



PRACTICE BRIEF:

Integrating clinical and community prevention initiatives in Maricopa County to prevent and control diabetes

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Introduction

Diabetes is a growing issue impacting population health nationally, in Arizona, and specifically within Maricopa County. While the prevalence and associated costs of diabetes including type 1, type 2, and prediabetes are rising among adults and children, innovative clinical-community partnerships utilizing effective diabetes prevention and control strategies can improve population health outcomes and decrease the burden of diabetes on Maricopa County residents.

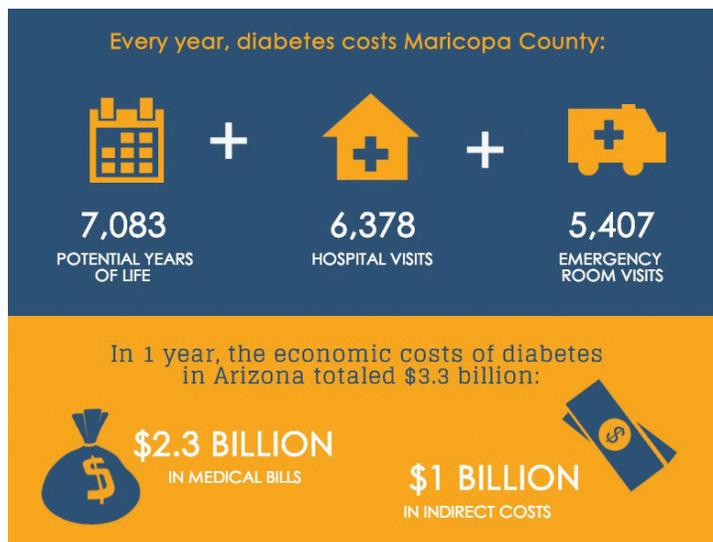
This practice brief and its accompanying infographic will empower public health partners including government agencies, community-based organizations, businesses, and providers and payers within the healthcare sector regarding:

The Impact of Diabetes: understanding the types of diabetes, who they affect, and the costs they incur at the national, state, and county levels.

The Value of Clinical-Clinical Partnerships to Prevent and Manage Diabetes: understanding the value of preventing and managing diabetes for both public health and healthcare sector partners and identifying population health measures (e.g. clinical quality measures and Healthy People 2020 objectives) to which the improvement of diabetes is tied.

Promising Programs to Prevent and Manage Diabetes: exploring successful evidence-based approaches to prevent prediabetes and manage diabetes types 1 and 2 currently being implemented across the United States.

Roadmaps to Success: considering the opportunities to engage in clinical-community linkages that would expand the impact of current and future diabetes prevention and control interventions among patient populations and the general public in Maricopa County.



The Impact of Diabetes

WHAT IS DIABETES?

The disease category of diabetes contains multiple types of diabetes including types 1 and 2, as well as prediabetes (an increased risk for developing type 2 diabetes) and gestational

diabetes. Type 1 diabetes cannot be prevented and usually manifests in childhood when an individual's immune system is actively destroying insulin-producing pancreatic cells.

TABLE 1. DIABETES PREVALENCE STATISTICS

United States	<ul style="list-style-type: none">• 19.7 million (10.1%) American adults have been diagnosed with diabetes¹• There are significant disparities in the development of type 2 diabetes among both adults and children• Prevalence of diabetes (types 1 and 2) among adult populations most at risk:¹<ul style="list-style-type: none">» Non-Hispanic White adults: 7% (7.7% male, 6.2% female)» Mexican American adults: 11.7% (11.4% male, 12.0% female)» Non-Hispanic Black adults: 14.5% (13.5% male, 15.4% female)• Proportion of type 2 diabetes among those children diagnosed with diabetes:¹<ul style="list-style-type: none">» Non-Hispanic White children: 14.9%» Hispanic children: 46.1%» Non-Hispanic Black children: 57.8%• Type 2 diabetes accounts for more than 90% of the diabetes diagnoses among adults in the US.• Type 2 diabetes has traditionally been a diagnosis reserved for adults over age 40 but is increasing in incidence among youth under the age of 20.¹• Approximately 15,000 American children (ages 10-19) are diagnosed with type 1 diabetes and 3,600 are diagnosed with type 2 diabetes every year.¹
Arizona	<ul style="list-style-type: none">• Adult prevalence:<ul style="list-style-type: none">» Prediabetes 1.2%²» Diabetes 10.6%²• Child prevalence: not available• In 2010 the treated population of adults and children numbered 416,200³• Diabetes is more common among:³<ul style="list-style-type: none">» Black (14.7%) and Hispanic (12.5%) residents as compared to White residents (9.4%)» Medicare beneficiaries (22.7%)³» Age groups 55-64 years (17.4%) and 65+ years (17.9%)» Males (11%) as compared to females (10.2%)• The burden of diabetes is highest among the poor, with those with the lowest socioeconomic status (SES) experiencing the highest rates of diabetes⁴
Maricopa County	<ul style="list-style-type: none">• Adult prevalence:<ul style="list-style-type: none">» Prediabetes 1.3%» Diabetes 10%» In 2011, diabetes had a higher prevalence among Hispanics (11%) than Whites (7.6%)^{5, 6}• Child prevalence: not available

Type 2 diabetes typically begins in adulthood with insulin resistance and is a modifiable risk factor for and comorbid condition with impaired glucose tolerance, obesity, physical inactivity, high blood pressure (hypertension), and hyperlipidemia. Complications of diabetes include heart disease, kidney disease or failure, vision loss, and amputations of the lower extremities.

2050, with older adults, Hispanics and Black Americans at the highest risk.¹

While specific childhood prevalence statistics are not available for diabetes at the state and county levels, the prevalence rates for diabetes in adulthood averages about 10% nationally, in Arizona, and in Maricopa County. See **Table 1** for more specific statistics by geographic area.

WHO DOES DIABETES AFFECT?

Diabetes affects both adults and children. The overall prevalence of diabetes (types 1 and 2) is projected to double between 2005 and the year

WHAT ARE THE COSTS OF DIABETES?

Diabetes among adults and children incurs significant costs at the national, state, and county levels. See **Table 2** for specific cost statistics.

TABLE 2. DIABETES COST STATISTICS

United States	<ul style="list-style-type: none"> • Medical care costs: As of 2012, costs associated with diabetes accounted for 1 out of 5 American healthcare dollars (\$245 billion total)¹ <ul style="list-style-type: none"> » \$176 billion in medical care costs and \$69 billion in lost productivity costs due to diabetes¹ » Medical costs for Americans with diabetes are 2.3 times greater than for those without diabetes⁶ • Mortality: In 2010, the diabetes-related death rate among adults was 20.8 per 100,000 people¹ • Adult Hospitalizations: As of 2010, diabetes (types 1 and 2) accounted for 16% of hospital discharges among adults¹ • Youth Hospitalizations: Between 1993 and 2004, hospitalization for diabetes (types 1 and 2) among children and young adults ages 0-29 increased by 38%¹
Arizona	<ul style="list-style-type: none"> • Medical care costs: Every year, diabetes costs the state: <ul style="list-style-type: none"> » \$2.4 billion in medical costs borne by all payers (including \$328 million paid by Medicaid, \$643 paid by Medicare)³ » \$100 million in productivity lost from absenteeism from work and school each year³ • Hospitalizations: In 2012, diabetes led to: <ul style="list-style-type: none"> » 11,260 hospitalizations » An average stay length of 4.5 days » An average cost of \$38,655, which is an increase of \$9,166 per admission since 2007³
Maricopa County	<ul style="list-style-type: none"> • Mortality: In 2010, Diabetes was the seventh leading cause of death in Maricopa County with 7,083 potential years of life lost⁷ <ul style="list-style-type: none"> » The age-adjusted mortality rate was 25.5 per 100,000 people in 2010⁶ » African Americans, Hispanic/Latinos, and Native Americans experience disproportionately high mortality rates^{6,7} • Hospitalizations: Diabetes was the primary cause of 6,378 hospital visits and 5,407 emergency room visits in 2010⁶



The Value of Clinical-Community Partnerships to Prevent and Manage Diabetes

WHAT IS THE VALUE OF COMMUNITY-CLINICAL LINKAGE IN EFFORTS TO REDUCE THE BURDEN OF DIABETES?

When it comes to the prevention and management of a burdensome condition such as diabetes, multi-level interventions are often the most successful and cost-effective. Prediabetes prevention and management of diabetes types 1 and 2 in Maricopa County are areas primed for clinical-community linkage between the healthcare sector (providers and payers), the Maricopa County Department of Public Health (MCDPH), and community-based partners. These partnerships could make significant inroads to improving the quality of care and the quality of life for people living with diabetes and/or its risk factors, while serving to reduce costs and increase healthcare quality measures for providers, payers, and purchasers alike.

HOW IS DIABETES TIED TO POPULATION HEALTH MEASURES THAT INDICATE COST SAVINGS AND HEALTH IMPROVEMENTS?

The integration of clinical and community-based efforts to prevent and manage diabetes can assist in meeting health quality standards and measures relevant to both the healthcare and public health sectors. When managing diabetes in patients, providers are guided by specific clinical quality measures such as the National Quality Forum (NQF) measures that indicate the health status, treatment, and improvements of their patients over time. In order to improve the prevalence, costs, and outcomes of diabetes, a goal would be to seek to positively impact the following clinical quality measures:⁸

- NQF 0059 (% patients ages 18-75 years-old with A1c >9.0%)
 - » A1c >9.0% indicates a level of glycated hemoglobin that tends to correspond with patient potential for extensive use of medical services
- NQF 0064 (% patients ages 18-75 years-old with LDL-C <100 mg/dL)
 - » LDL-C <100 mg/dL is considered the ideal level of “bad” cholesterol for those at risk of heart disease
- NQF 0061 (% patients ages 18-75 years-old with blood pressure <140/80 mmHg)

When working to prevent diabetes and its costs outside of the clinical setting, public health advocates such as MCDPH are guided by measures such as the Center for Disease Control and Prevention’s (CDC) Healthy People 2020 objectives. Diabetes-related population health objectives target improvements in:⁹

- Diabetes incidence (target 7.2 cases per 1,000 adults)
- Diabetes death rate (target 6.6 deaths per 100,000 people)
- Number of adults with A1c >9.0% (target 16.1%)
- Number of adults with LDL-C <100 mg/dL (target 58.4%)
- Number of adults with blood pressure under control (target 57%)
- Number of adults monitoring glucose daily (target 70.4%)



- Number of adults receiving formal diabetes education (target 62.5%)
- Number of adults ages 20 and over whose diabetes has been diagnosed (target 80.1%)
- Number of prediabetics practicing diabetes prevention behaviors (healthy eating and active living, target 49.1%)

See the following section for opportunities to integrate diabetes prevention and management efforts through clinical-community linkages.



Promising Programs to Prevent and Manage Diabetes

WHICH COMMUNITY-CLINICAL LINKAGES ACROSS THE US ARE SUCCESSFULLY PREVENTING AND MANAGING DIABETES?

Across the nation, a number of evidence-based programs utilized by innovative clinical-community partnerships have been successful at preventing and managing the health effects and costs of diabetes. At the state level, the Arizona Diabetes Coalition based in the Arizona Department of Health Services is at the forefront of the movement to establish such clinical-community partnerships for diabetes prevention and management. This coalition's work and two examples of cost-effective and impactful

programs being implemented by some of its partners are highlighted in the following case studies for consideration as potential points of collaboration between the Arizona Department of Health Services, the Maricopa County Department of Public Health, the healthcare system, and other community stakeholders. These collaborative efforts enable partners to maximize their reach, efficiency, and impact in relieving the burden of diabetes.

CASE STUDY:

ARIZONA DIABETES LEADERSHIP COUNCIL AND COALITION

The purpose of the Arizona Diabetes Coalition is to reduce the burden of diabetes on individuals, families, communities, and the healthcare system. This is achieved by increasing awareness of diabetes and advocating for and promoting policies and programs that improve access to care, treatment, and outcomes for people with diabetes and those at risk for developing diabetes.¹⁰ The Coalition uses a coordinated and collaborative approach to bring together stakeholders to maximize their impact on improving the health of all Arizonans. The Coalition has had a Diabetes Strategic Plan¹¹ in place since 2008, which aligns with Arizona's Coordinated Chronic Disease Plan. Five work groups are currently pursuing interventions to address the following focus areas:

- Raise awareness of prediabetes and support evidence-based diabetes prevention programs
- Form primary prevention partnerships to avert type 2 diabetes
- Promote professional/paraprofessional awareness and education through its SALUD (Supporting Action for Latinos Against Diabetes) workgroup, which is dedicated to mobilizing the assets of the greater Phoenix metropolitan area to reduce the impact of diabetes in the Hispanic/Latino population
- Conduct health communications campaigns, healthy school initiatives, and worksite wellness programs to create policy, systems, and environmental change around diabetes prevention and management



- Form care and treatment partnerships for the management of diabetes on a continuum of care that extends from the clinic into the community
- Increase utilization of the recognized/ accredited Diabetes Self-Management Education programs in Arizona

CASE STUDY:

EL RIO COMMUNITY HEALTH CENTER DIABETES SELF-MANAGEMENT PROGRAM

El Rio Community Health Center in Tucson, Arizona is the only federally qualified health center to be accredited as an American Association of Diabetes Educators (AADE) diabetes self-management program. El Rio was awarded a grant through the American Pharmacy Association to launch Project IMPACT: Diabetes, an evidence-based initiative to integrate pharmacists into diabetes care teams that provide care to medically underserved communities. El Rio applied the integrative model of Project IMPACT along with its own comprehensive diabetes self-management program to the development of a clinic located in the tribal headquarters of the Pascua Yaqui Reservation where need for diabetes prevention and management is prevalent. This clinic engages Hispanic/Latino and Native American Pascua Yaqui populations in diabetes self-management through clinical referrals to see a pharmacist with authority to prescribe medication in collaboration with the patient's primary physician. These pharmacists help patients with a diagnosis of new or uncontrolled diabetes to understand and manage their medication therapy. Throughout the treatment process, pharmacists continuously monitor patients for positive or adverse reactions to their medication, educate and counsel patients on how to adhere to their treatment protocol, and are empowered to provide referrals to supportive

medical providers (e.g. podiatrists, nutritionists, etc.).¹² Project IMPACT: Diabetes has demonstrated significant improvements in patients' blood sugar control (-1.0% A1C), systolic blood pressure (-1.6mmHg), LDL cholesterol (-10.1mg/dL), and BMI (-0.1 unit).¹³

CASE STUDY:

YMCA DIABETES PREVENTION PROGRAM

The YMCA was one of the first community organizations in the US to offer a Diabetes Prevention Program (DPP) for adults at risk of developing type 2 diabetes. The YMCA's DPP behavior change protocol includes a year-long series of group-based education sessions about healthy eating, active living, and strategies for coping with stressors that may lead to weight gain.¹⁴ The DPP model was originally designed, implemented, and evaluated for use in community-based, group settings such as the YMCA by clinical researchers from the Indiana University School of Medicine in partnership with the National Institutes of Health and United Health Care. The pilot program known as Diabetes Education and Prevention with a Lifestyle Intervention (DEPLOY) was first offered in two YMCA facilities in greater Indianapolis as a matched-pair, group-randomized intervention trial. Ninety-two adults at high risk of developing type 2 diabetes participated in DEPLOY with the goal of increasing their physical activity, losing a modest amount of weight, and ultimately reversing their prediabetes. This pilot demonstrated significant reductions in body weight (-6.0%) and total cholesterol (-22mg/dL) among all those who participated.¹⁵ Further iterations of this DPP program have now been implemented at YMCAs across the country with the impact of reducing the number of new cases of type 2 diabetes by as much as 58% among adults of all ages and by 71% among adults aged 60 years or older.¹⁴



Roadmaps to Success

WHAT ARE OPPORTUNITIES FOR CLINICAL-COMMUNITY LINKAGES TO REDUCE THE BURDEN OF DIABETES IN MARICOPA COUNTY?

The prevention and management of diabetes in Maricopa County is an area primed for clinical-community linkage between the healthcare sector (providers and payers), MCDPH, and community-based partners. Collaborative efforts performed through clinical-community linkages would allow all partners to maximize their reach and impact to mitigate the burden of diabetes in Maricopa County efficiently and effectively.

STRENGTHS OF THE PUBLIC HEALTH SECTOR

As a leader among Maricopa's population health partners, MCDPH is optimally positioned to offer the following unique assets to an integrated approach towards bridging the gap between healthcare and public health's efforts to prevent and manage diabetes through:

- **Data analysis and surveillance:**
 - » Surveying, monitoring, mapping, and reporting health behavior, access to diabetes prevention and condition management opportunities, and trends in diabetes with a population-scale perspective
- **Reaching vulnerable populations:**
 - » Addressing health disparities and upstream factors — such as poverty and lack of access to opportunities to eat healthy and engage in regular physical activity — that disproportionately affect type 2 diabetes outcomes among at-risk populations
 - » Engaging hard-to-reach populations and community organizations to identify unmet needs for support in improving diabetes prevention and management behaviors

- » Convening stakeholders to develop and implement community-based solutions to rising rates of type 2 diabetes
- » Bridging sectors (e.g. healthcare and education) and coordinating services to integrate and sustain prevention interventions like the Complete Streets Initiative

- **Health promotion, programs, and screening:**
 - » Communicating and reinforcing best practices advised by clinicians for diabetes and weight management, including Diabetes Self-Management Education principles
 - » Conducting health education and awareness efforts within communities that encourage lifestyle-based behavior modification and risk reduction
- **Policy development:**
 - » Advising a variety of sectors on the potential health impact of various policies and procedures related to the prevention and management of diabetes

STRENGTHS OF THE HEALTHCARE SYSTEM

MCDPH appreciates the complementary strengths that the healthcare sector has to offer a partnership for diabetes prevention and management including:

- **Sharing data and patient/provider perspectives:**
 - » Diagnosing diabetes in the Maricopa County population
 - » Sharing patient and hospital/clinic level data on diabetes prevalence and access to condition management support
 - » Sharing clinicians' detailed knowledge of their patient populations in the aggregate with regard to their health history and diabetes management needs
 - » Integrating efforts through referral to lay health educators and county-run programs for condition management support



- **Proactive case management:**
 - » Coordinating medical care and comprehensive support services for diabetes patients to manage weight, diabetes symptoms, and treatment
 - » Referring diabetes patients to community support and relevant population health resources
- **Community Benefits:**
 - » Aligning health improvement plans with comprehensive efforts that focus on improving diabetes outcomes

POSSIBLE POINTS OF COLLABORATION BETWEEN THE PUBLIC HEALTH SECTOR AND THE HEALTHCARE SYSTEM

The addition or enhancement of partnerships would expand the reach and impact of partner efforts as well as apply national standards for evidence-based diabetes prevention and management at the county level.

Sample expansions of the Chronic Disease Self-Management Programs currently in place within Maricopa County:

- Increasing diabetes patient adherence to chronic disease-based prevention and treatment protocols and/or retention in self-management programs by prescribing attendance at self-management workshops
- Training more community health workers and lay health educators to run Diabetes Self-Management Education and Chronic Disease Self-Management Workshops and support patients in managing their diabetes
- Incorporating Diabetes Self-Management Education and Chronic Disease Self-Management Workshops run by community health workers into health clinics across Maricopa County

- Expanding the volume of Chronic Disease Self-Management Workshops conducted for the general public run by lay health workers
- Developing policies to support reimbursement for Diabetes Self-Management Education, Chronic Disease Self-Management Programs, and Diabetes Prevention Programs by Medicaid and third party insurers

Sample activities of community and clinical partnerships to reduce type 2 diabetes include:

- Prevention and screening programs within community and workplace settings
- Holding screening programs to identify prediabetes or those at risk and to ensure proper medical referrals
- Targeting high risk populations such as Latinos and Native Americans with education, screening, and home visiting programs
- Initiating communication channels (e.g. e-referral, etc.) and building capacity to link clinical settings and community-based resources that support patients in daily life. These local resources for healthy eating, active living, and type 2 diabetes management could include community nutrition education programs, low-cost or free athletic programs and recreational facilities, chronic disease self-management programs, etc.
- Working with WIC programs and other community programs that serve pregnant women to ensure they have been tested for gestational diabetes

Together we can prevent and control the burden of diabetes in Maricopa County.



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RESOURCES FOR FURTHER INFORMATION:

For more information about diabetes prevention and management from MCDPH, contact:

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