Reducing the Clinical and Economic Impact of Diabetes: Translating Evidence-Based Medicine into Clinical Practice

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Immediate Past President, American Diabetes Association

Health Care & Education
U.S. Diabetes Facts and Figures 2017 Update

cdc.gov/diabetes/statistics

**Diabetes**
- 30.3 million people have diabetes
  - That’s about 1 out of every 10 people

**Prediabetes**
- 84.1 million people — more than 1 out of 3 adults — have prediabetes
  - 9 out of 10 don’t know they have prediabetes
Clinical Costs of Diabetes

Total of 7.2 million hospital discharges/year with diabetes as any listed diagnosis among adults (18 years or older)

1.5 million for major cardiovascular diseases (70.4 per 1,000 persons with diabetes), including:

• 400,000 for ischemic heart disease (18.3 per 1,000 persons with diabetes)
• 251,000 for stroke (11.5 per 1,000 persons with diabetes)

108,000 for a lower-extremity amputation (5.0 per 1,000 persons with diabetes)

A total of 14.2 million ED visits

• Hypoglycemia (11.2 per 1,000 persons with diabetes)
• Hyperglycemic crisis (9.5 per 1,000 persons with diabetes)

Figure 1—Trends in mortality by age-groups and select CVDs among adults with diabetes. Among U.S. adults both with and without diabetes by three age-groups (20–54, 55–65, and ≥65 years of age), the sex- and race/ethnicity-adjusted death rates from major CVD including IHD and stroke have decreased steadily from 1988 to 2015, especially among adults ≥65 years of age with diabetes. The solid lines represent the mortality of adults with diabetes, and the dashed lines represent the mortality of adults without diabetes. The green lines represent the mortality of adults 20–54 years of age, the orange lines represent the mortality of adults 55–65 years of age, and the blue lines represent the mortality of adults ≥65 years of age.
# Health Care and Public Health Spending in the U.S.: Top 10 Conditions


<table>
<thead>
<tr>
<th>Rank</th>
<th>Condition</th>
<th>2013 Spending (Billions of Dollars), $</th>
<th>Annualized Rate of Change, 1996-2013, %</th>
<th>2013 Spending by Type of Care, %</th>
<th>2013 Spending by Age, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ambulatory Care</td>
<td>Inpatient Care</td>
</tr>
<tr>
<td>1</td>
<td>Diabetes mellitus</td>
<td>2100.1</td>
<td>3.5</td>
<td>33.6</td>
<td>33.2</td>
</tr>
<tr>
<td>2</td>
<td>Ischemic heart disease</td>
<td>88.1</td>
<td>0.2</td>
<td>23.9</td>
<td>56.5</td>
</tr>
<tr>
<td>3</td>
<td>Low back and neck pain</td>
<td>87.6</td>
<td>6.5</td>
<td>60.5</td>
<td>28.8</td>
</tr>
<tr>
<td>4</td>
<td>Treatment of hypertension</td>
<td>83.9</td>
<td>5.1</td>
<td>45.8</td>
<td>1.3</td>
</tr>
<tr>
<td>5</td>
<td>Falls</td>
<td>76.3</td>
<td>3.0</td>
<td>29.7</td>
<td>34.3</td>
</tr>
<tr>
<td>6</td>
<td>Depressive disorders</td>
<td>71.1</td>
<td>3.4</td>
<td>53.1</td>
<td>11.6</td>
</tr>
<tr>
<td>7</td>
<td>Oral disordersb</td>
<td>66.4</td>
<td>2.9</td>
<td>1.0</td>
<td>1.5</td>
</tr>
<tr>
<td>8</td>
<td>Sense organ diseasesc</td>
<td>59.0</td>
<td>2.8</td>
<td>85.4</td>
<td>2.3</td>
</tr>
<tr>
<td>9</td>
<td>Skin and subcutaneous diseasesd</td>
<td>55.7</td>
<td>3.5</td>
<td>52.0</td>
<td>20.7</td>
</tr>
<tr>
<td>10</td>
<td>Pregnancy and postpartum caree</td>
<td>55.6</td>
<td>2.9</td>
<td>47.6</td>
<td>50.5</td>
</tr>
</tbody>
</table>
• $327 billion/year is the total economic cost of diagnosed diabetes
  • $237 billion in direct medical costs
  • $90 billion in reduced productivity

• Costs attributable to diabetes: 1 in 7 health care dollars

• Care for people with diabetes: 1 in 4 health care dollars

• Medical costs for people with diabetes are 2.3 times higher than for people without diabetes.
Increasing Economic Costs of Diabetes

- After adjusting for inflation, economic costs of diabetes increased 26% from 2012 to 2017 due to the increased prevalence of diabetes and the increased cost per person with diabetes.
- The total cost of insulin and other medications to control blood glucose increased by 45% from 2012 to 2017, to a total of $31 billion.
- The cost of insulin alone increased by 110%.
Emotional and Psychosocial Costs of Diabetes

- Up to 45% of people with diabetes report **Diabetes Distress**
- 1 in 4 people with diabetes has **Depressive disorder**
- 1 in 5 people with diabetes has **Anxiety disorder**
- 3 in 4 older adults with diabetes will experience **Dementia**

**Psychosocial Care for People With Diabetes: A Position Statement of the American Diabetes Association**

*Diabetes Care 2016;39:2126–2140 | DOI: 10.2337/dc16-2053*
Global total economic burden of diabetes is 1.31 trillion USD (1.8% of the world GDP):

- 49% of the cost is due to drop-out from the workforce
- 46% is due to early death
- 4% is due to being absent from work (sick-days)
- 2% is due to reduced productivity while at work
Diabetes Population Health Management
Opportunity to Improve Health Care Quality in Diabetes
Type 2 Diabetes Trends in the U.S. 2006-2013

Escalating spending and advances in health technology, drug therapies and policy have NOT translated into improvements in diabetes care quality.

Population Health Management

Initiatives are designed around management of cohorts of patients and defined patient populations within the context of health care and healthcare systems. Initiatives are generally designed to improve the clinical outcomes and quality metrics of patient populations using multi-level interventions within healthcare settings.

Consultation service to health care systems to translate over 78 years of our science and advocacy into action by supporting our nation’s healthcare systems to improve population outcomes for people with diabetes.

Tailors interventions to the needs, goals, resources and demographics of our healthcare partners and populations served, meeting value-based care measures.
Diabetes INSIDE 2012-2018
A National Strategy to Effect Sustainable Change

- **Single Health Systems**
  - 8 health systems over 6 years
  - Diverse patient populations and resources
  - All achieved improvements

- **Multi-Sector Collaboratives**
  - Focus on urban centers
  - Groups of health systems, industry, payers, communities working together
  - Pilot collaborative in Greater Philadelphia

- **Rural Systems**
  - Partner with HRSA, VA and States
  - Virtualize programmatic interventions to maximize reach

American Diabetes Association.

Population Density (low to high)
Interventions target HEDIS (Healthcare Effectiveness Data and Information Set) quality metric of A1C > 9.0%

Achieved 19% decrease in proportion of patients with A1C > 9% in 6 months \((p < 0.005)\)
- From 12% to 10.6%

Specific interventions:
- Monthly reports of patients with A1C >9% for providers
- Provider and patient engagement
- Nurse navigators following patients with A1C > 9% (education, appt scheduling)

Insulin use in poorly-controlled patients (A1C > 9.0) increased by 24% over 2 years from program start
- From 36% to 44% of patients with A1C >9% on insulin

Specific interventions:
- EMR updates for identification and tracking
- Shared medical appointments (SMAs) for patients, with nurse educators
- Pre-visit planning; education & training
Insulin initiation in A1C > 9.0%

% Population with A1C > 9.0%

Population Mean A1C %

Parkland Health & Hospital System Achieved Significant Population Health Improvements Working with ADA through Diabetes INSIDE

Diabetes INSIDE Begins
Economic projections for improved diabetes control

If health center patients with uncontrolled diabetes reduced their HbA1c (a measurement of glucose control) by 1.25% there is a potential to save more than $3 Billion over three years.

Diabetes INSIDE Awards

The American Diabetes Association received the

• 2015 Award for Outstanding Continuing Education Outcomes Assessment
• 2016 Award for Outstanding Innovation in Continuing Professional Development

from the Alliance of Continuing Education in the Health Professions (ACEHP)
ADA and American Psychological Association (APA) partnered to create the first ever, diabetes-focused, continuing education (CE) program for licensed mental health providers.

Upon successful completion of the Continuing Education program, the provider can:

• Become an ADA member at the Associate level
• Receive 12 CE credits from the APA
• Become eligible for inclusion on the Mental Health Provider Referral Directory
• Access the ADA’s new listserv for behavioral health and psychosocial topics
• Access monthly “mentoring” calls with experts in the field
Living with diabetes is exhausting. People need support and empowerment to live their best life.

ADA is pleased to announce the launch of the new Mental Health Provider Referral Directory, which can help you locate mental health professionals in your area with demonstrated expertise in diabetes care.

https://professional.diabetes.org/ada-mental-health-provider-directory
Diabetes Population Health Improvement
Interventions for Population Health *Improvement*

- Proactive initiatives with goals of **prevention, risk reduction, health equity, and health promotion**
- Reduce need for care before individuals enter the healthcare system
- Reduce reliance on healthcare services by addressing the social and behavioural determinants that give rise to care that could have been avoided

DIABETES PREVENTION
The National Diabetes Prevention Program (DPP)

30.3 Million with Diabetes
86.1 Million with Prediabetes

American Diabetes Association
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Prediabetes

Fasting Blood Sugar

- 126 mg/dL or More
- 100 to 125 mg/dL
- Less than 100 mg/dL

Diabetes

A1C Test

- 6.5% or More
- 5.7 to 6.4%
- Less than 5.7%
Incidence of Diabetes in Placebo and Two Treatment Groups

31% Reduction
58% Reduction
U.S. DPP Long-Term Effects on Diabetes Incidence

• At 10 years after the trial . . .
  o Lifestyle Intervention maintained a 34% reduction in incident diabetes relative to placebo
  o Metformin 18% reduction
  o Lifestyle maintained greater cardiometabolic protection and less medication use

• At 15 years after the trial . . .
  o Lifestyle Intervention maintained a 27% reduction in incident diabetes relative to placebo
  o Metformin 18% reduction
  o Lifestyle maintained cardiometabolic protection, despite less medication use
Federal Agency and Health Organization
Prioritizing of Diabetes Prevention

Centers for Disease Control and Prevention (CDC) and National Institutes of Health (NIH)/NIDDK
- Translational research grants and contracts for DPP in real-world settings
- Addition of prediabetes to national reports and statistics

American Diabetes Association (ADA)
- Addition of Standards of Care chapter on Lifestyle Intervention for Prevention of Type 2 Diabetes
- ADA Governmental Affairs advocacy for policy prioritization
The Diabetes Prevention Act of 2009

Amends the Public Health Service Act to direct the Secretary of Health and Human Services (HHS), acting through the Director of the Centers for Disease Control and Prevention (CDC), to establish a national diabetes prevention program targeted at persons at high risk for diabetes.
CDC Establishes the U.S. National Diabetes Prevention Program (DPP) as Public Health


National DPP Lifestyle Change Program Dissemination

1. Standardized, structured curriculum
2. New workforce: DPP Lifestyle Coach, with training and CDC certification
3. Specific goals, performance metrics, and reporting requirements
4. Use of community-based intervention settings rather than reliance solely on health care access
5. Insurance reimbursement to community settings and DPP lifestyle coaches
Eligibility Criteria for DPP

- Adults (18 years of age or older)
- Overweight or obese
  - Body mass index (BMI) of $\geq 24 \text{ kg/m}^2$ ($\geq 22 \text{ kg/m}^2$, if Asian descent)
- Prediabetes status (ADA Standards of Care)

<table>
<thead>
<tr>
<th>A1C</th>
<th>5.7 – 6.4%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasting Glucose:</td>
<td>100 mg/dL - 125 mg/dL</td>
</tr>
<tr>
<td>Impaired Glucose Tolerance</td>
<td></td>
</tr>
</tbody>
</table>

- Or, history of gestational diabetes
- Or, Type 2 Diabetes Risk Test (paper, online)
### CDC Initial Performance Metrics for DPP months 1 - 6

<table>
<thead>
<tr>
<th>Category</th>
<th>Requirement</th>
<th>Measurement</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session attendance during months 1-6</td>
<td>Minimum of 9 sessions attended, on average</td>
<td>Attendance averaged over all participants attending a minimum of 4 sessions</td>
<td>Every 12 months</td>
</tr>
<tr>
<td>Documentation of body weight</td>
<td>On average, participants must have had body weights recorded at a minimum of 80% of the sessions attended</td>
<td>Documentation of body weights based on all participants attending a minimum of 4 sessions</td>
<td>Every 12 months</td>
</tr>
<tr>
<td>Documentation of physical activity minutes</td>
<td>On average, participants must have had physical activity minutes recorded at a minimum of 60% of all sessions attended</td>
<td>Documentation of physical activity minutes based on all participants attending a minimum of 4 sessions</td>
<td>Every 12 months</td>
</tr>
<tr>
<td>Weight loss achieved at six months</td>
<td>Average weight loss achieved by participants attending a minimum of 4 sessions must be a minimum of 5% of “starting” body weight.</td>
<td>Weight loss averaged over all participants attending a minimum of 4 sessions. The first and last weights recorded for each participant during months 1-6 will be used to calculate this measure.</td>
<td>Every 12 months</td>
</tr>
</tbody>
</table>
CDC Initial Performance Metrics for DPP months 7 - 12

<table>
<thead>
<tr>
<th>Participant average session attendance during the months 7-12</th>
<th>Minimum of 3 sessions in months 7-12</th>
<th>Attendance averaged over all participants attending a minimum of 4 sessions</th>
<th>Every 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight loss achieved at 12 months</td>
<td>Average weight loss achieved over the entire 12 month intervention period by participants attending a minimum of 4 sessions must be a minimum of 5% of “starting” body weight.</td>
<td>Weight loss averaged over all participants attending a minimum of 4 sessions during the entire intervention period. The first and last weights recorded for each participant during months 1-12 will be used to calculate this measure.</td>
<td>Every 12 months</td>
</tr>
</tbody>
</table>
Medicare Coverage for DPP (as Public Health)
Medicare Effectiveness and Cost Effectiveness Trial (CMMI)

Average 5% Weight Loss at 6 months and 1 Year

Cost savings: $2,650/enrollee over 15 months compared to beneficiaries not in program

Independent experts confirm that diabetes prevention model supported by the Affordable Care Act reduces Medicare spending.

Sylvia M. Burwell announced that the independent Office of the Actuary in the Centers for Medicare & Medicaid Services (CMS) certified that expansion of the Diabetes Prevention Program, a model funded by the Affordable Care Act, would reduce not Medicare spending. The expansion was also determined to improve the quality of patient care without limiting coverage or benefits. This is the first time that a preventive service model from the CMS Innovation Center has become eligible for expansion into the Medicare program.

Currently, about 30 million adults have type 2 diabetes, resulting in two deaths every five minutes in this country. Additionally, 86 million adults have prediabetes, a condition that if left unaddressed puts them at high risk for developing diabetes in the future.
Developing and Evaluating Effective Models to Obtain Medicaid Coverage for the National Diabetes Prevention Program (National DPP) through Medicaid Integrated Care Organizations

In July 2015, the Centers for Disease Control and Prevention (CDC) Division of Diabetes Translation (DDT) awarded a cooperative agreement through the CDC Office of State, Tribal, Local, and Territorial Support (OSTLTS) to the National Association of Chronic Disease Directors (NACDD) for a project designed to test the feasibility and effectiveness of various models to obtain Medicaid coverage for the National DPP. Two to three states will be selected to work with Medicaid Managed Care Organizations (MCOs), Accountable Care Organizations (ACOs), and/or Health Homes to develop and implement a coverage model for the National DPP. The coverage models will be evaluated and successful models will be translated for use by other states.

Background

While authorities to provide the National DPP (http://www.cdc.gov/diabetes/prevention/) as a covered preventive service through managed care options exist, they have not always been clearly articulated or prioritized. Further, the Medicaid landscape is changing as states respond to provisions in the Affordable Care Act (ACA) regarding health delivery and transformation, including new requirements related to quality measures, value-based purchasing, risk-sharing, access, and prevention. Through this project, states will determine how to leverage opportunities to obtain coverage for the National DPP, either alone or as part of a bundled package of chronic disease preventive services, to Medicaid beneficiaries with prediabetes through Integrated Care Models, including MCOs, ACOs, and Health Homes.
Example of Community DPP Effectiveness: Johns Hopkins Brancati Center

Average % Weight Loss at 12 Months

Retention: 100%
Weight measurement: 99%
Attendance: 97%
DPP Resources
Provides estimates of:

- Total cost of delivering the DPP to a covered population
- Total health benefit resulting from the program
- Life years gained and quality-adjusted life years saved
- Cost-effectiveness of the lifestyle change program
- Return on investment, if applicable
• Online Risk Test takes less than one minute to complete

• Connects people to care and resources

IF HIGH RISK (SCORE ≥ 5)

– How to discuss diabetes with a doctor
– Information to register for a local or online diabetes prevention program

IF LOW RISK (SCORE < 5)

– Healthy living information and programs
– Caregiver toolkits and services
– Advocate tools
– Invitations to re-screen periodically
New ADA Resource: **DPP Express Documentation Platform**

https://professional.diabetes.org/content-page/dpp-express-diabetes-prevention-program-charting-platform

- HIPAA and HI TECH compliant
- CDC 2018 DPP Standards and CMS MDPP reimbursement requirements
- Document CDC required DPP session data and ability to document additional biometrics/data points
- Generate CDC Recognition CSV reports
- Billing alert when DPP participants meet Medicare reimbursement requirements
- Platform is available to all. Nominal fee and ADA ERP discount.
Welcome!
Kathy Michalski - Director of Intervention: act2 Program Johns Hopkins Medicine

Today's Meeting Focus

During this introductory pre-meeting, we will:
- Get to know one another;
- Talk about how this program was developed and what prediabetes means;
- Review program goals;
- Discuss each of our roles and responsibilities week to week;
- Introduce keeping track of our foods and our weight;
- Determine if the program is right for you.

First, let's take a few minutes to get to know one another.
2018 Health Care & Education
Presidential Address:
The American Diabetes
Association in the Era of Health Care Transformation

_Felicia Hill-Briggs_


This address was delivered by Felicia Hill-Briggs, PhD, ABPP, President, Health Care & Education of the American Diabetes Association (ADA) at the ADA’s 78th Scientific Sessions in Orlando, FL, on 23 June 2018. Diabetes has become a high-priority condition in the current era of health care transformation due to diabetes and prediabetes prevalence rates, suboptimal diabetes outcomes at the health care system and population levels, and high health care and public health costs attributed to diabetes. Population health is the path forward for the ADA to
Thank you!

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