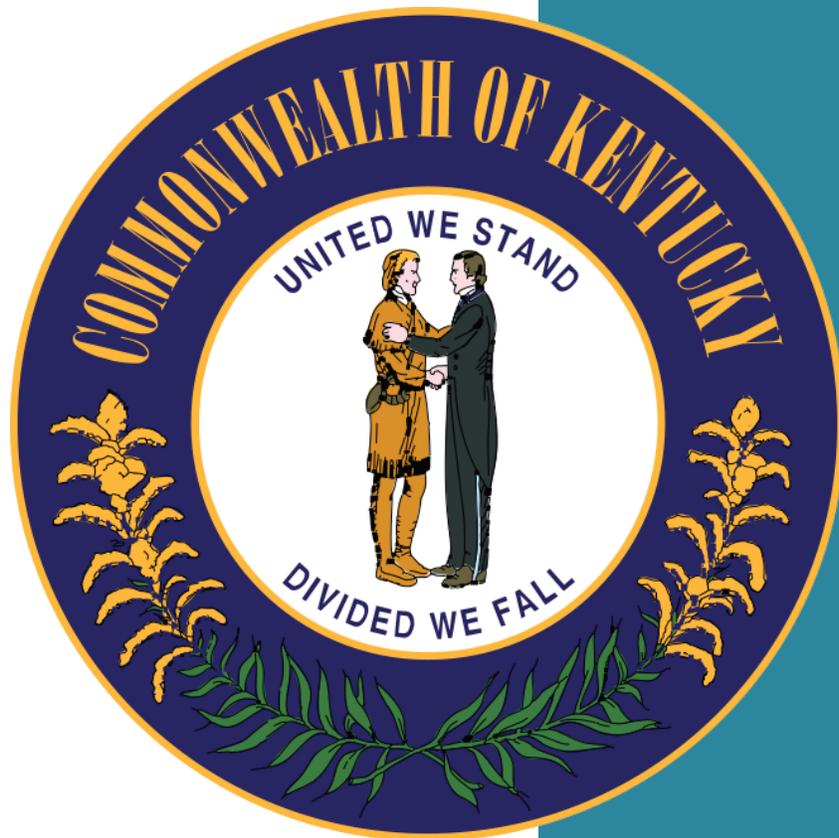


# 2019

## Kentucky Diabetes Report



The Cabinet for Health and Family Services

and the Personnel Cabinet present:

A report to the Legislative Research

Commission in fulfillment of

Kentucky Revised Statute 211.752

4/18/2019



# 2019 Kentucky Diabetes Report

---

DEPARTMENT FOR MEDICAID SERVICES  
DEPARTMENT FOR PUBLIC HEALTH  
OFFICE of HEALTH DATA and ANALYTICS  
*On behalf of the*  
CABINET FOR HEALTH AND FAMILY SERVICES

DEPARTMENT OF EMPLOYEE INSURANCE  
*On behalf of the*  
PERSONNEL CABINET

## ***For More Information***

To access or download copies of this report, visit  
<https://chfs.ky.gov/agencies/dph/dpqi/cdpb/Pages/diabetes.aspx>.

To request print copies of this report, please call the Kentucky Diabetes Prevention and Control Program at (502) 564-7996.

For more information about the legislation requiring the Diabetes Report, visit  
<https://legislature.ky.gov>.

## ***Suggested Citation***

Kentucky Cabinet for Health and Family Services and Kentucky Personnel Cabinet. *The 2019 Diabetes Report*. Frankfort, KY: KY Cabinet for Health and Family Services, Department for Medicaid Services, Department for Public Health, Office of Health Data and Analytics, and KY Personnel Cabinet, Department of Employee Insurance, 2019.



# Message from the Health and Family Services Cabinet and the Personnel Cabinet

---

This 2019 Kentucky Diabetes Report is the fourth issue of a collaboration directed by KRS 211.752, that requires the Cabinet for Health and Family Services (Department for Medicaid Services, Department for Public Health, Office of Health Data and Analytics-formerly the Office of Health Policy) and the Personnel Cabinet (Kentucky Employees' Health Plan) to compile an account of the status of diabetes in Kentucky. In this report, we utilized a new format, which includes fact sheets, an infographic, and links to detailed information, with the goal of making this resource more user-friendly. Highlighted in this report, you will find successes of the diabetes value benefit and the *Healthy Living with Diabetes* program.

Diabetes is a complex, chronic disease that affects the body in multiple ways. It can cause heart disease, stroke, blindness, kidney damage, lower extremity amputations, gum disease and pregnancy-related effects on the mother and baby. Kentucky has a long history of working collaboratively to decrease the burden of diabetes and now can even prevent the onset of this disease. Despite these efforts, in Kentucky, as in most other states, the prevalence of diabetes continues to climb, and in 2015 and 2016, Kentucky saw a significant increase in the diabetes mortality rate.

Preventing new cases, screening to find cases early, offering evidence-based services to those with diabetes, assuring a workforce to handle this load and improving data to track outcomes are goals recommended by this report. Kentucky partners – health care providers, hospital systems, public and private health plans, persons with diabetes, public health agencies, technology resources, communities and more, must continue to work together to develop innovative approaches and strengthen evidence-based strategies to offer Kentuckians a life free of diabetes or the opportunity to live with diabetes in a manner where they are in control of their disease.

We hope you share this report to foster new energy among collaborators and to engage more stakeholders in this effort to improve the health of the commonwealth.

Sincerely,



Adam Meier  
Cabinet for Health and Family Services



Thomas B. Stephens  
Personnel Cabinet

# Executive Summary

---

## Introduction

KRS 211.752 requires that in odd numbered years, the Department for Public Health, the Department for Medicaid Services (DMS), the Office of Health Policy (now the Office of Health Data and Analytics-OHDA), and the Personnel Cabinet – Kentucky Employees’ Health Plan (KEHP), collaborate in developing a report addressing the impact of diabetes on the commonwealth and plans to address the epidemic.

## Goals and Actions for Addressing Diabetes

The committee, listed in **Attachment 2**, has identified specific goals with related actions to strengthen diabetes prevention, minimize diabetes complications, and improve our ability to have reliable data to track and understand the scope of this epidemic. These goals/actions are consistent with current standards of care and scientific evidence, national and state guidelines/initiatives, existing chronic disease state planning efforts, and federal grant guidance from the Centers for Disease Control and Prevention (CDC). Goals include:

1. Prevent new cases of type 2 diabetes by promoting participation in the National Diabetes Prevention Program (DPP).
2. Increase appropriate screening for prediabetes, diabetes and gestational diabetes by promoting evidence-based screening guidelines.
3. Ensure that people with diabetes have access to evidence-based services, including Diabetes Self-Management Education and Support (DSMES), and/or case/disease management, which improve knowledge, skills, and behaviors necessary to manage their disease, and improve outcomes.
4. Assure a sustainable diabetes prevention and control public health infrastructure and workforce at the state and local level.
5. Improve capacity for, and use of, diabetes and chronic disease surveillance systems and Health Information Technology (HIT) systems needed to determine the extent and impact of diabetes on the commonwealth.

In addition, the commonwealth must also take actions to impact certain social determinants of health and equity. Social determinants of health are factors that not only negatively affect the ability of certain population groups to access health care, but also seriously limit their ability to live a healthy lifestyle and make lifestyle changes. These include education level, income and the ability to earn a living wage, lack of social support, chronic stress, racial discrimination, transportation access, adequate housing, access to affordable and nutritious food, and access to safe spaces for physical activity. Affecting these social determinants of health will require efforts by a wide variety of community, business, and political leaders across the commonwealth.

## The Scope of Diabetes in Kentucky

### Prevalence:

Diabetes is a common disease in Kentucky and the nation, with type 2 diabetes being the most common form.

### Prevalence in adults:

- The prevalence of diabetes among Kentucky adults has increased from 6.5% (240,000 adults) in 2000 to 12.9% (442,480 Kentucky adults) in 2017.
- The prevalence of diabetes in Appalachia is 17.0% and compared to 11.2% in non-Appalachia.
- Among the 204,379 adults covered by the Kentucky Employees' Health Plan (KEHP) in 2017, 8.4% (17,094) have been diagnosed with diabetes based on medical claims data.
- For 2017, 16.2%, or 165,110 adult Medicaid members had a diagnosis of diabetes on at least one claim.
- Under Medicaid expansion, diabetes prevalence in 2017 was similar to 2013; however, the expansion resulted in a 2.2 fold increase in the number of adult Medicaid members with diabetes between 2013 and 2017.

### Prevalence in youth:

- During 2017, 3,074 Medicaid members under the age of 20 had a diabetes diagnosis indicated on at least one claim.
- There are 287 youth aged 17 and younger with diabetes covered by KEHP.

### Prevalence of diabetes during pregnancy:

- 5.6% of all Kentucky resident women who gave birth in a Kentucky hospital had gestational diabetes at delivery.
- Gestational diabetes was diagnosed in 10% of Medicaid beneficiaries who gave birth in 2017.
- Gestational diabetes was diagnosed in 5.8% of women covered by KEHP who gave birth in 2017.

### Mortality:

- In 2016, Kentucky had the 4<sup>th</sup> highest mortality rate due to diabetes in the nation. This is an increase in ranking from 14<sup>th</sup> in 2014.
- Since 2001, diabetes mortality rates have increased slightly for men, but decreased somewhat for women.
- Mortality rates for African American Kentuckians are substantially higher than for white Kentuckians, but show a significant decrease over time.
- For 2016, four out of the five Area Development Districts (ADDs) with the highest diabetes death rate are in eastern Kentucky; however, the highest diabetes death rate occurred in the Pennyriple Region of Western Kentucky.

### Hospitalization and Emergency Department Visits:

- In 2017, diabetes was the primary diagnosis for 10,470 hospitalizations with an average length of stay (ALOS) of 5 days, average charge of \$35,141 and total charges of \$367,827,153.
- In 2017, there were 16,167 Emergency Department visits for diabetes, which resulted in billed charges of approximately \$74 million.

### **Diabetes is Costly:**

- For Medicaid, diabetes has the third highest overall cost of several common chronic diseases at almost \$117 million dollars for all claims, with the exception of prescription costs.
- For KEHP, diabetes is one of the most costly chronic conditions for both active and early retirees at almost \$174 million in combined medical and prescription drug costs in 2017.

## **Addressing Diabetes in Kentucky**

### **Applying the Evidence Base to Improve Diabetes Outcomes:**

One key to prevention of type 2 diabetes and diabetes complications is for individuals and health care practitioners to follow evidence-based guidelines. They include screening and diagnosing diabetes as early as possible, providing good medical care, and supporting lifestyle change.

Actions designed to support the availability and sustainability of CDC-Recognized Diabetes Prevention Programs (DPP) and accredited/recognized Diabetes Self-Management Education and Support (DSMES) programs, health care provider referral of patients to these programs, and program enrollment are primary recommendations of this report.

### **Current Diabetes Prevention and Control Efforts:**

The Department for Public Health (DPH), Department for Medicaid Services (DMS), the Kentucky Employees' Health Plan (KEHP), and external partners support a wide range of activities designed to improve diabetes prevention and control in their respective populations – as well as the state as a whole.

Examples include:

- Providing access to care for prevention, early detection, and treatment of diabetes.
- Providing health risk assessments to health plan members to identify those at risk for diabetes.
- Offering wellness programs to health plan members to increase physical activity levels and improve dietary choices.
- Providing Disease Management (DM) and Case Management (CM) programs for health plan members with complications of diabetes and/or with multiple chronic conditions.
- Providing education about diabetes prevention and control to the public and to health plan members.
- Offering training to health care providers to provide DSMES education programs.
- Educating health care providers about opportunities to refer patients with diabetes to DSMES programs.
- Providing statewide leadership in the development of a network of sites providing DPP.
- Taking leadership in providing professional education programs on diabetes for health care providers.
- Supporting development of referral mechanisms to connect people with or at risk for diabetes to appropriate care.
- Convening state partners to coordinate diabetes prevention and control activities and carry out evidence-based activities.
- Collection, analysis, and dissemination of data to track diabetes prevalence, mortality, and outcomes.

Successes related to these efforts include growth in access and utilization of the National Diabetes Prevention Program (DPP) and growth in access to accredited/recognized Diabetes Self-Management Education and Support (DSMES) programs. In addition, KEHP initiated a “Value-Based Benefit,” which provides medication and supplies for people with diabetes at reduced cost, with no deductible, which has increased medication adherence, decreased hospitalizations and emergency department (ED) visits, and kept overall costs stable.

## Measuring Progress

The partners involved in this report have agreed to establish comparable benchmarks to measure progress in diabetes management in the state. Collectively, these data provide a picture of clinical care and management, and access to self-management education and support, and lifestyle change programs across the commonwealth.

- Medicaid requires the Medicaid Managed Care Organizations (MCO) to report Healthcare Effectiveness Data and Information Set (HEDIS) diabetes measures.
- KEHP reports “HEDIS-Like” measures on diabetes.
- DPH reports measures on self-reported diabetes clinical benchmarks from the Kentucky Behavioral Risk Factor Survey (KyBRFS).
- The OHDA reports diabetes specific Prevention Quality Indicators (PQIs) as defined and instituted by the Agency for Healthcare Research and Quality (AHRQ).
- Data on access to, and use of, DPP and DSMES programs.

As the burden of diabetes in Kentucky continues to grow, we must increase our efforts to make changes in our communities, health care systems, and personal behaviors in order to influence the growing epidemic. Now is the time for the commonwealth to act on the information in this report and move forward with making changes to improve diabetes prevention and control for Kentuckians. Ultimately, this will improve the quality of life and promote better health outcomes for all Kentuckians.

# Table of Contents

- Executive Summary ..... 1
  - Introduction ..... 1
  - Goals and Actions for Addressing Diabetes ..... 1
  - The Scope of Diabetes in Kentucky ..... 2
  - Addressing Diabetes in Kentucky ..... 3
  - Measuring Progress..... 4
- Introduction ..... 7
- Section 1 – Goals and Actions to Improve Diabetes Prevention and Outcomes ..... 8
  - Goals and Action Items ..... 9
  - Recommendations for the Legislature ..... 15
- Section 2: The Scope of Diabetes in Kentucky ..... 16
  - What is the prevalence of prediabetes among adults in Kentucky?..... 17
  - What portion of the adult population were screened for diabetes/prediabetes? ..... 18
  - What is the prevalence of diabetes among Kentucky adults? ..... 19
  - What is the prevalence of diabetes among the KEHP population? ..... 20
  - What is the prevalence of diabetes among Medicaid beneficiaries? ..... 22
  - What is the trend in diabetes prevalence for Medicaid beneficiaries? ..... 24
  - What is the prevalence of Gestational Diabetes Mellitus for mothers with live births in Kentucky? ..... 25
  - How does diabetes affect the type of delivery for Kentucky mothers? ..... 26
  - How does diabetes affect the type of delivery for Kentucky Medicaid mothers?..... 27
  - How does diabetes affect the type of delivery for KEHP mothers?..... 28
  - What is the death rate due to diabetes in Kentucky?..... 29
  - Geographic Variation in Diabetes Mortality ..... 30
- How many hospitalizations occur due to diabetes? ..... 31
  - Diabetes Hospitalizations by Area Development District (ADD)..... 32
  - How many Emergency Department visits are due to diabetes?..... 33
  - What other common chronic conditions and risk factors for complications are seen among people with diabetes? ..... 34
  - What are the hospitalization charges associated with common complications of diabetes? ..... 35
  - How do charges for diabetes hospitalizations compare to the charges for hospitalization due to other common chronic diseases? ..... 35

What is the cost of diabetes and other common chronic diseases in the Medicaid program? ..... 36

What is the cost of diabetes and other common chronic diseases for KEHP? ..... 37

Cost of diabetes and other common chronic diseases among youth covered by KEHP ..... 38

Section 3 – Addressing Diabetes in Kentucky ..... 39

    Prevention of Diabetes..... 40

    Management of Diabetes..... 40

    Current Diabetes Prevention and Control Efforts ..... 42

Section 4 – Measuring Progress ..... 52

    Medicaid – HEDIS Measures ..... 53

    KEHP – HEDIS-Like Measures ..... 54

    Department for Public Health HEDIS-Like Measures ..... 54

    Participation in DPP and DSMES Services ..... 54

Attachments ..... 56

    Attachment 1 – Legislation - KRS 211.751-753 ..... 57

    Attachment 2 – Committee Members ..... 59

    Attachment 3 - Infographic ..... 60

    Attachment 4 – Medicaid Adults, Diabetes prevalence by county, 2017 ..... 61

    Attachment 5 – Medicaid Children, Diabetes prevalence by county, 2017..... 62

    Attachment 6 –Maternal Delivery and Non-Delivery Hospital Stays by Race and Diabetes Type..... 63

    Attachment 7 – Vaginal and C-Section Deliveries by Race and Diabetes Type..... 64

    Attachment 8 - 2016 Kentucky Age Adjusted Diabetes Mortality per 100,000 and Ranking of Diabetes as Leading Cause of Death by Disease: by Gender and Race ..... 65

    Attachment 9 - Emergency Department Visits for Diabetes, by Area Development District and Race ..... 66

    Attachment 10 - Number and Crude Rate of Hospitalization for Diabetes as Primary Cause (Kentucky residents only; 2017)..... 67

    Attachment 11 - Number and Crude Rate of Hospitalization for Diabetes as Any Cause (Kentucky residents only; 2017)..... 68

    Acronym List..... 69

# Introduction

---

The *2019 Diabetes Report* is a requirement of KRS 211.752 (see **Attachment 1**). It requires that in odd numbered years, the Department for Public Health (DPH), the Department for Medicaid Services (DMS), the Office of Health Policy (now the Office of Health Data and Analytics-OHDA), and the Personnel Cabinet (KEHP), collaborate in developing a report on the impact of diabetes on the commonwealth as well as a plan and recommendations to address the epidemic. Although not specifically named in the legislation, the committee chose to include the Office of Health Equity (OHE), housed in DPH, in this process to ensure attention to the Social Determinants of Health that impact hard to reach and vulnerable populations.

This fourth report was developed by a committee with representatives from each of the entities named above. A list of these committee members is included in **Attachment 2**. The committee sent out a brief survey to key stakeholders to collect input for this report. Based on the comments received, this edition of the report has been reorganized and streamlined to be more readable. Some of these changes include:

- Placing goals/plans at the beginning of the report.
- Making activities/plans less broad and more measureable.
- Presenting information on what each agency is currently doing to address diabetes in a more concise table format.
- Presenting data on the scope and impact of diabetes as fact sheets.

While the information in this report discusses activities/plans specific to state government agencies, it is expected that policy makers, communities, professional organizations, and anyone interested in the health of Kentuckians will use this information to improve diabetes outcomes in the commonwealth.

# Section 1 – Goals and Actions to Improve Diabetes Prevention and Outcomes

---

The committee has developed a plan based on five goals with objectives and actions for prevention of new cases of diabetes and improving outcomes for those already diagnosed with diabetes. Each area includes at least one outcome measure. The planned actions are based on accepted standards of practice and scientific evidence for improving diabetes prevention and control outcomes for those with diabetes. The plan is also aligned with national and state health improvement efforts such as Healthy People 2020, and federal grant guidance from Centers for Disease Prevention and Control (CDC).

Please note that these goals are NOT listed in order of priority; rather, they are listed in the logical sequence of prevention, diagnosis, and improved clinical and self-management along with recommendations for infrastructure, training, and health information technology capabilities necessary to address the diabetes epidemic.

- 1) Prevent new cases of type 2 diabetes by promoting participation in the National Diabetes Prevention Program (DPP).
- 2) Increase appropriate screening for prediabetes, diabetes and gestational diabetes by promoting evidence-based screening guidelines.
- 3) Ensure that people with diabetes have access to evidence-based services and education, including DSMES and case/disease management, which improve knowledge, skills, and behaviors necessary to manage their disease, and improve outcomes.
- 4) Assure a sustainable diabetes prevention and control public health infrastructure and workforce at the state and local level.
- 5) Improve capabilities and use of diabetes and chronic disease surveillance systems and Health Information Technology (HIT) systems needed to determine the extent and impact of diabetes on the commonwealth.

## Goals and Action Items

The goals and actions listed in the tables below reflect plans for the next 2 years – between the release of this report and the next report due in January 2021. The objectives have been made as measurable when possible. In addition, consistent with the legislation, “recommendations” for the legislature have been included.

| Goal 1: Prevent new cases of type 2 diabetes by promoting participation in the National Diabetes Prevention Program (DPP)   |  |
|---|--|
| Objective   | Actions  |
| A. Maintain at least 54 CDC <b>Recognized DPP organizations</b> in Kentucky.  | <ol style="list-style-type: none"> <li>1) DPH will provide financial and technical support to train DPP lifestyle coaches</li> <li>2) DPH will provide technical assistance and support to lifestyle coaches/organizations (webinars, steering committee meetings, regular e-mail updates)</li> <li>3) DPH will track the number of DPP programs in Kentucky and report this information at least quarterly via websites</li> </ol>  |
| B. Increase <b>awareness of prediabetes and DPP</b> effectiveness among the public and among health care professionals.   | <ol style="list-style-type: none"> <li>1) DPH, KEHP, DMS, and others will collaborate to implement communication and marketing strategies for DPP</li> <li>2) DPH will work with Appalshop and other partners in Eastern Kentucky to develop and implement messaging regarding prediabetes and DPP specific to the Appalachian population</li> <li>3) DPH will promote the CDC and American Medical Association (AMA) “Prevent Diabetes Stat” toolkit to providers</li> </ol>  |
| C. Increase <b>DPP participation</b> in: <ul style="list-style-type: none"> <li>• Kentucky overall from 3,992 (cumulative) to - 4,032</li> <li>• The eligible KEHP population from 344 (2017) to 400</li> </ul> | <ol style="list-style-type: none"> <li>1) KEHP will continue to identify members at risk for prediabetes and provide outreach to them regarding the availability of DPP</li> <li>2) KEHP will track outreach/recruitment efforts and participation</li> <li>3) KEHP will continue to offer Go365 points for DPP participation</li> <li>4) DPH will maintain the online <a href="#">Kentucky Diabetes Resource Directory</a> listing available DPP programs and new classes</li> <li>5) DMS will evaluate Managed Care Organization (MCO) DPP pilots to assist in formalizing a DMS DPP</li> </ol>  |
| D. Improve DPP <b>referral mechanisms</b> from health care providers.   | <ol style="list-style-type: none"> <li>1) DPH will work with state and national partners to pilot an electronic bi-directional referral system for DPP</li> </ol>  |
| E. Improve <b>Reimbursement/Sustainability</b> of DPP programs.   | <ol style="list-style-type: none"> <li>1) DMS and DPH will continue to participate in the Medicaid/MCO workgroup formed to define a pathway for reimbursement of DPP by Medicaid</li> <li>2) DPH will participate in, or facilitate, workgroups for employers, Medicare, and private insurers to improve coverage for DPP</li> <li>3) DMS will evaluate the addition of DPP to the “My Rewards” incentive program for Medicaid members in the Kentucky Health (1115 Waiver)</li> <li>4) DMS and DPH will participate in a CDC initiative known as 6 18, focusing on high burden health conditions – including diabetes prevention, with evidence-based interventions</li> <li>5) DMS will work with at least one MCO to pilot a DPP program</li> <li>6) DMS will evaluate adding coverage of DPP</li> <li>7) KEHP will continue to cover DPP for its eligible members</li> </ol> |

| <b>Goal 2: Increase appropriate screening for prediabetes, diabetes and gestational diabetes by promoting evidence-based screening guidelines.</b> |   |
|--|---|
| <b>Objective</b>   | <b>Actions</b>  |
| A. Increase KEHP member participation in <b>biometric screening</b> (includes blood glucose) to 35%.   | 1) KEHP will continue to provide/promote biometric screenings (including blood glucose) for all health plan participants  |
| B. Develop a method to calculate <b>baseline diabetes screening rates</b> from claims data.  | 1) DPH, DMS, OHDA, and KEHP will collaborate to improve the use of claims data to report screening rates for prediabetes and diabetes   |
| C. Develop a method to calculate <b>baseline gestational diabetes screening rates</b> from claims data.  | 1) DPH, DMS, OHDA, and KEHP will collaborate to improve the use of claims data to report screening rates for gestational diabetes<br>2) KEHP will establish a method to track gestational diabetes screening rates using claims data and calculate a baseline   |
| D. Promote and provide information on <b>evidence-based screening and guidelines.</b>  | 1) OHE will work with health care providers to increase the number providing evidence-based screening among populations impacted by health disparities<br>2) DMS will work with MCOs to promote screening for gestational diabetes with inclusion in care management programs<br>3) KEHP will continue to work with their medical third party administrator so that Anthem’s Personal Nurse Consultants (PNCs) continue to promote screening for gestational diabetes and prediabetes<br>4) DPH will promote the CDC/AMA “Prevent Diabetes Stat” resource to assist providers with approaches to screening, billing, and referral for prediabetes<br>5) Promote utilization of diagnosis code for prediabetes |

**Goal 3: Ensure that people with diabetes have access to evidence-based services, including DSMES and Case/Disease Management, which improve knowledge, skills, and behaviors necessary to manage their disease, and improve outcomes.**

| Objective  | Actions  |
|--|--|
| <p>A. Increase the <b>number of Accredited/Recognized DSMES providers</b> in Kentucky from 89 to 93.</p>   | <ol style="list-style-type: none"> <li>1) KDPCP and OHE will provide training and technical support to local health departments (LHDs) to provide the nationally accredited DSMES program, <i>Healthy Living With Diabetes</i></li> <li>2) DPH will produce, identify, and provide curricula, tools, and materials for delivery of DSMES services</li> <li>3) DPH and OHE will provide technical assistance to non-health department DSMES providers/programs</li> <li>4) OHE will work with DPH and others to increase the number of providers serving disparate populations</li> </ol>   |
| <p>B. <b>Increase participation</b> in Accredited/Recognized DSMES programs:</p> <ul style="list-style-type: none"> <li>• at least 445 KEHP eligible members will participate in a DSMES program</li> <li>• increase the number of MCO members who participate in DSMES by 10%</li> <li>• increase participation statewide from 9,542 to 10,000</li> </ul> | <ol style="list-style-type: none"> <li>1) KEHP will offer Go365 wellness points for DSME participation</li> <li>2) DMS will explore the possibility of awarding “My Rewards” dollars to Medicaid members in Kentucky Health (1115 waiver) for participation in DSMES programs</li> <li>3) KEHP and DMS will explore removal of co-pays and co-insurance (if any) related to DSMES</li> <li>4) DPH will pilot telehealth DSMES services in at least 2 health department areas serving disparate populations</li> <li>5) DPH will maintain the <a href="#">Kentucky Diabetes Resource Directory</a> including listings of DSMES programs statewide</li> <li>6) KEHP’s wellness vendor, Go365, will provide DSMES information at biometric screening events</li> <li>7) DMS will work with MCOs to incorporate DSMES into the MCO disease/case management (CM/DM) and quality programs</li> <li>8) OHE will work with providers to make referrals</li> <li>9) KEHP’s medical third party administrator will work with disease/case managers to make referrals to DSMES</li> </ol> |
| <p>C. Improve <b>referral mechanisms</b> for DSMES.</p>  | <ol style="list-style-type: none"> <li>1) DPH will work with state and national partners to pilot an electronic bi-directional referral system for DSMES</li> <li>2) DMS will provide DSMES information to the MCO quality programs</li> <li>3) DPH will provide information and tools to providers regarding the “Four critical times” to refer for DSMES</li> </ol>  |
| <p>D. Increase the number of KEHP and DMS members who participate in <b>diabetes disease management</b> by 10%.</p>  | <ol style="list-style-type: none"> <li>1) KEHP medical third party administrator and DMS will continue to offer diabetes disease management services and DSMES referrals</li> <li>2) DMS will evaluate MCO Diabetes CM/DM program outcomes</li> </ol>  |
| <p>E. Support DSMES program <b>sustainability</b>.</p>   | <ol style="list-style-type: none"> <li>1) DMS and KEHP will continue to provide coverage for DSMES</li> <li>2) DMS and DPH will work to better define the current reimbursement mechanism across MCOs</li> </ol>   |
| <p>F. Increase <b>optimally adherent</b> KEHP members by 10% in 2019 and 10% in 2020.</p>  | <ol style="list-style-type: none"> <li>1) KEHP will continue to offer a diabetes value benefit to members with reduced copays and no deductible for diabetes medications and supplies</li> </ol>   |

| <b>Goal 4: Assure a sustainable diabetes prevention and control public health infrastructure and workforce at the state and local level.</b>   |  |
|--|--|
| <b>Objective</b>   | <b>Actions</b>   |
| A. Administer the delivery of <b>population-based diabetes prevention and control services.</b>  | <ol style="list-style-type: none"> <li>1) DPH will provide funds, guidance, technical assistance, and support to LHDs for diabetes prevention and control efforts</li> <li>2) DPH will provide oversight, monitoring, and reporting regarding state and local public health activities and funds</li> <li>3) DPH will administer and implement the CDC Cooperative Agreements to improve diabetes outcomes</li> </ol>  |
| B. Collect, analyze and distribute <b>diabetes-related data</b> to stakeholders at least annually.   | <ol style="list-style-type: none"> <li>1) DPH will collect and/or analyze diabetes-related data from key data sources</li> <li>2) DPH will disseminate data to partners via fact sheets, infographics, documents, presentations, and publications</li> <li>3) DPH will work with LHDs to complete an annual diabetes resources assessment</li> </ol>   |
| C. Inform, educate, and empower people about <b>diabetes-related health issues utilizing two evidence-based interventions.</b>                 | <ol style="list-style-type: none"> <li>1) DPH will provide public awareness curricula, materials, and resources across multiple venues</li> <li>2) DPH and OHE will provide/facilitate/promote evidence-based behavior change education, specifically: <ul style="list-style-type: none"> <li>• Diabetes Self-Management Education and Support (DSMES) – see Goal #3</li> <li>• National Diabetes Prevention Program (DPP) – see Goal #1</li> </ul> </li> <li>3) DPH will support innovative efforts such as telehealth for DSMES and DPP delivery</li> </ol>  |
| D. Mobilize <b>at least 25 new and existing state and local community partnerships</b> to identify and address diabetes-related health issues. | <ol style="list-style-type: none"> <li>1) DPH will provide guidance and support for community coalitions with a focus on diabetes prevention and control (currently 45 coalitions). Current guidance emphasizes the improved access and participation in DSMES and National DPP programs.</li> <li>2) DPH will facilitate/participate in the state coalition – Kentucky Diabetes Network (KDN) and organizations interested in diabetes prevention, control, and quality improvement (Kentucky Regional Extension Center, the Heart Disease and Stroke Prevention Task Force, employer groups, obesity prevention and physical activity partners, etc.)</li> </ol> |
| E. Develop <b>policies and plans</b> that support individual and community diabetes-related health efforts.                                    | <ol style="list-style-type: none"> <li>1) DPH will partner with KDN, local coalitions, purchasers, payers, large employers, health systems, and other partners to develop and implement diabetes-related plans and policies particularly in the area of reimbursement for DPP, and diabetes quality improvement at the practice level</li> <li>2) DPH and DMS will implement the national CDC 6   18 plan</li> </ol>   |
| F. Link people to needed <b>diabetes-related services through at least one resource.</b>   | <ol style="list-style-type: none"> <li>1) DPH will maintain the online <a href="#">Kentucky Diabetes Resource Directory</a></li> <li>2) Routinely update listings (DSMES, DPP programs, Medical Nutrition Therapy providers, coalitions, etc.)</li> <li>3) Conduct a pilot project regarding electronic referrals for DSMES and DPP</li> <li>4) Promote the <i>Directory</i> to people with diabetes, communities, stakeholders, diabetes educators, providers and more</li> </ol>   |

|   |  |
|---|--|
| <p>G. Assure a <b>competent public health diabetes workforce utilizing at least three mechanisms.</b></p> | <ol style="list-style-type: none"> <li>1) DPH will provide continuing education opportunities for public health and state diabetes educators to assist with maintenance of diabetes educator licensure and certification (LDE, CDE)</li> <li>2) DPH and OHE will facilitate/provide educational opportunities for health care professionals, allied health professionals, community health workers and others in providing diabetes education/management services</li> <li>3) DPH will distribute regular strategic communications (newsletter, e-mail updates, etc.)</li> </ol> |
| <p>H. Evaluate <b>reach and effectiveness of interventions.</b></p>                                       | <ol style="list-style-type: none"> <li>1) DPH will monitor clinical and behavioral outcomes related to their accredited DSMES program, <i>Healthy Living with Diabetes</i></li> <li>2) KDPCP will contract with professional evaluators for outcome evaluation</li> <li>3) KDPCP will continue to strengthen its monitoring of the reach and outcome of interventions with external evaluator</li> <li>4) KDPPD will work with health system partners to improve the health of their patient population with diabetes.</li> </ol>  |

**Goal 5: Improve the capacity for, and use of, diabetes and chronic disease surveillance systems and Health Information Technology (HIT) systems needed to determine the extent and impact of diabetes on the commonwealth.**

| Objectives   | Actions   |
|--|---|
| <p>A. Improve understanding of diabetes health disparities based on <b>Social Determinants of Health (SDOH)</b> including race, ethnicity, income, education and geographic differences.</p> | <ol style="list-style-type: none"> <li>1) If new funding is approved, increase the sample size of the Kentucky Behavioral Risk Survey</li> <li>2) All agencies will stratify data by demographics that give a comprehensive view of the burden of diabetes among vulnerable populations</li> </ol>  |
| <p>B. Optimize <b>the use of claims data</b> (now including identifiers) to describe the diabetes epidemic.</p>  | <ol style="list-style-type: none"> <li>1) OHDA will analyze administrative claims/hospital data to assess the scope of readmissions for diabetes complications</li> <li>2) OHDA will analyze administrative claims/emergency department data to assess the scope of readmissions for diabetes as primary cause</li> <li>3) KEHP will analyze medical and pharmacy claims data to determine diabetes medication adherence and impact on pharmacy and medical claims related to diabetes and co-morbidities.</li> </ol>   |
| <p>C. Collect <b>benchmark data</b> as identified in this report.</p>  | <ol style="list-style-type: none"> <li>1) Calculate diabetes Prevention Quality Indicator (PQI) measures as defined by National Committee for Quality Assurance (NCQA) on an annual basis</li> <li>2) Medicaid MCOs will report diabetes-related HEDIS measures and diabetes program outcomes to DMS at least annually including improvement in measures as indicated</li> <li>3) KEHP’s data aggregator will report diabetes “HEDIS-Like” measures to KEHP on an annual basis</li> <li>4) DPH will collect and report “HEDIS-Like” data from the KyBRFS annually</li> <li>5) DPH, KEHP, and DMS will report DSMES participation at least annually to KDPCP</li> <li>6) DPH and KEHP will report DPP participation at least annually to KDPCP</li> <li>7) KEHP and Medicaid MCOs will develop processes to track use of the prediabetes diagnosis code</li> </ol> |

## Recommendations for the Legislature

1. Provide \$300,000 in state funding to expand the sample size for the Kentucky Behavioral Risk Factor Survey (KyBRFS) to allow for more complete understanding of the burden of diabetes in Kentucky's vulnerable and high-risk populations.
2. Provide an additional \$3,000,000 in funding for state and local public health diabetes prevention and control efforts.
3. Provide \$300,000 in funding for the Office of Health Equity to address barriers, inequities and other identified SDOH that impact hard to reach and vulnerable populations.
4. Create a resolution encouraging Medicaid and other insurers to follow KEHP's example of the Diabetes Value Benefit (DVB) to improve medication adherence resulting in improved health outcomes, as well as the addition of DPP as a covered service for those with prediabetes.

## Section 2: The Scope of Diabetes in Kentucky

---

### **Data makes disparities visible**

While all Kentuckians are at risk of developing diabetes at some time in their life, the disease affects some groups at a higher rate than others. Accurate, timely data is vital to understanding which segments of the population are most affected by diabetes. Better data allows communities to develop targeted interventions to address their specific needs.

Collecting and sharing standardized and meaningful data is the first step in identifying health disparities and in understanding, tracking, reducing, and subsequently eliminating them in our work toward achieving health equity.

This section provides data on the scope of diabetes in the commonwealth and within the populations covered by the Kentucky Employees' Health Plan and the Medicaid program.

The information shared here is structured as a series of one to two page fact sheets addressing different topics ranging from diabetes prevalence, to mortality rates, the impact of gestational diabetes, hospitalizations due to diabetes complications and cardiovascular complications of diabetes.

These data sheets serve multiple purposes. They address requirements defined in the KRS guiding this report, measure and describe the scope of the diabetes epidemic in Kentucky, and are used to monitor trends and identify populations disproportionately impacted by diabetes.

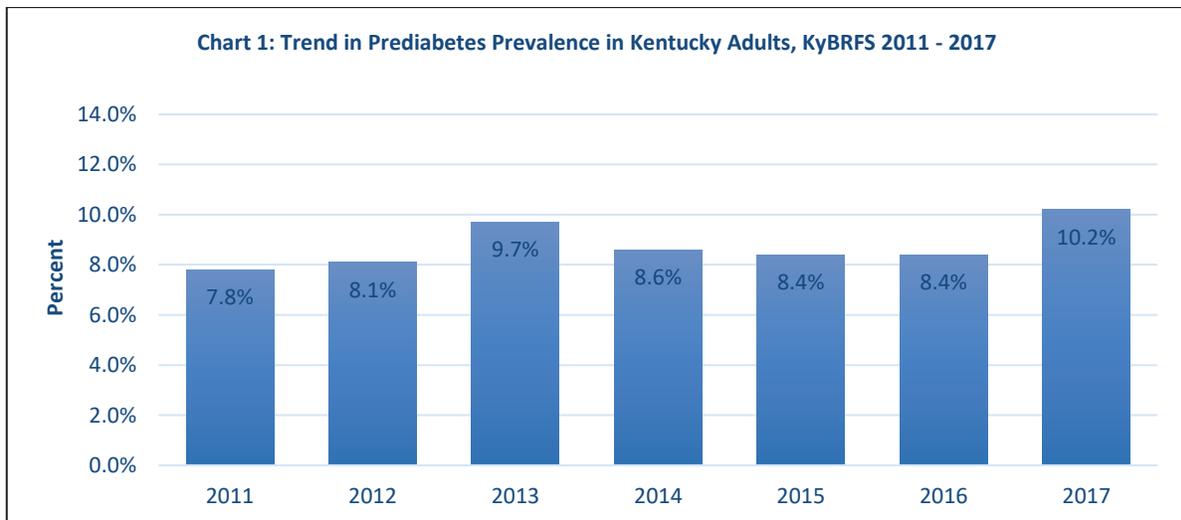
Please note that the appendix provides more detailed data breakdowns by race on some topics including hospitalizations, Emergency Department visits, and gestational diabetes.

## What is the prevalence of prediabetes among adults in Kentucky?

- One in ten Kentucky adults have been told that they have prediabetes (288,148).
- Men have slightly higher rates of prediabetes than do women.
- African Americans have higher rates of prediabetes than whites.
- Prediabetes prevalence increases with age.

| <b>Table 1: Kentucky Adults 2017<br/>Prediabetes Prevalence<br/>(Source-KyBRFS)</b> |                        |                                |
|---|------------------------|--------------------------------|
| Characteristic  | Prediabetes Prevalence | Estimated Number with Diabetes |
| Adults age 18 and older   |                        |                                |
| All Adults  | 10.2%                  | 288,148                        |
| Gender  |                        |                                |
| Men   | 11.4%                  | 156,128                        |
| Women   | 9.1%                   | 132,020                        |
| Race  |                        |                                |
| African American  | 13.9%                  | 29,103                         |
| White   | 9.8%                   | 237,002                        |
| Age   |                        |                                |
| 18-44   | 6.4%                   | 87,605                         |
| 45-54   | 11.9%                  | 57,831                         |
| 55-64   | 15.0%                  | 68,505                         |
| 65+   | 14.4%                  | 74,207                         |

- Prediabetes tracking began in 2011, when the rate was 7.8%. As of 2017, it has increased to 10.2%.

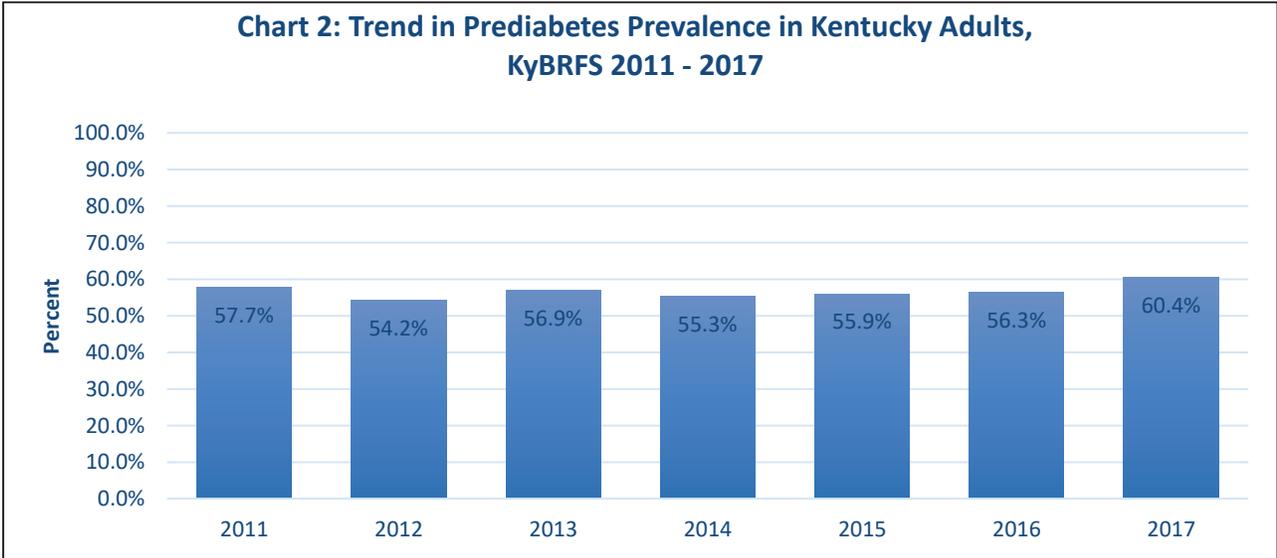


**What portion of the adult population were screened for diabetes/prediabetes?**

- In the past three years, 60.4% of adults were screened for diabetes/prediabetes.
- Women are more likely to be screened than men.
- Whites are more likely to be screened than African Americans.
- Consistent with screening guidelines, those age 45 and older have higher screening rates than those 18 to 44.

| <b>Table 2: Kentucky Adults 2017 Diabetes/Prediabetes Screening, (Source-KyBRFS)</b> |                            |                           |
|--|----------------------------|---------------------------|
| Characteristic   | % Screened in past 3 years | Estimated Number Screened |
| Adults age 18 and older  |                            |                           |
| All Adults   | 60.4%                      | 1,649,396                 |
| Gender   |                            |                           |
| Men  | 56.7%                      | 748,785                   |
| Women  | 63.8%                      | 900,611                   |
| Race   |                            |                           |
| African American   | 56.7%                      | 113,216                   |
| White  | 61.0%                      | 1,438,235                 |
| Age  |                            |                           |
| 18-44  | 49.4%                      | 651,570                   |
| 45-54  | 68.1%                      | 323,922                   |
| 55-64  | 70.4%                      | 314,907                   |
| 65+  | 73.2%                      | 358,997                   |

- Screening rates for diabetes/prediabetes have remained essentially flat between 2011 (57.7%) and 2017 (60.4%).

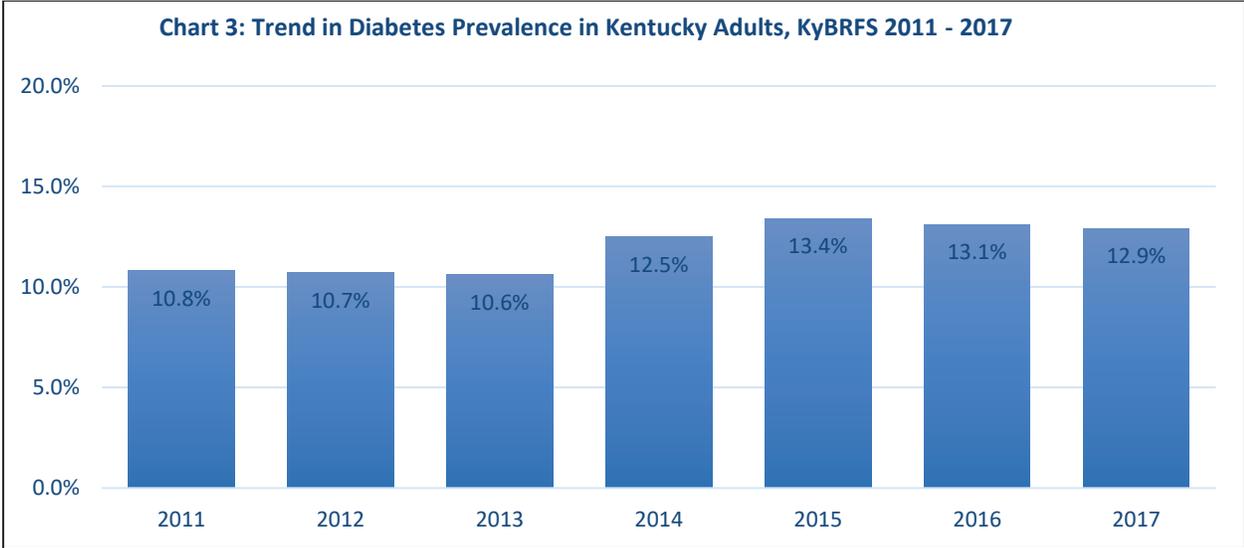


**What is the prevalence of diabetes among Kentucky adults?**

- Kentucky ranks 7<sup>th</sup> highest in the nation for adult diabetes prevalence.
- Over 440,000 Kentucky adults have been diagnosed with diabetes.
- Diabetes prevalence among African Americans is lower than whites in Kentucky. This is not true nationally and may be a result of measurement error due to small sample size.
- The prevalence of diabetes in Appalachia is 17.0% and compared to 11.2% in non-Appalachia.
- Diabetes prevalence increases with age.

| <b>Table 3: Kentucky Adults 2017 Diabetes Prevalence (Source: KyBRFS)</b> |                     |                                |
|---|---------------------|--------------------------------|
| Characteristic  | Diabetes Prevalence | Estimated Number with Diabetes |
| Adults age 18 and older   |                     |                                |
| All Adults  | 12.9%               | 442,480                        |
| Gender  |                     |                                |
| Men   | 12.8%               | 213,698                        |
| Women   | 12.9%               | 228,782                        |
| Race  |                     |                                |
| African American  | 11.4%               | 29,351                         |
| White   | 13.2%               | 387,941                        |
| Geography   |                     |                                |
| Appalachia  | 17.0%               | 160,937                        |
| Non-Appalachia  | 11.2%               | 281,544                        |
| Age   |                     |                                |
| 18-44   | 3.0%                | 47,068                         |
| 45-54   | 13.5%               | 77,973                         |
| 55-64   | 20.7%               | 122,245                        |
| 65+   | 26.8%               | 195,194                        |

- In 2011, the adult diabetes prevalence rate in Kentucky was 10.8 %, but by 2017, the rate had increased to 12.9%.



## What is the prevalence of diabetes among the KEHP population?

- Diabetes prevalence was 8.4% of the adult KEHP population in 2017, down slightly from 8.8% in 2015.
- Diabetes prevalence is higher among men (10.1%) than for women (7.3%).
- The prevalence of diabetes increases with age. Diabetes is present in 1 in 10 KEHP members between ages 45-54, 1 in 6 members ages 55-64 and nearly 1 in 4 of those aged 65 and older.

| <b>Table 4: KEHP Adults<br/>2017 Diabetes Prevalence</b>   |                     |                      |
|--|---------------------|----------------------|
| Characteristic   | Diabetes Prevalence | Number with Diabetes |
| Adults age 18 and older  |                     |                      |
| All Adults   | 8.4%                | 17,094               |
| Gender   |                     |                      |
| Men  | 10.1%               | 8,076                |
| Women  | 7.3%                | 9,018                |
| Age*   |                     |                      |
| 18-44  | 2.9%                | 2,667                |
| 45-54  | 10.5%               | 5,084                |
| 55-64  | 16.9%               | 10,088               |
| 65+ not eligible for Medicare  | 23.1%               | 1,136                |
| *Total number reported under 'Age' is higher than total 'Adults age 18 and older' due to double counting of individuals between the age bands. |                     |                      |

- Diabetes prevalence is very low among youth covered by KEHP.
- Rates are highest among older youth, age 15-17 at only 1%, but this group accounts for 40% (112 out of 287) of youth with diabetes.

| <b>Table 5:<br/>KEHP Youth – 2017 Diabetes Prevalence</b> |                     |                      |
|---|---------------------|----------------------|
| Characteristic  | Diabetes Prevalence | Number with Diabetes |
| Youth 17 and Under  |                     |                      |
| All youth   | 0.5%                | 287                  |
| Boys  | 0.5%                | 159                  |
| Girls   | 0.4%                | 128                  |

- Diabetes prevalence among KEHP members is highest in Appalachian districts, compared to other parts of the state.

| <b>Table 6: 2017 Diabetes Prevalence Among Adult KEHP Members by Area Development District (ADD) of Residence</b>   |                        |             |                              |             |
|---|------------------------|-------------|------------------------------|-------------|
| <b>Area Development District</b>  | <b>Prevalence Rate</b> |             | <b>Number with Diabetes*</b> |             |
|   | <b>Female</b>          | <b>Male</b> | <b>Female</b>                | <b>Male</b> |
| Barren River  | 7.2%                   | 8.1%        | 601                          | 529         |
| Big Sandy   | 10.3%                  | 10.9%       | 439                          | 366         |
| Bluegrass   | 8.0%                   | 8.6%        | 2,070                        | 1,739       |
| Buffalo Trace   | 10.6%                  | 10.8%       | 191                          | 150         |
| Cumberland Valley   | 8.6%                   | 9.8%        | 592                          | 524         |
| FIVCO   | 10.0%                  | 10.7%       | 350                          | 287         |
| Gateway   | 8.8%                   | 10.9%       | 243                          | 231         |
| Green River   | 7.7%                   | 8.5%        | 457                          | 388         |
| KIPDA   | 7.8%                   | 8.8%        | 1,788                        | 1,551       |
| Kentucky River  | 10.7%                  | 11.6%       | 404                          | 351         |
| Lake Cumberland   | 8.1%                   | 9.7%        | 520                          | 486         |
| Lincoln Trail   | 7.6%                   | 8.2%        | 522                          | 437         |
| Northern Kentucky   | 7.6%                   | 8.9%        | 696                          | 616         |
| Pennyrile   | 8.4%                   | 9.7%        | 533                          | 478         |
| Purchase  | 7.0%                   | 9.0%        | 392                          | 380         |
| Out of State  | 8.6%                   | 9.5%        | 308                          | 261         |
| *Note- Totals in this table are higher than in Table 4 due to some duplication due to members moving residences across ADD lines which cannot be accounted for when pulling the data. |                        |             |                              |             |

## What is the prevalence of diabetes among Medicaid beneficiaries?

- There were 165,110 adult Medicaid beneficiaries with diabetes in calendar year 2017, representing 16.2% of the total adult Medicaid population.
- Diabetes prevalence is higher among women (17.2%) than for men (15.0%).
- The prevalence of diabetes increases with age. Diabetes is present in 1 in 12 members between the ages of 18-44, 1 in 5 members between ages 45-54, nearly 1 in 3 members ages 55-64 and more than 1 in 3 of those aged 65 and older.
- Diabetes prevalence is highest among “other” race beneficiaries at 20.3%.
- Beneficiaries in Appalachian and non-metro counties have higher rates of diabetes than those in non-Appalachian or metro counties.

| <b>Table 7:<br/>Medicaid Adults– 2017 Diabetes<br/>Prevalence</b> |                        |                         |
|---|------------------------|-------------------------|
| Characteristic  | Diabetes<br>Prevalence | Number with<br>Diabetes |
| <b>Adults age 19 and older</b>                                    |                        |                         |
| All Adults  | 16.2%                  | 165,110                 |
| <b>Gender</b>   |                        |                         |
| Men   | 15.0%                  | 66,153                  |
| Women   | 17.2%                  | 98,957                  |
| <b>Age</b>  |                        |                         |
| 18-44   | 8.2%                   | 37,290                  |
| 45-54   | 23.0%                  | 39,625                  |
| 55-64   | 31.9%                  | 47,336                  |
| 65+ not<br>eligible for<br>Medicare                               | 38.9%                  | 40,859                  |
| <b>Race/Ethnicity</b>   |                        |                         |
| White   | 15.5%                  | 109,957                 |
| African<br>American   | 14.5%                  | 14,523                  |
| Hispanic  | 11.1%                  | 1,825                   |
| All Other<br>Races and<br>Unknown                                 | 20.3%                  | 38,805                  |
| <b>Geography</b>  |                        |                         |
| Appalachia  | 18.6%                  | 71,756                  |
| Non-<br>Appalachia  | 14.8%                  | 93,347                  |
| Unknown -<br>Out of State   | .01%                   | 7                       |
| Metro   | 14.2%                  | 55,927                  |
| Non-Metro   | 17.5%                  | 109,176                 |
| Unknown-<br>Out of State  | .01%                   | 7                       |
| Source: Medicaid Claims Data                                      |                        |                         |

Please see **Attachment 4** for a county level map of diabetes prevalence among adult Medicaid beneficiaries.

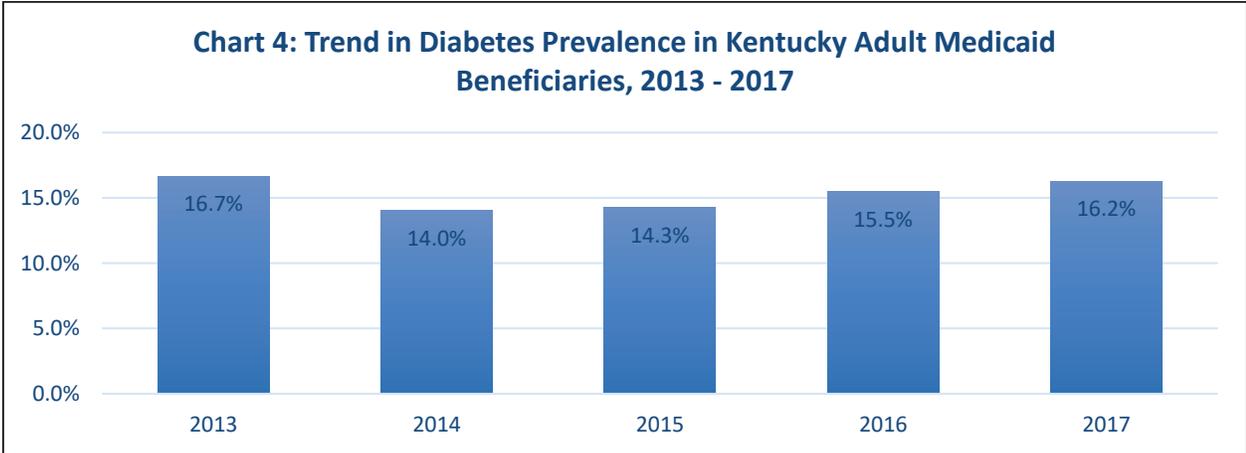
- In calendar year 2017, there were 3,074 youth Medicaid beneficiaries with diabetes, representing 0.5% of the total youth Medicaid population.
- Diabetes prevalence is slightly higher among girls (0.55%) than for boys (0.45%).
- The prevalence of diabetes increases slightly with age, with the highest rate of 1.51% seen in the 15 to 19 year old age group.
- Diabetes prevalence is highest among “other” race beneficiaries at 0.65%.
- Beneficiaries in Appalachian and non-metro counties have slightly higher rates of diabetes than those in non-Appalachian or metro counties.

| <b>Table 8:<br/>Medicaid Youth – 2017 Diabetes<br/>Prevalence</b> |                        |                         |
|---|------------------------|-------------------------|
| Characteristic  | Diabetes<br>Prevalence | Number with<br>Diabetes |
| Youth age 18 and under  |                        |                         |
| All Youth   | 0.50%                  | 3,074                   |
| Gender  |                        |                         |
| Girls   | 0.55%                  | 1,647                   |
| Boys  | 0.45%                  | 1,427                   |
| Age   |                        |                         |
| <5  | 0.04%                  | 70                      |
| 5-9   | 0.19%                  | 326                     |
| 10-14   | 0.60%                  | 958                     |
| 15-19   | 1.51%                  | 1720                    |
| Race/Ethnicity  |                        |                         |
| White   | 0.49%                  | 2,005                   |
| African<br>American   | 0.45%                  | 358                     |
| Hispanic  | 0.23%                  | 80                      |
| All Other<br>races and<br>Unknown                                 | 0.65%                  | 631                     |
| Geography   |                        |                         |
| Appalachia  | 0.56%                  | 1,109                   |
| Non-<br>Appalachia  | 0.47%                  | 1,965                   |
| Metro   | 0.48%                  | 1,268                   |
| Non-Metro   | 0.51%                  | 1,806                   |
| Source: Medicaid Claims Data                                      |                        |                         |

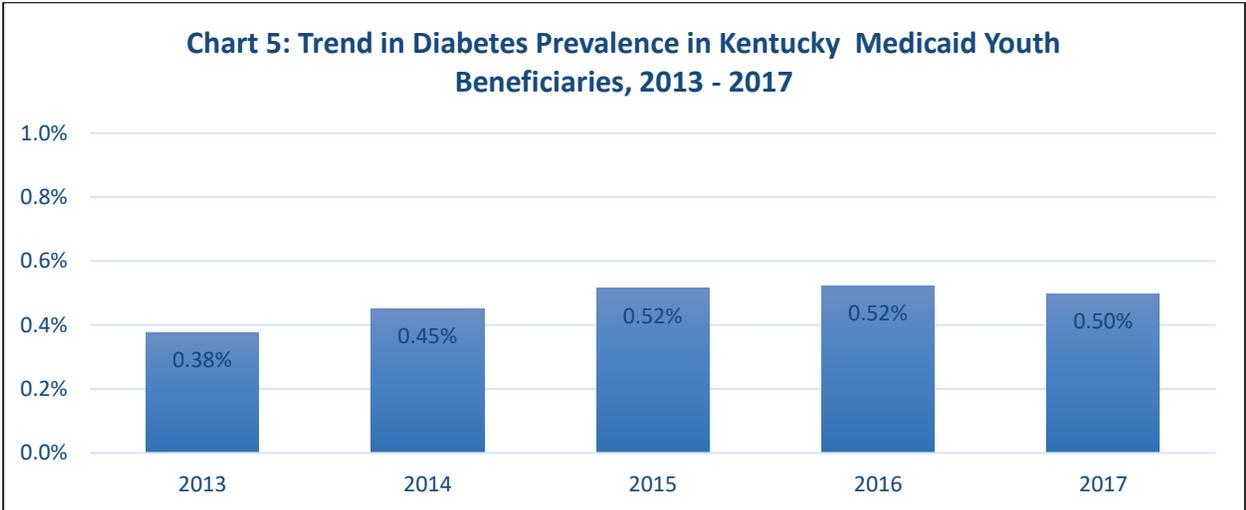
Please see **Attachment 5** for a county level map of diabetes among youth Medicaid beneficiaries.

**What is the trend in diabetes prevalence for Medicaid beneficiaries?**

- Diabetes prevalence declined slightly between 2013 and 2014, largely due to an influx of new beneficiaries under Medicaid expansion who had no claims history, which is used to identify a diabetes diagnosis.
- By 2017, diabetes prevalence rates, as measured by claims data, have rebounded to near the rate seen in 2013 as patients received diagnoses.
- The total number of adult beneficiaries with diabetes increased 2.2 fold from 76,386 in 2013 to 165,110 in 2017, but the percent of beneficiaries with diabetes remained the same.



- Diabetes prevalence among youth has increased somewhat between 2013 and 2017.
- Due to an influx of new beneficiaries under Medicaid expansion, the number of youth beneficiaries with diabetes increased 1.5-fold from 2,067 in 2013 to 3,074 in 2017.



## What is the prevalence of Gestational Diabetes Mellitus for mothers with live births in Kentucky?

- There are three Area Development Districts with gestational diabetes rates somewhat higher than average: Northern Kentucky (9.6%), FIVCO (7.8%) and Bluegrass (6.9%).
- Gestational diabetes was present in 3,039 (5.6%) of Kentucky live births in 2016, and an additional 548 (1%) of mothers had been diagnosed with diabetes pre-pregnancy.

| Area Development District of Residence | Pre-pregnancy Diabetes |             | Gestational Diabetes |             | No Diabetes   | Unknown      | Total Number By District |
|--|------------------------|-------------|----------------------|-------------|---------------|--------------|--------------------------|
|  | Number                 | %           | Number               | %           | Number        | Number       | Number                   |
| Purchase                               | 20                     | 0.9%        | 106                  | 4.6%        | 2,131         | 55           | 2,312                    |
| Pennyrile                              | 26                     | 0.9%        | 123                  | 4.1%        | 2,271         | 584          | 3,004                    |
| Green River                            | 21                     | 0.8%        | 100                  | 3.7%        | 2,473         | 138          | 2,732                    |
| Barren River                           | 38                     | 1.0%        | 192                  | 5.1%        | 3,384         | 163          | 3,777                    |
| Lincoln Trail                          | 36                     | 1.1%        | 189                  | 5.6%        | 3,068         | 57           | 3,350                    |
| Kentuckiana                            | 118                    | 1.0%        | 439                  | 3.6%        | 11,415        | 276          | 12,248                   |
| Northern Kentucky                      | 38                     | 0.7%        | 537                  | 9.6%        | 4,471         | 549          | 5,595                    |
| Buffalo Trace                          | 5                      | 0.8%        | 34                   | 5.4%        | 556           | 31           | 626                      |
| Gateway                                | 11                     | 1.1%        | 51                   | 5.0%        | 937           | 25           | 1,024                    |
| FIVCO                                  | 15                     | 1.0%        | 121                  | 7.8%        | 1,291         | 115          | 1,542                    |
| Big Sandy                              | 28                     | 1.8%        | 93                   | 5.9%        | 1,445         | 13           | 1,579                    |
| Kentucky River                         | 21                     | 1.6%        | 59                   | 4.5%        | 1,213         | 12           | 1,305                    |
| Cumberland Valley                      | 32                     | 1.0%        | 172                  | 5.6%        | 2,772         | 80           | 3,056                    |
| Lake Cumberland                        | 16                     | 0.6%        | 133                  | 5.3%        | 2,297         | 45           | 2,491                    |
| Bluegrass                              | 123                    | 1.2%        | 690                  | 6.9%        | 9,121         | 52           | 9,986                    |
| <b>Total</b>                           | <b>548</b>             | <b>1.0%</b> | <b>3,039</b>         | <b>5.6%</b> | <b>48,845</b> | <b>2,195</b> | <b>54,627</b>            |

### How does diabetes affect the type of delivery for Kentucky mothers?

- Gestational diabetes was present in 6.7% of all mothers who delivered in Kentucky hospitals in 2017.
- 52% of births to Kentucky mothers with gestational diabetes in Kentucky hospitals were vaginal deliveries and 48% were Cesarean-Section (C-section) deliveries.
- 28.8% of births to mothers with pre-existing (type 1 or type 2) diabetes were vaginal deliveries and 71.2% were C-section deliveries.
- 65.9% of births to mothers with no diabetes diagnosis were vaginal deliveries and 34.1% were C-section deliveries.

**Table 10: Diabetes and Type of Delivery, All Kentucky Hospital Deliveries 2017**

(Source: Kentucky Inpatient Hospital Discharge Claims 2017)

|  | Pre-pregnancy Diabetes | Gestational Diabetes | Maternal Stays without Diabetes | Total Maternal Stays |
|--|------------------------|----------------------|---------------------------------|----------------------|
| Stays with Delivery                        | 534                    | 3,269                | 45,299                          | 49,102               |
| (% of all delivery stays by diabetes type) | 1.1%                   | 6.7%                 | 92.2%                           | 100%                 |
| Type of Delivery                           | Pre-pregnancy Diabetes | Gestational Diabetes | Maternal Stays without Diabetes | Total Deliveries     |
| Vaginal                                    | 154                    | 1,701                | 29,852                          | 31,707               |
| (% of stays WITH delivery)                 | 28.8%                  | 52%                  | 65.9%                           | 64.6%                |
| C-section                                  | 380                    | 1,568                | 15,447                          | 17,395               |
| (% of stays WITH delivery)                 | 71.2%                  | 48%                  | 34.1%                           | 35.4%                |

## How does diabetes affect the type of delivery for Kentucky Medicaid mothers?

- Gestational diabetes was present in 10% of Medicaid beneficiaries who gave birth in 2017.
- 64.9% of births to mothers with gestational diabetes covered by Medicaid were vaginal deliveries and 35.1% were C-Section deliveries.
- 54.3% of births to Medicaid mothers with pre-existing (type 1 or type 2) diabetes were vaginal deliveries and 45.8% were C-Section deliveries.
- 75.6% of births to Medicaid mothers with no diabetes diagnosis were vaginal deliveries and 24.4% were C-Section deliveries.

| <b>Table 11: Diabetes and Type of Delivery, Medicaid Mothers, Kentucky: 2017</b>  |                        |                      |                                 |                      |
|---|------------------------|----------------------|---------------------------------|----------------------|
|   | Pre-pregnancy Diabetes | Gestational Diabetes | No Diabetes Diagnosis Indicated | Total Delivery Stays |
| Stays with delivery   | 588                    | 2,703                | 23,692                          | 26,983               |
| (% of all delivery stays by diabetes type)  | 2.2%                   | 10.0%                | 87.8%                           | 100.0%               |
| Type of Delivery  | Pre-pregnancy Diabetes | Gestational Diabetes | Maternal Stays without Diabetes | Total Deliveries     |
| Vaginal   | 319                    | 1,754                | 17,919                          | 19,992               |
| (% of deliveries by diabetes type)  | 54.3%                  | 64.9%                | 75.6%                           | 74.1%                |
| C-Section   | 269                    | 949                  | 5,773                           | 6,991                |
| (% of deliveries by diabetes type)  | 45.8%                  | 35.1%                | 24.4%                           | 25.9%                |
| Data Source: Medicaid Beneficiaries who have a claim using the live birth DRG codes. Gestational diabetes is determined based on look back period of 39 weeks from live birth and pre-existing diabetes is determined based on look back period of 2 years from live birth. |                        |                      |                                 |                      |

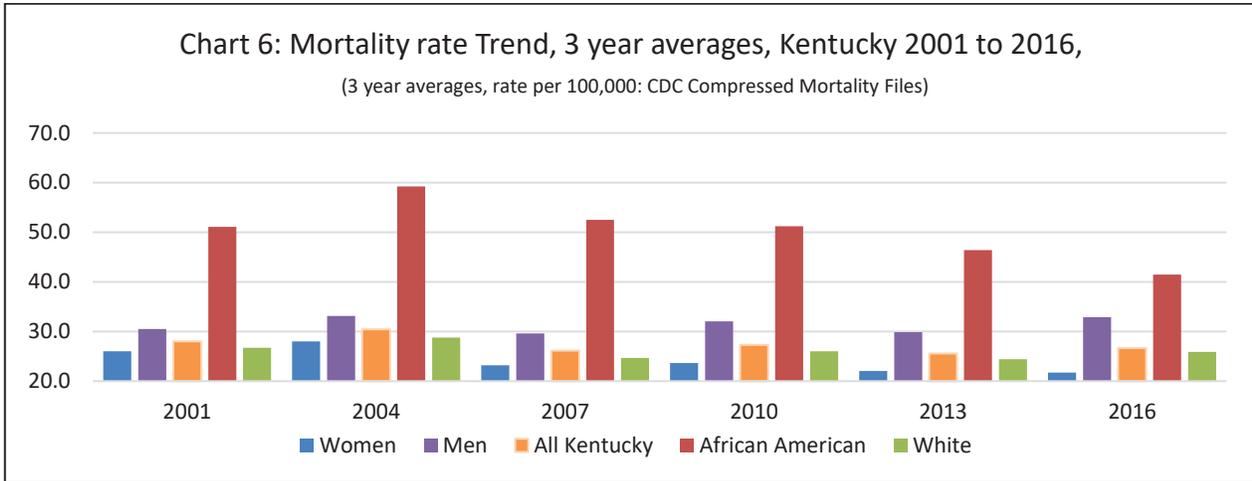
### How does diabetes affect the type of delivery for KEHP mothers?

- Gestational diabetes was present in 5.8% of women covered by KEHP who gave birth in 2017.
- 74.1% of births to mothers with gestational diabetes covered by KEHP were vaginal deliveries and 25.9% were C-Section deliveries.
- 74.1% of births to mothers covered by KEHP with pre-existing (type 1 or type 2) diabetes were vaginal deliveries and 25.9% were C-Section deliveries.
- 86.4% of births to mothers covered by KEHP with no diabetes diagnosis were vaginal deliveries and 13.6% were C-Section deliveries.

| <b>Table 12: KEHP Number and Percentage of Vaginal and C-Section deliveries by type of diabetes diagnosis of mother, Kentucky: 2017</b> |                        |                      |                                 |                      |
|---|------------------------|----------------------|---------------------------------|----------------------|
|   | Pre-pregnancy Diabetes | Gestational Diabetes | No Diabetes Diagnosis Indicated | Total Delivery Stays |
| Stays with delivery   | 27                     | 116                  | 1,842                           | 1,985                |
| (% of all delivery stays by diabetes type)  | 1.4%                   | 5.8%                 | 92.7%                           | 100%                 |
| Type of Delivery  | Pre-pregnancy Diabetes | Gestational Diabetes | Maternal Stays without Diabetes | Total Deliveries     |
| Vaginal Deliveries  | 20                     | 86                   | 1,591                           | 1,697                |
| (% of deliveries by diabetes type)  | 74.1%                  | 74.1%                | 86.4%                           | 85.5%                |
| C-Section Deliveries  | 7                      | 30                   | 251                             | 288                  |
| (% of deliveries by diabetes type)  | 25.9%                  | 25.9%                | 13.6%                           | 14.5%                |
| Data Source: KEHP Claims data for births in 2017  |                        |                      |                                 |                      |

### What is the death rate due to diabetes in Kentucky?

- In 2016, Kentucky had the 4<sup>th</sup> highest rate of death due to diabetes in the nation. This is an increase in ranking from 14<sup>th</sup> in the nation in 2014.
- Since 2001, diabetes mortality rates have increased slightly for men as a whole, but decreased somewhat for women. Rates for African American Kentuckians are substantially higher than for white Kentuckians, but show a significant decrease over time.



- Diabetes is the 6<sup>th</sup> leading cause of death by disease in Kentucky and in the nation.
- Death due to diabetes ranks 6<sup>th</sup> for white women and 5<sup>th</sup> for white men.
- Death due to diabetes ranks 4<sup>th</sup> for African American women and 3<sup>rd</sup> for African American men.

**Table 13: 2016 Ranking\* of Diabetes among Leading Causes of Death Shown by Race and Gender**  
(Source: CDC WONDER Multiple Cause of Death files 2016)

|                        | Ranked Cause of Death in Kentucky | Number of Deaths | Kentucky Age Adjusted Rate | National Age Adjusted Rate |
|------------------------|-----------------------------------|------------------|----------------------------|----------------------------|
| <b>All Groups</b>      | 6th                               | 1,479            | 28.4                       | 24.8                       |
| Women                  | 6th                               | 672              | 23.1                       | 22.1                       |
| Men                    | 5th                               | 807              | 34.6                       | 27.5                       |
| White (All)            | 6th                               | 1,320            | 27.3                       | 24.5                       |
| White Men              | 5th                               | 721              | 33.3                       | 27.7                       |
| White Women            | 6th                               | 599              | 22.2                       | 21.4                       |
| African American (All) | 3rd                               | 153              | 48.5                       | 31.5                       |
| African American Men   | 3rd                               | 81               | 58.5                       | 32.6                       |
| African American Women | 4th                               | 72               | 40.3                       | 30.4                       |

\*Ranking excludes Accident as a cause of death

## Geographic Variation in Diabetes Mortality

- There is significant geographic variation in diabetes death rates across Kentucky.
- For 2016, four out of the five Area Development Districts (ADDs) with the highest diabetes death rate are in eastern Kentucky; however, the highest diabetes death rate in occurred in the Pennyryle ADD in western Kentucky.

| <b>Table 14: 2016 Kentucky Deaths Due to Diabetes by Area Development District (ADD)</b> (Source: CDC WONDER Multiple Cause of Death files 2016) |                         |                                       |                              |
|--|-------------------------|---------------------------------------|------------------------------|
| <b>ADD</b>   | <b>Number of Deaths</b> | <b>Age Adjusted Rate/<br/>100,000</b> | <b>Ranked Cause of Death</b> |
| Pennyryle  | 122                     | 46.7                                  | 6th                          |
| Cumberland Valley  | 124                     | 43.8                                  | 5th                          |
| Lake Cumberland  | 94                      | 39.2                                  | 5th                          |
| Kentucky River   | 51                      | 38.7                                  | 5th                          |
| Buffalo Trace  | 27                      | 36.4                                  | 5th                          |
| Big Sandy  | 65                      | 35.5                                  | 5th                          |
| Gateway  | 34                      | 35.3                                  | 5th                          |
| Northern KY  | 158                     | 32.4                                  | 6th                          |
| Green River  | 86                      | 31.2                                  | 5th                          |
| Lincoln Trail  | 88                      | 28.2                                  | 6th                          |
| Barren River   | 87                      | 25.1                                  | 6th                          |
| KIPDA  | 282                     | 24.5                                  | 5th                          |
| FIVCO  | 42                      | 23.2                                  | 7th                          |
| Bluegrass  | 172                     | 20                                    | 6th                          |
| Purchase   | 47                      | 17.6                                  | 9th                          |
| <b>TOTAL</b>   | <b>1,479</b>            | <b>28.4</b>                           | <b>6th</b>                   |

## How many hospitalizations occur due to diabetes?

- Diabetes was the primary diagnosis for 10,470 hospitalizations with an ALOS of 5 days, average charge of \$35,141 and total billed charges of \$367,827,153.
- The most frequent complication was “Other Specified Manifestations,” a new category under the change to ICD10 codes initiated in 2015. This includes hypoglycemia, arthropathy, skin condition, and oral complications. This category accounted for 42.7% (4,468) of all cases with an ALOS of 6.0 days, average charge of \$20,354 and total billed charges of \$164,911,611.
- Diabetic ketoacidosis (DKA) is a life-threatening complication in which ketones (fatty acids) build up in the blood due to a lack of insulin. In 2017, DKA accounted for 37.9% (3,972) of all diabetes-primary cause hospitalizations, with an ALOS of 3.3 days, an average charge of \$23,700, and total billed charges of \$94,136,271.
- Diabetes with peripheral circulatory disorders have the longest ALOS of 7.8 days, an average charge of \$70,134, and total billed charges of \$68,100,237 for all stays. Peripheral circulatory disorders contribute to the development of lower extremity infections and can result in amputations.
- Kidney disease leading to kidney failure requiring dialysis and transplant is a common complication of diabetes. Hospitalizations with renal (kidney) complications of diabetes account for a relatively small (1.7%) percentage of cases. However, this group has a significant ALOS at 7.2 days, and has the highest average charge of \$84,172 per stay with total billed charges of \$14,730,140 for all stays.

**Table 15: 2017 Kentucky Inpatient Hospital Discharges with Complications of Diabetes as Primary Diagnosis – ALL AGES**

(Source: Kentucky Inpatient Hospital Discharge Claims 2017)

| Primary Diagnosis ICD10<br>E10.x - E13.x | *note – The amount a hospital lists as a “charge” is not the same as the amount actually reimbursed by an insurer. Reimbursement is a lower amount. |                       |      |                 |                |
|--|---|-----------------------|------|-----------------|----------------|
|  | Total Discharges  | Percent of Discharges | ALOS | Average* Charge | Total Charges* |
| Without mention of complication          | 30  | 0.3%                  | 2.1  | \$11,423        | \$342,693      |
| Ketoacidosis (DKA)                       | 3,972   | 37.9%                 | 3.3  | \$23,700        | \$94,136,271   |
| Hyperosmolarity                          | 262   | 2.5%                  | 3.7  | \$25,220        | \$6,607,631    |
| With Renal Manifestations                | 175   | 1.7%                  | 7.2  | \$84,172        | \$14,730,140   |
| With Ophthalmic Manifestations           | 3   | 0.0%                  | 5.0  | \$169,206       | \$507,619      |
| With Neurological Manifestations         | 585   | 5.6%                  | 4.7  | \$31,640        | \$18,509,537   |
| With Peripheral Circulatory Disorders    | 971   | 9.3%                  | 7.8  | \$70,134        | \$68,100,237   |
| Other Specified Manifestations           | 4,468   | 42.7%                 | 6.0  | \$36,909        | \$164,911,611  |
| Unspecified Complications                | 4   | 0.0%                  | 3.0  | \$20,354        | \$81,416       |
| Total                                    | 10,470  | 100.0%                | 5.0  | \$35,141        | \$367,927,155  |

## Diabetes Hospitalizations by Area Development District (ADD)

- Hospitalizations shown below includes only those with diabetes listed as the primary diagnosis. Cases are classified by the ADD in which the resident resides, not the ADD where the hospital is located.
- Diabetes primary diagnosis hospitalizations produced total charges of approximately \$368 million in 2017.
- The highest average charges are for residents of the Big Sandy and Lake Cumberland ADDs, areas known to have the highest rates of diabetes in the state.

| <b>Table 16 : Kentucky Inpatient Discharges for Diabetes as Primary Diagnosis</b> |               |                        |                      |             |
|---|---------------|------------------------|----------------------|-------------|
| <small>(Source: Kentucky Inpatient Hospital Discharge Claims 2017)</small>        |               |                        |                      |             |
| <b>Area Development District of Patient Residence</b>                             | <b>Cases</b>  | <b>Average Charges</b> | <b>Total Charges</b> | <b>ALOS</b> |
| Barren River  | 660           | \$27,719               | \$18,294,878         | 5.62        |
| Big Sandy   | 429           | \$54,495               | \$23,378,539         | 5.33        |
| Bluegrass   | 1,658         | \$37,792               | \$62,660,452         | 5.51        |
| Buffalo Trace   | 118           | \$37,150               | \$4,383,776          | 5.51        |
| Cumberland Valley   | 738           | \$36,323               | \$26,806,560         | 6.24        |
| FIVCO   | 389           | \$28,182               | \$10,962,938         | 3.76        |
| Gateway   | 182           | \$29,454               | \$5,360,736          | 4.43        |
| Green River   | 393           | \$29,879               | \$11,742,670         | 3.87        |
| KIPDA   | 2,480         | \$36,181               | \$89,730,532         | 4.67        |
| Kentucky River  | 458           | \$34,412               | \$15,761,095         | 4.12        |
| Lake Cumberland   | 573           | \$42,752               | \$24,497,351         | 5.29        |
| Lincoln Trail   | 573           | \$30,215               | \$17,313,534         | 4.78        |
| Northern KY   | 950           | \$31,653               | \$30,070,856         | 4.94        |
| Pennyryle   | 429           | \$29,220               | \$12,535,695         | 4.78        |
| Purchase  | 440           | \$32,789               | \$14,427,539         | 5.18        |
| <b>TOTAL</b>  | <b>10,470</b> | <b>\$35,141</b>        | <b>\$367,927,151</b> | <b>5.01</b> |

## How many Emergency Department visits are due to diabetes?

Emergency Department (ED) data shown below includes only those visits not resulting in a full hospitalization. 23-hour observation stays are included in ED data. Cases are classified by the ADD in which the resident resides, not the ADD where the hospital is located.

- ED visits for diabetes produced billed charges of approximately \$74 million in 2017.
- The highest average charges for ED visits due to diabetes are residents of the Big Sandy and Kentucky River ADDs, areas known to have some of the highest rates of diabetes in the state.

| <b>Table 17: Emergency Department Encounters with Diabetes coded as the Primary Reason for the Admission</b> |               |                 |                     |
|--|---------------|-----------------|---------------------|
| <small>(Source: Kentucky Inpatient Hospital Discharge Claims 2017)</small>                                   |               |                 |                     |
| Area Development District of Patient Residence   | 2017          |                 |                     |
|  | Cases         | Average Charges | Total Charges       |
| Barren River   | 1,060         | \$2,693         | \$4,395,912         |
| Big Sandy  | 764           | \$4,235         | \$4,991,219         |
| Bluegrass  | 2,808         | \$3,175         | \$12,760,786        |
| Buffalo Trace  | 167           | \$2,837         | \$677,857           |
| Cumberland Valley  | 1,392         | \$3,152         | \$6,265,864         |
| FIVCO  | 652           | \$2,885         | \$2,740,635         |
| Gateway  | 471           | \$2,519         | \$1,700,451         |
| Green River  | 888           | \$3,028         | \$3,804,768         |
| KIPDA  | 2,959         | \$3,541         | \$16,201,732        |
| Kentucky River   | 573           | \$4,045         | \$3,353,401         |
| Lake Cumberland  | 829           | \$2,822         | \$3,442,848         |
| Lincoln Trail  | 906           | \$2,051         | \$3,017,395         |
| Northern KY  | 1,126         | \$2,024         | \$3,394,278         |
| Pennyryle  | 832           | \$2,785         | \$3,607,535         |
| Purchase   | 740           | \$3,192         | \$3,292,645         |
| <b>TOTAL</b>   | <b>16,167</b> | <b>\$3,033</b>  | <b>\$73,647,326</b> |

**What other common chronic conditions and risk factors for complications are seen among people with diabetes?**

- People with diabetes experience significantly higher rates of other common chronic diseases, which can complicate self-management and medical care.
- Nearly 60% of people with diabetes have arthritis, which can limit their ability to be physically active and make it more difficult to use injectable medications or open pill bottles.
- Asthma affects about 19% of those with diabetes. Corticosteroids used to control asthma and chronic obstructive pulmonary disease (COPD) can make blood glucose control more difficult.
- Hypertension is a risk factor in almost 80% of those with diabetes. Hypertension with or without uncontrolled blood glucose can lead to blindness, kidney disease, heart disease, peripheral artery disease, and lower extremity amputations.
- Diabetes is associated with dental disease and tooth loss. Over 30% of those aged 65 and older have had all their natural teeth extracted due to dental disease compared to 19% of those without diabetes.
- Cigarette smoking is essentially the same for those with diabetes (23%) as those without diabetes (24%).
- Over half of those with diabetes are obese, compared to 31% of those without diabetes.
- Nearly half of those with diabetes are physically inactive (49%) compared to 32% of those without diabetes.

| <b>Table 18: Chronic Diseases and Risk Factors for Complications – People with Diabetes and Those Without Diabetes</b> |                      |                         |
|--|----------------------|-------------------------|
| <i>(Source: KyBRFS)</i>  |                      |                         |
| <b>Chronic Condition</b>   | <b>With Diabetes</b> | <b>Without Diabetes</b> |
| Arthritis  | 58.9%                | 28.4%                   |
| Asthma   | 18.5%                | 9.6%                    |
| Coronary Heart Disease   | 17.9%                | 4.5%                    |
| Hypertension   | 77.8%                | 33.6%                   |
| High Cholesterol   | 66.5%                | 33.1%                   |
| ALL natural teeth extracted (65 or older only)   | 30.7%                | 19.0%                   |
| Current Smokers  | 22.8%                | 24.0%                   |
| Obesity  | 56.1%                | 30.9%                   |
| No leisure time physical activity  | 49.2%                | 32.3%                   |

### What are the hospitalization charges associated with common complications of diabetes?

- The most common complication of uncontrolled diabetes is cardiovascular disease. The combination of diabetes with high blood pressure and/or high cholesterol is tied to increased rates of cardiovascular diseases such as heart attacks and stroke.
- Hospitalizations due to cardiovascular and cerebrovascular diseases resulted in total charges of over 1 billion dollars in Kentucky in 2017.
- Over half of all hospitalizations for a primary diagnosis of hypertensive disease include a secondary diagnosis of diabetes.

**Table 19: Cardiovascular Diseases Hospitalizations for those With and Without Diabetes**

(Source: Kentucky Inpatient Hospital Discharge Claims 2017)

| Primary Diagnosis        | With Diabetes        |  | Without Diabetes     |  | % of Discharges with Diabetes |
|--------------------------|----------------------|--|----------------------|--|-------------------------------|
|                          | Number of Discharges | Total Charges<br>(Charges are higher than the final cost negotiated with insurers) | Number of Discharges | Total Charges<br>(Charges are higher than the final cost negotiated with insurers) |                               |
| Hypertensive Disease     | 9,203                | \$377,734,341  | 7,275                | \$288,097,358  | 56%                           |
| Coronary Heart Disease   | 7,465                | \$641,100,635  | 9,722                | \$770,085,609  | 43%                           |
| Congestive Heart Failure | 1,691                | \$54,692,071   | 2,227                | \$74,493,997   | 43%                           |
| Cerebrovascular Disease  | 5,838                | \$312,141,912  | 8,664                | \$514,868,360  | 40%                           |
| Total                    | 24,197               | \$1,385,668,959  | 27,888               | \$1,647,545,324  | 49%                           |

### How do charges for diabetes hospitalizations compare to the charges for hospitalization due to other common chronic diseases?

- Diabetes and other chronic diseases often result in costly hospitalizations. The conditions listed below are among the most common in Kentucky.
- Coronary heart disease has the highest charges for hospitalizations in Table 20. Diabetes has the third highest average charge at \$35,493.

**Table 20: Kentucky 2017 Inpatient Discharges for Common Chronic Diseases**

(Source: Kentucky Inpatient Hospital Discharge Claims 2017)

| Primary Diagnosis        | Cases  | Average Charges<br>(Charges are higher than the final cost negotiated with insurers) | Total Charges<br>(Charges are higher than the final cost negotiated with insurers) |
|--------------------------|--------|--|--|
| Coronary Artery Disease  | 5,832  | \$89,548   | \$522,244,428  |
| Hypertension             | 17,562 | \$41,276   | \$724,888,438  |
| Diabetes                 | 11,083 | \$35,493   | \$393,371,182  |
| Congestive Heart Failure | 4,182  | \$33,750   | \$141,140,857  |
| COPD                     | 21,107 | \$28,019   | \$591,404,910  |
| Asthma - Adult           | 1,040  | \$19,850   | \$20,644,214   |

## What is the cost of diabetes and other common chronic diseases in the Medicaid program?

- For adult Medicaid beneficiaries, diabetes was the third highest total cost chronic disease hospitalization as seen in Table 21.
- In the per patient average cost, diabetes ranked fifth.

| <b>Table 21: 2017 Cost of Diabetes and Other Common Chronic Diseases for Adult Medicaid Beneficiaries</b> |                        |                   |                                 |
|---|------------------------|-------------------|---------------------------------|
| <b>Chronic Condition</b>  | <b># Beneficiaries</b> | <b>Total Cost</b> | <b>Average cost per Patient</b> |
| Cerebrovascular Disease   | 18,773                 | \$129,834,524     | \$6,916                         |
| Congestive Heart Failure  | 17,876                 | \$46,827,477      | \$2,620                         |
| Coronary Artery Disease   | 36,383                 | \$95,127,412      | \$2,615                         |
| COPD  | 86,949                 | \$120,870,820     | \$1,390                         |
| Diabetes  | 101,214                | \$116,998,573     | \$1,156                         |
| Hypertensive Disease  | 168,923                | \$85,421,523      | \$506                           |
| Asthma  | 25,896                 | \$10,923,580      | \$422                           |

Beneficiaries often have multiple diagnosis codes on the same claim, costs are assigned to the disease indicated in the first position on each claim. There is no "total" line because individual beneficiaries are counted more than once in this table if they have any of the conditions listed. Prescription costs are not included in this table.

- For youth Medicaid beneficiaries, diabetes was the second highest total cost chronic disease included in Table 22.
- In per patient average cost, diabetes ranks highest.

| <b>Table 22: 2017 Cost of Diabetes and Other Common Chronic Diseases for Youth Medicaid Beneficiaries</b> |                        |                     |                            |
|---|------------------------|---------------------|----------------------------|
| <b>Condition</b>  | <b># Beneficiaries</b> | <b>Total Amount</b> | <b>Average per Patient</b> |
| Diabetes  | 2,024                  | \$6,481,207         | \$3,202                    |
| Cerebrovascular Disease   | 521                    | \$1,497,842         | \$2,875                    |
| Hypertensive Disease  | 2,059                  | \$1,325,821         | \$644                      |
| Asthma  | 26,872                 | \$11,451,895        | \$426                      |
| Chronic Bronchitis  | 9,269                  | \$1,238,785         | \$134                      |

Beneficiaries often have multiple diagnosis codes on the same claim, costs are assigned to the disease indicated in the first position on each claim. There is no "total" line because individual beneficiaries are counted more than once in this table if they have any of the conditions listed. Prescription costs are not included in this table. Congestive Heart failure and Coronary Artery Disease are not included in this table due to low prevalence among children.

## What is the cost of diabetes and other common chronic diseases for KEHP?

- Among adults covered by KEHP, the highest total cost condition is chronic back pain followed by essential hypertension, diabetes, cancer, and osteoarthritis.
- The highest per patient cost condition is congestive heart failure followed by coronary artery disease, COPD, osteoarthritis, and diabetes.
- Table 23 reflects only hospitalization costs and medications taken during the hospital stay for diabetes and other co-morbidity issues but does not include pharmacy costs by members who receive prescriptions on an outpatient basis.

| <b>Table 23: Comparison of Diabetes and Other Chronic Conditions in KEHP Adults for 2017</b>  |                           |                             |                              |                      |                            |
|---|---------------------------|-----------------------------|------------------------------|----------------------|----------------------------|
| <b>Condition</b>  | <b>Number of Patients</b> | <b>Net Pay Medical Care</b> | <b>Net Pay Prescriptions</b> | <b>Total Net Pay</b> | <b>Net Pay per Patient</b> |
| Congestive Heart Failure  | 1,034                     | \$1,738,036                 | \$16,064,345                 | \$17,802,381         | \$17,217                   |
| Coronary Artery Disease   | 5,587                     | \$33,471,614                | \$42,304,383                 | \$75,775,998         | \$13,562                   |
| COPD  | 2,922                     | \$3,530,924                 | \$29,406,335                 | \$32,937,260         | \$11,272                   |
| Osteoarthritis  | 17,032                    | \$44,183,939                | \$118,896,971                | \$163,080,911        | \$9,574                    |
| Diabetes  | 18,880                    | \$13,057,265                | \$161,372,613                | \$174,429,878        | \$9,238                    |
| Cancer  | 18,816                    | \$65,113,367                | \$99,109,754                 | \$164,223,122        | \$8,727                    |
| Overweight/Obesity  | 5,715                     | \$10,522,947                | \$36,373,424                 | \$46,896,371         | \$8,205                    |
| Asthma  | 5,861                     | \$1,613,060                 | \$39,874,915                 | \$41,487,976         | \$7,078                    |
| Chronic Back  | 43,981                    | \$44,548,643                | \$187,380,134                | \$231,928,778        | \$5,273                    |
| Hypertension, Essential   | 44,356                    | \$10,040,708                | \$193,755,601                | \$203,796,309        | \$4,594                    |
| Population: All patients age 18 and older with at least one episode of care, including their related admissions and claims, for the chronic condition listed. |                           |                             |                              |                      |                            |

### Cost of diabetes and other common chronic diseases among youth covered by KEHP

- For youth covered by KEHP, the highest total cost conditions are asthma and chronic back pain followed by diabetes.
- The highest per patient cost condition is diabetes, followed by osteoarthritis, cancer, and COPD.
- Table 24 reflects only hospitalization costs and medications taken during the hospital stay for diabetes and other co-morbidity issues but does not include pharmacy costs by members who receive prescriptions on an outpatient basis.

**Table 24: Comparison of Diabetes and Other Chronic Conditions in KEHP Children for 2017**

| Condition   | Number of Patients | Net Pay Medical Care | Net Pay Prescriptions | Total Net Pay | Net Pay per Patient |
|---|--------------------|----------------------|-----------------------|---------------|---------------------|
| Diabetes  | 365                | \$1,136,799          | \$2,996,611           | \$4,133,410   | \$11,324            |
| Osteoarthritis  | 64                 | \$27,697             | \$561,221             | \$588,918     | \$9,201             |
| Cancer  | 194                | \$628,292            | \$891,462             | \$1,519,755   | \$7,833             |
| COPD  | 48                 | \$43,990             | \$323,659             | \$367,649     | \$7,659             |
| Coronary Artery Disease   | 5                  | \$1,351              | \$28,135              | \$29,486      | \$5,897             |
| Congestive Heart Failure  | 7                  | \$8,899              | \$31,788              | \$40,687      | \$5,812             |
| Hypertension, Essential   | 123                | \$48,423             | \$447,318             | \$495,741     | \$4,030             |
| Asthma  | 2,320              | \$623,250            | \$5,175,920           | \$5,799,171   | \$2,499             |
| Overweight/Obesity  | 383                | \$104,755            | \$690,551             | \$795,306     | \$2,076             |
| Chronic Back Pain   | 3,501              | \$819,208            | \$4,970,265           | \$5,789,474   | \$1,653             |
| Population: All patients age 17 and under with at least one episode of care, including their related admissions and claims, for the Chronic Condition listed. |                    |                      |                       |               |                     |

## Section 3 – Addressing Diabetes in Kentucky

---

### Applying the Evidence Base to Improving Diabetes Outcomes in Kentucky

There is a solid evidence base around both the prevention of type 2 diabetes and the management of existing diabetes. It is important that these proven interventions are considered when planning and implementing interventions to address diabetes in Kentucky.

The work described in this section focuses on promoting or implementing these evidence-based strategies, specifically the:

- National Diabetes Prevention Program (DPP); and
- Diabetes Self-Management Education and Support (DSMES).

## Prevention of Diabetes

Preventing diabetes is a critical element of addressing the diabetes epidemic in Kentucky and the nation. The DPP research study showed that those at high-risk for diabetes, including those with prediabetes, can reduce their risk of developing diabetes by 58% (71% in those over 60 years of age) with structured lifestyle change programs, such as the DPP. These results were realized by weight loss of 5-7 percent achieved by healthy eating and 150 minutes of physical activity per week.

Research has also found that even after 10 years, people who completed a diabetes prevention lifestyle change program were one-third less likely to develop type 2 diabetes. To learn more about the DPP, visit [www.cdc.gov/prevention](http://www.cdc.gov/prevention).

## Management of Diabetes

Complications from diabetes are debilitating and have huge costs – both human and financial. These complications include blindness, kidney damage, lower extremity amputations, heart disease, stroke, and gum disease. There is strong science that shows that good control of the ABCs (**A1C**, **B**lood Pressure, and **C**holesterol) can dramatically improve outcomes in people with both type 1 and type 2 diabetes.

Application of clinical care recommendations, also known as “Preventive Care Practices,” is essential to achieving diabetes control and improving outcomes. These recommendations/practices are updated annually and disseminated by the American Diabetes Association (ADA). The recommendations include screening, diagnostic, and therapeutic actions that are known or believed to favorably affect health outcomes of patients with diabetes. They include things such as:

- Measuring blood pressure at every visit;
- Checking feet for sores and providing a thorough foot exam at least once a year;
- Conducting laboratory testing such as A1C at least twice per year, as well as kidney function tests, and cholesterol tests;
- Immunizing against flu, pneumococcal disease, and hepatitis B per guidelines;
- Referrals for preventive exams such as:
  - a dental checkup twice a year; and
  - a dilated eye exam once a year; and
- Referring for DSMES services

While critical, clinical care alone is not enough to manage a complex chronic disease like diabetes. A host of other risk reduction strategies, behavior changes/self-management, and support are necessary to achieve diabetes control and avoid short and long-term complications of the disease. One of the most important is DSMES.

The “2017 National Standards for Diabetes Self-Management Education and Support” define DSMES as: *“The ongoing process of facilitating the knowledge, skills, and ability necessary for diabetes self-care as well as activities that assist a person in implementing and sustaining the behaviors needed to manage his or her condition on an ongoing basis beyond or outside of formal self-management training.”* These standards,

supported by the American Association of Diabetes Educators (AADE) and the ADA, also note that DSMES is a “critical element” of care for all people with diabetes. Numerous studies have demonstrated the benefits of DSMES, which include improved clinical outcomes and quality of life while reducing hospitalizations and health care costs. Engagement in DSMES services improves A1C by 0.6%, as much as many medications – with no side effects.

In 2015, the ADA, the AADE, and the Academy of Nutrition and Dietetics (AND) released a joint position statement on DSMES in type 2 diabetes. In addition to the benefits of DSMES, the statement identified four critical times to assess, provide, and adjust DSMES: 1) with a new diagnosis of type 2 diabetes, 2) annually for health maintenance and prevention of complications, 3) when new complicating factors influence self-management, and 4) when transitions in care occur.

Despite the abundance of evidence supporting the benefits of DSMES, it continues to be a very underutilized service.

## Current Diabetes Prevention and Control Efforts

DPH, OHDA, DMS, and the Personnel Cabinet-KEHP support a number of interventions related to diabetes for their respective populations. The tables below show a summary of these efforts by agency. For consistency with the evidence-base in diabetes prevention and control, as well as brevity, activities are listed related to the following categories: Prevention of Type 2 Diabetes, Diabetes Self-Management Education and Support (DSMES), Case/Disease Management, and Other.

| <b>Kentucky Employees' Health Plan (KEHP)</b>  |   |
|--|---|
| <p><i>The KEHP is a self-funded health plan providing health insurance benefits to employees and retirees under the age of 65. This includes state employees, local school boards, and various cities and county governmental agencies. KEHP provides health insurance coverage to approximately 265,000 employees, retirees, and their eligible dependents. KEHP's primary vendors include Anthem Blue Cross Blue Shield as the medical third party administrator, Go365 as the wellness vendor, and CVS/Caremark as the pharmacy benefits manager.</i></p> |   |
| <b>Prevention of Type 2 Diabetes/Diabetes Prevention Program (DPP)</b>   | <ul style="list-style-type: none"> <li>• Continue to offer classroom and online DPP as a covered benefit payable at 100%.</li> <li>• Continue management and expansion of DPP. Anthem provides system-driven analytics and data-mining capabilities to identify those members at risk for diabetes.</li> <li>• Anthem will continue to actively identify members who are at risk for diabetes and refer them to a DPP class in their community.</li> <li>• Continue to offer wellness points through Go365, the wellness vendor, for completion of DPP.</li> </ul>  |
| <b>Diabetes Self-Management Education and Support (DSMES)</b>  | <ul style="list-style-type: none"> <li>• Continue to cover DSMES as a covered benefit under the health plan.</li> <li>• Anthem continues to identify members who have a diabetes diagnosis and refer them to a DSMES class in their community.</li> </ul>   |
| <b>Case/Disease Management</b>   | <ul style="list-style-type: none"> <li>• Continue to partner with Anthem as the medical third party administrator. Anthem uses the Integrated Health Model (IHM) for case management, integrated behavioral health strategies, and utilization management. KEHP members have access to this IHM and it includes a multi-disciplinary team of professionals managing members in a holistic approach vs. a single disease state. This allows Anthem to provide guided support to members to find the right care at the right time.</li> <li>• Anthem makes outbound calls to the most at risk members and treating physicians to collaboratively address health care coordination.</li> <li>• Anthem provides KEHP with IHM reporting to demonstrate the success of the program.</li> </ul> |
| <b>Other</b>   | <ul style="list-style-type: none"> <li>• Go365, the wellness vendor, provides points, or incentives to members who track their physical activity such as walking, climbing steps, mowing the lawn, etc. with a fitness-tracking device. Points are awarded for on-target sleeping habits, parking farther away, going to a park, etc. for creating lifestyle changes.</li> <li>• KEHP's LivingWell Promise activities require members to either take the written health assessment with Go365 or to obtain a biometric screening.</li> </ul>  |

**INNOVATION HIGHLIGHT: KEHP Diabetes Value Benefit**

In 2016, KEHP introduced a Diabetes Value Benefit (DVB) that was available in all four health insurance plans offered by KEHP. The DVB allows members with a diabetes diagnosis to receive maintenance diabetic prescriptions and supplies, such as diabetic strips, free or at a reduced copay or coinsurance with no deductible. The goal of the DVB was to encourage members to control their diabetes through regular doctor visits and proper medication adherence. A review of the healthcare data on KEHP’s patients with diabetes shows that members are in fact adhering to their medications and lowering usage of other prescription drugs, emergency department visits, health care provider visits, and acute admissions.

In 2017, 67% of members with diabetes attained optimal adherence to their diabetes medications, producing a savings of over \$5 million dollars.

**Figure 1: KEHP Diabetes Value Benefit – Optimally Adherent Members with Diabetes**

| <b>Summary: Optimally Adherent Members with Diabetes Diagnosis</b> |                |                            |                           |                                  |                             |
|--|----------------|----------------------------|---------------------------|----------------------------------|-----------------------------|
| Year   | Total Members* | Optimally Adherent Members | Percent Optimal Adherence | Newly Optimally Adherent Members | Estimated Medical Savings** |
| 2015   | 17,139         | 10,597                     | 62%                       | 19                               | \$56,100                    |
| 2016   | 17,885         | 11,810                     | 66%                       | 1,865                            | \$5,507,300                 |
| 2017   | 18,569         | 12,508                     | 67%                       | 1,719                            | \$5,076,200                 |

\*Total Members only represents those who were eligible for at least 85% of the reporting period.  
 \*\*Estimated \$2,953 medical savings per optimal utilizer were derived from CVS/Caremark Enterprise Analytics Pharmacy Economical Model, 2014

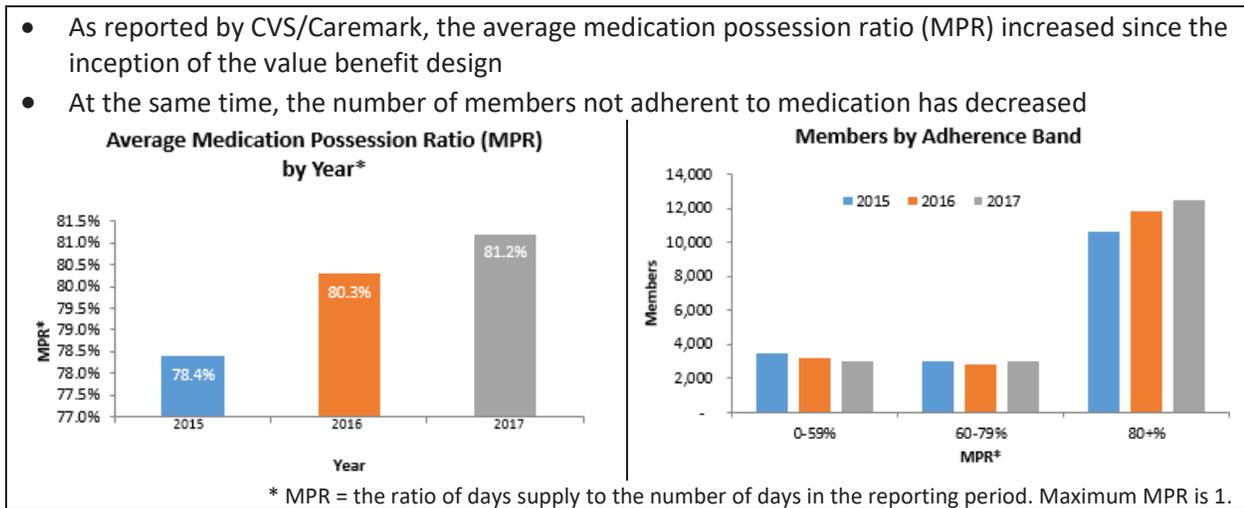
**Figure 2: KEHP Diabetes Value Benefit – Prescription Utilization**

- The increase in prescriptions to treat diabetes was much greater than other prescriptions
- The CDHPs had the highest increases for prescriptions to treat diabetes

| Utilization Change from 2015 to 2016 |                       |                          |
|--------------------------------------|-----------------------|--------------------------|
| Population with Diabetes             | RXs to treat diabetes | RXs for other conditions |
| LivingWell CDHP                      | 8.3%                  | 2.5%                     |
| LivingWell PPO                       | 7.9%                  | 1.9%                     |
| Standard PPO                         | 6.9%                  | 1.6%                     |
| Standard CDHP                        | 8.5%                  | 3.7%                     |
| Total Plans                          | 7.9%                  | 2.1%                     |

**Figure 3: KEHP Diabetes Value Benefit – Medication Possession Ratio and Adherence**

- As reported by CVS/Caremark, the average medication possession ratio (MPR) increased since the inception of the value benefit design
- At the same time, the number of members not adherent to medication has decreased



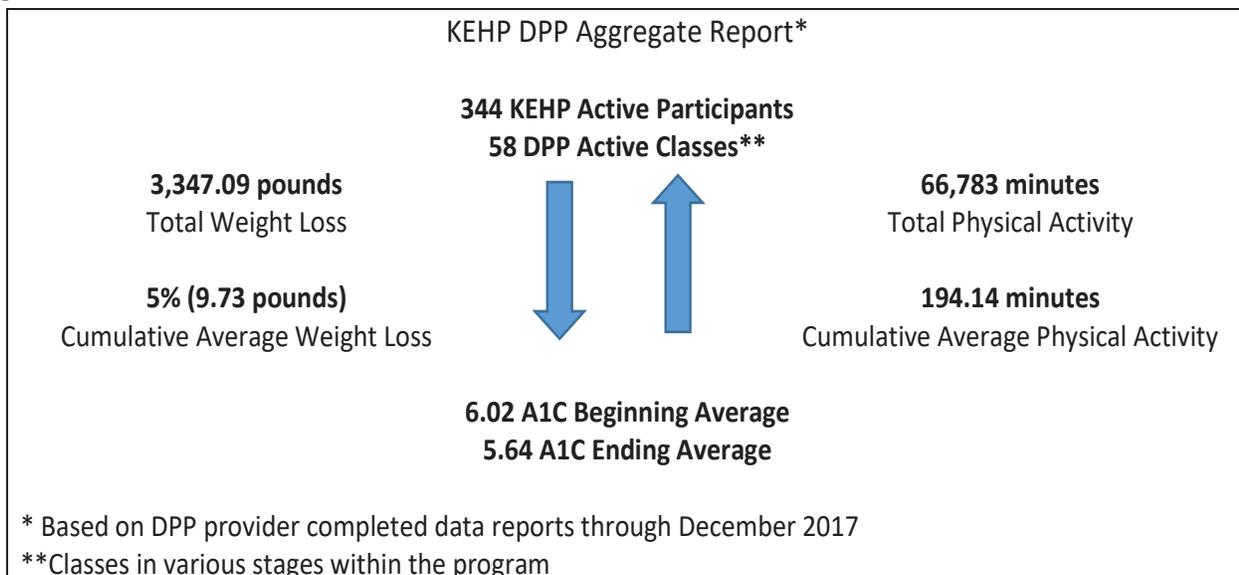
**INNOVATION HIGHLIGHT: KEHP - Connecting Members to the DPP**

In 2013, KEHP began a new program of recruiting and referring eligible members to a Diabetes Prevention Program and in 2014, offered the benefit at no cost to all members who met program qualifications. Beginning in 2015, KEHP partnered with Anthem to administer, manage, and expand enrollment in the DPP. Anthem provides system-driven logic for class referrals based on member demographics. Anthem has combined the use of its analytics and data-mining capabilities to identify “at risk” members for the DPP within the KEHP population. Once members have been identified, Anthem’s team of Personal Health Consultants (PHCs) and clinical staff refer KEHP members to specific DPP classes in their community. Referrals are based on both systemic triggers from claims data as well as member interaction with PHCs. Customer Service Associates are also trained to support program awareness.

The DPP benefit is available at no cost to KEHP members who have prediabetes or are considered at a high-risk of developing diabetes consistent with the CDC’s established eligibility guidelines for participation in a DPP.

In 2017, 344 KEHP members participated in a DPP class. The number of DPP providers receiving reimbursement grew to 23 providers offering 62 classes in 21 counties. The program is producing positive results. KEHP members participating in DPP classes are losing weight, increasing physical activity, and reducing blood glucose levels at or below CDC recommended levels. As seen in the chart below, DPP participants are averaging 5% weight loss, increasing their physical activity minutes, and showing improvement in their A1C levels. DPP data from KEHP enrollees (January through October 2017) shows that the 344 members who participated in DPP cost KEHP \$34 per month compared to the almost 18,000 enrollees with type 2 diabetes who incurred average costs of \$356, suggesting significant savings can be achieved.

**Figure 4: KEHP DPP Results**



## Medicaid/MCOs

*The Department for Medicaid Services works with Managed Care Organizations (MCOs) to provide care for most of its members. Currently, DMS works with five MCOs: Anthem Medicaid, Aetna Better Health, Humana CareSource, Passport Health Plan, and WellCare. Each is required to conduct a Health Risk Assessment (HRA) for new members and identify health needs, provide robust CM/DM services, and track and report data including HEDIS measures.*

|   |  |
|---|--|
| <b>Prevention of Type 2 Diabetes/DPP</b>              | <ul style="list-style-type: none"> <li>• One MCO has developed a pilot DPP program and other MCOs are considering it.</li> </ul>   |
| <b>Diabetes Self-Management Education and Support</b> | <ul style="list-style-type: none"> <li>• All MCOs cover DSMES services.</li> </ul>   |
| <b>Case/Disease Management</b>                        | <ul style="list-style-type: none"> <li>• MCOs provide CM/DM programs for low to high-risk members with diabetes.</li> </ul>  |
| <b>Other</b>  | <ul style="list-style-type: none"> <li>• Some MCOs offer member incentives to visit their Primary Care Provider.</li> <li>• MCOs offer providers value-based incentives for increasing A1C screening, and testing.</li> <li>• MCOs administer HRA for early identification of diabetes for referral to care management programs. Medicaid members participating in Kentucky HEALTH (1115 Waiver) will be incentivized under the “My Rewards” program to complete a HRA.</li> <li>• MCOs conduct member outreach to increase their awareness of diabetes through newsletters, community collaboration, phone, email, and/or mailing campaigns to remind members to make appointments.</li> <li>• MCOs conduct outreach to non-adherent Medicaid members to encourage diabetes screenings (dilated retinal exams, A1C testing and nephropathy screenings).</li> <li>• MCOs offer members educational material about good nutrition.</li> </ul> |

## Department for Public Health – Kentucky Diabetes Prevention and Control Program (KDPCP) and Office of Health Equity (OHE)

*The DPH houses the KDPCP as well as the OHE. KDPCP is a population-based public health initiative working to reduce the sickness, disability and death associated with diabetes and its complications and to prevent new cases of type 2 diabetes. The work is implemented through a network of state and local partners that expand the reach of diabetes prevention and control efforts across the state. The OHE supports prevention and education efforts in reducing mortality and morbidity that exist among Kentuckians and specify populations at greatest risk.*

|   |  |
|---|--|
| <b>Prevention of Type 2 Diabetes/DPP</b>              | <ul style="list-style-type: none"> <li>• Promote awareness of prediabetes and DPP to the general public.</li> <li>• Provide continuing education about prediabetes and DPP to health care professionals.</li> <li>• Support training costs for DPP lifestyle coaches.</li> <li>• Track locations of DPP programs and new DPP classes and share via the <i>Kentucky Diabetes Resource Directory</i>, websites, and with payers (KEHP).</li> <li>• Provide DPP services through certain LHDs (26 as of June 2018).</li> <li>• Maintain active partnerships with DPP providers across the state.</li> <li>• Maintain a strong and active partnership with the KEHP.</li> </ul>  |
| <b>Diabetes Self-Management Education and Support</b> | <ul style="list-style-type: none"> <li>• Promote awareness of diabetes and benefits of DSMES to the public and professionals.</li> <li>• Provide continuing education about diabetes to health care professionals and the four critical times to refer to DSMES.</li> <li>• Provide training, curricula and materials for LHDs and select other DSMES providers.</li> <li>• OHE and KDPCP work to tailor and modify trainings to address cultural competency, the SDOH and health inequities that impact health and health outcomes.</li> <li>• Track locations of DSMES programs and share via the <i>Kentucky Diabetes Resource Directory</i>.</li> <li>• Oversee an accredited DSMES program (<i>Healthy Living with Diabetes</i>) and provide services through 20 LHDs.</li> </ul>   |
| <b>Case/Disease Management</b>                        | <ul style="list-style-type: none"> <li>• Share educational materials with MCOs for use with their members.</li> <li>• Keep updated and share locations of DPP and DSMES services across the state.</li> <li>• Referral source for those seeking DSMES/DPP.</li> </ul>  |
| <b>Other</b>  | <ul style="list-style-type: none"> <li>• Monitor KyBRFS and other data to assess the impact of diabetes, plan appropriate interventions and evaluate program efforts.</li> <li>• Create/Maintain active partnerships to identify diabetes-related issues and solutions at the state and local level including a robust state level coalition, the Kentucky Diabetes Network (KDN), and over 40 local coalitions.</li> <li>• OHE supports prevention and education efforts in reducing diabetes mortality and morbidity that exist among Kentuckians and specific populations at greatest risk.</li> <li>• OHE ensures that state diabetes prevalence data is captured, analyzed and disseminated to minority and vulnerable communities.</li> <li>• OHE uses multiple methods for dissemination including but not limited to; the biennial minority health status report, infographics and other culturally appropriate materials.</li> <li>• OHE educates minority and vulnerable communities on risk factors of disease/prevention efforts, and disease management programs.</li> <li>• OHE acts as a resource to DPH/KDPCP in addressing barriers, inequities, and other identified SDOH that impact hard to reach and vulnerable populations.</li> </ul> |

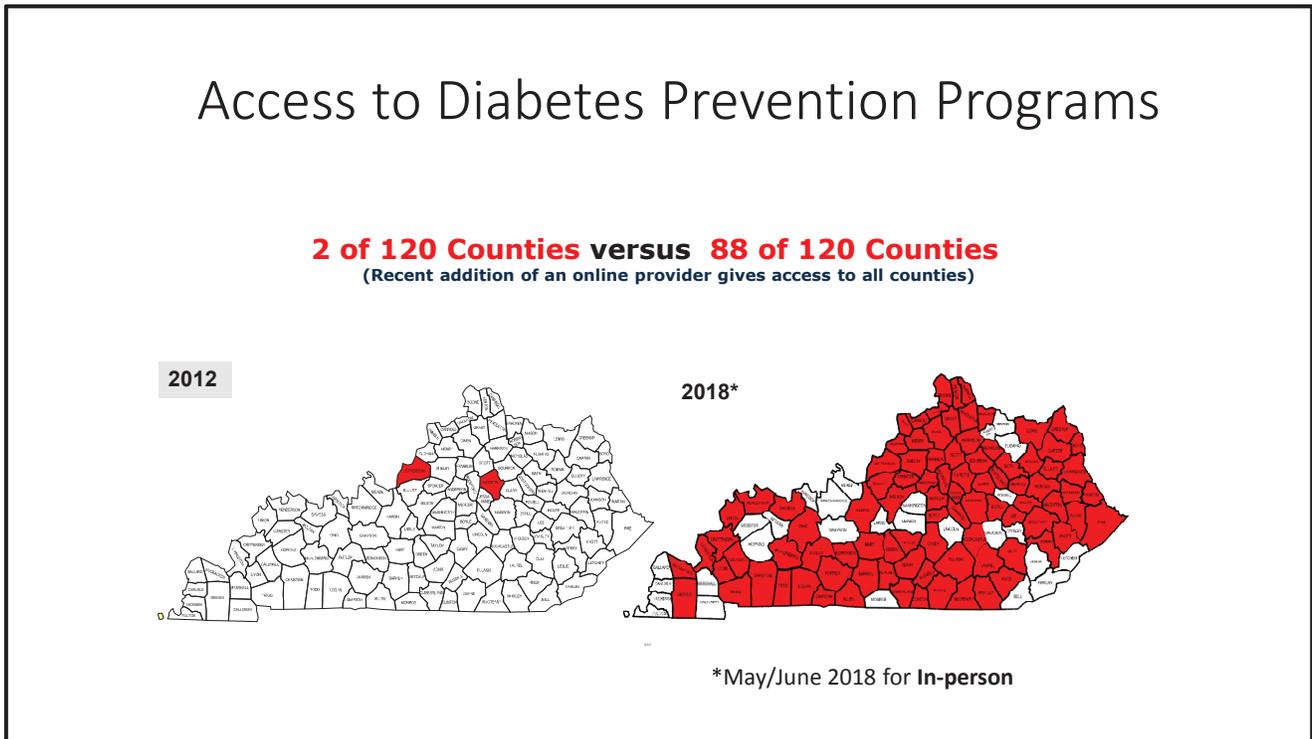
### ***INNOVATION HIGHLIGHTS:***

KDPCP, along with many partners across the state, have worked to improve access to the National DPP across the commonwealth. This effort has resulted in a number of achievements, including:

- Increased access to DPP from 2 counties in 2012 to 88 counties in 2018 (see maps below);
- Increased the number of CDC-Recognized DPP organizations in Kentucky from 2 in 2012 to 54 in June 2018:
  - 48% of these are local health departments;
  - 10 organizations have full recognition (four are local health departments);
- Cumulative enrollment in Kentucky increased from 297 persons at baseline to 3,992;
- Participants averaged 4.4% weight loss;
- Kentucky was 8th in the nation in the number of National DPP recognized organizations and 11<sup>th</sup> in the nation for number participants (CDC, January, 2018);
- Several state and national presentations including the American Association of Diabetes Educators, the Kentucky Public Health Association, and at the Kentucky Primary Care Association meetings;
- Provided technical assistance relate to implementation of DPP to over 20 states.

While this represents great progress, the maintenance of this improvement and future growth are in jeopardy. The numbers of CDC-Recognized DPP organizations are already starting to decline in Kentucky. Likely reasons include the intensity and length of the program and inadequate reimbursement opportunities. Sustainability of these programs must be addressed. Similarly, a yearlong lifestyle change program is challenging to maintain for both participants and coaches. Removal of barriers to participation and continued participation must also be addressed. Use of technology to deliver/enhance the service, removal of co-pays and cost sharing where they exist, and support for coaches and programs should be considered.

Figure 5: Kentucky Counties Covered by a CDC-Recognized Diabetes Prevention Program



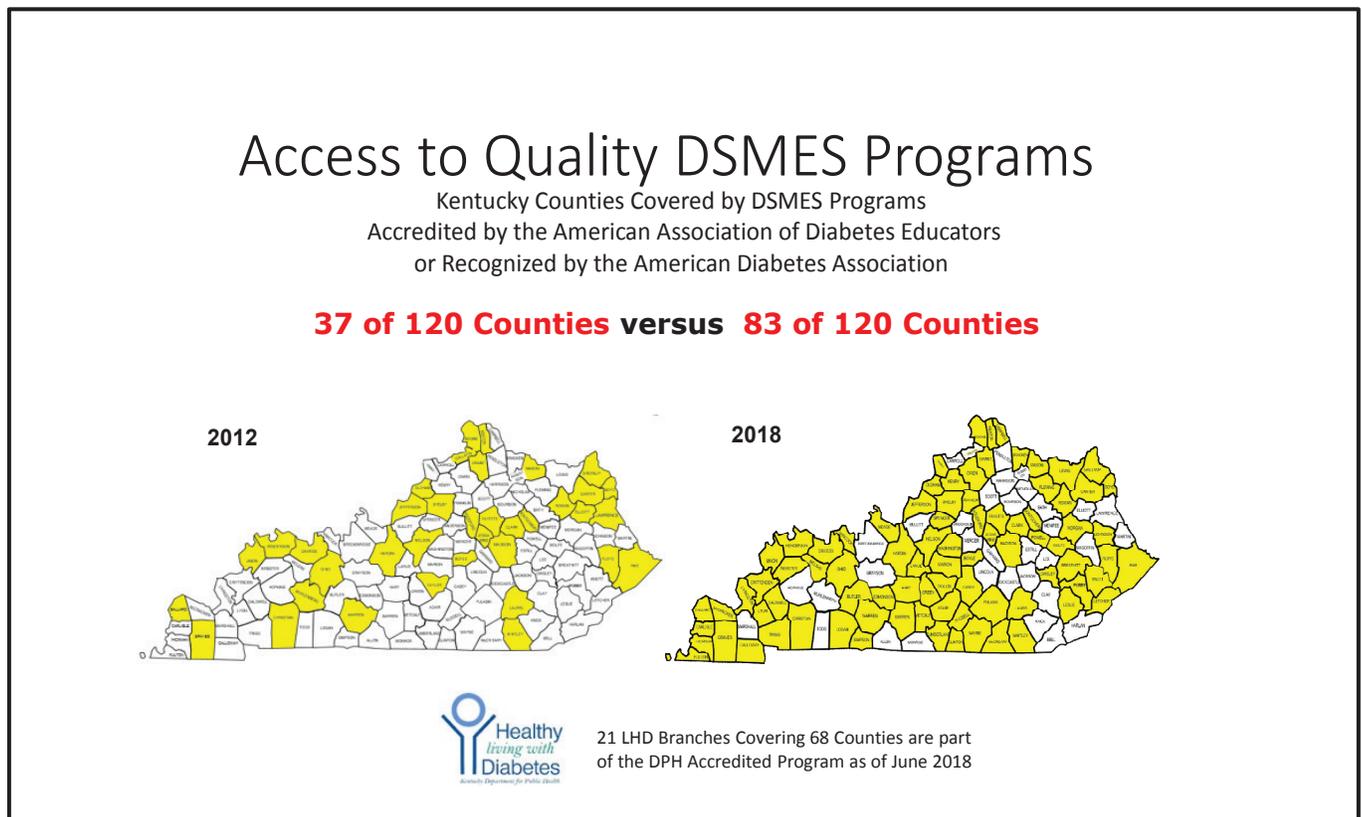
KDPCP and its many partners have also been working to increase access to Accredited/Recognized DSMES services across the commonwealth. Achievements in this area include:

- Increased the number of counties covered by a recognized/accredited DSMES program from 37 in 2012 to 83 counties in 2018 (see maps below)
- Increased from 43 Accredited/Recognized organizations at baseline to 89 programs
- Annual participation data actually decreased from baseline to year 5; however, there is an increase from 8,132 to 9,542 over last 2 years
- DPH/KDPCP received accreditation status from the American Association of Diabetes Educators (AADE) for their novel “umbrella accreditation” program, *Healthy Living with Diabetes* (HLWD). In this model, DPH holds the accreditation and local health departments can join as branches:
  - As of June 2018, 21 branches covering 68 counties are part of the accredited program
  - Outcomes from the HLWD programs include:
    - 1,082 individuals with diabetes had 4,508 encounters from July 2015 to June 2018’
    - The average person who completed the program decreased their A1C from 7.41% to 6.94%. An A1C lab value of less than 7% indicates good control of diabetes’
    - An A1C greater than 9% indicates very poor diabetes control. Before the program, 14% of participants had very poor control of their diabetes and after completing the program only 7% had very poor control.

- Of participants setting behavior change goals related to their diabetes self-management, 93% reported success with making positive change toward achieving their goal
- Kentucky's program was highlighted in the July, 2018 issue of "AADE In Practice"

As noted regarding the National DPP above, this significant improvement in access to accredited/recognized DSMES services across Kentucky could be at risk. Maintenance and growth of DSMES will require attention to removal of barriers to DSMES participation and adequate reimbursement for providers.

**Figure 6: Kentucky Counties Covered by Accredited/Recognized DSMES Programs**



## Office of Health Data and Analytics (OHDA)

*OHDA does not provide health programs as do the other agencies include in this report. OHDA provides data, reports, and analyses to other entities such as DMS, DPH and policymakers. The revised structure increases the capacity to support departments across the Cabinet for Health and Family Services (CHFS).*

- Analyzes statewide administrative claims data specific to inpatient and outpatient hospitals and ambulatory care facilities.
- Identifies opportunities for preparing and distributing relevant information to public and governmental entities about health, health care, and public policy.
- Collects administrative claims data through the Kentucky Hospital Association (KHA) in the form of billing records from hospitals and ambulatory facilities. This data includes elements such as procedure codes, diagnosis codes, facility charges, and patient demographic information. Furthermore, claims data are related to inpatient hospital discharges, emergency department utilization (including observation stays), outpatient surgery, mammograms, and other outpatient procedures such as MRI, CAT scan, or procedures identified by specific CPT© codes.
- Ensures data is available on the CHFS web site, including information on charges for health care services, as well as descriptive information relevant to quality and outcome measures.

## Section 4 – Measuring Progress

---

Key clinical standards of diabetes care are benchmarked and measured via the Healthcare Effectiveness Data and Information Set (HEDIS). HEDIS measures are used by more than 90 percent of America's health plans to measure performance on important dimensions of care and service. National benchmarks for these measures have been established for Medicaid, Medicare, and private insurers.

Comprehensive Diabetes Care HEDIS measures for 2017 include the percentage of adults ages 18-75 with diabetes (type 1 or 2) who had each of the following:

- A1C testing;
- A1C poor control (>9.0%);
- A1C control (<8.0%);
- A1C control (<7.0%) for a selected population;
- Medical attention for nephropathy;
- Eye exam (retinal);
- BP control (<140/90 mm Hg).

In addition to making use of HEDIS measures, the committee will begin monitoring DPP and DSMES availability and participation.

### Medicaid – HEDIS Measures

Table 25 reports HEDIS data on adults ages 18-75 enrolled in one of Kentucky’s Medicaid MCO plans. The (+) percentages compare favorably and the (-) percentages compare unfavorably to the 2018 HEDIS national benchmark for the 50<sup>th</sup> percentile for all Medicaid MCO plans nationally. Although, not all plans measure scores were positive, Aetna stands out as having positive performance in four (4) of the six (6) diabetes measures.

| Table 25: Kentucky Medicaid Managed Care HEDIS Scores 2018<br>(adults aged 18-75 enrolled in a Kentucky Medicaid Managed Care Plan) |  |   |   |   |   |   |  |
|---|--|---|---|---|---|---|--|
|   | Aetna<br>(+) =<br>Compares<br>favorably ; (-)<br>= Compares<br>Unfavorably | Anthem<br>(+) =<br>Compares<br>favorably ; (-)<br>= Compares<br>Unfavorably | Humana<br>(+) =<br>Compares<br>favorably ; (-)<br>= Compares<br>Unfavorably | Passport<br>(+) =<br>Compares<br>favorably ; (-)<br>= Compares<br>Unfavorably | WellCare<br>(+) =<br>Compares<br>favorably ; (-)<br>= Compares<br>Unfavorably | Weighted<br>Average<br>(FINAL<br>STATEWIDE<br>RATE) | 2018 HEDIS<br>National<br>Benchmark (50th<br>Percentile) |
| <b>Comprehensive Diabetes Care</b>  |  |   |   |   |   |   |  |
| HbA1c Testing   | 87.02% (-)   | 87.96% (+)  | 86.32% (-)  | 86.31% (-)  | 87.18% (-)  | 86.93% (-)  | 87.83%   |
| HbA1c Poor Control<br>(>9.0%)   | 34.91% (+)   | 39.60% (-)  | 64.79% (-)  | 56.93% (-)  | 42.47% (-)  | 47.18% (-)  | 38.08% *   |
| HbA1c Control<br>(<8.0%)  | 54.64% (+)   | 47.45% (-)  | 32.14% (-)  | 34.67% (-)  | 46.35% (-)  | 43.22% (-)  | 51.40%   |
| HbA1c Control<br>(<7.0%)  | 41.36% (+)   | 34.35% (-)  | 23.84% (-)  | 23.98% (-)  | 34.97% (-)  | 31.75% (-)  | 35.07%   |
| Eye Exam  | 48.40% (-)   | 49.45% (-)  | 52.82% (-)  | 44.53% (-)  | 58.12% (+)  | 52.12% (-)  | 57.89%   |
| Medical Attention<br>for Nephropathy  | 91.06% (+)   | 89.60% (-)  | 90.26% (-)  | 89.78% (-)  | 89.29% (-)  | 89.81% (-)  | 90.51%   |
| Blood Pressure<br>Control (<140/90<br>mm Hg)  | 62.56% (-)   | 60.58% (-)  | 54.87% (-)  | 52.37% (-)  | 58.24% (-)  | 57.34% (-)  | 63.26%   |
| Footnote: * Lower Score is Better   |  |   |   |   |   |   |  |

### KEHP – HEDIS-Like Measures

The KEHP reviews data that deviate slightly from the normal HEDIS parameters. Such measures are called “HEDIS-Like” and are commonly used when data does not conform to the full set of guidelines. Truven Health Analytics (now IBM Watson Health) provides analysis for the selected diabetes data for KEHP. Table 26 shows HEDIS-Like rates for employees and retirees diagnosed with diabetes. For all three measures reported by Truven (now IBM Watson Health), KEHP members have lower (poorer) rates than the national benchmark.

| Table 26: KEHP Diabetes HEDIS-Like Measures 2017 |   |                                     |
|--|---|-------------------------------------|
| Measure  | KEHP Rate<br>(+) compares favorably<br>(-) compares unfavorably | 2017 HEDIS<br>National<br>Benchmark |
| A1C Test Age 18-75                               | 82% (-)   | 90%                                 |
| Dilated Eye Exam (age 18-75)                     | 38% (-)   | 41%                                 |
| Medical Attention for Nephropathy                | 81%(-)  | 90%                                 |

### Department for Public Health HEDIS-Like Measures

DPH conducts the Kentucky Behavioral Risk Factor Survey (KyBRFS) which tracks specific health measures for Kentucky adults. Table 27 includes data on diabetes standards of care from the KyBRFS. Only the items related to A1C are similar to a HEDIS measure; however, the other measures reported are key standards of care that are critical as measures of diabetes management. Nearly 95% of Kentucky adults with diabetes report they have had at least one A1C test in the previous 12 months. Eighty percent report that they have had two or more A1C tests in the previous 12 months, as is considered standard for a person with diabetes.

| Table 27: Diabetes Standards of Care for<br>Kentucky Adults<br>KY BRFSS- 2017 |       |
|---|-------|
| One or more A1C past 12 months  | 94.5% |
| Two or more A1C past 12 months  | 80.2% |
| Foot exam from HCP in past 12 months  | 75.9% |
| Dilated Eye Exam past 12 months   | 66.5% |

### Participation in DPP and DSMES Services

The committee has also identified DPP and DSMES participation as an important measure for monitoring of progress.

#### *Diabetes Prevention Program (DPP):*

As detailed in the previous “Current Efforts” section, DPH/KDPCP, along with CDC, tracks the number and identity of CDC-Recognized DPP organizations in Kentucky. In 2018, there were 54 such organizations. KDPCP prepares listings and maps of these organizations every other month and shares them with partners via websites and the *Kentucky Diabetes Resource Directory*. CDC also reports the number of DPP participants by state to the KDPCP. The number is cumulative since the programs’ inception. The most recent report

(January 2018), indicated that enrollment increased from 297 at baseline to 3,992.

KEHP also tracks information about their member participation in the National DPP. In 2017, 344 KEHP members participated in a DPP class. The number of DPP providers receiving reimbursement from Anthem grew to 23 providers offering 62 classes in 21 counties.

***Diabetes Self-Management Education and Support (DSMES):***

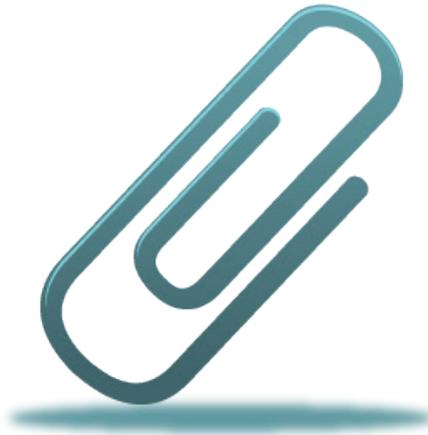
At the state level, access to accredited/recognized DSMES services has improved significantly over the past several years, as illustrated in the comparison maps in Section 3. Despite this success, there are still areas of the state that have no access to in-person DSMES. Even where programs do exist, the frequency of offerings is inadequate to serve all those in need. In addition, transportation and other barriers to class attendance necessitate new modes of delivery of DSMES. Online providers have now become available in Kentucky. In addition, telehealth models are being explored via pilot projects in Kentucky and nationally. Having multiple methods for obtaining the service should increase access and participation.

Participation in DSMES is a covered benefit for adult Medicaid beneficiaries. Use of this benefit nearly doubled following Medicaid expansion in 2014, but has declined slightly since then. At less than even 1% of the eligible population, it is an underused benefit. As shown in the DSMES maps above, which detail program availability across the state, there is good opportunity to see growth in participation by the Medicaid population.

| <b>Table 28: Number and Percent of Adult Medicaid Beneficiaries Who had a Claim for DSMES</b> |               |               |               |               |
|---|---------------|---------------|---------------|---------------|
| <b>2013</b>   | <b>2014</b>   | <b>2015</b>   | <b>2016</b>   | <b>2017</b>   |
| 500<br>(0.7%)   | 903<br>(0.8%) | 820<br>(0.6%) | 656<br>(0.4%) | 731<br>(0.4%) |

DSMES continues to be a covered benefit under the KEHP. The medical third party administrator identified 503 unique members who had a medical claim filed with a code for DSMES from January 1 to December 31, 2017, and 388 unique members from January 1-October 31, 2018. KEHP continues to ensure members are aware of this valuable benefit.

# Attachments



## Attachment 1 – Legislation - KRS 211.751-753

### **211.751 Goals, benchmarks, and plans to reduce incidence of diabetes, improve care, and control complications.**

The Department for Medicaid Services, the Department for Public Health, the Office of Health Policy, and the Personnel Cabinet shall collaborate to identify goals and benchmarks while also developing individual entity plans to reduce the incidence of diabetes in Kentucky, improve diabetes care, and control complications associated with diabetes.

**Effective:** June 8, 2011

**History:** Created 2011 Ky. Acts ch. 83, sec. 1, effective June 8, 2011.

### **211.752 Annual reports to Legislative Research Commission.**

The Department for Medicaid Services, the Department for Public Health, the Office of Health Policy, and the Personnel Cabinet shall submit a report to the Legislative Research Commission by January 10 of each odd-numbered year on the following:

(1) The financial impact and reach diabetes of all types is having on the entity, the Commonwealth, and localities. Items included in this assessment shall include the number of lives with diabetes impacted or covered by the entity, the number of lives with diabetes and family members impacted by prevention and diabetes control programs implemented by the entity, the financial toll or impact diabetes and its complications places on the program, and the financial toll or impact diabetes and its complications places on the program in comparison to other chronic diseases and conditions;

(2) An assessment of the benefits of implemented programs and activities aimed at controlling diabetes and preventing the disease. This assessment shall also document the amount and source for any funding directed to the agency or entity from the Kentucky General Assembly for programs and activities aimed at reaching those with diabetes;

(3) A description of the level of coordination existing between the entities on activities, programmatic activities, and messaging on managing, treating, or preventing all forms of diabetes and its complications;

(4) The development or revision of detailed action plans for battling diabetes with a range of actionable items for consideration by the General Assembly. The plans shall identify proposed action steps to reduce the impact of diabetes, prediabetes, and related diabetes complications. The plan shall also identify expected outcomes of the action steps proposed in the following biennium while also establishing benchmarks for controlling and preventing relevant forms of diabetes; and

(5) The development of a detailed budget blueprint identifying needs, costs, and resources required to implement the plan identified in subsection (4) of this section. This blueprint shall include a budget range for all options presented in the plan identified in subsection (4) of this section for consideration by the General Assembly.

**Effective:** June 8, 2011

**History:** Created 2011 Ky. Acts ch. 83, sec. 2, effective June 8, 2011.

### **211.753 Use of agencies' existing diabetes information, data, initiatives, and programs to implement KRS 211.751 and 211.752.**

The requirements of KRS 211.751 and 211.752 shall be limited to the diabetes information, data, initiatives, and programs within each agency prior to June 8, 2011, unless there is unobligated funding for diabetes in

each agency that may be used for new research, data collection, reporting, or other requirements of KRS 211.751 and 211.752.

**Effective:** June 8, 2011

**History:** Created 2011 Ky. Acts ch. 83, sec. 3, effective June 8, 2011.

## Attachment 2 – Committee Members

The following people participated in the preparation of the 2019 Diabetes Report.

### **Cabinet for Health and Family Services**

#### **Department for Public Health**

Jeffrey Howard, MD, Commissioner

Connie Gayle White, MD, MS, FACOG, Senior Deputy Commissioner

Devon McFadden, MPH, Director, Division of Prevention and Quality Improvement

Sue Thomas-Cox, RN, Manager, Chronic Disease Prevention Branch

Theresa A. Renn, RN, CDE, Program Manager, Kentucky Diabetes Prevention and Control Program

Teresa A. Wood, PhD, Epidemiologist, Chronic Disease Prevention Branch

Sarojini Kanotra, PhD, MPH, Epidemiologist, Kentucky Behavioral Risk Factor Surveillance Survey

Ariel Arthur, BA, Health Policy Analyst, Chronic Disease Prevention Branch

Vivian Lasley-Bibbs, MPH, Epidemiologist, Office of Health Equity

### **Office of Health Data and Analytics**

Maik Schutze, Chief Analytics Officer

Allison Lile, Health Care Data Administrator

Jason Reed, Sr. Project Manager

Lynn Ng, Policy Advisor

### **Department for Medicaid Services**

Stephanie Bates, Deputy Commissioner

Gil Liu, MD, MS, Medical Director

Evette Rhodes, CPC, Human Services Program Branch Manager

Angela W. Parker, RHIT, CHCQM, Director, Program Quality and Outcomes

### **Personnel Cabinet**

#### **Department of Employee Insurance, Kentucky Employees' Health Plan**

Jenny Goins, SPHR, Commissioner

Donna Marcum, Staff Assistant, Office of the Commissioner

Bruce Cottew, Healthcare Data Administrator, Office of the Commissioner



# 2019 KENTUCKY DIABETES REPORT

## STATISTICS FOR KENTUCKY

442,480

adults were diagnosed with diabetes in 2017

1.1 MILLION

adults are estimated to have prediabetes

...that's

1 OUT OF 3

Kentuckians

4<sup>TH</sup>

Kentucky has the 4<sup>th</sup> highest diabetes mortality rate in US

## PREVENTING TYPE 2 DIABETES



EXERCISE



HEALTHY EATING

\$5.16 BILLION

ESTIMATED COST OF DIABETES IN KENTUCKY

COST FOR ADULTS WITH DIABETES IS

2.3X HIGHER

THAN FOR ADULTS WITHOUT DIABETES

## DIABETES COMES WITH A HIGHER RISK OF SERIOUS COMPLICATIONS

blindness



kidney failure



heart disease



stroke



loss of toes, feet or legs



## GOALS

1. **PREVENT** new cases of type 2 diabetes by promoting participation in the National Diabetes Prevention Program (DPP).
2. **INCREASE APPROPRIATE SCREENING** for prediabetes, diabetes and gestational diabetes by promoting evidence-based screening guidelines.
3. Ensure that people with diabetes have **ACCESS TO EVIDENCE-BASED SERVICES**, including Diabetes Self-Management Education and Support (DSMES) and Case/Disease Management, which improve knowledge, skills, and behaviors necessary to manage their disease, and improve outcomes.
4. Assure a sustainable diabetes prevention and control public health **INFRASTRUCTURE AND WORKFORCE** at the state and local level.
5. Improve capabilities and use of diabetes and chronic disease **SURVEILLANCE SYSTEMS** and Health Information Technology (HIT) systems needed to determine the extent and impact of diabetes on the Commonwealth.





## Attachment 6 – Maternal Delivery and Non-Delivery Hospital Stays by Race and Diabetes Type

| Appendix Companion to Table 9: Number and Percentage of Delivery and Non-delivery Maternal Hospital Stays and Type of Diabetes Diagnosis of Mother, Kentucky: 2017 |                       |                      |                       |                      |                       |                      |                       |                      |                       |                      |                       |                      |
|--|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|
| Type of Maternal Stay  | WHITE                 |                      |                       |                      | AFRICAN AMERICAN      |                      |                       |                      | OTHER RACES           |                      |                       |                      |
|  | Pre-existing diabetes | Gestational Diabetes | No Diabetes Diagnosis | Total Maternal Stays | Pre-existing diabetes | Gestational Diabetes | No Diabetes Diagnosis | Total Maternal Stays | Pre-existing diabetes | Gestational Diabetes | No Diabetes Diagnosis | Total Maternal Stays |
| Total Maternal Stays (Delivery and Non-Delivery)   | 618                   | 2,940                | 84,275                | 87,833               | 123                   | 295                  | 10,315                | 10,733               | 21                    | 236                  | 4,940                 | 5,197                |
| (% of all maternal stays by diabetes type)   | 0.7%                  | 3.3%                 | 95.9%                 | 100%                 | 1.1%                  | 2.7%                 | 96.2%                 | 100%                 | 0.4%                  | 4.5%                 | 95.1%                 | 100%                 |
| Non-Delivery Stays   | 182                   | 160                  | 45,625                | 45,967               | 41                    | 31                   | 5,741                 | 5,813                | 5                     | 11                   | 2,865                 | 2,881                |
| (% of total stays which are non-delivery)  | 29.4%                 | 5.4%                 | 54.1%                 | 52.3%                | 33.2%                 | 10.5%                | 55.7%                 | 54.2%                | 23.8%                 | 4.7%                 | 58.0%                 | 55.4%                |
| Stays with Delivery  | 436                   | 2,780                | 38,650                | 41,866               | 82                    | 264                  | 4,574                 | 4,920                | 16                    | 225                  | 2,075                 | 2,316                |
| (% of total stays with delivery)   | 70.6%                 | 94.6%                | 45.9%                 | 47.7%                | 66.7%                 | 89.5%                | 44.3%                 | 45.8%                | 76.2%                 | 95.4%                | 42.0%                 | 44.6%                |

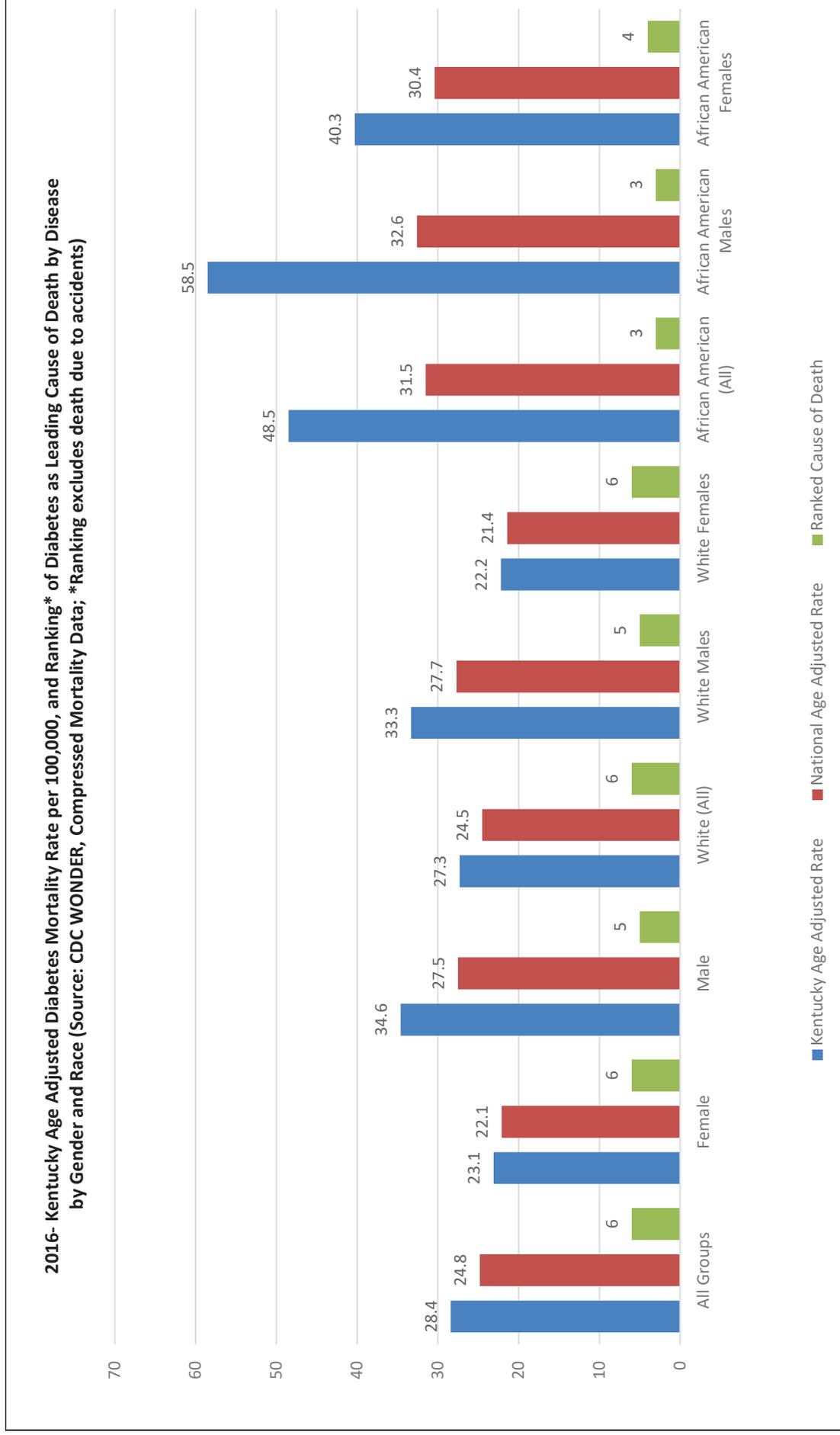
Source: 2017 Kentucky Hospital Discharge Data, based on all listed diagnoses

## Attachment 7 – Vaginal and C-Section Deliveries by Race and Diabetes Type

| Appendix Companion to Table 9: Number and Percentage of Vaginal and C-Section Deliveries by Type of Diabetes Diagnosis of Mother, Kentucky: 2017 |                       |                      |                       |                      |                       |                      |                       |                      |                       |                      |                       |                      |
|--|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|
| Type of Delivery   | WHITE                 |                      |                       |                      | AFRICAN AMERICAN      |                      |                       |                      | OTHER RACES           |                      |                       |                      |
|  | Pre-existing diabetes | Gestational Diabetes | No Diabetes Diagnosis | Total Delivery Stays | Pre-existing diabetes | Gestational Diabetes | No Diabetes Diagnosis | Total Delivery Stays | Pre-existing diabetes | Gestational Diabetes | No Diabetes Diagnosis | Total Delivery Stays |
| All stays with delivery  | 436                   | 2,780                | 38,650                | 41,866               | 82                    | 264                  | 4,574                 | 4,920                | 16                    | 235                  | 2,075                 | 2,326                |
| (% of all delivery stays by diabetes type)   | 1.1%                  | 6.6%                 | 92.3%                 | 100%                 | 1.6%                  | 5.4%                 | 92.9%                 | 100%                 | 0.7%                  | 10.1%                | 89.6%                 | 100%                 |
| Type of Delivery   |                       |                      |                       |                      |                       |                      |                       |                      |                       |                      |                       |                      |
| Vaginal  | 120                   | 1,438                | 25,480                | 27,038               | 27                    | 134                  | 2,928                 | 3,089                | 7                     | 129                  | 1,444                 | 1,580                |
| (% of deliveries by diabetes type)   | 27.52%                | 51.73%               | 65.92%                | 64.58%               | 32.93%                | 50.76%               | 64.01%                | 62.78%               | 43.75%                | 57.33%               | 69.59%                | 68.22%               |
| C-Section  | 316                   | 1,342                | 13,170                | 14,828               | 55                    | 130                  | 1,646                 | 1,831                | 9                     | 96                   | 631                   | 736                  |
| (% of deliveries by diabetes type)   | 72.48%                | 48.27%               | 34.08%                | 35.42%               | 67.07%                | 49.24%               | 35.99%                | 37.22%               | 56.25%                | 42.67%               | 30.41%                | 31.78%               |

Source: 2017 Kentucky Hospital Discharge Data, based on all listed diagnoses

## Attachment 8 - 2016 Kentucky Age Adjusted Diabetes Mortality per 100,000 and Ranking of Diabetes as Leading Cause of Death by Disease as Leading Cause of Death by Gender and Race



## Attachment 9 - Emergency Department Visits for Diabetes, by Area Development District and Race

| 2016: Emergency Department Encounters with Diabetes Coded as the Primary Diagnosis (Kentucky Residents Only) |        |                 |               |                  |                 |               |            |                 |               |        |                 |               |
|--|--------|-----------------|---------------|------------------|-----------------|---------------|------------|-----------------|---------------|--------|-----------------|---------------|
| ADD of Patient Residence   | White  |                 |               | African American |                 |               | Other Race |                 |               | Total  |                 |               |
|  | Cases  | Average Charges | Total Charges | Cases            | Average Charges | Total Charges | Cases      | Average Charges | Total Charges | Cases  | Average Charges | Total Charges |
| BARREN RIVER   | 908    | \$2,744         | \$3,723,556   | 130              | \$2,609         | \$605,249     | 22         | \$1,984         | \$67,108      | 1,060  | \$2,693         | \$4,395,912   |
| BIG SANDY  | 757    | \$4,233         | \$4,935,859   | Suppressed       | Suppressed      | Suppressed    | Suppressed | Suppressed      | Suppressed    | 764    | \$4,235         | \$4,991,219   |
| BLUEGRASS  | 2,320  | \$3,186         | \$10,740,608  | 460              | \$3,145         | \$1,916,446   | 28         | \$2,850         | \$103,733     | 2,808  | \$3,175         | \$12,760,786  |
| BUFFALO TRACE  | 159    | \$2,837         | \$624,610     | 8                | \$2,312         | \$53,246      | Suppressed | Suppressed      | Suppressed    | 167    | \$2,837         | \$677,857     |
| CUMBERLAND VALLEY  | 1,377  | \$3,162         | \$6,217,423   | 13               | \$3,006         | \$38,864      | 2          | \$4,788         | \$9,577       | 1,392  | \$3,152         | \$6,265,864   |
| FIVCO  | 639    | \$2,885         | \$2,702,780   | 7                | \$1,250         | \$16,194      | 6          | \$3,503         | \$21,661      | 652    | \$2,885         | \$2,740,635   |
| GATEWAY  | 452    | \$2,511         | \$1,625,431   | 13               | \$2,479         | \$42,881      | 6          | \$2,978         | \$32,138      | 471    | \$2,519         | \$1,700,451   |
| GREEN RIVER  | 751    | \$2,907         | \$3,081,460   | 114              | \$3,919         | \$604,004     | 23         | \$3,208         | \$119,304     | 888    | \$3,028         | \$3,804,768   |
| KIPDA  | 1,720  | \$3,595         | \$9,712,455   | 1,198            | \$3,468         | \$6,265,929   | 41         | \$3,224         | \$223,347     | 2,959  | \$3,541         | \$16,201,732  |
| KY RIVER   | 567    | \$4,009         | \$3,303,242   | Suppressed       | Suppressed      | Suppressed    | Suppressed | Suppressed      | Suppressed    | 573    | \$4,045         | \$3,353,401   |
| LAKE CUMBERLAND  | 786    | \$2,823         | \$3,299,599   | 34               | \$2,892         | \$121,015     | 9          | \$1,741         | \$22,234      | 829    | \$2,822         | \$3,442,848   |
| LINCOLN TRAIL  | 766    | \$2,082         | \$2,579,829   | 127              | \$1,531         | \$388,299     | 13         | \$2,950         | \$49,267      | 906    | \$2,051         | \$3,017,395   |
| NORTHERN KY  | 1,026  | \$2,058         | \$3,159,153   | 76               | \$1,763         | \$161,863     | 24         | \$1,627         | \$73,262      | 1,126  | \$2,024         | \$3,394,278   |
| PENNYRILE  | 633    | \$2,831         | \$2,787,506   | 194              | \$2,689         | \$804,419     | Suppressed | Suppressed      | Suppressed    | 832    | \$2,785         | \$3,607,535   |
| PURCHASE   | 620    | \$3,069         | \$2,683,217   | 116              | \$3,930         | \$579,861     | Suppressed | Suppressed      | Suppressed    | 740    | \$3,192         | \$3,292,645   |
| Total  | 13,481 | \$3,003         | \$61,176,728  | 2,499            | \$3,216         | \$11,646,794  | 187        | \$2,888         | \$823,803     | 16,167 | \$3,033         | \$73,647,326  |

(Source: Kentucky Outpatient Hospital Discharge Claims 2017; Kentucky Cabinet for Health and Family Services, Office of Health Data and Analytics) Note: Data reporting is suppressed when there are 5 or fewer cases in one cell to protect privacy

**Attachment 10 - Number and Crude Rate of Hospitalization for Diabetes as Primary Cause (Kentucky residents only; 2017)**

| Number and Crude Rate of Hospitalization for Diabetes as Primary Cause (Kentucky residents only; 2017) |                  |                      |                  |                      |                  |                      |                  |                      |                      |
|--|------------------|----------------------|------------------|----------------------|------------------|----------------------|------------------|----------------------|----------------------|
| ADD of Patient Residence   | White            |                      | African American |                      | Other            |                      | Total            |                      | Crude Rate per 1,000 |
|  | Diabetes Primary | Crude Rate per 1,000 |                      |
| PURCHASE   | 371              | 2.16                 | 65               | 5.21                 | suppressed       | suppressed           | 440              | 2.24                 |                      |
| PENNYRILE  | 343              | 1.97                 | 86               | 3.76                 | 0                | 0.00                 | 429              | 2.02                 |                      |
| GREEN RIVER  | 354              | 1.84                 | 32               | 2.84                 | suppressed       | suppressed           | 393              | 1.82                 |                      |
| BARREN RIVER   | 577              | 2.21                 | 68               | 3.56                 | 15               | 0.64                 | 660              | 2.18                 |                      |
| LINCOLN TRAIL  | 517              | 2.21                 | 45               | 2.31                 | 11               | 0.52                 | 573              | 2.09                 |                      |
| KIPDA  | 1,616            | 2.20                 | 842              | 4.82                 | 22               | 0.22                 | 2,480            | 2.46                 |                      |
| NORTHERN KY  | 847              | 2.06                 | 87               | 5.56                 | 16               | 0.51                 | 950              | 2.07                 |                      |
| BUFFALO TRACE  | 111              | 2.12                 | 6                | 4.46                 | suppressed       | suppressed           | 118              | 2.13                 |                      |
| GATEWAY  | 170              | 2.15                 | 11               | 5.34                 | suppressed       | suppressed           | 182              | 2.15                 |                      |
| FIVCO  | 377              | 2.96                 | 7                | 3.18                 | suppressed       | suppressed           | 389              | 2.91                 |                      |
| BIG SANDY  | 426              | 3.12                 | 2                | 1.16                 | suppressed       | suppressed           | 429              | 3.03                 |                      |
| KY RIVER   | 458              | 4.48                 | 0                | 0.00                 | 0                | 0.00                 | 458              | 4.33                 |                      |
| CUMBERLAND VALLEY  | 726              | 3.28                 | 10               | 3.12                 | suppressed       | suppressed           | 738              | 3.18                 |                      |
| LAKE CUMBERLAND  | 551              | 2.83                 | 16               | 3.48                 | 6                | 0.60                 | 573              | 2.74                 |                      |
| BLUEGRASS  | 1,397            | 2.06                 | 245              | 3.45                 | 16               | 0.21                 | 1,658            | 2.01                 |                      |
| Total  | 8,841            | 2.35                 | 1,522            | 4.20                 | 107              | 0.33                 | 10,470           | 2.35                 |                      |

(Source: Kentucky Outpatient Hospital Discharge Claims 2017; Kentucky Cabinet for Health and Family Services, Office of Health Data and Analytics) Note: Data reporting is suppressed when there are 5 or fewer cases in one cell to protect privacy

**Attachment 11 - Number and Crude Rate of Hospitalization for Diabetes as Any Cause (Kentucky residents only; 2017)**

| Number and Crude Rate of Hospitalization for Diabetes as Any Cause (Kentucky residents only; 2017) |              |                      |                  |                      |              |                      |              |                      |  |
|--|--------------|----------------------|------------------|----------------------|--------------|----------------------|--------------|----------------------|--|
| ADD of Patient Residence   | White        |                      | African American |                      | Other        |                      | Total        |                      |  |
|  | Any Diabetes | Crude Rate per 1,000 | Any Diabetes     | Crude Rate per 1,000 | Any Diabetes | Crude Rate per 1,000 | Any Diabetes | Crude Rate per 1,000 |  |
| PURCHASE   | 5,609        | 32.60                | 601              | 48.22                | 60           | 5.06                 | 6,270        | 31.92                |  |
| PENNYRILE  | 4,883        | 27.99                | 649              | 28.36                | 28           | 1.84                 | 5,560        | 26.16                |  |
| GREEN RIVER  | 5,416        | 28.18                | 332              | 29.50                | 42           | 3.30                 | 5,790        | 26.78                |  |
| BARREN RIVER   | 8,619        | 33.06                | 756              | 39.56                | 145          | 6.16                 | 9,520        | 31.39                |  |
| LINCOLN TRAIL  | 7,604        | 32.58                | 582              | 29.83                | 103          | 4.88                 | 8,289        | 30.25                |  |
| KIPDA  | 22,067       | 30.05                | 7,819            | 44.77                | 482          | 4.85                 | 30,368       | 30.12                |  |
| NORTHERN KY  | 12,848       | 31.21                | 513              | 32.79                | 231          | 7.42                 | 13,592       | 29.65                |  |
| BUFFALO TRACE  | 1,673        | 32.02                | 55               | 40.92                | 20           | 11.33                | 1,748        | 31.58                |  |
| GATEWAY  | 2,832        | 35.77                | 62               | 30.11                | 31           | 9.59                 | 2,925        | 34.63                |  |
| FIVCO  | 5,802        | 45.57                | 44               | 20.00                | 33           | 7.58                 | 5,879        | 43.91                |  |
| BIG SANDY  | 7,829        | 57.33                | 23               | 13.39                | 17           | 4.93                 | 7,869        | 55.52                |  |
| KY RIVER   | 6,988        | 68.32                | 66               | 74.66                | 7            | 2.73                 | 7,061        | 66.78                |  |
| CUMBERLAND VALLEY  | 10,154       | 45.90                | 121              | 37.79                | 29           | 3.99                 | 10,304       | 44.47                |  |
| LAKE CUMBERLAND  | 6,732        | 34.61                | 153              | 33.26                | 75           | 7.48                 | 6,960        | 33.28                |  |
| BLUEGRASS  | 19,076       | 28.19                | 2,413            | 34.02                | 145          | 1.93                 | 21,634       | 26.29                |  |
| Total  | 128,132      | 34.00                | 14,189           | 39.15                | 1,448        | 4.49                 | 143,769      | 32.28                |  |

Source: Kentucky Outpatient Hospital Discharge Claims 2017; Kentucky Cabinet for Health and Family Services, Office of Health Data and Analytics

## Acronym List

| Acronym List |   |
|--------------|---|
| A1C          | Hemoglobin A1C                                    |
| ABCs         | A1C, Blood Pressure, Cholesterol, and Smoking     |
| ADA          | American Diabetes Association                     |
| ADD          | Area Development District                         |
| AHRQ         | Agency for Healthcare Research and Quality        |
| ALOS         | Average Length of Stay                            |
| AMA          | American Medical Association                      |
| BMI          | Body Mass Index                                   |
| C-Section    | Cesarean Section                                  |
| CDC          | Centers for Disease Control and Prevention        |
| CDE          | Certified Diabetes Educator                       |
| CDHP         | Consumer Driven Health Plans                      |
| CHFS         | Cabinet for Health and Family Services            |
| CHW          | Community Health Worker                           |
| CM           | Case Management                                   |
| COPD         | Chronic Obstructive Pulmonary Disease             |
| DKA          | Diabetic Ketoacidosis                             |
| DM           | Disease Management                                |
| DMS          | Department for Medicaid Services                  |
| DPH          | Department for Public Health                      |
| DPP          | National Diabetes Prevention Program              |
| DSMES        | Diabetes Self-Management Education and Support    |
| DVB          | Diabetes Value Benefit                            |
| ED           | Emergency Department                              |
| EHR          | Electronic Health Record                          |
| EMR          | Electronic Medical Record                         |
| EQR          | External Quality Review                           |
| FFS          | Fee for Service                                   |
| FFY          | Federal Fiscal Year                               |
| FQHC         | Federally Qualified Health Center                 |
| HCS          | Humana CareSource                                 |
| HEDIS        | Healthcare Effectiveness Data and Information Set |
| HIT          | Health Information Technology                     |
| HLWD         | <i>Healthy Living with Diabetes</i>               |
| HRA          | Health Risk Assessment                            |
| KDPCP        | Kentucky Diabetes Prevention and Control Program  |
| KDN          | Kentucky Diabetes Network                         |
| KEHP         | Kentucky Employees' Health Plan                   |
| KHA          | Kentucky Hospital Association                     |
| KHIE         | Kentucky Health Information Exchange              |

|        |   |
|--------|---|
| KyBRFS | Kentucky Behavioral Risk Factor Survey            |
| LDE    | Licensed Diabetes Educator                        |
| LHD    | Local Health Department                           |
| MCO    | Managed Care Organization                         |
| NACDD  | National Association of Chronic Disease Directors |
| NCQA   | National Committee for Quality Assurance          |
| OHDA   | Office of Health Data and Analytics               |
| OHE    | Office of Health Equity                           |
| PHC    | Personal Health Consultant                        |
| PHP    | Passport Health Plan                              |
| PNC    | Personal Nurse Consultant                         |
| PPO    | Preferred provider Organization                   |
| PQI    | Prevention Quality Indicators                     |
| Rx     | Prescription                                      |
| SFY    | State Fiscal Year                                 |
| SDOH   | Social Determinants of Health                     |
| USPSTF | U.S. Preventive Services Task Force               |

