen.com  
https://doi.org/10.1001/jamaopen.2019.4000

McGraw-Hill

Assessment of Personalized Nutrition by Prediction of Glycemic Responses



**Original Research Communications**

### Model of personalized postprandial glycemic response to food developed for an Israeli cohort predicts responses in Midwestern American individuals

**Graphical Abstract**

**Authors**  
Tal Korem, David Zeevi, Nir Zmora, Zemer Hazem, Eran Elinav, Eran Segal

**Correspondence**  
eran.segal@weizmann.ac.il (A.L.L.)  
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November 19, 2019 | www.jamaopen.com  
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McGraw-Hill

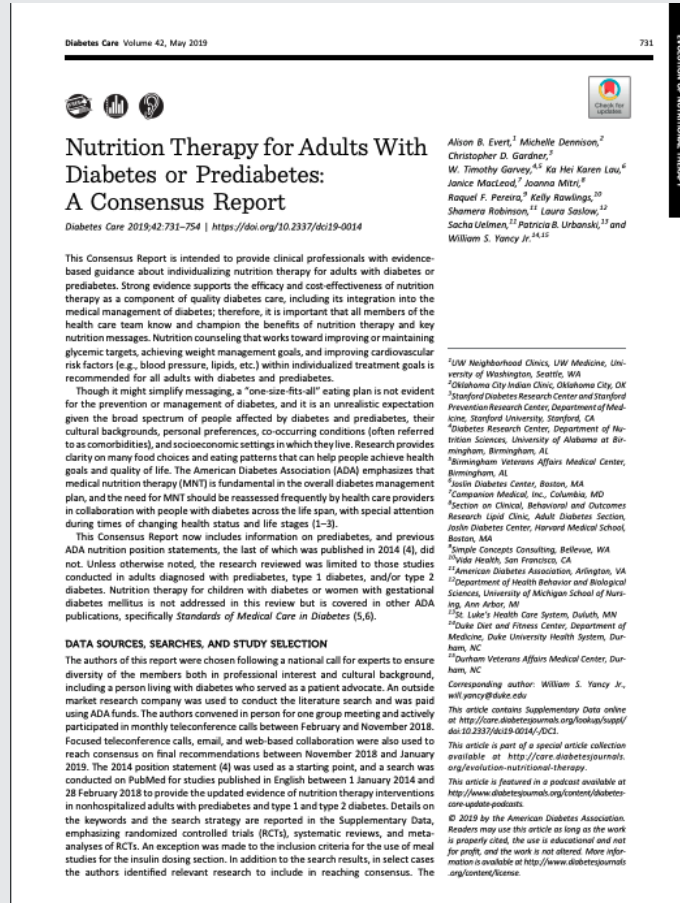
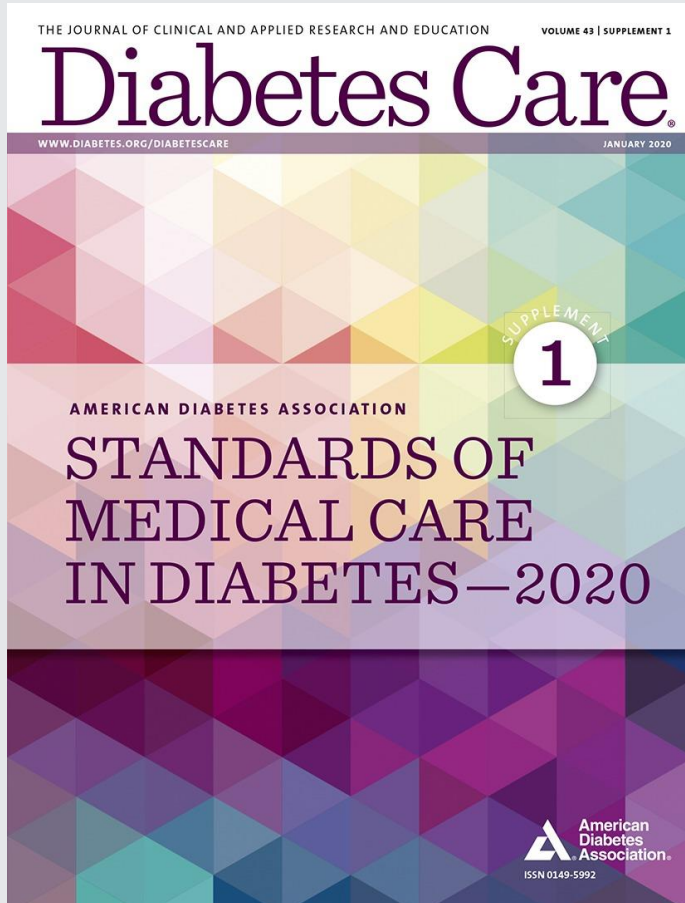
Model of Personalized Postprandial Glycemic Response to Food



SCIENCE FOR THE BENEFIT OF HUMANITY



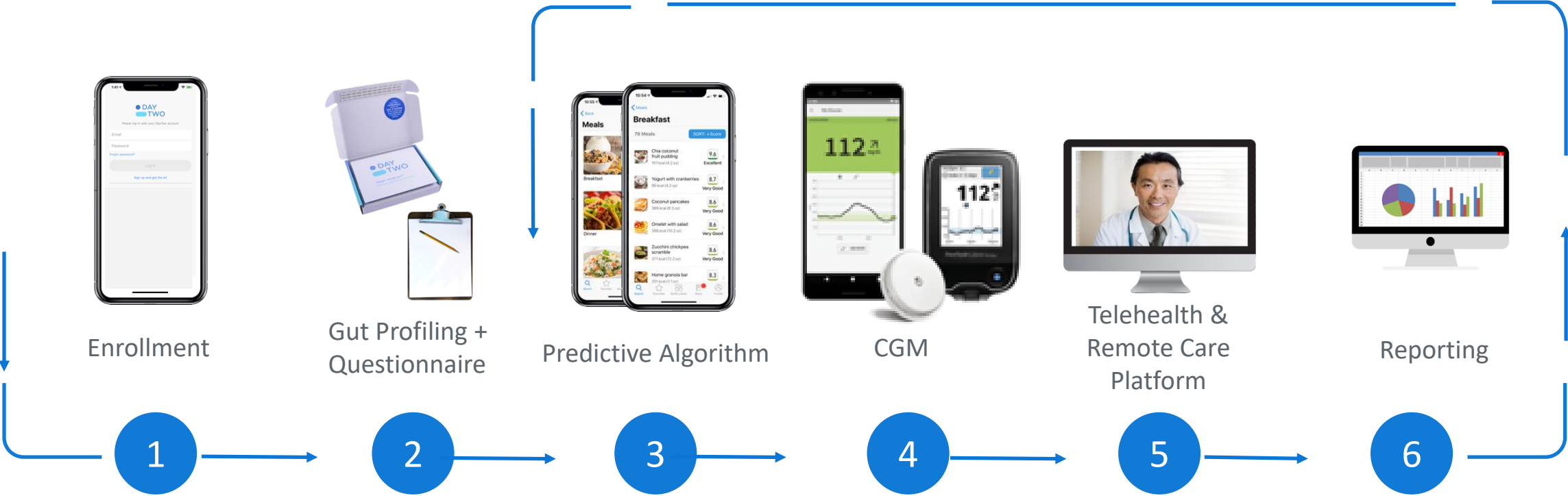
# ADA Cites Microbiome Profiling In 2020 Standards of Care



“...research has shown, for example, the wide interpersonal variability in blood glucose response to standardized meals that could be predicted by clinical and microbiome profiles.”



# Food As Medicine Solution For Metabolic Syndrome



# Health System

To provide high quality care and services that will improve the health of those we serve.

Taking care of our Employees, allows them to provide the very best care for our patients.





# Health System

**Hospital campuses: 19\***

**Employees: ~15,000**

**Licensed beds: 2,200+**

\*Campuses not pictured include Decatur West, Lincoln Medical Center & Curae Health hospitals in Russellville, Haleyville, and Winfield.



Marshall Medical Center



Marshall Medical South



Huntsville Hospital



Women & Children



Madison Hospital



Decatur Morgan Hospital



Athens-Limestone Hospital



Helen Keller Hospital



Lawrence Medical Center



Red Bay



Decatur Morgan/Parkway



The Heart Center

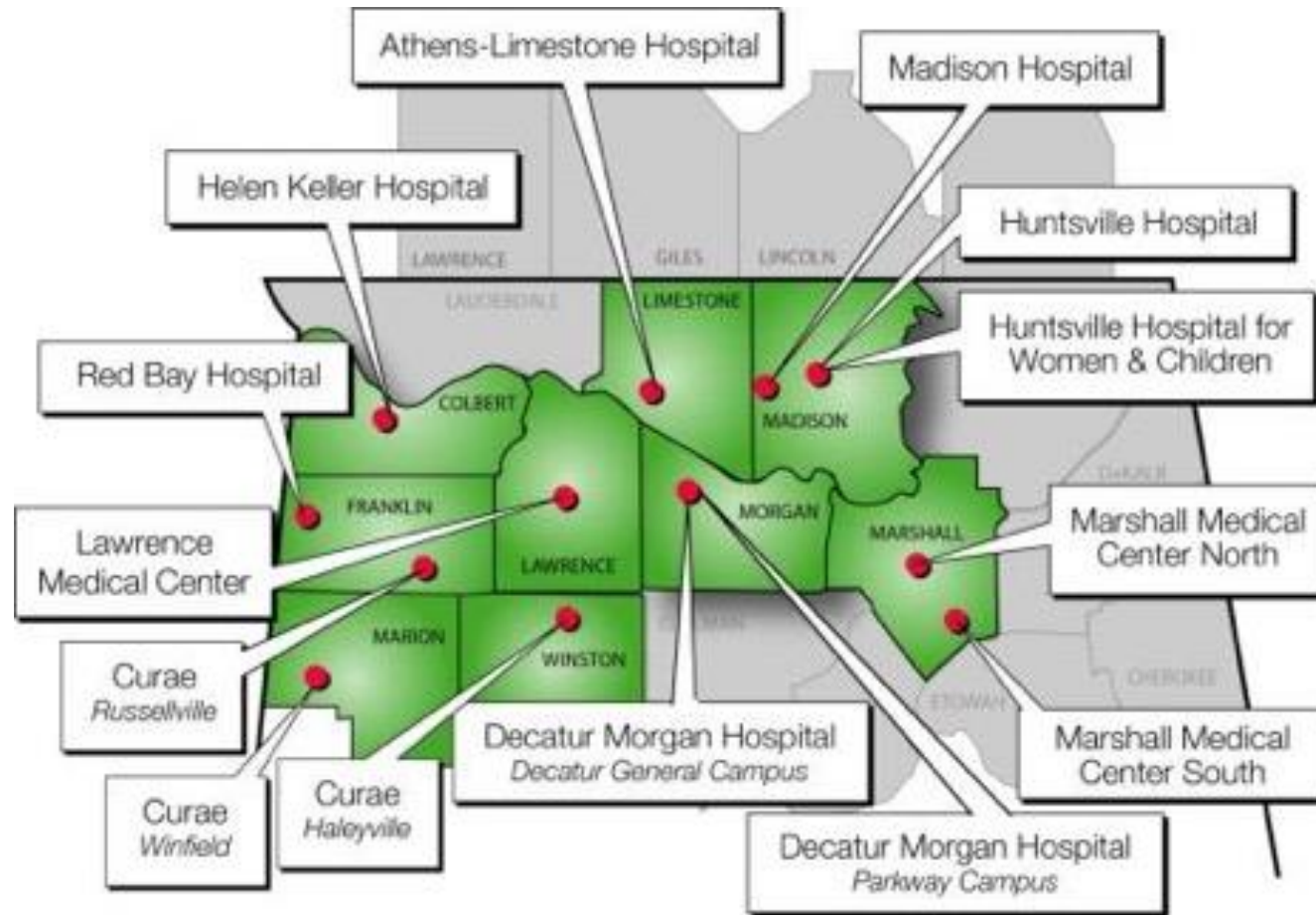


Surgery Center of Huntsville



Encompass Health

# Health System



# Health System

## Our Story

**Employee Assistance Program**

1995

**Employee Health Clinic**

1998

**Wellness Centers**

2000

**Employee Pharmacy Services**

2007

**Corporate Wellness**

2007

**Disease Management**

2009

**Health Risk Assessment & Health Coaching**

2012



# Traditional Approaches To Diabetes

## ADA Guidelines

Diet  
Exercise  
Pharmacology  
Behavior Change

## Pharmacology

Metformin  
Glucotrol  
Actos  
Januvia

## Nutrition

Ketogenic  
Mediterranean  
DASH plan  
Paleo

# Prescription Drugs Are Not Personalized

**Amblify** (*aripiprazole*): Schizophrenia



**Nexium** (*esomeprazole*): Heartburn



**Humira** (*adalimumab*): Arthritis



**Crestor** (*rosuvastatin*): High cholesterol



**Cymbalta** (*duloxetine*): Depression



**Enbrel** (*etanercept*): Psoriasis



**Advair Diskus** (*fluticasone propionate*): Asthma



**Remicade** (*infliximab*): Crohn's disease



**Copaxone** (*glatiramer acetate*): Multiple sclerosis



**Advair Diskus** (*fluticasone propionate*): Asthma



Based on published number needed to treat (NNT) figures. For a full list of references, see Supplementary Information at [go.nature.com/4dr78f](http://go.nature.com/4dr78f)

# 2019 Employee Diabetes statistics

## Population

Employees: **15,000**  
Covered Lives: **30,000**  
Type 2s: **~800**

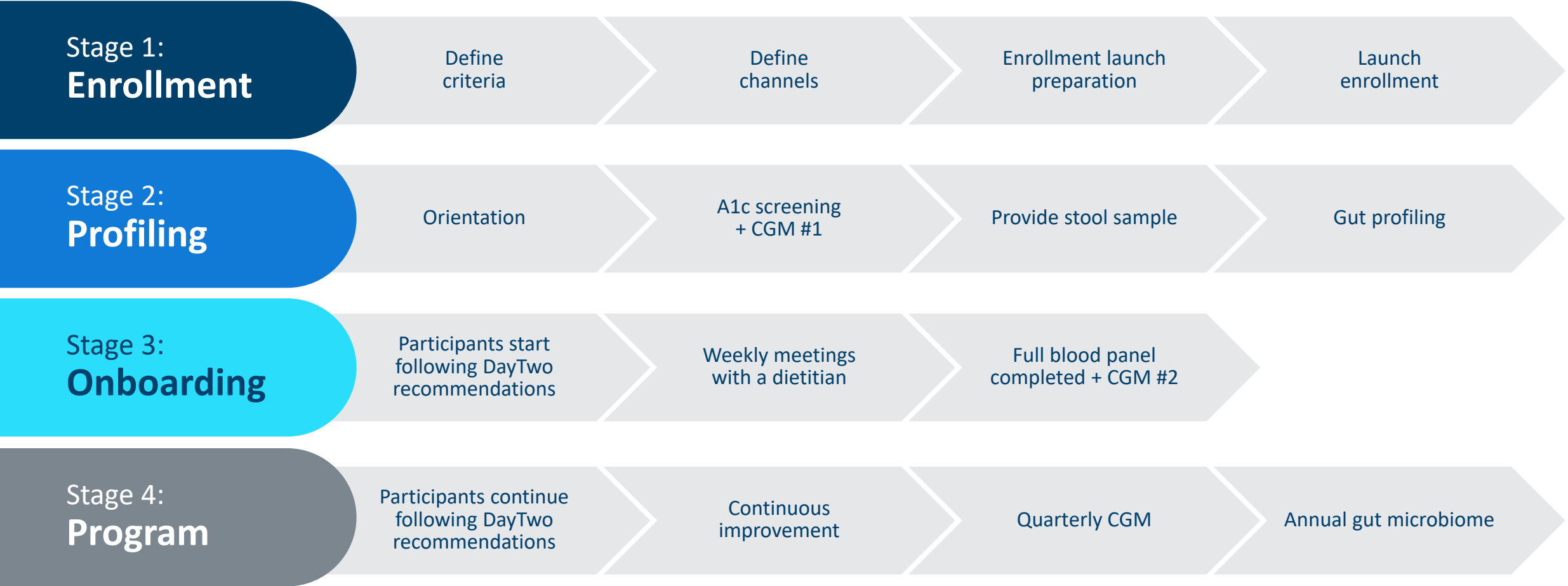
## Costs

Total: **\$102 million**  
Type 2: **~\$5.7 million**

## A1c

2017: 7.32  
2018: 7.40  
2019: 7.01

# DayTwo Program Stages



# DayTwo Clinical Outcomes



▼ **0.98%**  
reduction  
in A1C



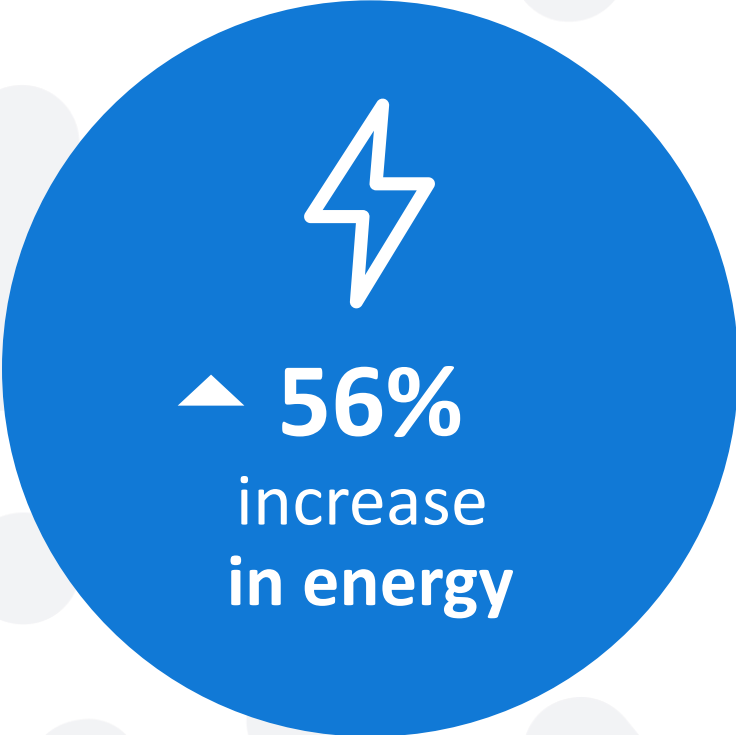
▼ **7.8 lbs**  
reduction  
in weight



▲ **75%**  
more  
time-in-range



# DayTwo Member Reported Outcomes



# DayTwo Member Retention



# Q&A: Please Submit Your Question In The Q&A Window

The screenshot displays a DayTwo meeting interface with several panels. The main panel shows a presentation slide titled "Diabetes Is A Top 3 Cost Driver For Employers" with statistics: "52% of the adult population is suffering from metabolic disease", "Nearly 4 in 10 US adults have prediabetes", and "1 in 7 US adults have type 2 diabetes". A "Q & A" window is open in the center, containing the text "Andrew Federici: Hello I have a question". This window is circled in red, and a red arrow points to it from the right. Other panels include "Video" with a "Start My Webcam" button, "Presenter Chat", "Engagement Dashboard" showing 80% meeting engagement, and a participant list on the right.

For a briefing on how food as medicine can lower 2021 claims costs contact:  
[employers@DayTwo.com](mailto:employers@DayTwo.com)



# Human Capital Insights

A new podcast series brought to  
you by The Conference Board  
Human Capital Center

**The Conference Board Insights** podcast series helps talent executives address challenges and stay informed about current issues across the entire spectrum of human capital

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# Use code **KN1** for a **\$300 discount** on these Upcoming Events

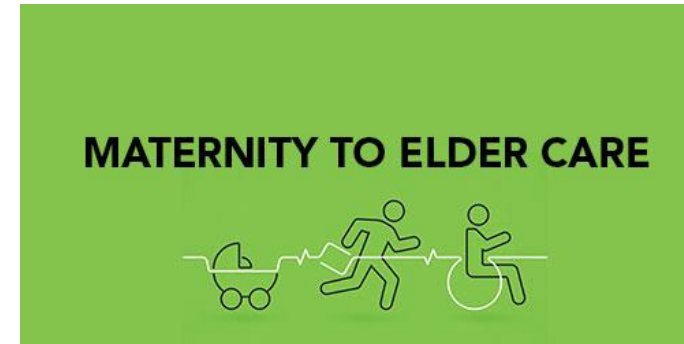
## 2020 Employee Health Care Conference

June 24 – July 2, 2020  
(Virtual)



## Maternity Through Elder Care Seminar

November 9-10, 2020  
(New York, NY)



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