

# **Coordination of Diabetes Programs**

**Biennial Report**

**G.S. 130A-221.1**



**Report to the**

**Joint Legislative Oversight Committee on Health and Human Services**

**and**

**Fiscal Research Division**

**By**

**North Carolina Department of Health and Human Services**

**December 31, 2016**

# COORDINATION OF NORTH CAROLINA DIABETES PROGRAMS BIENNIAL REPORT

## **I. Executive Summary**

North Carolina General Statute 130A-221.1 requires the Department of Health and Human Services and the State Health Plan for Teachers and State Employees, a division of the Department of State Treasurer, to report by January 1 of every odd-numbered year how North Carolina is working to reduce the incidence of diabetes, improve diabetes care, and control the complications associated with diabetes.

### *Scope of the Problem*

The North Carolina Department of Health and Human Services (NC DHHS) Division of Public Health (DPH) and Division of Medical Assistance (DMA), and the Department of State Treasurer's State Health Plan for Teachers and State Employees (Plan) collectively offer diabetes-related programs and services to all North Carolinians. Diabetes afflicts one out of every ten North Carolinians. The rate of diabetes has steadily increased over the past two decades rising from less than 5% in 1994 to nearly 11% in 2015. An additional 10% of North Carolinians had prediabetes in 2015. As of June 2016, diabetes affected roughly 128,000 Medicaid beneficiaries. In 2016, it also affected 41,883 active and non-Medicare Plan members. In addition, another 19% (29,083) of Plan Members who are Medicare eligible are also estimated to have diabetes.

### *Financial Impact*

One in five health care dollars spent across the nation is spent on persons with diabetes, and health care costs for this population average 2.3 times more than those without diabetes. North Carolina Medicaid spent an estimated \$803 million on medical care for beneficiaries with diabetes in SFY 2016. The Plan's active and non-Medicare members with diabetes incurred \$399 million in allowed claims in 2015.

### *Effectiveness of Programs*

A variety of evidence-based programs and interventions targeting diabetes prevention and management are available to persons with prediabetes or diabetes. Plan members and Medicaid beneficiaries are able to receive diabetes self-management education, diabetes prevention programs, health coaching, and care alerts for both prevention and disease management. Several of these programs and services are extended to other North Carolinians through DPH and the NC Division of Aging and Adult Services (DAAS). The Plan continuously monitors effectiveness of its programs, benefit design, and provider networks through quarterly and annual review of a wide variety of quality, utilization, and financial metrics. Additionally, DMA contractor for primary care management, Community Care of North Carolina (CCNC), evaluates the effectiveness of its programs in a continuous manner and provides DMA information through quarterly and annual reports that include both process and outcome measures.

## *Coordination*

DPH, DMA, and the Plan coordinate efforts on the following diabetes prevention efforts: Eat Smart, Move More, Weigh Less (ESMMWL), an evidence-based weight management program; Diabetes Prevention Programs available onsite or online; education of providers on programs and resources; and worksite wellness programs.

## *Initiatives*

The following coordinated actions were completed between January of 2015 and June of 2016 by the Plan, DPH, and DMA to improve diabetes prevention and management:

- The Centers for Disease Control and Prevention (CDC) recognizes programs that use an approved curriculum to deliver the Diabetes Prevention Program (DPP) which is a year-long intervention proven to prevent type 2 diabetes. Most programs cover 16 lesson topics during the first 6 months and an additional 6 or more lessons during the remaining 6 months of the program. The primary goals of the DPPs are to increase physical activity to at least 150 minutes per week and help individuals lose 5-7% of their body weight. The Plan approved the Diabetes Prevention Program (DPP) as a covered benefit for active employees, Non-Medicare retirees, Medicare-primary members enrolled in the Traditional 70/30 Plan, and their dependents over the age of 18.
- DPH developed and continues to expand the network of onsite providers of the DPP.
- DPH partnered with NC State University to develop a DPP curriculum suitable for online delivery using synchronous, distance-education technology. The curriculum, “Eat Smart, Move More, Prevent Diabetes” was recognized by the Centers for Disease Control and Prevention and is being offered as a covered benefit for Plan members as outlined above.
- CCNC Care Managers continued to refer Medicaid beneficiaries to DPP and Diabetes Self-Management Education programs sponsored by DPH
- DPH worked with CCNC to help support tuition cost for Medicaid beneficiaries to participate in Eat Smart, Move More, Weigh Less in target areas.
- The Plan, in coordination with DPH, conducted a state-wide campaign to raise awareness of prediabetes and diabetes, and promoted evidence-based Diabetes Prevention Programs and Diabetes Self-Management Education among Plan members.
- The Plan launched a *Diabetes Resource Center* on its website, [www.shpnc.org](http://www.shpnc.org), to provide education and resources to help members prevent, manage, or slow the progression of prediabetes and diabetes.
- The Plan implemented the Wellness Wins pilot initiative in counties with a high prevalence and burden of chronic conditions to create a model for influencing member health, partnering with DPH to support worksite wellness programs.
- CCNC refined its analytics processes for targeting patients with chronic diseases that are highly impactful and will benefit most from care management.
- In November 2015, CCNC achieved a three-year accreditation in intensive case management provided to Medicaid patients from the National Committee for Quality Assurance (NCQA). The three-year accreditation recognizes “strong performance” of the functions outlined in NCQA’s Case Management standards as well as dedication to care

coordination, patient-centeredness, and continuous quality improvement.

### *Action Plan*

The following coordinated efforts will be continued to improve diabetes prevention and management:

- Collaborate to raise awareness of prediabetes among Plan members and increase early identification and management of diabetes.
- Evaluate and enhance the benefit design of Plan and DMA covered services to increase identification and improve management of diabetes and prediabetes.
- Collaborate to assess worksite wellness programs and develop sustainable and replicable models of worksite wellness programs, which brings focus on conditions such as prediabetes.
- Develop and disseminate a toolkit to support worksite wellness efforts that promotes awareness, prevention, and management of diabetes within public worksites.
- Develop and disseminate the North Carolina Guide to Diabetes Prevention and Management 2015-2020, an action guide for individuals with prediabetes, caregivers, communities, employers, and health care providers.
- Support and collaborate with the Diabetes Advisory Council (DAC) to promote “Patient Engagement” in diabetes prevention, care and management which involves identifying and addressing barriers to participation in Diabetes Self-Management Education and Diabetes Prevention Programs.
- Revise DMA Clinical Coverage Policy 1A-24, Diabetes Outpatient Self-Management Education (DSME), to allow for reimbursement for DSME that is recognized by the American Association of Diabetes Educators. DMA will continue to offer DSME to teach knowledge and skills needed for diabetes self-care. DSME combines the needs, goals, and life experiences of diabetic Medicaid beneficiaries with certified diabetes educators and is guided by evidence-based standards.

## II. General Statute 130A-221.1, Coordination of Diabetes Programs

G.S. 130A-221.1, as established by Session Law 2013-192 and as amended by Session Law 2014-100, Section 12E.7, reads:

“(a) The Division of Medical Assistance and the Diabetes Prevention and Control Branch of the Division of Public Health, within the Department of Health and Human Services<sup>1</sup>; in addition to the State Health Plan Division within the Department of State Treasurer; shall work collaboratively to each develop plans to reduce the incidence of diabetes, to improve diabetes care, and to control the complications associated with diabetes. Each entity's plans shall be tailored to the population the entity serves and must establish measurable goals and objectives.

(b) On or before January 1 of each odd-numbered year, the entities referenced in subsection (a) of this section shall collectively submit a report to the Joint Legislative Oversight Committee on Health and Human Services and the Fiscal Research Division. The report shall provide the following:

- (1) An assessment of the financial impact that each type of diabetes has on each entity and collectively on the State. This assessment shall include: the number of individuals with diabetes served by the entity, the cost of diabetes prevention and control programs implemented by the entity, the financial toll or impact diabetes and related complications places on the program, and the financial toll or impact diabetes and related complications places on each program in comparison to other chronic diseases and conditions.
- (2) A description and an assessment of the effectiveness of each entity's programs and activities implemented to prevent and control diabetes. For each program and activity, the assessment shall document the source and amount of funding provided to the entity, including funding provided by the State.
- (3) A description of the level of coordination that exists among the entities referenced in subsection (a) of this section, as it relates to activities, programs, and messaging to manage, treat, and prevent all types of diabetes and the complications from diabetes.
- (4) The development of and revisions to detailed action plans for preventing and controlling diabetes and related complications. The plans shall identify proposed action steps to reduce the impact of diabetes, prediabetes, and related diabetic complications; identify expected outcomes for each action step; and establish benchmarks for preventing and controlling diabetes.
- (5) A detailed budget identifying needs, costs, and resources required to implement the plans identified in subdivision (4) of this subsection, including a list of actionable items for consideration by the Committee."

The three agencies named in the legislation aligned their efforts and vision to provide this coordinated report.

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<sup>1</sup> The Diabetes Prevention and Control Branch was eliminated in 2013 and the Branch functions are now performed through the Community and Clinical Connections for Prevention and Health Branch.

## Agency Descriptions

### *Division of Public Health*

NC DHHS's Division of Public Health's Chronic Disease and Injury (CDI) Section, along with local health departments and other partners, works to reduce death and disabilities related to chronic disease and injury. This is accomplished through policy development and environmental changes that support healthy behavior and improvements in systems of care, as well as through education, screening, direct medical service, and community engagement. Interventions that support diabetes prevention and reduction of risks for those North Carolinians who have diabetes are a top priority for the CDI Section given the health burden and health disparities associated with diabetes. Two risk factors, obesity and tobacco use, are particularly important to diabetes prevention and management. Recent data have shown that the risk of developing diabetes is 30-40% higher for active smokers than nonsmokers and there is a positive dose-response relationship between the number of cigarettes smoked and the risk of developing diabetes. The relationship between obesity and diabetes has also been well-documented. Weight loss is a strategy employed for both diabetes prevention and management. DPH's data in this report is based on a number of data sources, including the CDC, the Behavioral Risk Factor Surveillance System (BRFSS) Survey available through the State Center for Health Statistics, and the American Diabetes Association. Unless otherwise specified, data includes type 1, type 2, and gestational diabetes.

### *Division of Medical Assistance*

NC DHHS Division of Medical Assistance (DMA) administers the state and federally funded Medicaid and NC Health Choice programs that serve many low-income individuals and families in North Carolina who would not otherwise be able to afford health care, including low-income parents, children, seniors, and people with disabilities. In collaboration with other community partners, DMA addresses the needs of individuals living with diabetes through Clinical Coverage Policy 1A-24, Diabetes Outpatient Self-Management Education (DSME).<sup>2</sup> DSME is an interactive, ongoing process of teaching the knowledge, skills, and abilities needed for diabetes self-care. The process combines the needs, goals, and life experiences of the diabetic beneficiary with a certified diabetes educator(s), and is guided by evidence-based standards. This process includes:

- (a) assessment of the individual's specific education needs;
- (b) identification of the individual's specific diabetes self-management goals;
- (c) education and behavioral intervention directed toward helping the individual achieve identified self-management goals; and
- (d) evaluation of the individual's attainment of identified self-management goals.

Additionally, CCNC works with networks to achieve long-term quality objectives through a patient-centered "medical home" model. CCNC implemented a Diabetes Quality Improvement Initiative based on the core components of process and patient outcome improvement. The program includes screening for prevention and early diagnosis, improved glucose control,

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<sup>2</sup> This policy is available here: <https://ncdma.s3.amazonaws.com/s3fs-public/documents/files/1A24.pdf>.

improved blood pressure control, and improved lipid control. These interventions can delay the onset and progression of diabetes complications. In addition, CCNC Case Managers intervene with those persons identified as being most at risk, including those beneficiaries with a new diagnosis of diabetes or hospital utilization. DMA's and CCNC's data in this report includes type 1, type 2, and gestational diabetes.

### *State Health Plan*

The Plan provides health care coverage to more than 700,000 teachers and local school personnel, state employees, retirees, current and former lawmakers, state university and community college faculty and staff, and their dependents. The Plan is self-insured and exempt from the Employee Retirement Income Security Act as a government-sponsored plan. The Plan operates as a division of the Department of State Treasurer. The Treasurer is responsible for administering and operating the Plan as described in Article 3B of Chapter 135 of the General Statutes subject to certain approvals by and consultations with the Board of Trustees. An Executive Administrator oversees the day-to-day operations of the Plan. The State Treasurer, Board of Trustees and Executive Administrator are required to carry out their duties and responsibilities as fiduciaries for the Plan and report to the General Assembly as directed by the President Pro Tempore of the Senate and the Speaker of the House of Representatives.

Improving members' health is a strategic priority for the Plan. Promoting patient-provider relationships, assisting members to effectively manage high cost and high prevalence of chronic conditions including diabetes, offering health promoting and value-based benefit designs, and promoting worksite wellness are included in the Plan's strategic plan for achieving that goal. The Plan's healthy living initiative, NC HealthSmart, offers resources and supports to assist members in reaching their best health. This includes case and disease management and health coaching through the Plan's population health management vendor, ActiveHealth Management (AHM). AHM employs evidence-based clinical decision support, predictive modeling, and analytics to identify and risk-stratify members with various health conditions including diabetes. Once identified, innovative communications strategies are used to engage members and providers with a suite of integrated clinical services, including care management and online technologies that support adherence to provider care plans and help improve blood glucose and blood pressure control, manage lipids, and monitor renal, vascular, and eye health. In addition, the Plan provides access for members to QuitlineNC, onsite and online Diabetes Prevention Programs, and Eat Smart, Move More, Weigh Less for active and non-Medicare retirees, programs which aim to reduce the risk of developing diabetes and the complications related to the same. Through benefit design, population health management, and other initiatives aimed at improving care coordination and health outcomes, the Plan believes it can improve its members' long-term diabetes outcomes and overall health.

The Plan's data in this report includes only type 2 diabetes, unless otherwise specified. The Plan's prevention and management efforts are primarily focused on type 2 diabetes.

### **III. Scope of Diabetes in North Carolina**

The World Health Organization (WHO) defines diabetes as a chronic disease that occurs either when the pancreas does not produce enough insulin (type 1 diabetes) or when the body cannot effectively use the insulin it produces (type 2 diabetes). Insulin is a hormone that regulates blood sugar. Hyperglycemia, or raised blood sugar, is a common effect of uncontrolled diabetes and over time can lead to serious complications such as heart attack, stroke, renal failure, blindness and lower limb amputations.<sup>i</sup> The prevalence of diagnosed diabetes in North Carolina increased from 6.4% of the adult population in 1998 to 10.47% in 2015, an increase of 67%. North Carolina's 2014 diabetes rate of 10.84% was higher than the U.S. average rate (9.7%). Despite recent improvements in overall ranking, North Carolina still has the 18<sup>th</sup> highest prevalence of diabetes among the 50 states and the District of Columbia. North Carolina adults with lower education levels and lower incomes are more likely to report being diagnosed with diabetes. Adults in North Carolina aged 35-44 are almost twice as likely to have diabetes compared to North Carolinians of the same age group a decade ago. North Carolina's prevalence of type 2 diabetes is also higher than the national average. Type 2 (or adult-onset) diabetes may account for 90-95% of all diagnosed cases of diabetes and has many risk factors, including age and obesity. The prevalence of type 2 diabetes in North Carolina is also marked by significant racial, economic, and geographic disparities.

#### **Diabetes Incidence**

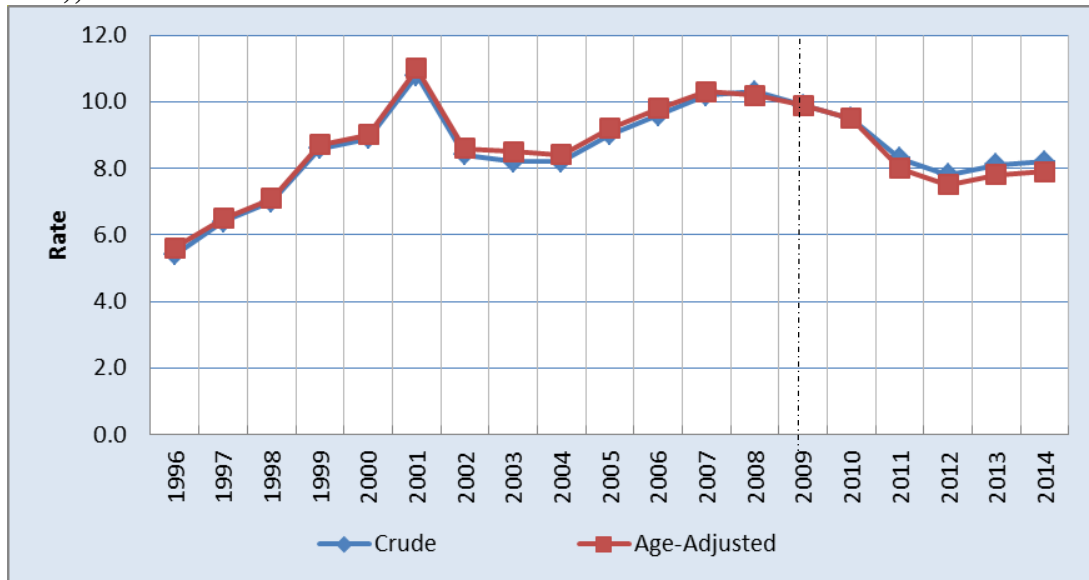
Diabetes rates among North Carolinians almost doubled between the 1990s and 2000s, going from an age-adjusted rate of 5.6 new cases per 1,000 people in 1996 to 10.3 per 1,000 people in 2007. Though the rate declined to 7.5 in 2012, it rose again to 7.9 in 2014. This rate of new diagnoses continued to outpace the national growth rate of 7.8 new cases per 1,000 people in 2014 (Graph 1).<sup>3,ii</sup>

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<sup>3</sup> Since 2011, cell phones were included with BRFSS data which may account for some of this change.



**Graph 1: North Carolina - Rate of New Cases of Diagnosed Diabetes per 1,000 Adults (Aged 18-76 Years), 1996-2014**



Vertical dotted line indicates major changes made to the survey methods in 2011

Source: *North Carolina Rate of New Cases of Diagnosed Diabetes per 1000 Adults (Aged 18-76 Years), 1996-2014*, Centers for Disease Control and Prevention

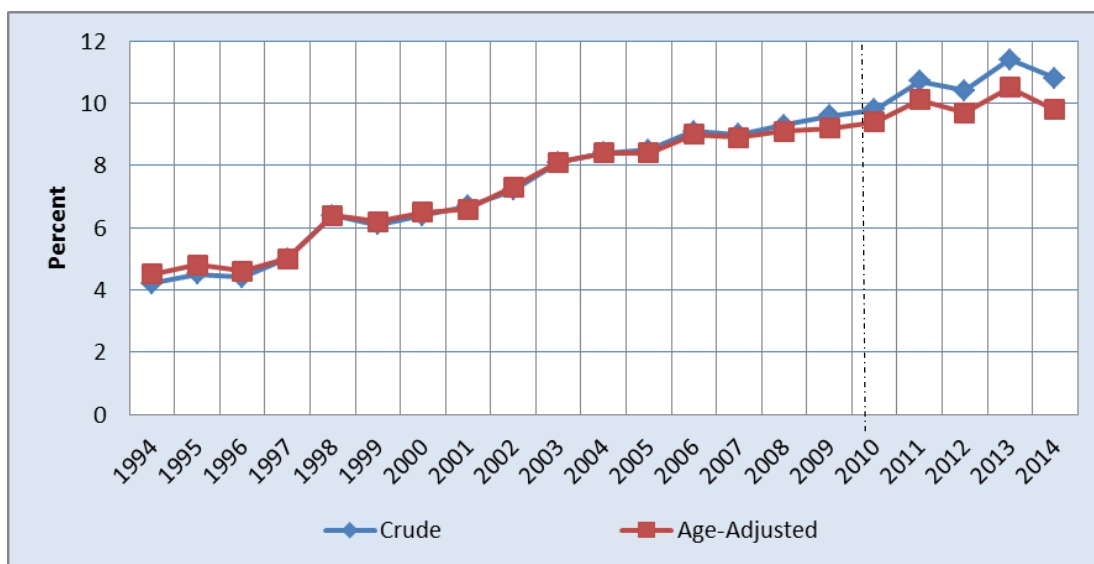
Only 10.1% of North Carolinians (more than 700,000) reported having prediabetes in 2015. Many people remain unaware that they have prediabetes.

### Diabetes Prevalence

In 2014, approximately 9.8% (age-adjusted) of North Carolinians, representing 828,855 individuals, had received a diabetes diagnosis (Graph 2).<sup>4</sup> The estimated prevalence of diabetes nationally in 2014 was 9.1% of the age-adjusted adults. Note that these data reflect all cases of diabetes, including both type 1 and type 2. However, type 1 diabetes only accounts for approximately 5% of the total cases of diabetes, so the bulk of this increase is attributable to the rise in type 2 diabetes.

<sup>4</sup> Note that these data reflect all cases of diabetes, including both type 1 and type 2. However, because type 1 diabetes only accounts for 5% to 10% of the total cases of diabetes, the bulk of this increase is attributable to the rise in type 2 diabetes.

**Graph 2: North Carolina – Percentage of Adults (aged 18 years or older) with Diagnosed Diabetes, 1994-2014**



**Vertical dotted line indicates major changes made to the survey methods in 2011**

Source: North Carolina – Percentage of Diagnosed Diabetes among Adults (Aged 18 and above), 1994-2014, Centers for Disease Control and Prevention

## Diabetes Prevalence by Agency

### *Division of Medical Assistance*

Of the 128,000 Medicaid beneficiaries with diabetes, 42,000 are enrolled with CCNC, representing 3% of total CCNC enrollees, in State Fiscal Year (SFY) 2016. Of those diagnosed, 12.9% of Medicaid adults and 16.1% of Aged, Blind, and Disabled beneficiaries are diabetic.

### *State Health Plan for Teachers and State Employees*

In 2015, 41,883 or 7.8% of active and non-Medicare Plan members and 19% (29,083) of Medicare members had a diagnosis of diabetes.

## Diabetes and Age

The prevalence of type 2 diabetes increases markedly with age. While only 1.4% of North Carolinians aged 18 to 34 reported a diagnosis of diabetes in 2015,<sup>iii</sup> this percentage increased within the following age groups:

- 4.2% of 35 to 44 year olds;
- 11.4% of 45 to 54 year olds;
- 17.9% of 55 to 64 year olds;
- 23.9% of 65 to 74 year olds; and

- 22.8% of people 75 years and over.<sup>iv</sup>

For people ages 45-64, diabetes was the fifth leading cause of death in 2014, while for people 65 and over it ranked sixth.<sup>v</sup>

### **Racial/Ethnic Inequalities in Diabetes Prevalence and Mortality**

North Carolina is a diverse state. In 2015, of its estimated 10,042,802 population;

- 63.8% identified as non-Hispanic whites;
- 22.1% identified as African American;
- 9.1% identified as Hispanic or Latino; and
- 1.6% identified as American Indian and Alaska Native.<sup>vi</sup>

Type 2 diabetes is not distributed equitably among these racial and ethnic groups. In 2015, 14.9% of African-Americans and 13.1% of American Indians reported a diabetes diagnosis, compared to 10.4% of non-Hispanic whites, and 4.1% of Hispanics, though the particularly low reported rate for Hispanics is likely due to under-sampling and under-reporting.<sup>vii</sup> While diabetes prevalence increases with age for all racial groups, the disease disproportionately affects older African Americans, affecting 23.5% of African Americans aged 55 to 64, and more than a third (36.0%) of African Americans between the ages of 65 and 74 in 2015.<sup>viii</sup>

Statewide, diabetes was the third leading cause of death for American Indians, the fourth leading cause of death for African Americans, and the seventh leading cause of death for non-Hispanic whites in 2014.<sup>ix</sup>

### **Education and Income**

Diabetes prevalence also correlates with education levels. In fact, diabetes prevalence for those without a high school diploma is more than double the prevalence for college graduates. In 2015, almost one in six North Carolina adults (15.9%) who had less than a high school diploma had been diagnosed with diabetes, compared with only 6.2% of adults with college degrees.<sup>x</sup>

The disparities in diabetes rates by income level are also significant. Of those with less than \$15,000 in household income, 18.8% of people had diabetes in 2015. This group had more than twice the chance of having diabetes as people earning from \$50,000 to \$74,999 (8.0%). People earning more than \$75,000 were three times less likely (5.8%) to have received a diabetes diagnosis than those in the lowest income bracket.<sup>xi</sup>

### **Geographic Disparities**

A regional analysis of North Carolina diabetes rates shows stark geographic differences across the state. North Carolina is generally divided into three broad geographic areas: the Mountains (western region); the Piedmont (central region); and the Coastal Plains (eastern region).

In the Piedmont, where most of the State's largest cities are located—including Charlotte, Raleigh,

Greensboro, and Durham - the rate of diagnosed diabetes is 9.9%. In the Mountains, it is 9.6%. The rate of diagnosis is significantly higher in the Coastal Plains at 12.8%.<sup>xii</sup>

Racial disparities are pronounced within geographic regions. In 2015, African Americans living in the Coastal Plains had the highest reported rate of diabetes of any group in the State, at 17.3%, compared to 12.3% of non-Hispanic whites in the region. This region has the highest rate of diabetes for both African Americans and non-Hispanic whites. In the Piedmont, 13.7% of African Americans reported a diabetes diagnosis, while 9.8% of non-Hispanic whites did so.<sup>xiii</sup> The Mountains and Piedmont regions saw a similar rate of diabetes among non-Hispanic whites at 9.8%. African Americans were not included as a category for the Mountains region.<sup>xiv</sup>

#### **IV. Financial Impact of Diabetes in North Carolina**

The American Diabetes Association estimated that the total national costs associated with diabetes rose from \$174 billion in 2007 to \$245 billion in 2012, increasing 41% over just 5 years.<sup>xv</sup> Across the nation, one in five healthcare dollars is spent to care for people who have been diagnosed with diabetes; over half of this amount is used to treat diabetes-related issues.<sup>xvi</sup> People with diabetes have medical expenditures approximately 2.3 times higher than what they would have incurred if they did not have diabetes.<sup>xvii</sup> A majority (62.4%) of the costs are paid for by government programs, including Medicare, Medicaid and military health programs.<sup>xviii</sup> Seventy-two percent of national diabetes costs are attributed to direct health care expenditures while 28% represent lost productivity from work-related absenteeism, unemployment, and premature mortality.<sup>xix</sup>

Like the rest of the nation, North Carolina continues to face significant increases in diabetes-related spending. In 2012, roughly \$8.3 billion of excess medical costs and lost productivity were attributable to diabetes within the State.<sup>xx</sup> In SFY 2016, North Carolina Medicaid expenditures for the 42,000 CCNC-enrolled beneficiaries with a primary diagnosis of diabetes totaled 803 million, with an average per member per month (PMPM) cost of \$1,645.

Annual healthcare costs are projected to surpass \$17 billion by 2025.<sup>xxi</sup> With a budget in SFY 2014 that totaled approximately \$20.6 billion,<sup>xxii</sup> an increase in costs to \$17 billion could consume nearly a third of the annual budget.

#### **Financial Impact of Diabetes by Agency**

##### *Division of Public Health*

While diabetes does not have a direct financial impact to the Division of Public Health, it is clear that costs related to diabetes are substantial to the state of North Carolina. For example, when assessing 2014 statewide data, diabetes was the primary cause of many hospitalizations in North Carolina (n=18,744). It was associated with an average stay of 4.5 days and a discharge rate of 1.9 per 1,000 population. Hospital charges with diabetes as a primary cause were also high (\$465 million), with an average charge of \$24,830 per case in North Carolina for 2014.

##### *Division of Medical Assistance*

In SFY 2016, North Carolina Medicaid expenditures for the CCNC-enrolled population with a

primary diagnosis of diabetes was \$153,851,380 for medical care claims and \$83,781,777 for prescription drugs for the treatment of diabetes, totaling approximately \$238 million. The prescription drug amount includes only paid claims and does not include any drug rebates or any diabetic supplies. In addition, this population incurred another \$566 million for all other health care services, including \$18 million for diabetic supplies, bringing expenditures to a total of \$803 million, with an average PMPM of \$1,645. During 2016, the average cost of an inpatient hospitalization for CCNC-enrollees with a primary diagnosis of diabetes was \$3,566 for adults and \$5,054 for children age 0-20. The total cost of all inpatient hospitalizations for CCNC-enrollees with a primary diagnosis of diabetes was \$7,714,095 for adults and \$4,073,202 for children age 0-20.

### *State Health Plan for Teachers and State Employees*

While the Plan covers only a subset of the State's population, the impact of chronic conditions such as diabetes parallels patterns seen in the State as a whole. Approximately 8% of the Plan's active and non-Medicare members have diabetes, accounting for 16.5% of total medical claims incurred. More than \$399 million was incurred in CY 2015 for medical services for members with diabetes. These expenditures represent all the claims related to these members, while diabetes specific claims totaled \$123 million for these members. More than \$101 million was incurred in CY2015 for pharmacy claims related to members with diabetes. The PMPM cost for diabetes prescriptions was \$15.81, a 35% increase from the previous 12-month period.<sup>xxiii</sup>

## **Cost of Diabetes Programs**

### *Division of Public Health*

Due to the variation in diabetes programming in North Carolina, it is difficult to establish programming costs. The cost to participate in the Diabetes Prevention Program (DPP) averages \$429 per person for a one-year enrollment. This aligns with national standards established by the YMCA, and is the cost that is reimbursed by the State Health Plan, which is the only public payer at this point. The program costs are often discounted by the YMCA for persons who are not able to pay. Additionally, the Community and Clinical Connections for Prevention and Health Branch offers some DPP scholarships for Medicaid eligible persons with prediabetes or who are at high risk for developing diabetes that reduce the cost to approximately \$25 per person. These programs are available in approximately 50 North Carolina counties. In 2016, the NC General Assembly appropriated \$2.3 million to the North Carolina Office of Minority Health and Health Disparities to promote minority participation in DPP. Persons participating in the DPP associated with this appropriation will pay approximately \$25 per person and will receive a variety of incentives designed to enhance retention in this evidenced-based program.

A 2014 report commissioned by the Kate B. Reynolds Charitable Trust estimated that Diabetes Self-Management Education (DSME) Programs recovered a maximum of 33% of the cost to deliver the program through billing. A 2012 economic analysis of the NC Diabetes Education Recognition Program (DERP) estimated the costs of program delivery at that time to be approximately \$375 per participant per year. Analysis of 310 program participants in 18 counties suggests that DERP generates \$1.21 in medical care cost-avoidance benefits for every \$1 spent on

this intervention.

### *Division of Medical Assistance*

Education and counseling on diabetes prevention are critical in primary care of Medicaid beneficiaries to control overall expenditures arising from complications from or conditions exacerbated by diabetes. CCNC's Diabetes Quality Improvement Initiative for persons with diabetes includes screening for prevention and early diagnosis, improved glucose control, improved blood pressure control, and improved lipid control. In addition, CCNC Case Managers work with people who are identified as being newly diagnosed with diabetes, those at most risk, and those with diabetes who have been hospitalized.

As previously stated, in SFY 2016, CCNC-enrolled Medicaid beneficiaries with a primary diagnosis of diabetes had expenditures totaling \$803,208,100, with an average PMPM of \$1,645. DMA also reimburses fee-for-service diabetes self-management education covered under Clinical Coverage Policy 1A-24. Expenditure under this policy for SFY 2016 totaled \$146,141.

### *State Health Plan for Teachers and State Employees*

From January of 2015 through September of 2016, the Plan spent approximately \$2.6 million on diabetes-related disease management and intervention programs through its population health management vendor, ActiveHealth Management. These programs delivered by the vendor include identification and targeted outreach to members with prediabetes and diabetes; targeted communication campaigns; identification and closure of evidence-based clinical alerts; expanded outreach campaigns focused on members with high cost and utilization trends; online and community resources for members with diabetes; and management services aimed at self-management, education, reduced utilization, and coordination of care for engaged members.

During the same time frame, the Plan spent an additional \$800,000 on the Eat Smart, Move More, Weigh Less program and Diabetes Prevention Programs, and \$238,629 on Diabetes Self-Management Education (DSME).

## **V. Diabetes Prevention and Control Programs**

### *Division of Public Health*

Most diabetes programs in North Carolina fall into two categories - programs to prevent diabetes and programs to empower individuals with diabetes to manage their health. Diabetes management programs have been operational for many years. In 1997, the NC General Assembly required that Diabetes Self-Management Education (DSME) programs recognized by the American Diabetes Association and Indian Health Services be reimbursed by private insurance and Medicaid. The American Association of Diabetes Educators (AADE) began accrediting or recognizing DSME programs in the fall of 2008. North Carolina Medicaid clinical policy 1A-24, Diabetes Outpatient Self-Management Education (DSME), is currently being revised to allow providers to be reimbursed for DSME provided by AADE accredited programs. This policy already covers

assessment of the individual's specific education needs, identification of the individual's specific diabetes self-management goals, education and behavioral interventions directed toward helping the individual achieve identified self-management goals, and evaluation of the individual's attainment of identified self-management goals.

DSME is available in most counties in North Carolina and can be delivered by hospitals, local health departments, and other entities. As of 2014, the last year that data were available, a total of 34,839 persons with diabetes participated in recognized DSME. Research has shown that people who have received diabetes education are more likely to: use primary care and preventive services; take medications as prescribed; control their blood sugar, blood pressure, and cholesterol; and have lower health care costs. Despite these benefits, it is estimated that less than 60% of people with diabetes participate in recognized DSME.

As of 2016, 29 local health departments and other health organizations throughout the state participate in the NC Diabetes Education Recognition Program (DERP DiabetesSmart).

Since July of 2010:

- 8,174 patients have received diabetes self-management education through the NC DERP.
- Of these patients, 12% had Medicaid, 20% Medicare, 13% Blue Cross Blue Shield, 2% had other insurance, and 4% were self-pay or had no insurance.
- Most participants are 45-64 and 33% are 65 or older.
- The population served is 57% white or Caucasian; 26% African American; 11% Latino and 1% American Indian.
- Local Health Departments fund positions that support DERP through a mixture of local appropriations, billing, and grant funding. The state provides technical assistance and leadership for DERP DiabetesSmart sites through grant funding.

The NC Division of Aging and Adult Services (DAAS) has expanded the Stanford Diabetes Self-Management Program (DSMP), known in North Carolina as "Living Healthy with Diabetes," to all its 16 Area Agencies on Aging (AAAs) statewide.

Since April 1, 2010:

- 10,514 participants have enrolled in (7,826 participants have completed) a chronic disease self-management program, which includes Chronic Disease Self-Management (CDSMP), diabetes self-management, Tomando Control de Su Salud (Spanish CDSMP), Positive Self-Management Program for HIV/AIDS, and Chronic Pain Self-Management Program.
- For all programs, 1,001 workshops were held (average class size of 10.7 enrolled and 7.9 completers).
- DSMP represents about one-third of the total classes (372 workshops, 3,985 enrolled participants, and 2,952 completers). Some characteristics of the participants are: 60-74 years old; 57.1% white, 40.3% African American, 2.1% Hispanic/Latino; 71.27% have multiple chronic conditions.

The AAAs are required to use Administration on Aging (AoA) health promotion funding for Evidence-Based Programs (EBPs). Living Healthy is embedded into:

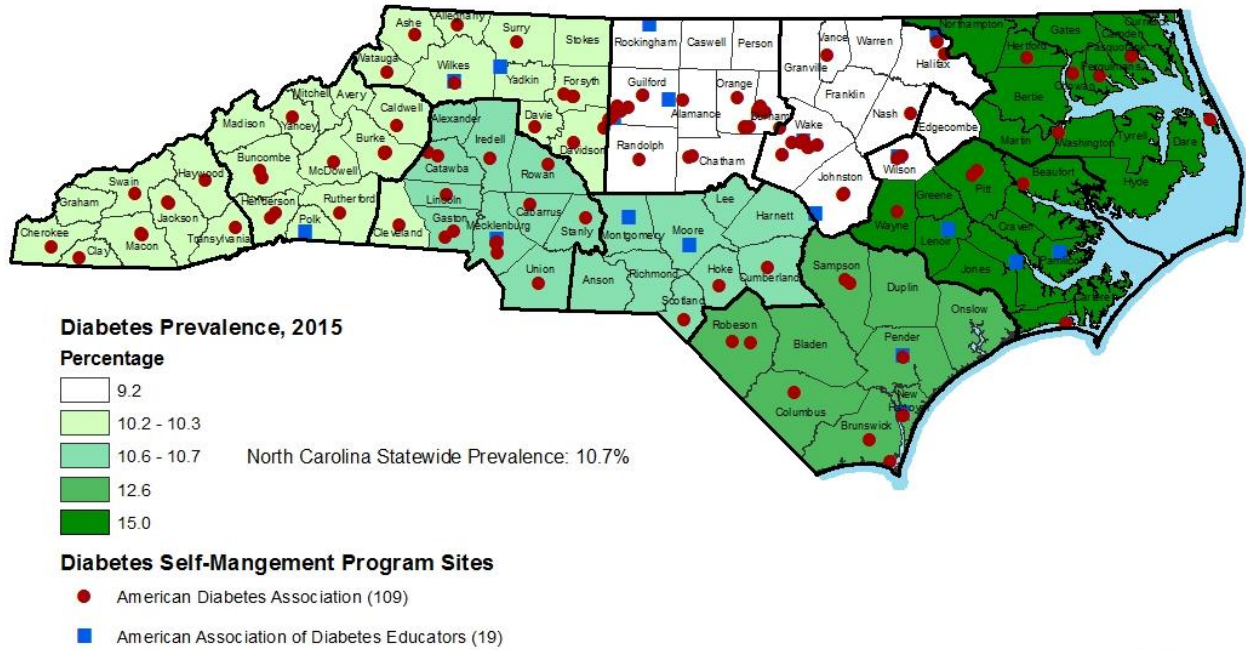
- Grant proposals (e.g., DPH's Office of Minority Health prior CFEHDI Grant)
- Programs and Policies – DAAS and DPH (e.g., NC Stroke Plan)
- Local Grants (Vidant and Kate B. Reynolds have funded projects that include CDSME programs)
- Partnerships between AAAs and
  - Local health departments
  - Primary care clinics
  - Hospitals
  - Community Care of NC networks
  - Cooperative Extension
  - AARP
  - Faith-based groups

The map attached as Figure 1 shows diabetes self-management programs in North Carolina as of 2016, layered over the diabetes burden.



Figure 1

**Diabetes Prevalence, 2015 and  
Diabetes Self-Management Program Sites  
in North Carolina**



Data Sources: American Association of Diabetes Educators, Accredited Programs in North Carolina, 2016. Accessed November 3, 2016. <http://www.diabeteseducator.org/ProfessionalResources/accred/Programs.htm#NorthCarolina>  
 American Diabetes Association Diabetes Pro Professional Resources Online. Accessed November 3, 2016. [http://professional.diabetes.org/ERP\\_List.aspx](http://professional.diabetes.org/ERP_List.aspx)  
 North Carolina State Center for Health Statistics, Behavioral Risk Factor Surveillance System, Survey Results 2015. <http://www.schs.state.nc.us/data/btrfs/2015/nc/nocr/DIABETE3.html>. Accessed November 3, 2016.

**Community & Clinical  
CONNECTIONS  
for Prevention & Health  
Branch**  
NORTH CAROLINA  
DIVISION OF PUBLIC HEALTH  
 Revised: November 3, 2016

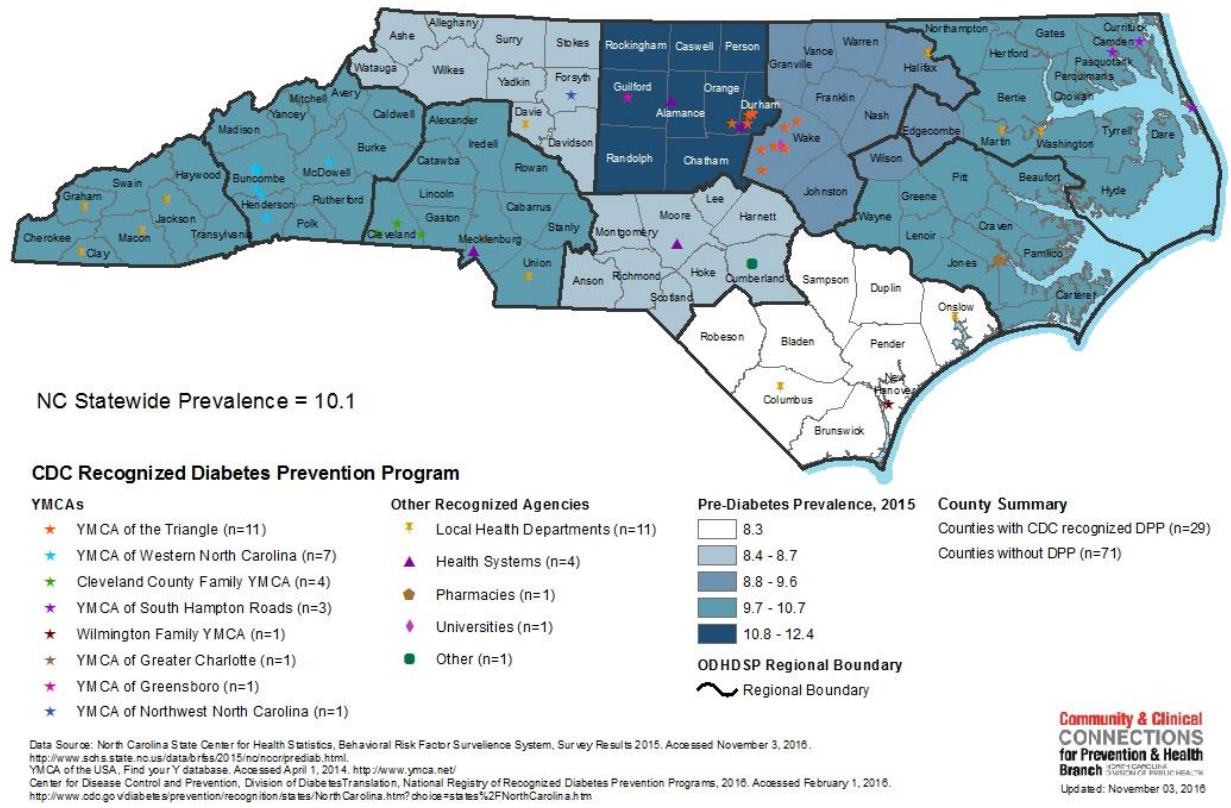
Several initiatives in different parts of North Carolina have already begun to slow the progression of prediabetes among at-risk individuals. The Centers for Disease Control and Prevention (CDC) recognizes programs that use an approved curriculum to deliver the Diabetes Prevention Program (DPP) which is a year-long intervention proven to prevent type 2 diabetes. Most programs cover 16 lesson topics during the first 6 months and an additional 6 or more lessons during the remaining 6 months of the program. The primary goals of the DPPs are to increase physical activity to at least 150 minutes per week and help individuals lose 5-7% of their body weight. As of September 2016, North Carolina had 40 sites that had applied for CDC recognition. North Carolina is also the home of an online version of DPP. Eat Smart, Move More, Prevent Diabetes is a real-time, online DPP that is delivered using synchronous, distance-education technology so participants can benefit from a live, interactive session with their instructor and other participants. Since May 2016, the Plan has been offering this program along with onsite programs as part of its benefit package for members. State Health Plan members with prediabetes can sign up for either the online or onsite Diabetes Prevention Programs through the portal [www.diabetesfreenc.com](http://www.diabetesfreenc.com). As of September 2016, over 300 Plan members had registered and/or enrolled in a Diabetes Prevention Program.

The map attached as Figure 2 shows diabetes prevention programs in North Carolina as of 2016

layered over the burden of prediabetes.

Figure 2

### NC Diabetes Prevention Programs and Prevalence of Prediabetes, 2015



### Division of Medical Assistance

Built on the core components of process improvement and patient outcome improvement, the goals of N3CN’s Diabetes Quality Improvement Initiative include screening for prevention and early diagnosis, improved glucose control, and improved blood pressure control and lipid control which can delay the onset and progression of diabetes complications. Improvements require primary care, follow-up care and education that is consistent with evidence-based practice guidelines. This initiative has been designed based on guidelines developed by the American Diabetes Association (ADA) and national models for improvement.

The core elements of the Diabetes Quality Improvement Initiative are:

1. Criteria for Screening, Prevention, Diagnosis, and Standards for Best Practice
  - Clinical Directors adopt ADA (American Diabetes Association) criteria for diagnosing diabetes and ADA Clinical Practice Recommendations to define Best Practice guidelines and quality measures.

## 2. Identify the Target Population

- Using CCNC analytics tools, the following criteria defines the population of patients with diabetes that will benefit most from Care Management and engagement with the medical home:
  - Emerging Diabetes;
  - Provider Referrals;
  - Patients with diabetes who meet CCNC Transitional Care Priority and are hospitalized;
  - Patients with diabetes who meet CCNC Priority based on medication and utilization data;
  - Patients with diabetes who have care alerts and/or gaps in care as indicated by CCNC Quality Measures and Feedback Data; and
  - Patients with diabetes with recent ED visits, identified by the CCNC Call Center as needing local Care Management services and/or linkage to their medical home.

## 3. Disease Management

- Deploy a multidisciplinary care management team to assess the needs of the diabetes target population on both a population and individual level.
- Develop and implement interventions based on assessment findings.
- Deliver interventions at the patient level through multidisciplinary care management teams.
- Deliver interventions at the population level through quality improvement activities with the medical home.
- Evaluate and utilize results to facilitate program improvement.

## 4. Define and Develop Diabetes Resources and Tools

- Develop and customize tools and education, tailored to meet the varying needs identified by providers and patients.
- Ensure medical homes have a process for referring patients to community resources specific to diabetes education and self-management (e.g., NC's Stanford Chronic Disease Management Model – Living Healthy, Quitline NC, and Diabetes Education Recognition Programs).

## 5. Enhance Partnerships with Community Resources

- Identify, collaborate, and coordinate with existing community resources.
- Seek new partnerships and/or leverage relationships to assess and plan for new resources targeted at areas of un-met need.

## 6. Performance measures to assess patient's progress include:

- Hemoglobin testing and control;
- Lipid screening and management;
- Blood pressure control;

- Smoking status and cessation advice/treatment;
- Foot exams;
- Eye exams;
- Nephropathy screening; and
- Hypertension control for patients with hypertension and diabetes.

*State Health Plan for Teachers and State Employees*

The Plan utilizes ActiveHealth Management, its population health management vendor, to administer lifestyle coaching and disease management programs for members with prediabetes and diabetes. The Plan’s diabetes program, as implemented by the population health management vendor, provides the following:

- Educates patients on the fundamental nature of prediabetes and diabetes, both type 1 and type 2.
- Evaluates and manages to significant targets in LDL, HDL cholesterol, triglycerides, blood pressure level, urine albumin/protein, and creatinine level.
- Ensures that members understand key clinical issues and self-management and monitoring strategies (e.g., control of diabetes, evaluation for complications through regular eye, teeth and foot exams).
- Evaluates and educates members on management of comorbidities and risk factors such as tobacco use, obesity, flu and pneumonia vaccination, exercise, and diet.
- Identifies gaps in care (evidence-based clinical care alerts) based on record of eye exams, HbA1c tests (glycated hemoglobin testing of average blood sugar levels over time), flu and pneumonia vaccines, lipid panels, nephropathy tests, tobacco history, Emergency Department (ED) visits, hospitalizations, and use of steroids.

In addition, the Plan contracts with DPH to provide members with preventive services such as the evidence-based tobacco cessation program QuitlineNC. QuitlineNC is available to active members, retirees (including Medicare primary), COBRA participants, and covered dependents age eighteen (18) and older. If members enroll in the multi-call program, they receive three months of free Nicotine Replacement Therapy (NRT). In January 2015, the Plan expanded NRTs to include nicotine lozenges as either a single use or a combination therapy option. Also, to comply with ACA requirements, prescription generic Bupropion SR 150mg and brand Chantix (Varenicline) are \$0 cost share (for 6 months) for members in the Enhanced 80/20 Plan and Consumer-Directed Health Plan (CDHP). As an additional tobacco cessation support tool, the Plan began offering the Text2Quit<sup>sm</sup> program to members in January 2016. This new resource includes coaching reminders, tracking, quit tips, and more. The Plan continues to actively promote the CDC’s “Tips from Former Smokers” campaign among its membership.

The Plan also offers, in conjunction with DPH and NC State University, the weight management program, Eat Smart, Move More, Weigh Less (ESMMWL). ESMMWL is offered online statewide and onsite in five counties (Wake, Orange, Mecklenburg, Guilford, and Pitt). The goal of the program is to help members adopt healthy lifestyle changes and achieve and maintain a healthy weight to reduce the risk of complications for future or unmanaged chronic conditions.

In 2016, the Plan expanded the scope of work with DPH and NC State University to include the provision of DPP, and became the 10<sup>th</sup> State in the nation to offer DPP as a covered benefit. DPP is available to active employees, Non-Medicare retirees, Medicare Primary retirees on the Traditional 70/30 Plan, and dependents above the age of 18 with Plan benefits who have a history of gestational diabetes, an HbA1c between 5.7 and 6.4, or who score 9 or above on the CDC's Prediabetes Screening Test. Eligible Plan members with prediabetes or at risk for type 2 diabetes can participate in available DPPs for only \$25, with the remainder of the program cost being covered by the Plan. Through a contract with NC State University, the Plan is able to offer an online, real-time, CDC recognized DPP in addition to onsite programs through a network of local providers. As of October 18, 2016, 331 Plan members have enrolled into the diabetes prevention programs.

The Plan also provides members enrolled in the Consumer-Directed Health Plan (CDHP) with the opportunity to participate in the Positive Pursuits component of the Health Engagement Program (HEP). This program promotes completion of medically recommended care and education for seven chronic conditions, including diabetes, incentivizing activities by providing incremental Health Reimbursement Account (HRA) funds.

## **VI. Assessment of Benefits of Diabetes Prevention and Control Programs**

### *Division of Public Health*

The Diabetes Education Recognition Program (DERP) has been operational in North Carolina since 2006, with more than 8,000 persons matriculated through the program. A 2012 data analysis showed that most participants demonstrated a reduction in average blood glucose that was statistically significant and more pronounced among people without insurance, in men and in people of Latin ethnicity. Maintaining adequate blood glucose levels will delay or prevent diabetes complications such as heart attack, kidney disease, blindness, and amputation.

DPH is currently working with 14 local health departments that offer diabetes prevention programs that are pending recognition by the Centers for Disease Control and Prevention (CDC) and should have the same effectiveness as national programs which have been proven to prevent diabetes, lower blood pressure and reduce body mass index.

### *Division of Medical Assistance*

From 2014 to 2016, diabetes quality measures in the CCNC-enrolled Medicaid population improved across the State, including cholesterol control, blood pressure control, nephropathy screenings, and HbA1c control. North Carolina outperformed the 2014 National Medicaid Health Maintenance Organization (HMO) Healthcare Effectiveness Data and Information Set (HEDIS) mean in each of these measures, with HgbA1c control better than the HEDIS 90<sup>th</sup> percentile.

### *State Health Plan for Teachers and State Employees*

Between 2014 and 2015, the Plan was able to hold the key set of clinical metrics for members with diabetes steady or demonstrate improvement for Members with diabetes. (Table I and II). Medicare

Primary members are not included in either table.

Table I. Diabetes Clinical Performance, SHP 2014, 2015

| Clinical Measures                             | 2014 Performance* | 2015 Performance* |
|---|-------------------|-------------------|
| Diabetes: HbA1c Rate                          | 89.7%             | 90.4%             |
| Diabetes: LDL Monitoring                      | 81.7%             | 81.3%             |
| Diabetes: Nephropathy Monitoring or Treatment | 71.1%             | 70.5%             |

\* Data presented is limited to claims received from the Plan's third party administrator, BCBCNC, on members managed by ActiveHealth Management (Actives, Cobra's, Pre-65 retirees).

Table II. Diabetes Related<sup>1</sup> Service Utilization, SHP 2014, 2015

| Utilization                      | Members <sup>2</sup> |       | Active Members Only |      |
|----------------------------------|----------------------|-------|---------------------|------|
|                                  | 2014                 | 2015  | 2014                | 2015 |
| Diabetes Admits per 1,000        | 24.5                 | 22.2  | 17.0                | 15.5 |
| Diabetes ER per 1,000            | 3.7                  | 3.7   | 2.9                 | 2.8  |
| Diabetes Office Visits per 1,000 | 111.8                | 110.6 | 78.4                | 77.8 |
| Diabetes Outpatient per 1,000    | 112.2                | 121.3 | 79.2                | 86.0 |

<sup>1</sup> Primary or Secondary Diabetes Diagnosis

<sup>2</sup> Includes Actives, COBRA and Pre-Medicare Retirees

## VII. Funding

### *Division of Public Health*

In State Fiscal Year 2015-16, the Chronic Disease and Injury Section received \$2,713,229 in federal funds to implement initiatives designed to prevent and manage diabetes at a population level. In 2016, the NC General Assembly appropriated \$2.3 million to the Division of Public Health to implement diabetes prevention programs that would increase ethnic minority participation in the programs.

### *Division of Medical Assistance*

The Medicaid program is jointly funded by the state and the federal government. In North Carolina, the federal government pays for 66.88% of program expenditures, known as the Federal Medicaid Assistance Percentage (FMAP). DMA does not receive targeted funding for diabetes prevention and control, but covers a range of services as discussed in this report.

### *State Health Plan for Teachers and State Employees*

The Plan receives funding from the State through premium contributions for employees and retirees. Premium dollars are not allocated by disease state or member acuity. Currently, fees paid by the Plan to medical and case/disease management vendors include comprehensive coverage for a wide array of chronic diseases.

## **VIII. Current Level of Coordination among Agencies**

A high level of coordination exists currently between the Plan and the DPH in the development and implementation of programs that impact prevention as well as the treatment and management of diabetes. The Plan currently contracts with DPH to provide the members with preventive services such as the tobacco cessation program QuitlineNC. The Plan also contracts with NC State University with DPH serving as an in-kind partner to offer the weight management program Eat Smart, Move More, Weigh Less (ESMMWL) and the Diabetes Prevention Program (DPP) to its members. Additionally, the Plan collaborates with DPH and participates on the Diabetes Advisory Council, the Asthma Advisory Group, the Tobacco Affinity Group, the Eat Smart, Move More NC Leadership Team, and the Justus-Warren Heart Disease and Stroke Prevention Task Force.

While DMA does not receive discrete state or federal funding to implement diabetes specific initiatives, DMA does draw federal financial participation (FFP) to support regional consultants who assist local health department efforts. In addition, DPH and DMA work collaboratively to promote DSME to the Medicaid population with diabetes. DERP sites coordinate with CCNC to teach classes and to refer patients to DSME. In addition, CCNC networks refer patients to Diabetes Self-Management Programs offered in local community agencies.

## **IX. Action Plans**

The legislature has charged the three state agencies with the “development of and revisions to detailed action plans for preventing and controlling diabetes and related complications. The plans shall identify proposed action steps to reduce the impact of diabetes, prediabetes, and related complications from diabetes; identify expected outcomes for each action step; and establish benchmarks for preventing and controlling diabetes.”

### **Diabetes Prevention and Control**

The Plan will continue coordinating with DPH and DMA in the development of an action plan that will:

- Continue collaboration efforts to raise awareness of prediabetes among Plan members and increase early identification and management of diabetes.
- Evaluate and enhance the benefit design of the Plan to impact the identification and improved management of prediabetes and diabetes.
- Collaborate with DPH on assessment of worksite wellness and the development of sustainable and replicable models of worksite wellness programs which brings focus on conditions such as diabetes.
- Develop and disseminate a toolkit to support worksite wellness efforts that promotes awareness, prevention, and management of diabetes within public worksites.
- Develop and disseminate the North Carolina Guide to Diabetes Prevention and Management 2015-2020, an action guide for individuals with diabetes, caregivers, communities, employers, and health care providers.
- Support and collaborate with the Diabetes Advisory Council (DAC) to promote “Patient

Engagement” in diabetes prevention, care and management, which involves identifying and addressing barriers to participation in Diabetes Self-Management Education and Diabetes Prevention Programs.

- Revise DMA clinical policy 1A-24, Diabetes Outpatient Self-Management Education (DSME), to allow for reimbursement for DSME that is recognized by the American Association of Diabetes Educators.

The Division of Public Health, in partnership with the Plan and the DMA, would like to enhance the recommendations above with the following:

- Promote third party coverage of diabetes prevention programs for individuals with prediabetes or at risk for type 2 diabetes.
- Implement a statewide focus on promoting Diabetes Self-Management Education as an evidence-based strategy among people with diabetes.
- Extend pregnancy Medicaid from 8 to 12 weeks post-partum to enable mandatory HbA1c screening for diabetes in women who have had gestational diabetes.
- Enable DERP sites to coordinate with CCNC to teach classes and to refer patients to DSME.
- Educate decision makers about the benefit of having DMA promote DSME to the Medicaid population with diabetes.

### **Expected Outcomes**

- Early identification of North Carolinians with diabetes and prediabetes.
- Increased delivery of care to those with diabetes consistent with clinical care guidelines.
- Increased referrals to, and participation in, disease management and lifestyle coaching programs.
- Reduced inpatient admissions, ED admissions, and hospital readmissions associated with diabetes and its complications.
- Increased participation of people with prediabetes in diabetes prevention programs.
- Increased management of diabetes through evidence-based programs and best practices with eventual reduction in complications such as blindness, heart attacks, and end stage renal disease.
- Early identification of women of child bearing ages to help reduce risk of diabetes among children.
- Increased sustainability for programs that assist patients with managing their disease and promote secondary prevention of complications.

### **Goals and Benchmarks**

- Reduced incidence of diabetes and prediabetes;
- Reduced inpatient admissions from a diabetes related complication;
- Reduced hospital readmissions with diabetes as an associated diagnosis;
- Reduced ED admissions with diabetes as a primary diagnosis;



- Reduced rates of diabetes-related complications;
- Increased number of people who participate in diabetes prevention programs;
- Increased number of people who participate in diabetes self-management programs;  
and
- Increased adherence to medications and recommended standards of medical care.

**X. Budget Fiscal Note**

There are no additional resources required for the action plans outlined in this report.

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- ii North Carolina - Rate of New Cases of Diagnosed Diabetes per 1000 Adults (Aged 18-76 Years), 1996-2014, Centers for Disease Control and Prevention, <https://gis.cdc.gov/grasp/diabetes/diabetesatlas.html> (last visited Sept. 27, 2016).
- iii North Carolina - Percentage of Adults (aged 18 years or older) with Diagnosed Diabetes, 1994 – 2014, Centers for Disease Control and Prevention, <http://gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html> (last visited Sept. 27, 016).
- iv 2015 BRFSS Survey Results: North Carolina, Diabetes, NC State Center for Health Statistics, <http://www.schs.state.nc.us/data/brfss/2015/nc/all/DIABETE3.html> (last visited October 7, 2016).
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- vi North Carolina Quick Facts, US Census Bureau, <https://www.census.gov/quickfacts/table/PST045215/00> (last visited Sept. 27, 2016)
- vii 2015 BRFSS Survey Results: North Carolina, Diabetes, NC State Center for Health Statistics, <http://www.schs.state.nc.us/data/brfss/2015/nc/all/DIABETE3.html> (last visited October 7, 2016).
- viii Laura A. Young et. al., Diabetes in North Carolina: Descriptive Epidemiology and Meaningful Use of Electronic Health Records, 72 NC Medical Journal. 383 (2011).
- ix 2015 BRFSS Survey Results: North Carolina, Diabetes-African Americans, NC State Center for Health Statistics, <http://www.schs.state.nc.us/data/brfss/2015/nc/afam/DIABETE3.html> (last visited October 7, 2016).(last visited October 7, 2016).
- x Leading Causes of Death, North Carolina Residents, 2014, NC State Center for Health Statistics, Volume 2, 2015, [http://www.schs.state.nc.us/data/vital/lcd/2014/pdf/Vol2\\_2014\\_PRT.pdf](http://www.schs.state.nc.us/data/vital/lcd/2014/pdf/Vol2_2014_PRT.pdf) (last visited Sept. 27, 2016).
- xi 2015 BRFSS Survey Results: North Carolina, Diabetes, NC State Center for Health Statistics, <http://www.schs.state.nc.us/data/brfss/2015/nc/all/DIABETE3.html> (last visited October 7, 2016).
- xii Id.
- xiii Id.
- xiv Id.
- xv Id.
- xvi American Diabetes Association, Economic Costs of Diabetes in the U.S. in 2012, 36 Diabetes Care 1033, 1033 (2013), <http://care.diabetesjournals.org/content/early/2013/03/05/dc12-2625.full.pdf+html> (last visited March 10, 2014).
- xvii The Cost of Diabetes, AMERICAN DIABETES ASSOCIATION, <http://www.diabetes.org/advocacy/news-events/cost-of-diabetes.html>.
- xviii Id.
- xix Id.
- xx American Diabetes Association, Economic Costs of Diabetes in the U.S. in 2012, 36 Diabetes Care 1033, 1038 (2013), <http://care.diabetesjournals.org/content/early/2013/03/05/dc12-2625.full.pdf+html> (last visited March 10, 2014).
- xxi Id.
- xxii Governor Pat McCrory, Governor Pat McCrory Signs Fiscally Responsible Budget (2013), <http://www.governor.state.nc.us/newsroom/press-releases/20130726/governor-pat-mccrory-signs-fiscally-responsible-budget>.
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