

# A Study on Prediabetes and the Development of Diabetes

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April 17, 2018

## Disclosure

*The opinions expressed during this presentation are the opinions of the presenter and do not necessarily reflect the opinions of Aetna. Nothing in the presentation should be misconstrued as a guarantee of coverage for any product or service.*

# Problem Researched

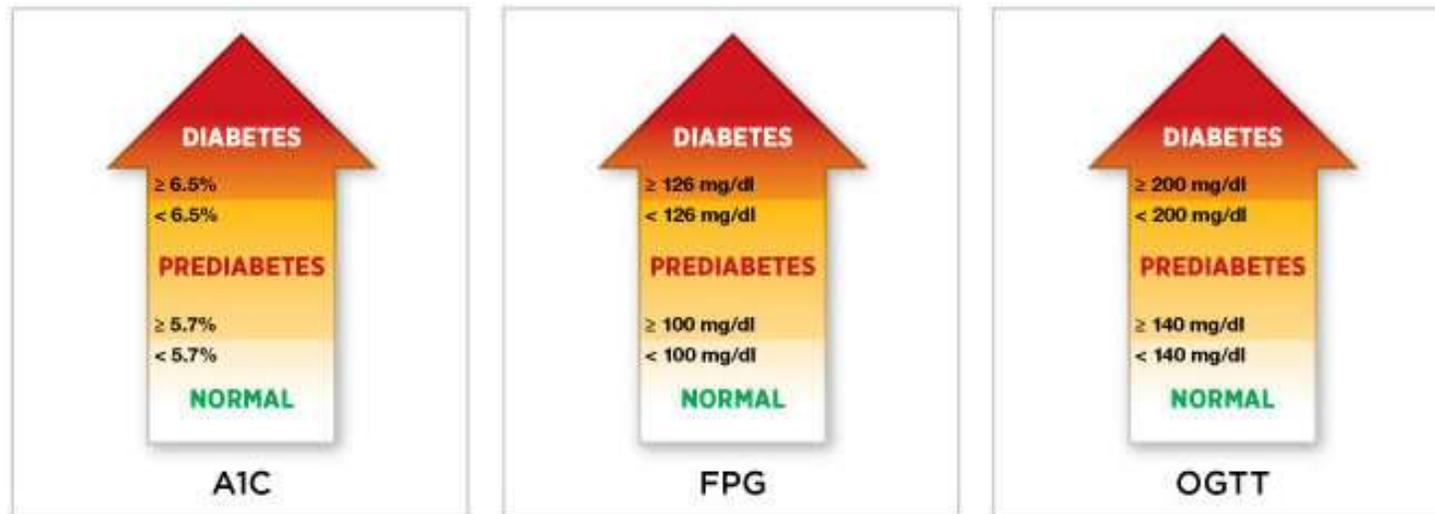
*Why don't all individuals with prediabetes know they have it?*

*And if they do have it...*

*Why aren't interventions instituted or medication prescribed to prevent diabetes?*

- ▶ Diabetes is one of the largest causes of morbidity and mortality throughout the world, with potentially 79 million with diabetes in the US, and millions more with prediabetes
- ▶ Approximately two-thirds of individuals with prediabetes become diabetic
- ▶ One-third of individuals with prediabetes know they are (although individuals may have been told but did not understand)

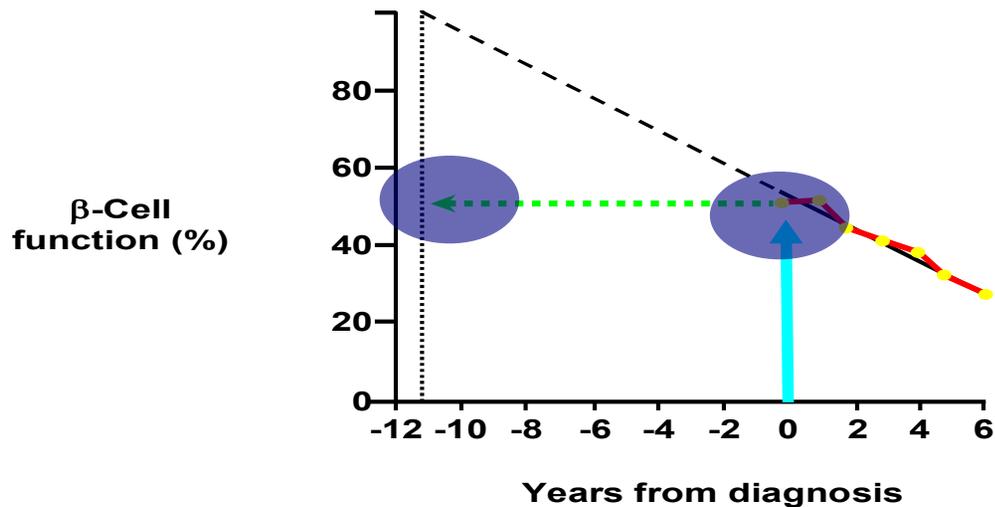
# Definitions at a Glance



Credit: American Diabetes Association

# Loss of Beta-Cell Function

## UKPDS: Progressive Deterioration in $\beta$ -Cell Function Over Time



Holman RR. *Diabetes Res Clin Pract.* 1998;40(suppl):S21-S25.

It has been noted by Bergman (2013) that beta cell dysfunction likely occurs during or prior to prediabetes.

Bergman, M. (2013). Inadequacies of current approaches to prediabetes and diabetes prevention. *Endocrine*, 44(3), 623-633. doi:10.1007/s12020-013-0017-9

# Practical Problems with Prediabetes Management - Findings in Literature

- ▶ Lifestyle interventions are currently the only approved therapy in individuals with prediabetes—other therapies shown to prevent diabetes such as bariatric surgeries and metformin are not approved
- ▶ There are only a few ICD-10 (and previously ICD-9) codes for the diagnosis of prediabetes or related beta cell dysfunction, and limited CPT codes around prediabetes treatment. More codes are not always better, but with so few codes other causes of abnormal increase in blood sugar levels are not differentiated (e.g. caused by steroids, in pregnancy)
- ▶ In the decade before a patient has diabetes, health care costs increase (Chatterjee, et al., 2013)

Chatterjee, R., Narayan, K. M. V., Lipscomb, J., Jackson, S. L., Long, Q., Zhu, M., & Phillips, L. S. (2013). Screening for diabetes and prediabetes should be cost-saving in patients at high risk. *Diabetes Care*, 36(7), 1981-1987

# Most Relevant Literature

- ▶ The seminal original research by Anderson (1954) noted that physicians were most likely aware their patients were prediabetic but did not take action to prevent diabetes.
- ▶ Cloney's research noted only a small percent of patients that were clinically prediabetic were diagnosed as such in medical records (9.9%), and only a fraction of those who were had interventions (25%).
- ▶ Bergman's (2013) set of research was some of the most relevant to interventions affecting prediabetes and preventing diabetes.
- ▶ DeFronzo (as per Kalvaitis, Portnoy, Cannon, and Goldberg, 2010) considered prediabetes and diabetes to be relatively the same condition and suggested there should not be different treatment approaches.

Anderson, G. (1954). A six-minute test with glucagon-free insulin in the classification of diabetes and prediabetes. *Diabetes*, 3(6), 462-465.

Bergman, M. (2013). Inadequacies of current approaches to prediabetes and diabetes prevention. *Endocrine*, 44(3), 623-633. doi:10.1007/s12020-013-0017-9

Cloney, T. A. (2010). *Provider practices in prediabetes care and the prevention of type 2 diabetes* (Order No. 3402147). Available from ProQuest Dissertations & Theses Full Text. (288541506).

Kalvaitis, K., Portnoy, S., Cannon, C., & Goldberg, R. B. (2010). Experts recommend two-pronged approach to treating prediabetes. *Endocrine Today*, 8(10), 1-13.

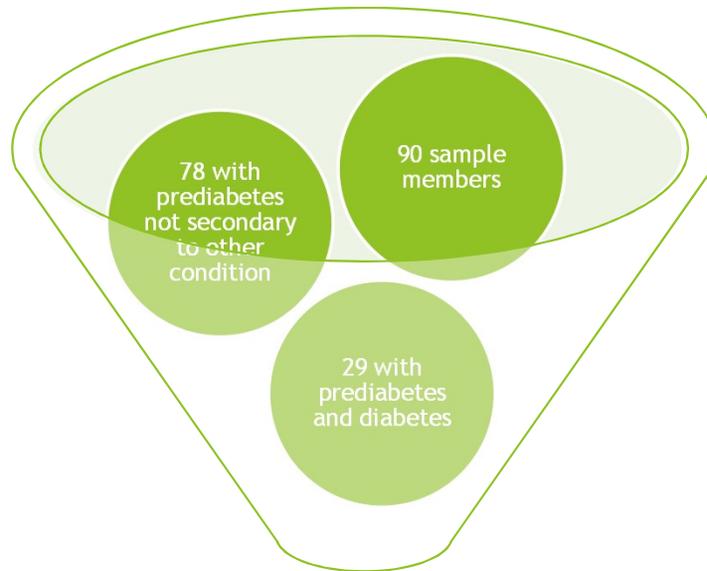
# Methodology

- ▶ 90 Individuals with prediabetes based on ICD-9 code identified from Florida Medicaid, Medicare, and commercial (fully-funded) managed care population
- ▶ ICD-9 codes for prediabetes used to identify eligible population
- ▶ 35 months continuous enrollment between July 2012 and June 2015
- ▶ 30 members from each line of business
- ▶ Purposeful sampling (not random as members with the diagnosis of prediabetes were included)
- ▶ Laboratory testing and diagnosis of prediabetes and diabetes examined through study timeline

## Research Results

- ▶ Of 90 sample members, 78 had a diagnosis of prediabetes in the claim data (others may have had co-diagnoses or potentially incorrect diagnoses, such as prediabetes due to pregnancy)
- ▶ 66% of individuals with a prediabetes and diabetes in the sample had prediabetes diagnosis in the emergency department after an outpatient diagnosis of diabetes
- ▶ Medication is not commonly used in prediabetes (2 members with prediabetes had medication fills for diabetes medications)
- ▶ Commercial members were more likely to have an outpatient visit for prediabetes within a day of a lab test than Medicaid or Medicare (33% versus 6.7% and 8.3% respectively).

# Diagnosis of Prediabetes in the ED



**19 individuals with prediabetes  
diagnosed in the ED after an  
outpatient diabetes diagnosis**

# Implication of Study Results

- ▶ Identifies lack of screening as a potential barrier to managing patients with prediabetes
- ▶ Provides insight into emergency department billing where prediabetes is a common diagnosis after diabetes has already been diagnosed
- ▶ Provides insight for managed care organizations on areas of focus to prevent diabetes
- ▶ Suggests a potential issue when using claim data to refer individuals for diabetes prevention programs



# Significance of the Study

- ▶ Approximately \$245 billion may be current expenditures for diabetes as per the American Diabetes Association
- ▶ Diabetics have a 1.6-2.3 times higher medical cost than non-diabetics
- ▶ Preventing diabetes could greatly reduce the burden on society and the healthcare system
- ▶ An increase in patient/employee healthy days should result from decreased absences and improved productivity.

# Potential Study Limitations

- ▶ Claim data is inherently imperfect
- ▶ A longer study period may have been helpful to identify periods of prediabetes before the diagnosis of diabetes
- ▶ The limited number of codes for prediabetes limits the ability to further analyze data (such as when prediabetes may be secondary)
- ▶ Reimbursement could be a driver of claim submission (lack of additional reimbursement may impact level of coding)
- ▶ Sample size, although valid, could have been limiting considering the short study data period

# Recommendation for Future Research

- ▶ Blockchain records of diagnoses and lab values to follow patient on a time continuum to aid in early identification of prediabetes or diabetes
- ▶ Investigation into why providers are not screening patients for prediabetes
- ▶ Use of HEDIS measures for screening individuals with prediabetes or early prevention of diabetes (not just management of diabetes)
- ▶ ‘Breakout codes’ to differentiate a point-in-time elevation of blood sugar versus ongoing elevation of blood sugar

## What lesson do we learn?



Credit: Dr. Kenneth Snow

# What lesson do we learn?



# Thank you!!!

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*Integrating Patient Identification and  
Diabetes Prevention Program Referral  
into Clinical Systems*

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**Joel Riemer**  
**American Medical Association**  
**Senior Program Manager**  
**April 17, 2018**

*Your* MISSION is *Our* MISSION

# AMA Prediabetes Initiative

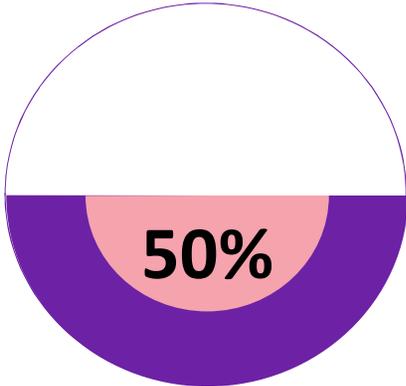
## Goal:

Galvanize efforts to increase the number of patients are referred to evidence-based diabetes prevention programs

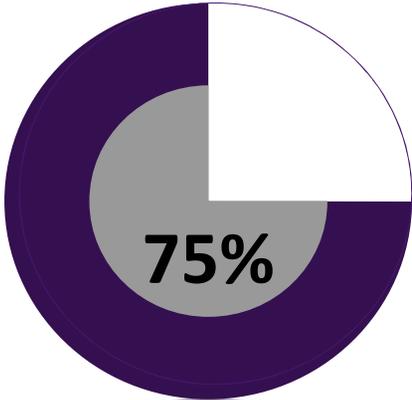
## Approach:

- Educate physicians regarding prediabetes and the National DPP
- Engage health systems and physician practices
- Implement processes to screen and refer patients to the National DPP
- Link practices to diabetes prevention programs
- Advocate for inclusion of lifestyle interventions in health benefits for employees
- Activate Local Stakeholders

# Chronic Disease Impact on Clinical Practice



**50% of visits to primary care**  
**care**  
are for chronic disease management

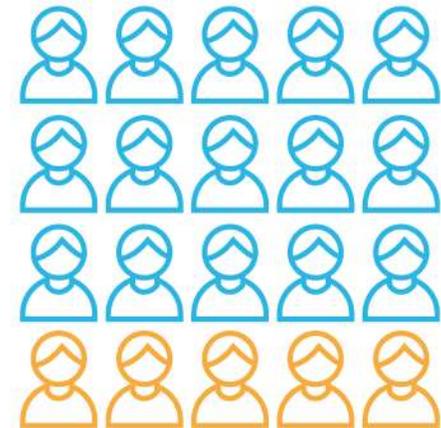
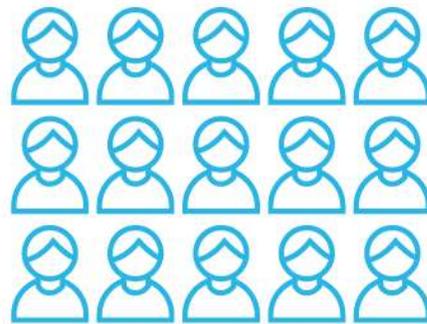


**~75% of health care spending**  
**is due to chronic conditions**

## Future impact on clinical practice

PROJECTION ESTIMATE

**32**  
**PERCENT**  
**INCREASE**  
IN NUMBER OF PATIENTS  
WITH DIABETES



Over the next 5 years, a typical large clinical practice could experience a **32% increase** in the number of patients with diabetes.

## What will it take to succeed?

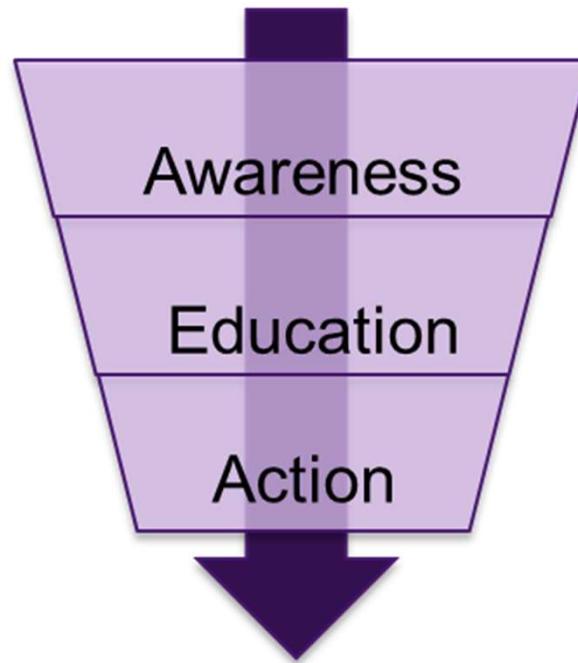
- Awareness of prediabetes as a treatable condition
- Clinical practices willing and able to screen, test and refer (STR) patients to a lifestyle change program
- Availability of credible, evidence-based programs
- Sufficient programs to efficiently enroll and engage participants
- Local employers and insurers willing to cover program participation



# AMA Actions

# AMA Prediabetes Initiative

**Goal: Galvanize efforts to increase the number of patients are referred to evidence-based diabetes prevention programs**



# AMA-CDC national collaboration to prevent diabetes



**Prevent Diabetes **STAT****  
Screen / Test / Act Today™

**86 MILLION** AMERICAN ADULTS HAVE PREDIABETES

**9** OUT OF **10** PEOPLE WITH PREDIABETES DON'T KNOW THEY HAVE IT.\*

PATIENTS AND PARTNERS    **HEALTH CARE PROFESSIONALS**    EMPLOYERS AND INSURERS

THE AMA AND CDC URGE YOU TO:



[www.preventdiabetesstat.org](http://www.preventdiabetesstat.org)



## Physician Activation through State Medical Societies

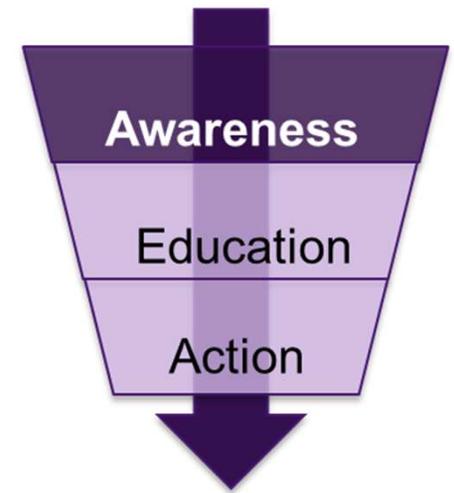
- Promote CDC/AMA tools and resources to physicians and employers - Prevent Diabetes STAT
- Engage physicians/practices/health systems with the goal of implementing a process to STR patients to the National DPP
- Encourage employers to provide coverage for employees to use the National DPP
- Scale effort in all 50 states

## Awareness – State Medical Societies (3)

- 492,000 total circulation of 27 articles
- 356,000 total circulation of 55 social media posts
  - 5,000 estimated reach of nine Facebook posts
  - 1,000 estimated reach of one Linked-in post
- 124,000 total circulation of 28 emails
- 73,000 impressions of two online ads through Facebook
- 26,000 estimated reach of five journal articles/ads (print)
- 4,000 unique hits to STAT from CA, MI & SC

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- 1,075,000 estimated total impressions in less than one year



# Education – State Medical Societies

Over 300 physicians/clinical care team members trained on the National DPP and STAT

## MSMS

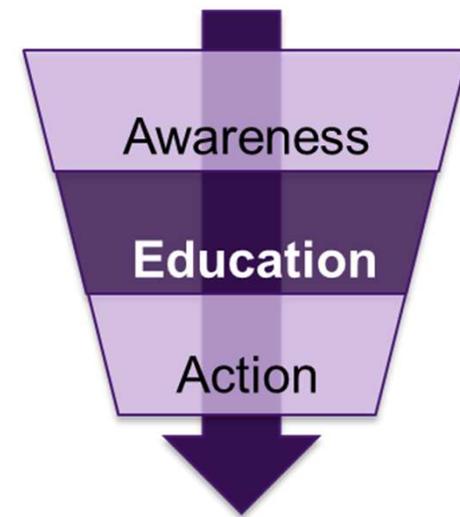
- Two scientific meetings featured presentations and booth
  - 300+ physician attendees & 75 trained
- Other meetings (MSMS Board, PGIP, PO Group & HCQEE) - 70 trained

## SCMA

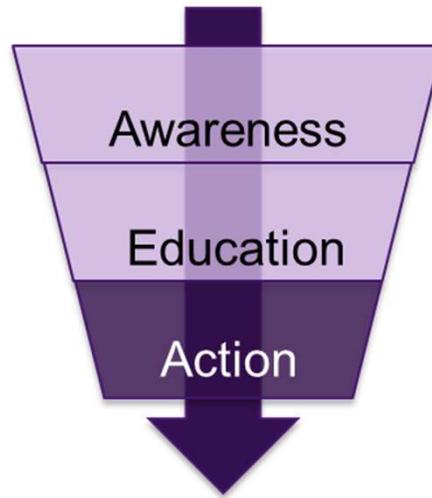
- Annual meeting featured a booth
  - 190 physician attendees & 60 visited the booth
- Three Regional in-person presentations completed - 69 trained

## CMA

- CA specialty society conference – 45 trained
- CME webinar – 39 trained
- Western Health Care Leadership Academy Meeting featured a presentation
  - 300 attendees & 20 trained



# Engaging Health Systems/Practices and Employers



## Health System/Practice Engagement

102

Health systems and physician practices we introduced to our work

10

Forecasted to implement by end of 2018 (to date)

16

New organizations plan to launch their own DPP program

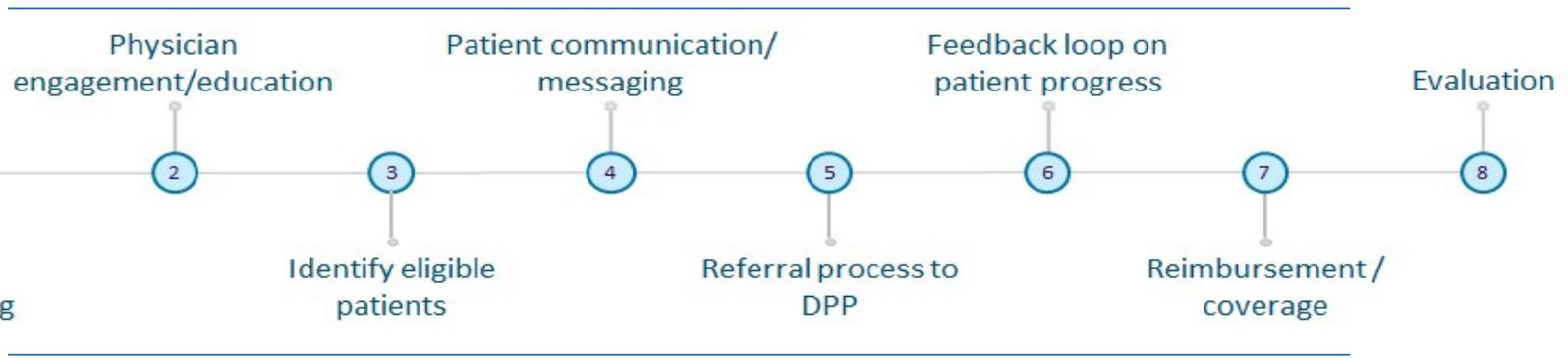
60

In the pipeline for 2018  
(as of March 2018)

# Health System/Practice Resources

The AMA offers a comprehensive program to guide implementation of clinical practice change in order to prevent type 2 diabetes.

Services



Walk through core decisions

Tools and solutions (examples, not comprehensive)

**Prediabetes PI CME Stage A: Learning from current practice performance assessment**

The ultimate goal of this program is to increase prediabetes screening and treatment of non-pregnant patients 18 years and older with no prior diagnosis of diabetes. This can be achieved through: (1) working with physicians in knowledge, attitude, skills and/or performance; (2) increasing physician knowledge and awareness; and (3) providing tools and other resources to help track changes that are made in practice. Show a screenshot of this activity to receive contact for a 15% credit.

**Retrospective prediabetes identification**

Queries IRR or patient database every 1-2 months using the following criteria:

A. Inclusion criteria:

- Age 18 years and older
- Medication (M1, J24, J22, P, A10A01) and
- Procedure (86.99, 86.99, 86.99, 86.99, 86.99)
- ICD-10-CM codes (E11.9, E11.9, E11.9)
- ICD-10-PCS codes (86.99, 86.99, 86.99)
- History of gestational diabetes (O24.4, O24.4, O24.4)

B. Exclusion criteria:

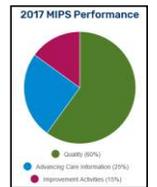
- Current Diagnosis of Diabetes (E10-E14, E10-E14, E10-E14)

**Patient risk assessment**

**DO YOU HAVE PREDIABETES?**

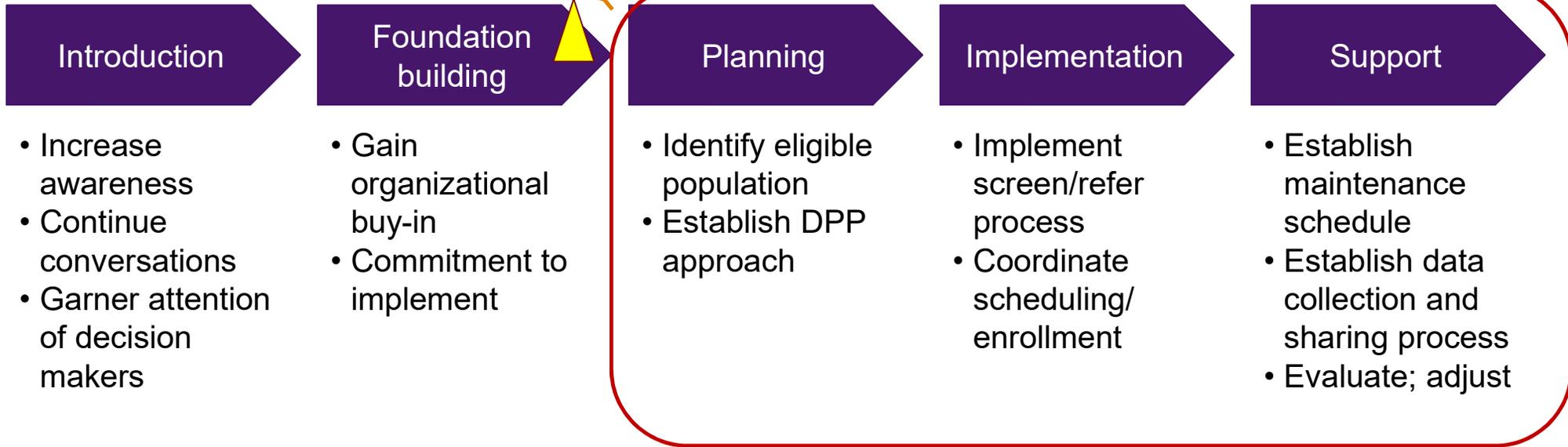
Prediabetes Risk Test

Write your score



# Health System - Phases of Engagement

Get to  
YES!!



*Account management underpins the entire client engagement cycle, ensuring a sequenced cadence that secures follow-ups and progress and leverages IHO expertise at the right points*

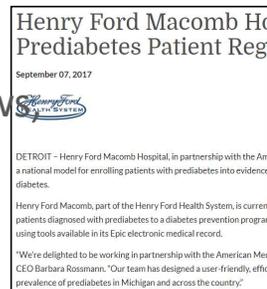


# Health System Implementations

## Henry Ford Macomb Hospital

*Leveraging EMRs to identify and refer patients at risk*

- Piloting a patient registry that could become a national model for enrolling patients with prediabetes into evidence-based diabetes prevention programs and reducing their risk of developing type 2 diabetes
- Developing clinical workflow and referral mechanisms



## Loma Linda University Health

*Implementing a diabetes prevention program within the health system*

**“[Dr.] Rea said she is grateful to the American Medical Association for providing invaluable support”**



## Intermountain

*Offering multiple DPP modalities and looking at roles of care team members*

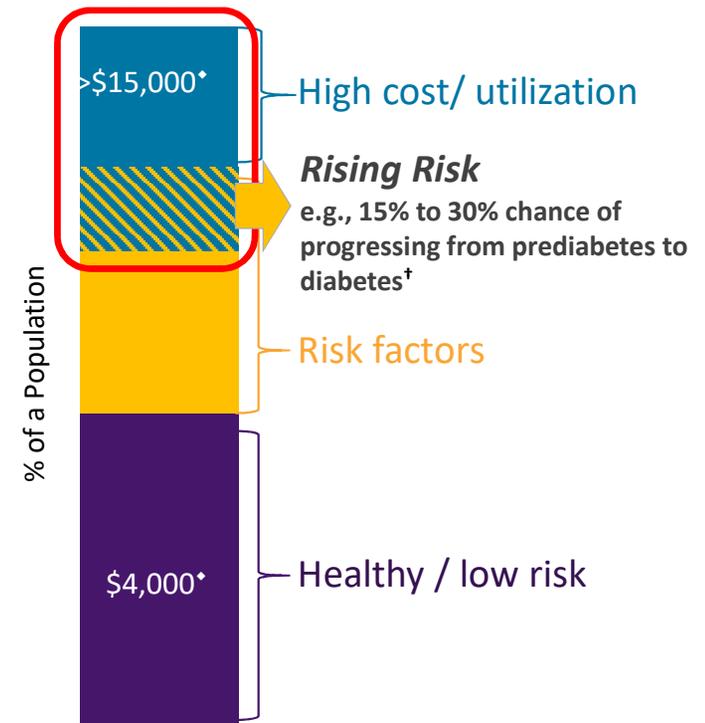
- Moving upstream in the diabetes
- Role of care team members, including care managers
- Offer in-person and online, patient and physician choice
- Initial partnership to integrate virtual DPP (Omada) into health care system setting

# Employer Engagement

Take a targeted approach to employee health and wellness by focusing on “rising risk” population

- Raise awareness and advocate for evidence-based interventions to be included in employee benefits
- Educate business groups and employers on the health and financial benefits of implementing chronic disease prevention programs
- Collaborate with local business leaders, coalitions, and physician partners to increase employee engagement and program utilization

Stratifying a population



\* Health Care Cost Institutes. "Per Capita Health Care Spending on Diabetes: 2009-2013." 2015.

† American Diabetes Association. "Standards of medical care in diabetes—2013." *Diabetes Care* (2013); 36:Suppl 1:S11.

# Employer Tools and Resources

**PREDIABETES AND DIABETES AT WORK: How to cut the risk in half**

**THE PROBLEM**  
1 in 3 adults has prediabetes. Approximately one out of three of your employees may have prediabetes. Prediabetes is when blood glucose levels are higher than normal, but not high enough to be diagnosed as type 2 diabetes. Without intervention, prediabetes can progress to type 2 diabetes within five years. Diabetes is a serious medical condition in which the body cannot keep blood glucose at normal levels.

**WHY IT MATTERS**  
**\$13,700 PER YEAR** is the average medical expense incurred by those with type 2 diabetes. Compared to people without diabetes, those with diabetes are:  
 • 100% more likely to be hospitalized for heart disease  
 • 80% more likely to be hospitalized for stroke  
 • 50% more likely to be hospitalized for kidney disease  
 • 70% more likely to be hospitalized for diabetes

**HOW IT IMPACTS YOUR WORKFORCE**  
Employees with diabetes may miss more work and have lower productivity. In fact, in one year, diabetes costs the United States:  
 • \$176 billion in direct medical costs  
 • \$69 billion in indirect medical costs

**HOW EMPLOYERS CAN HELP – AND BE BENEFITED**  
By participating in an evidence-based diabetes prevention program, people with prediabetes can reduce their risk of developing type 2 diabetes.

**NATIONAL DPP LIFESTYLE CHANGE PROGRAM IMPLEMENTATION: Your eight-step roadmap**

- SNAPSHOT OF POTENTIAL COSTS / BENEFITS**  
• Calculate potential risks based on population data  
• Assess alignment with wellness goals
- POTENTIAL PARTNERS & RESOURCES**  
• Assess internal resources  
• Check external partners  
• Explore ways to include as a covered benefit
- ELIGIBILITY & SCREENING STRATEGY**  
• Determine program eligibility  
• Determine screening plan  
• Offer various options to those who don't qualify
- PROGRAM PROPOSAL**  
• Create program goals  
• Plan phases and timing
- BUY-IN**  
• Engage stakeholders  
• Review and document program goals
- PARTNER CONTRACTING**  
• Select program model  
• Negotiate pricing  
• Execute contracts
- PROGRAM IMPLEMENTATION**  
• Rollout program  
• Monitor marketing plan  
• Plan reimbursement
- MEASURE AND FINE-TUNE**  
• Track results  
• Follow up needed  
• Plan after program support

**AMA DPP COST SAVING CALCULATOR**

Your organization type: **Employer**

Your insured population size (age 18-64): **2800**

Your cost of program per participant: **\$ 450**

Prevalence of prediabetes: **37%**

Your anticipated enrollment:  
 Low range: **10%**  
 High range: **50%**

Your anticipated completion:  
 Low range: **40%**  
 High range: **70%**

**RESET VALUES** **CALCULATE**

**Your potential 3 yr ROI: 42%**  
-19%

**Your potential 3 yr net savings: \$91,096**  
-\$8,142

For your population:  
 Potential individuals with prediabetes in your population: **962**  
 Potential enrollment in DPP:  
 Lower: **96** Upper: **481**  
 Potential completion of DPP:  
 Lower: **38** Upper: **337**  
 Potential number of diabetes cases prevented by DPP over 3 years:  
 Lower: **6** Upper: **49**

**SEE HOW TO IMPROVE YOUR ROI** **DOWNLOAD YOUR RESULTS**

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Materials intended for business groups, employers, brokers and payers to increase awareness of the National DPP

- Introductory content to make the business case
- ROI estimations
- Risk assessment for employees
- Implementation guide
- Employer examples

Now available to access at:

[www.preventdiabetesSTAT.org/employers-and-insurers](http://www.preventdiabetesSTAT.org/employers-and-insurers)

## Galvanizing Local Stakeholders

- Medical Societies
- Physician Champions
- Health Systems/Physician Practices
- Employers/Business Coalitions
- State and Local Departments of Health
- Federal Agencies

*Your* **MISSION** is *Our* **MISSION**

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