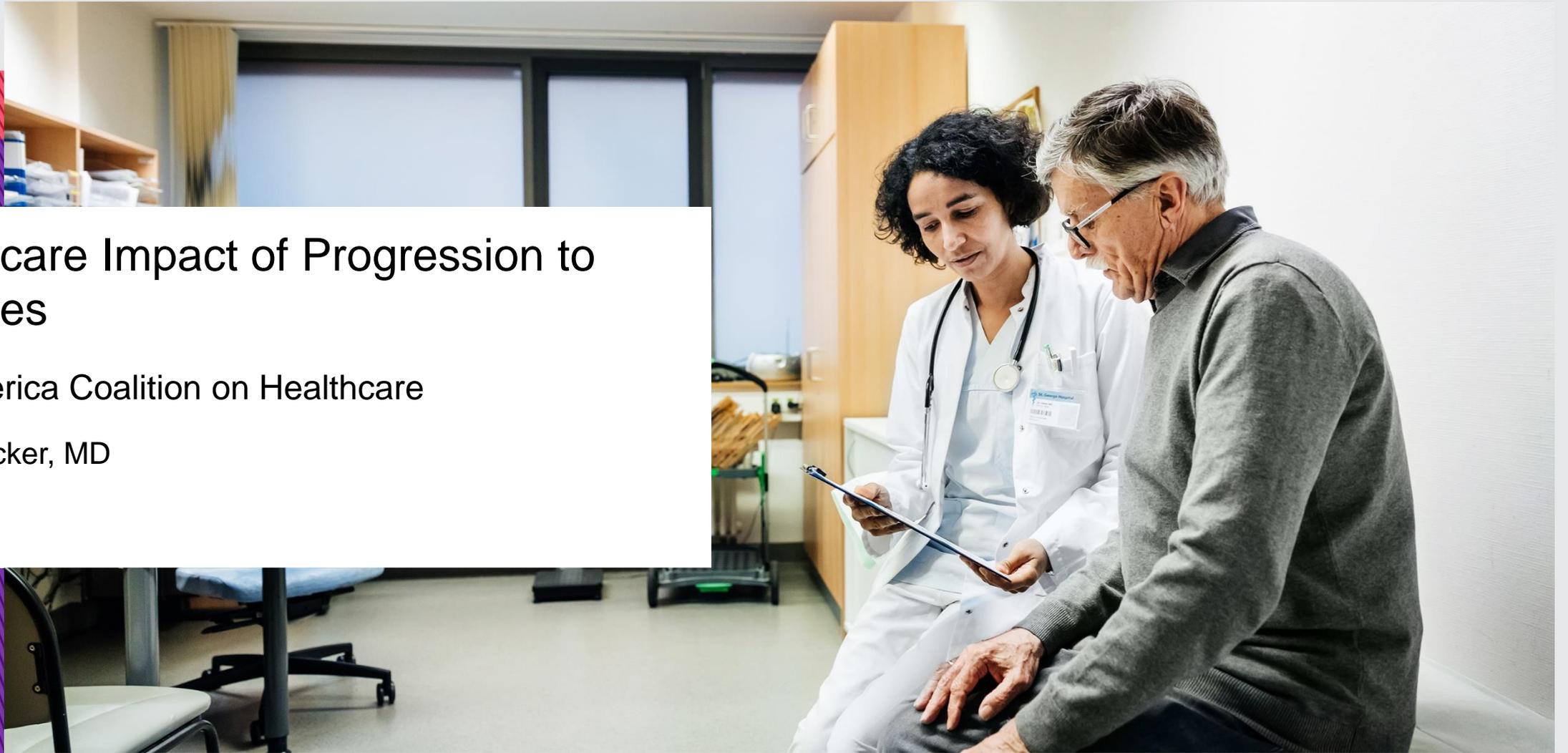




Healthcare Impact of Progression to Diabetes

Mid-America Coalition on Healthcare

Siupo Becker, MD
May 2022



Diabetes and Metabolic Syndrome

Growing concern for employers and employees

WHY

More than 34M
Adults have diabetes
in the US



20%+

of health care spend is
attributed to people with
diagnosed diabetes ²

ISSUE DEFINED



Metabolic Syndrome and Diabetes is a growing concern for employers and employees

- ~21% of adults with diabetes in the US don't know they have diabetes ¹
- 88M adults with pre-diabetes in the US; nearly 85% are unaware of their condition ¹
- 2.3x higher cost of caring for individuals with diabetes²
- Risk factors include heart attack and stroke, leading cause of neuropathy/vision impairment and kidney failure

MARKET INSIGHTS



- According to the WTW 2021 Best Practices in Health Care survey:
 - 58% of employers are planning on focusing on adopting metabolic syndrome / diabetes point solution in the next three years
 - 71% of employers will focus on metabolic syndrome / diabetes in the next three years as a means of improving member health
- For many employers, diabetes remains the top contributor to the non-specialty drug spend trend.

COVID-19 Impact on Weight

- 42% of Americans gained on average 29 lbs during the pandemic
- Risk factors for weight gain included: male, white or Hispanic, married, aged 45 or older, have a full-time job, have less than a college education, and to live in southern and western states or rural area
- individuals were more likely to have gained weight if they were overweight before the pandemic (2.07 times), had children at home (1.39 times), had depression or anxiety (1.25 times), or checked body weight within the last six months (1.32 times).

Sources: 1. [National Diabetes Statistics Report, 2020](#); 2. ADA The cost of diabetes <https://www.diabetes.org/resources/statistics/cost-diabetes> Accessed February 13, 2022

Metabolic Syndrome: Largely Preventable Risk Factors, Diseases and Costs

What Is Metabolic Syndrome?

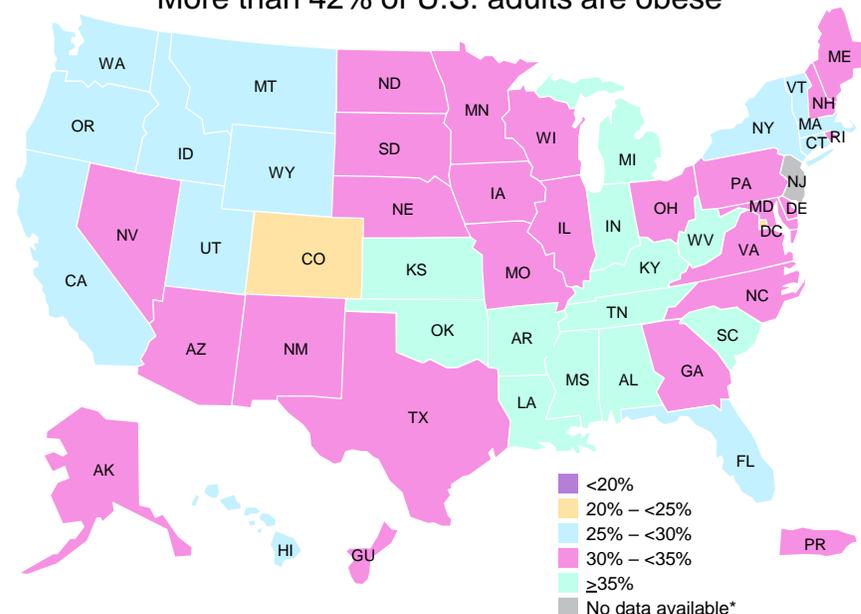
Group of risk factors, including large waistline, high triglyceride level, low HDL cholesterol level, high blood pressure and high fasting blood glucose, that increase the chance of developing heart disease, diabetes and stroke¹

Metabolic syndrome increases the risk of:

- Type 2 diabetes up to **fivefold** and
 - Cardiovascular disease **twofold**⁴
-
- As of 30 May 2020, among **COVID-19 cases in the U.S.**, the two most common underlying health conditions were **cardiovascular disease (32%) and diabetes (30%)**
 - **Hospitalizations were 6x higher** among patients with a reported underlying condition (45.4%) than those without reported underlying conditions (7.6%)
 - **Deaths were 12x higher** among patients with reported underlying conditions (19.5%) compared to those without reported underlying conditions (1.6%)⁷

The rise in **obesity** rates is a significant and common diabetes risk factor

>20% prevalence of obesity **in every state**²
More than 42% of U.S. adults are obese³

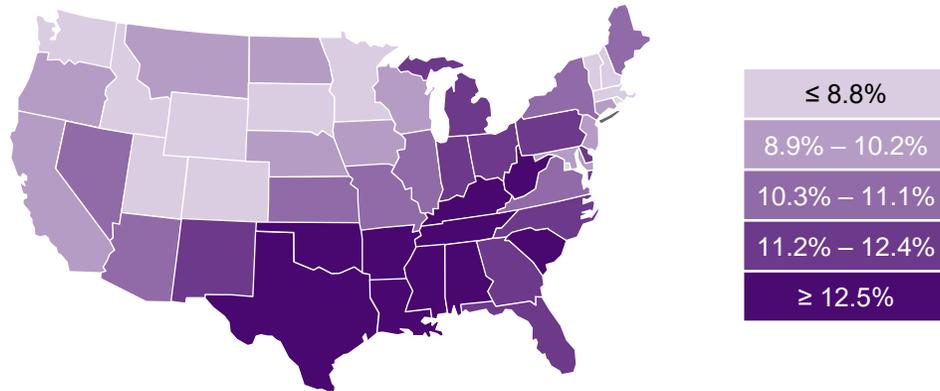


Annual adult per capital spending on medical costs for people with obesity are **\$1,429 higher** than those of normal weight³

Sources: 1. [National Heart, Lung and Blood Institute](#); 2. [Prevalence of Self-Reported Obesity Among U.S. BRFSS, 2019](#); 3. [Adult Obesity Facts, 2020](#); 4. [J Diabetes Investing](#). 2013 Jul 8; 4(4): 334–343. Published online 2013 May 28. doi: [10.1111/jdi.12075](#); 5. [Heart Disease Risk Factors](#); 6. [National Heart Disease and Stroke Prevention Program, Staff Orientation Guide, 2011](#); 7. [Coronavirus Disease 2019 Case Surveillance — United States, January 22–May 30, 2020](#) Accessed February 13, 2022

Diabetes: A growing concern for employers and employees

Percentage of adults with diabetes¹



- > 34M adults have diabetes in the U.S.

- ~21% of them do not know they have diabetes³

- 88M adults have pre-diabetes in the U.S.

- Nearly 85% are unaware of their condition³

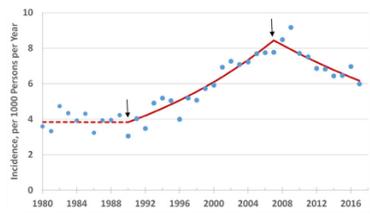
20%

of healthcare spend is attributed to people diagnosed with diabetes⁴

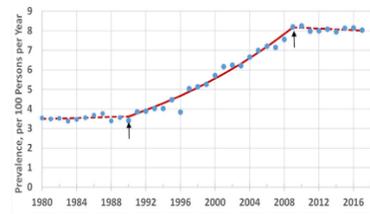
2.3x

higher cost of caring for individuals with diabetes

Trends in incidence and prevalence of age-adjusted, diagnosed diabetes among adults aged 18 – 79 years (1980 – 2016)



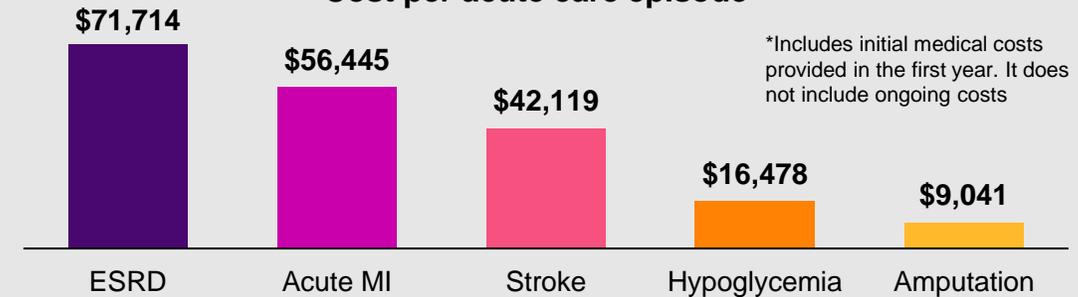
Incidence



Prevalence

Incidence has decreased and prevalence shows flattening of the upward trend²

Costly complications of diabetes⁵
Cost per acute care episode*



*Includes initial medical costs provided in the first year. It does not include ongoing costs

Sources: ¹America's Health Rankings; ²"New directions in incidence and prevalence of diagnosed diabetes in USA," accessed February 13, 2022; ³National Diabetes Statistics Report, 2020; ⁴American Diabetes Association, "Economic Costs of Diabetes in the U.S. in 2017," (March 2018), <https://doi.org/10.2337/dci18-0007>; ⁵J Med Econ, (March 2014), 17(3):176 – 83, <https://doi.org/10.3111/13696998.2014.882843>.

Diabetes and Metabolic Syndrome

Growing concern for employers and employees

FINANCIAL IMPACT



The total estimated 2017 cost of diagnosed diabetes of **\$327 billion includes \$237 billion in direct medical costs and \$90 billion in reduced productivity**.⁵ The largest components of medical expenditures are:

- Hospital inpatient care (30% of the total medical cost)
- Prescription medications to treat complications of diabetes (30%)
- Anti-diabetic agents and diabetes supplies (15%)
- Physician office visits (13%)

INDIRECT COSTS

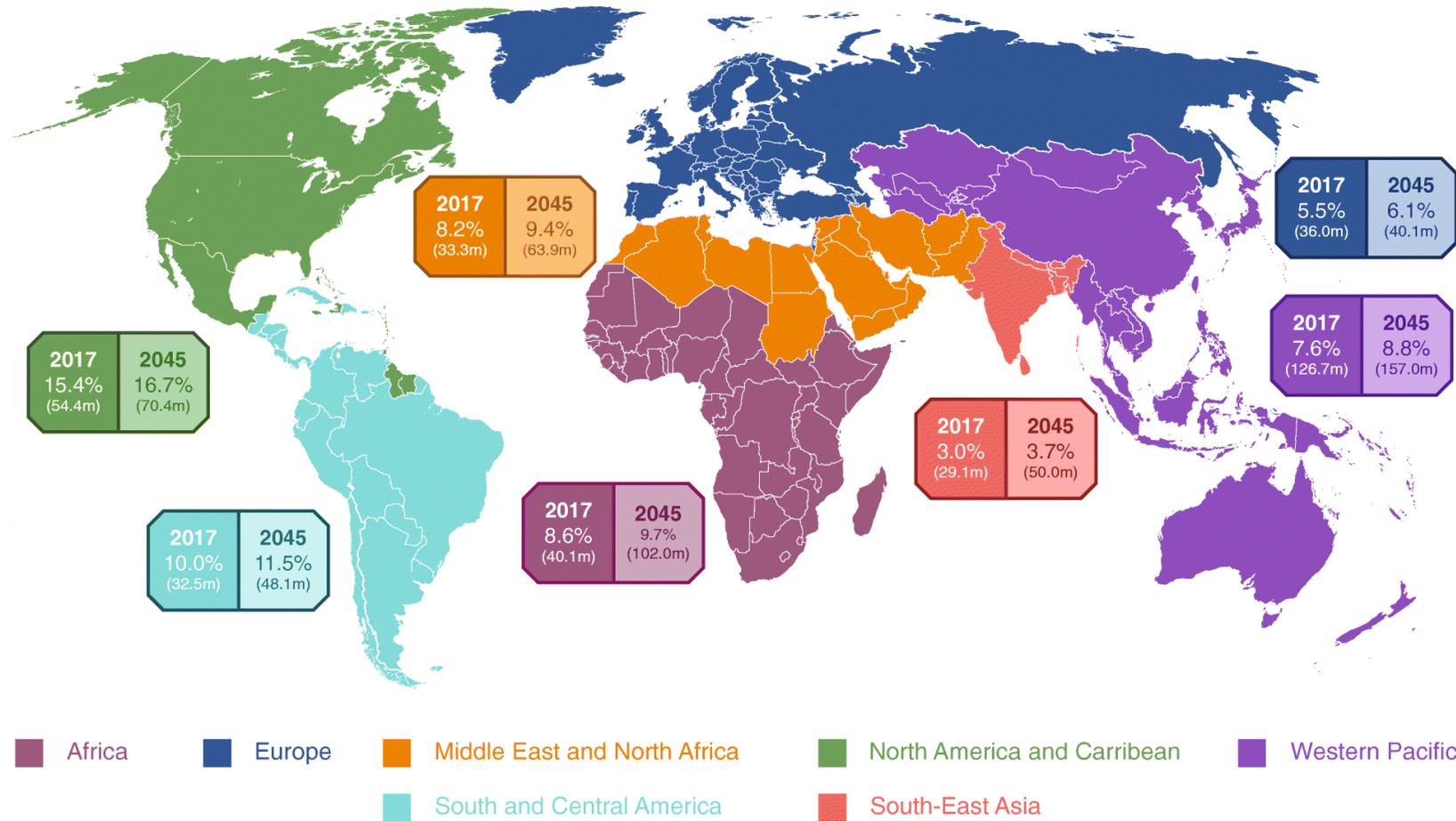


- Increased **absenteeism** (\$3.3 billion)
- **Reduced productivity** while at work (\$26.9 billion) for the employed population
- Reduced productivity for those not in the labor force (\$2.3 billion)
- Inability to work as a result of disease-related **disability** (\$37.5 billion)
- **Lost productive capacity** due to early mortality (\$19.9 billion)

Sources: 1. [National Diabetes Statistics Report, 2020](#); 2. Economic Costs of Diabetes in the U.S. in 2017. American Diabetes Association. Diabetes Care 2018. Mar; dci180007. <https://doi.org/10.2337/dci18-0007>; 3. [Prevalence of Self-Reported Obesity Among U.S. BRFSS, 2019](#); 4. [Adult Obesity Facts, 2020](#); 5. ADA The cost of diabetes <https://www.diabetes.org/resources/statistics/cost-diabetes> Accessed February 13, 2022

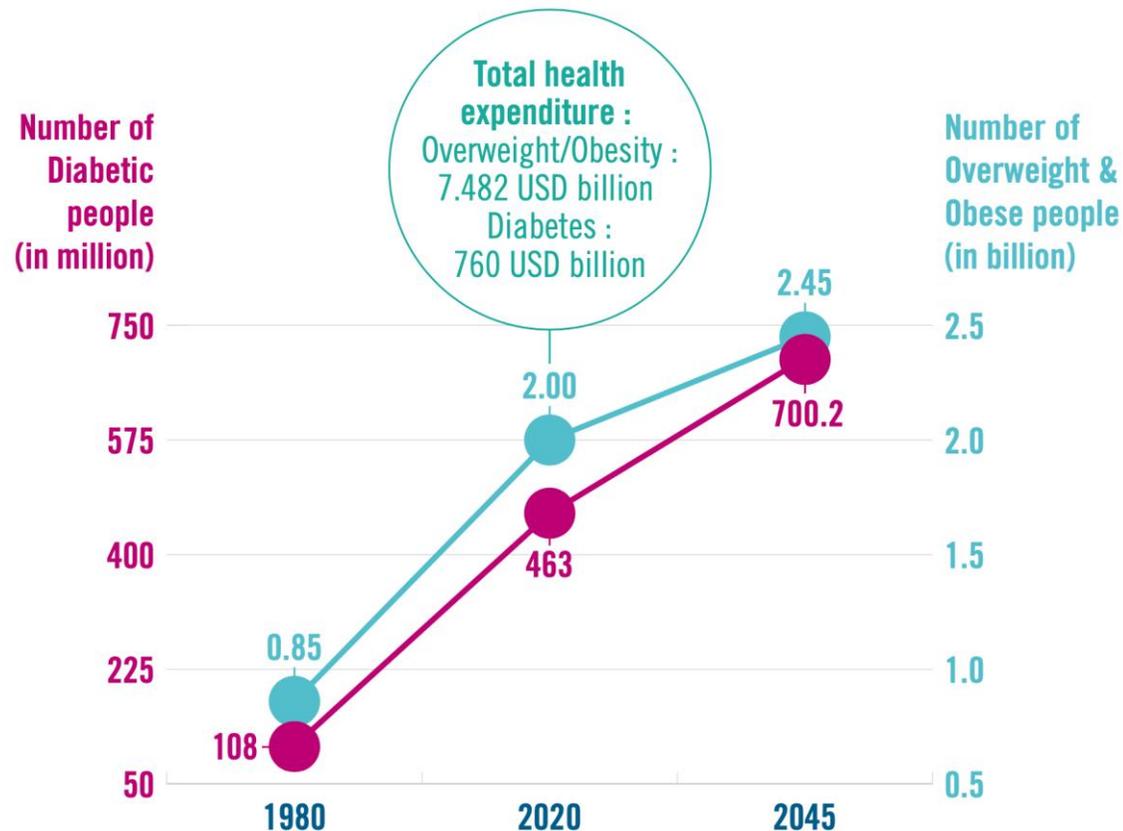
Pre-diabetes and prevalence and projections through 2045

Global prevalence estimates of Impair Glucose Tolerance by International Diabetes Federation (IDF) region



Sources: [A-mansia biotech](https://www.a-mansia.com) and [Diabetesatlas.org](https://www.diabetesatlas.org)

Diabetes and obesity projections through 2045

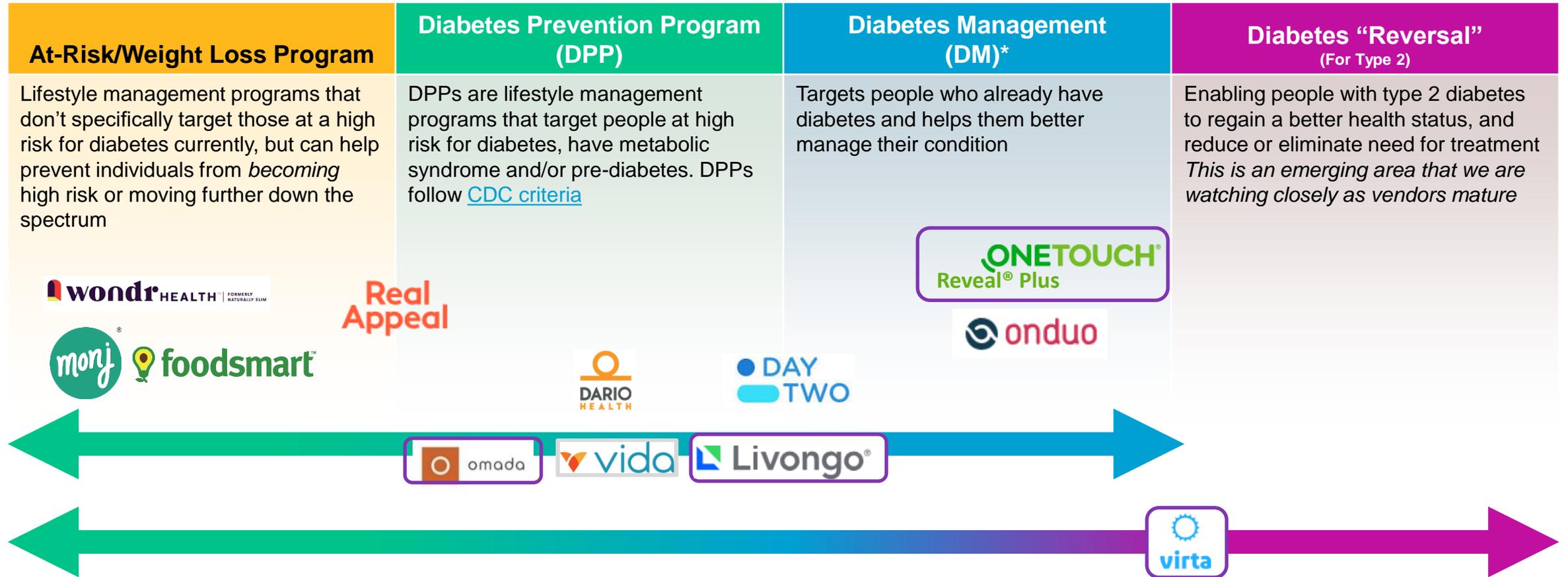


- Worldwide obesity has nearly tripled since 1975
- Obesity is one of the top 3 social burdens globally and the cost is nearly equivalent to the global impact of smoking or armed violence, war, and terrorism
- World Health Organization (WHO) has called diabetes the “21st century epidemic”
- One in two (232 million) people with diabetes are likely undiagnosed
- Around 5% to 10% of people with prediabetes become diabetic annually
- Diabetes cost \$760B in health expenditures in 2019

Source: [A-mansia biotech](#)

Diabetes and Metabolic Syndrome

Vendor Marketplace – Market Sample



 Denotes WTW vendor partners

CDE = Certified Diabetes Educator; SMBG = Self-monitoring blood glucose; BP = Blood pressure; T1 = Type 1; T2 = Type 2

Employers Should Use Best Practices for Supporting Members Across The Diabetes Spectrum

Pre-diabetes,
metabolic
syndrome, weight
management



- Access to lifestyle management programs aimed at improving [diet](#) and increasing physical activity
- Access to CDC recognized diabetes prevention programs ([DPPs](#))
- Healthy food options
- Behavioral counseling
- Tobacco cessation programs

Diabetes
Management



Health management programs should support members in regulating blood glucose/HbA1c levels, blood pressure, vascular function, serum lipids, kidney function and support the member's behavioral and lifestyle goals.

Program components should include:

- Behavioral counseling with CDE
- SMBG with meter/ test strip fulfillment only if on medications associated with hypoglycemia
- Remote monitoring of BP, weight, diet and activity
- Diabetes reversal through ketogenic diet may be appropriate for some people with T2 diabetes

Diabetes
Reversal



- Access to diabetes care team and nutritional monitoring
- Support for applicable changes to diabetes prescriptions as recommended by physician
- Weight loss and exercise support
- Not appropriate for people with Type 1 diabetes

With any health management program, employers should look for ways to integrate with existing condition and disease management programs as well as integration points back to a member's treating physician.

CDE = Certified Diabetes Educator; SMBG = Self-monitoring blood glucose; BP = Blood pressure; T1 = Type 1; T2 = Type 2

Source: [J Diabetes Investing](#). 2013 Jul 8; 4(4): 334–343. Published online 2013 May 28. doi: [10.1111/jdi.12075](#);

Appendix

Metabolic syndrome — Largely preventable risk factors, diseases and costs

What is metabolic syndrome?

Group of risk factors, including large waistline, high triglyceride level, low HDL cholesterol level, high blood pressure and high fasting blood glucose, that increase the chance of developing heart disease, diabetes and stroke¹

Metabolic syndrome increases the risk of:

1

Type 2 diabetes up to **fivefold**

2

Cardiovascular disease **twofold**¹

- As of May 30, 2020, among **COVID-19 cases in the U.S.**, the two most common underlying health conditions were **cardiovascular disease (32%) and diabetes (30%)**²
 - **Hospitalizations were 6x higher** among patients with a reported underlying condition (45.4%) than those without reported underlying conditions (7.6%)
 - **Deaths were 12x higher** among patients with reported underlying conditions (19.5%) compared to those without reported underlying conditions (1.6%)
- According to an analysis published in [JAMA](#), overall prevalence of metabolic syndrome has increased
 - Prevalence was 19.5% among those aged 20 to 39 years
 - Also increased to 48.6% among those aged at least 60 years



Sources: ¹[Heart Disease Risk Factors](#); ²[Coronavirus Disease 2019 Case Surveillance — United States, January 22–May 30, 2020](#).

Prediabetes Population Health Data

age groups, gender, ethnicity

Characteristic	Prediabetes, ^a 2019 estimates Number in millions (95% CI)	Prediabetes, ^a 2017–2020 estimates Percentage (95% CI)	Prediabetes awareness, ^b 2017–2020 estimates Percentage (95% CI)
Total	96.0 (90.5–102.0)	38.0 (35.7–40.3)	19.0 (15.0–23.7)
Age group			
18–44	32.2 (27.7–36.8)	27.8 (24.0–32.0)	13.8 (9.8–18.9)
45–64	37.4 (35.0–39.9)	44.8 (41.7–47.9)	20.6 (14.3–28.9)
≥65	26.4 (24.1–28.7)	48.8 (44.3–53.2)	23.0 (16.9–30.4)
Sex			
Men	52.3 (48.0–56.6)	41.9 (38.4–45.6)	17.4 (13.4–22.2)
Women	43.7 (39.8–47.6)	34.3 (31.2–37.5)	20.9 (15.5–27.5)
Race-ethnicity			
White, non-Hispanic	62.4 (57.4–67.4)	38.7 (35.5–41.9)	17.3 (11.8–24.7)
Black, non-Hispanic	12.4 (11.4–13.5)	39.2 (35.8–42.6)	21.9 (18.0–26.5)
Asian, non-Hispanic	6.0 (5.3–6.8)	37.3 (32.6–42.3)	30.1 (21.0–41.1)
Hispanic	14.3 (13.0–15.6)	34.5 (31.3–37.7)	20.9 (15.3–27.9)

Note: CI = confidence interval. Data are crude estimates (See [Appendix B: Detailed Methods and Data Sources](#)). Time period 2017–2020 covers January 2017 through March 2020 only.

Sample key performance indicators

Measure and monitor

Key performance indicators	Measure, monitor
<p>Evidence-based care</p> 	<ul style="list-style-type: none"> ■ Percent of those with diabetes with: <ul style="list-style-type: none"> ■ At least 1 HbA1c test ■ At least 2 HbA1c tests ■ HbA1c > 9% ■ HbA1c < 8% ■ Kidney testing (those not on ACE/ARB) ■ LDL tested ■ LDL < 100 ■ Visit with PCP or endocrinologist in the last 12 months ■ Last BP reading < 140/90 ■ Last BP reading < 130/80 ■ Diabetes retinopathy and foot exam
<p>Health improvement</p> 	<ul style="list-style-type: none"> ■ Percentage or members with obesity with: <ul style="list-style-type: none"> ■ BMI checked in previous 12 months ■ BMI that is unchanged or improved in last 12 months ■ Reduction to goal in A1c, LDL, BP; no worsening of kidney function
<p>Member interventions</p> 	<ul style="list-style-type: none"> ■ Percent of those with diabetes who had a health management intervention in the last 12 months ■ Percent of those enrolled in a program that completed the program ■ Net Promoter Score (NPS) for those that participated in the program

Diabetes Vendor Marketplace

Leading vendors across three types of solutions are:

Vendor	Diabetes Prevention Program (DPP)	Diabetes "Reversal" (For Type 2)	Diabetes Management (DM)*	Other capabilities/ Notes
			✓	
			✓	Precision nutrition using microbiome testing
	✓		✓	HTN, weight management, BH
			✓	
	✓			
	✓		✓	BH program; MSK program through acquisition of Physera
			✓	
	✓		✓	
	✓	✓	✓	Expanding to DM and DPP

 Denotes WTW vendor partners

A snapshot of diabetes in the United States

The prevalence of diabetes in the US continues to increase and imposes a significant economic burden.

34.2 Million

people have diabetes – approximately 1 in every 10 people¹

1 in 5

don't know that they have diabetes¹

1 in 3

adults are projected to have diabetes by 2050 if current trends continue²

\$327 Billion

total medical costs and lost work and wages for people with diagnosed diabetes¹

2x

higher medical costs for people with diabetes¹

60%

higher risk of early death for adults with diabetes vs. those without diabetes¹

88 Million

adults (more than 1 in 3) have prediabetes¹

8 in 10

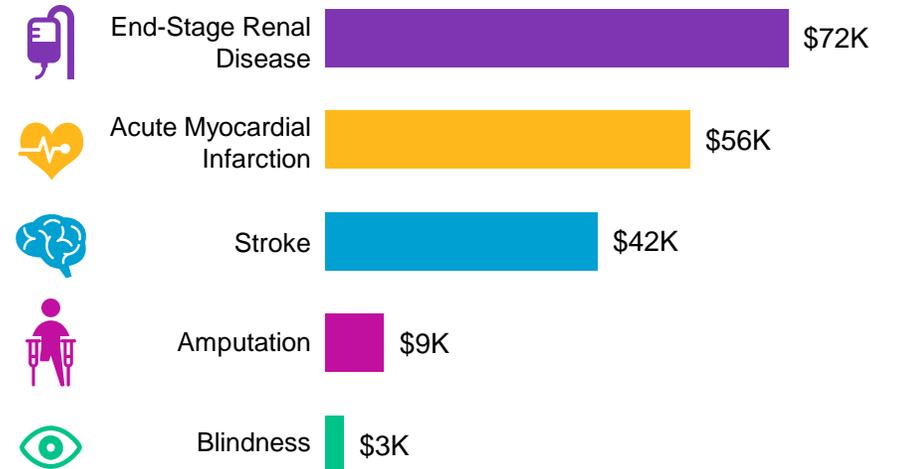
adults don't know they have prediabetes¹

1 in 5

adolescents (age 12-18 years) have prediabetes³

People with diabetes are at higher risk of serious health complications.

Costly complications of diabetes⁴
Cost per acute care episode*



*Includes initial medical costs provided in the first year. Does not include ongoing costs.

Sources: 1. [A Snapshot: Diabetes in the United States](#), 2. Boyle, J.P., Thompson, T.J., Gregg, E.W. et al. [Projection of the year 2050 burden of diabetes in the US adult population](#). doi: 10.1186/1478-7954-8-29; 3. [JAMA Pediatrics](#) 2020 Feb 1;174(2):e194498. doi: 10.1001/jamapediatrics.2019.4498; 4. [J Med Econ](#). 2014 Mar;17(3):176-83. doi:10.3111/13696998.2014.882843