Diabetes Initiative of South Carolina

2015 Annual Report

Kathie L. Hermayer, MD, MS
Chair, Board of Directors
Diabetes Initiative of South Carolina
People with Diabetes
- South Carolina had the 7th highest prevalence of diabetes among adults in the nation in 2014. One in eight adults has diabetes.
- Approximately one in six African-Americans has diabetes, compared to one in nine white adults.
- One in four over the age of 65 has diabetes in South Carolina. Additionally, one in six has prediabetes in this growing age group.
- One in five adults with less than an $15,000 annual household income has diabetes.

Diabetes Death
- Diabetes is the 7th leading cause of death in South Carolina. In 2014, 1,234 people died from diabetes, or three deaths every day. African-Americans had more than two times a higher death rate compared to whites.

Hospitalization and Cost of Diabetes
- In 2013, around 25,000 diabetes hospitalization and ER visits occurred in SC costing more than $404 million.
- The cost of care for all South Carolinians with diabetes is estimated to exceed three billion dollars in 2015 and more than four billion dollars by 2020. Less than one quarter (23.7%) of this cost has been paid by private insurance. The public portion will exceed three billion dollars in 2020 (Source CDC Cost Calculator).

Diabetes Risk and Complications
- 4 out of 5 people with diabetes in South Carolina are overweight or obese.
- 7 out of 10 people with diabetes have hypertension.
- 2 out of 3 people with diabetes have high cholesterol.
- Cases of end-stage renal disease attributable to diabetes have increased by 50% in the last 10 years.
- 2 out of 5 persons with diabetes have not taken a diabetes self-management class.
March 16, 2016

To Governor Nikki Haley and the Members of the General Assembly:

On behalf of the Board of Directors of the Diabetes Initiative of South Carolina (DSC), I am pleased to present our twenty-first Annual Report (calendar year 2015). The report was requested in the Diabetes Initiative of South Carolina Act, Chapter 39, Section 44-39.

Diabetes is a major public health problem in South Carolina; however, the Diabetes Initiative of South Carolina (DSC) provides a realistic mechanism to address issues on a statewide basis. In 2014, South Carolina ranked seventh highest in the nation in the prevalence of the adult population with diabetes. One in eight adults in South Carolina has diabetes. About one in six African-Americans has diabetes, which is in contrast to one in nine white adults. In South Carolina, one in four adults over the age of 65 has diabetes. Also, in this expanding age group, one in six has prediabetes. For those with an annual household income less than $15,000, one in five adults has diabetes.

DSC has a wide variety of representation on the DSC board and the Center of Excellence, Surveillance Council, and Outreach Council. Different individuals throughout the state are on the DSC board, such as representatives from academic medical centers, clinicians, certified diabetes educators, SC Hospital Association, SC DHEC, SC DHHS, and the SC Medical Association.

The Diabetes Center of Excellence in the DSC provides oversight for developing and supervising professional education programs for health care workers of all types in South Carolina. The goal is to increase their knowledge and ability to care for people with diabetes. The DSC has sponsored 21 Annual Diabetes Fall symposia for primary health care professionals featuring education regarding many aspects of diabetes mellitus. DSC also sponsors a Diabetes Strategies for the Twenty-First Century Symposium, held in the winter on an annual basis. In March, the DSC offers a Diabetes under the Dome Day that takes place at the state house and the intent is to provide screening for diabetes and educational input about diabetes for our state’s representatives and other professionals in the legislature.

Thank you for your past support and hope you will accept these achievements as part of your administration. We look forward to providing you the successes for 2015 in next year’s report.

Respectfully submitted on behalf of the DSC Board,

Kathie L. Hermayer, MD, MS, FACE
Board Chair, Diabetes Initiative of South Carolina

Enclosure
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For more information, please visit our website

http://www.musc.edu/diabetes
EXECUTIVE SUMMARY
EXECUTIVE SUMMARY

- Diabetes affects 29.1 million people, which is approximately 9.3 percent of the U.S. population. There are about 21 million people diagnosed with diabetes and 8.1 million people undiagnosed with diabetes.¹
- In 2014, South Carolina ranked seventh in the nation in the prevalence of diabetes mellitus.²
- The cost of care for all South Carolinians with diabetes is projected to exceed three billion dollars in 2015 and estimated to be more than four billion dollars by 2020. Less than one quarter (23.7 percent) of this cost has been paid by private insurance. The public portion will exceed three billion dollars in 2020 (Source: CDC Cost Calculator).²

The purpose of the Diabetes Initiative of South Carolina (DSC) is to develop and incorporate a comprehensive statewide plan of community outreach programs, health professional education, and diabetes surveillance. The DSC is committed to lowering the severe complications and cost burden of diabetes in the state by providing the tools for management of the disease.

The partnerships, via the effort of three Councils (Outreach, Diabetes Center, and Surveillance), achieved much success during 2015.

The Outreach Council:
The mission of the outreach council is to oversee and direct efforts in patient education for primary care to include: promoting adherence to national standards of education, ongoing assessment of patient care, costs, and reimbursement issues for persons with diabetes in South Carolina. The Outreach Council provides an annual report for the DSC Board. The DSC continues to work closely with the Diabetes Advisory Council to assess community needs and maintain an efficient and consolidated outreach effort. The Outreach Council supported efforts towards the national publication for primary care professionals and other subspecialists for the April 2016 Diabetes Symposium issue of the American Journal of the Medical Sciences. Contents of this journal include educational lectures spanning 21 Annual South Carolina Diabetes Fall Symposia for primary health care professionals featuring topics regarding many aspects of diabetes mellitus.

These programs have increased diabetes awareness and continue to motivate patients with diabetes to maintain their care. Over 220 children and youths with diabetes attended Camp Adam Fisher, where they learned the latest news about diabetes management from their peers and from volunteer health professionals. The DSC sponsored the Diabetes under the Dome Day at the Legislature on March 25, 2015. The purpose of this program is to increase awareness related to diabetes and associated risks and to screen the general assembly members and other legislative professionals for diabetes or prediabetes with a finger stick glucose, A1C, height, waist circumference, BMI, blood pressure and cholesterol/lipids. People who are identified with risks or prediabetes can reduce their chances of developing diabetes by increasing physical activity and losing a weight. Even 5-10 pound weight loss reduces risks. The program was met with great success and overall 57 people were screened.

A screening program to identify risks for diabetes in rural SC focused on Bamberg County and surrounding areas. Led by Dr. Carolyn Jenkins, DSC and the College of Nursing, with funding from Sanofi, the program used the American Diabetes Association Risk Test and screened about 1000 persons for risk factors for diabetes, including A1C, blood pressure, lipids, BMI, and waist circumference. Results are discussed with participants, action plans developed, and (with permission), the data are shared with the participants’ primary care provider (PCP). If participants have no PCP, they are linked to health care providers in the area.

In collaboration with Regional Medical Center in Orangeburg, South Carolina Health and Human Services, UNC-CH, and rural physicians, MUSC is conducting a study to evaluate nurse phone-
based care coordination compared to in home community health worker care coordination for patients with diabetes who have uncontrolled A1C or BP levels. Enrollment is completed and follow-up is ongoing.

**Diabetes Center Council:**
The mission of the Diabetes Center Council is to work with health care providers to improve care of persons with diabetes. The 21st Annual Diabetes Fall Symposium for Health Care Professionals was held on September 17 & 18, 2015 in North Charleston at the Convention Center. The total attendance for the Symposium was 207 participants. The Diabetes Strategies Program took place on February 2 & 3, 2016 at the North Charleston Convention Center. The total attendance for the Strategies Program was 86 participants.

The Medical University of South Carolina had a Joint Commission site visit on December 3 & 4, 2015 for an update on maintenance of Advanced Inpatient Diabetes Certification requirements and passed with no citations.

**The Surveillance Council:**
The mission of the surveillance Council is to acquire, analyze and distribute epidemiologic information about diabetes. In June 2015, Dr. John Vena, MUSC Chair of Biostatistics and Epidemiology, became the new chairman for the DSC Surveillance Council. Dr. John Vena and co-chair, Dr. Kelly Hunt, will be analyzing the data for diabetes in SC in conjunction with other statewide organizations such as DHEC and the SC Hospital Association.

Health Sciences South Carolina (HSSC), and its member institutions (AnMed Health, Clemson University, Greenville Health Systems, McLeod Health, MUSC Health, the Medical University of South Carolina, Palmetto Health, Self Regional Healthcare, Spartanburg Regional Healthcare System, and the University of South Carolina) have committed to aggressively tackle the devastating effect of diabetes and obesity. HSSC plans to showcase the state’s leading research and synergize ongoing efforts, leading to accelerated results. This endeavor will further identify key experts in the field and highlight existing diabetes and obesity efforts in the state. The intent is to create an innovative diabetes and obesity collaboration with a goal to improve the lives of South Carolinians.

Diabetes is a huge problem in South Carolina; however, the DSC provides a realistic mechanism to address issues on a statewide basis. The Burden Report assesses progress and provides evidence of significant decreases in co-morbidities and mortality. The overarching goal of the DSC is for these programs and the development of new targeted initiatives which will lead to continuous improvements in the care of people at risk and with diabetes, along with a decrease in morbidity, mortality, and costs of diabetes and its complications in South Carolina.

**References:**
3. Hermayer KL. The Diabetes Initiative of South Carolina Celebrates over 20 Years of Professional Diabetes Education. The American Journal of the Medical Sciences. Accepted for publication April 2016, in press.
HISTORICAL BACKGROUND
HISTORICAL BACKGROUND

In 1991, the Division of Diabetes Translation, Centers for Disease Control, Atlanta, Georgia, published updated trends in diabetes and in diabetic complications in the United States, between 1980 and 1989. Major trends included an increasing prevalence of diabetes and increasing hospitalization rates among diabetic individuals for the serious complications of amputations, end stage renal disease, myocardial infarctions and cardiovascular death. The prevalence of diabetes was doubled in blacks when compared with whites. There was an increase in all major cardiovascular complications among blacks with diabetes. Diabetes was the leading cause of blindness among adults, and women with diabetes were at an increase risk for adverse outcomes of pregnancy.

These issues were magnified in South Carolina, relative to most other states in the United States. Diabetes prevalence was estimated at 6.1%, 5th among 38 states surveyed. Diabetes as a contributor to mortality was increasing in incidence in South Carolina and diabetes accounted for approximately 11% of hospital admissions. Overall, 14% of hospital beds were occupied by people with diabetes. Longitudinal data in the decade of 1980-1990 revealed increases in the prevalence of excess weight, self-reported hypertension and high blood cholesterol in individuals known to have diabetes. Hospitalization rates for renal failure, amputation, and myocardial infarction were increasing and the mortality rate for diabetes as one of the listed causes of death in South Carolina was steadily rising, from 50.7/100,000 population in 1980 to 71.1/100,000 population in 1992.

Shortages of health care professionals involved in care for people with diabetes were recognized. In particular, there were inadequate numbers of primary care physicians, endocrinologists, nephrologists, certified diabetes educators, podiatrists, and pharmacists trained in the care of people with diabetes. Major physician health professional shortages were identified by the Office of Primary Care, S.C. DHEC in 50% of the 48 counties in South Carolina and 74% of the counties in the state were designated by the S.C. State Health and Human Services Commission as medically underserved.

Crude estimates of quality of care for people with diabetes were made. In one survey of type 2 diabetes patients in 1994, 24% had not seen a medical doctor in the past year for diabetes, only 34% reported that they checked blood glucose at least once a day, and a mere 28% had ever heard of HbA1c. Of these, only 18% had an A1C check in the past year. Approximately one quarter of the diabetes individuals reported eye examinations and less than half said they had a foot examination in the past year. It was found that diabetes education had been provided to less than 50% of individuals with diabetes.

Evidence was appearing from large scale collaborative clinical trials that the risks of morbidity and mortality from such cardiovascular complications as myocardial infarction and stroke could be substantially reduced by intensive management of lipid profiles and elevated blood pressure. In 1993, the seminal report from the Diabetes Control and Complications Trial (DCCT) established that intensive glycemic regulation in type 1 diabetes would substantially decrease the risks for the progression of retinopathy, nephropathy, and neuropathy. Simple, inexpensive low dose aspirin therapy produced modest risk reductions for myocardial infarction as a secondary prevention strategy. Microalbuminuria was recognized as a risk marker for cardiovascular events and for renal failure, and it was predicted that intervention trials with angiotensin converting enzyme inhibitors (ACEI) would be effective in delaying progression of these serious complications.

Thus, a serious public health problem of diabetes and its complications was recognized in South Carolina and in the United States. An undersupply of qualified health professionals was on hand to deal with the increasing demands of more intensive education and health care for people with diabetes. Ominous upward trends in mortality and morbidity statistics were present, and an increasing incidence of markers of future cardiovascular events (hypertension, cholesterol, overweight/obesity) was occurring. It was evident that an action plan was needed.
The Diabetes Initiative of South Carolina (DSC) was created by legislative action and signed into law by the Governor of South Carolina in July, 1994. The law established a Board of Directors with members appointed by the top officials of key organizations with an interest in diabetes and its complications. The Board has met quarterly since that time and annually submits this Report. It is referred for progress review by the Legislature and the Governor.

The Organization Chart of the Diabetes Initiative of South Carolina is shown below:

There are three Councils; the Center of Excellence, Outreach, and Surveillance Council. There is a Diabetes Center of Excellence, established in the original legislation, based at the Medical University of South Carolina. This Center is responsible for administering the many activities and programs of DSC and its Board and Councils. It is also responsible for developing and administering professional education programs for health professionals of all varieties in South Carolina, to improve their knowledge and abilities to care for people with diabetes in our state. The Outreach Council is responsible for community interface, with a broad goal of improving diabetes care and education directed at people affected by diabetes. The Surveillance Council is responsible for acquiring, analyzing and distributing epidemiologic information about diabetes including its prevalence costs, morbidity, and mortality. This Council works closely with the Division of Diabetes, Heart Disease, Obesity, and School Health of the SC Department of Health and Environmental Control, and regularly examines the scope and impact of diabetes in South Carolina. A DSC site has been established in the School of Medicine at USC, and provides a critical mechanism for liaison between the two schools and for oversight of programs and activities in the midlands and upstate regions of South Carolina.

We also regularly interact with the American Diabetes Association, the Carolinas Center for Medical Excellence, the Hypertension Initiative of South Carolina and the Area Health Education Consortium. Full reports from key components in the DSC structure are included in this Report.
In calendar year 2004, we completed a review of 5 years of progress, which concentrated on the first 3 goals of the 10 Year Strategic Plan. We recognized that the legislation had created a uniquely successful statewide collaborative effort. Programs were generally on target and were productive. Examples were community outreach, professional and patient education programs, and surveillance of trends in diabetes care. It was recognized, however, that prevalence of diabetes and obesity was increasing, and that comorbidities such as hypertension and altered blood lipids complicated overall management. Major extramural grant funding for community-based programs and clinical trials had been acquired at MUSC and at USC. Overall, progress with that unique combination of public and private resources (federal, state, regional and local support) had been exciting.

In 2011 the Diabetes Initiative of SC evaluated the 10 Year Strategic Plan for improving diabetes in South Carolina. Programs that have been operative for a sufficient time to see trends in morbidity, mortality, hospitalizations, emergency room visits, and health disparities among people with diabetes in South Carolina were assessed. After this analysis by the Board, Councils, and major partners, we published a monograph “The State of Diabetes in South Carolina: An Evaluation of the First Ten Year Strategic Plan of the Diabetes Initiative of South Carolina.” Areas of defined advances were described as well as issues which require further attention. Since diabetes mellitus is a chronic disease with very long-term complications, it is likely that another decade (or more) of work will be needed to be certain that promising trends are sustained and real.

In 2012 the Diabetes Initiative of SC began writing its second 10 Year Strategic Plan. It is hoped that the Plan will be completed by mid-2016.
BUDGET
AND
RESEARCH GENERATED IN PARTNERSHIP WITH DSC
DSC OPERATING BUDGET  
**FY 2014 – 2015**

State Appropriation $ 289,088  
Less Cuts 165,617  
Total Budget $ 123,471

*RESEARCH GENERATED IN PARTNERSHIP WITH DSC*

We are pleased to report major partnership opportunities in diabetes research for fiscal year 2015.

1. **Epidemiology of Diabetes Intervention and Complications (EDIIC)** is a follow-up study of the course of patients enrolled in the Diabetes Control and Complications Trial (DCCT) in Charleston. Along with patients from 27 other centers in the United States and Canada, this is a study of vascular complications after long-term glycemic control in type 1 diabetes. PI: Louis M. Luttrell, MD, PhD

2. **LEADER Trial**: To assess the effect of treatment with liraglutide compared to placebo for at least 3.5 years and up to 5 years on the incidence of cardiovascular events in adults with type 2 diabetes who are at high risk for cardiovascular events. PI: Ali Rizvi, MD

3. **Systolic Blood Pressure Intervention Trial (SPRINT)**: A randomized, multi-center clinical trial testing the effects of intensive lowering of systolic blood pressure (SBP) on preventing cardiovascular disease (CVD). Sponsor: NIH/NHLBI. PI: Ali Rizvi, MD

4. **LEADER: Liraglutide Effect and Action in Diabetes: Evaluation of Cardiovascular Outcome Results**: A long-term, multi-centre, international, randomized double-blind, placebo-controlled trial to determine liraglutide effects on cardiovascular events. PI: Kathie Hermayer, MD

5. **Technology Intensified Diabetes Education Study in African Americans with Type 2 Diabetes Mellitus (TIDES)**. The major goals of this project are to test the efficacy of a technology-intensified diabetes education/skills training (TIDES) intervention in improving glycemic control and reducing diabetes complications and mortality rates in African Americans with type 2 diabetes. Sponsor: NIH/NIDDK. PI: Leonard E. Egede, MD

6. **Technology-Intensified Diabetes Education/Skills Intervention in AAs with DM-2 (TIDES)**. The major goals of this project are to study the effectiveness of telephone-delivered diabetes knowledge/information and motivation/behavioral skills for improved glycemic control in patients with poorly controlled type 2 diabetes. Sponsor: NIH/NIDDK. PI: Leonard Egede, MD

7. **Tablet-Aided Behavioral Intervention Effect on Self-Management Skills (TABLETS)**. The major goal of the proposed research is to conduct a randomized clinical trial to test the effectiveness of a telephone-delivered behavioral lifestyle intervention on improving self-management behaviors in rural populations at high risk of cardiovascular disease. Sponsor: NIH/NIDDK. PI: Cheryl Lynch, MD. Co-I: Leonard Egede, MD

8. **Charleston Health Equity and Rural Outreach Innovation Center (HEROIC)**. Goal: The Charleston HEROIC is one of 19 nationally funded VA HSR&D Centers of Innovation (COIN). The VA HSR&D initiated the COIN program to promote innovative research, facilitate partnerships and collaboration across disciplines, and increase the impact of health services research on the health and health care of Veterans. HEROIC's mission is to improve access and equity in healthcare for all Veterans by eliminating geographic, racial/ethnic, and gender-based disparities. VA HSR&D Center Award. Center Director: Leonard Egede, MD
9. National Chronic Disease Screening Program (NCDSP): Screening for Diabetes in Underserved Rural Communities in South Carolina
   This study will document the primary barriers and facilitators for diabetes screening and actions to reduce risks for diabetes in Bamberg County through formative focus group and key informant interview research with community members, ministers, and leaders; people with diabetes and their families; primary care, specialist providers, and public health practitioners.

10. Transforming Patient-Centered Medical Homes into Medical Communities for Underserved Rural Patients (TPCMH-MCURP)
    The purpose of this study is to improve diabetes management from hospital to home. Research specific aims are to document the primary barriers and facilitators of diabetes management and transitional care in Bamberg County through formative research with local hospital staff (at Orangeburg Regional Hospital as local hospital closed), primary care and specialist providers, public health practitioners, and high risk diabetes patients and their families. PI: Carolyn Jenkins, DrPH, APRN-BC

11. South Carolina Division of Diabetes, Heart Disease, Obesity, and School Health –DHEC
    The division is funded through the Centers for Disease Control and Prevention. In collaboration with multiple partners, contractors and community organizations, the division is implementing targeted strategies that will have statewide reach and impact multiple population groups to achieve improved chronic disease outcomes. The initiatives are focused on health systems interventions to improve the effective delivery and use of clinical and other preventive services; and community-clinical linkages to support heart disease and diabetes prevention and control. The Diabetes Initiative of South Carolina is a major clinical partner to the program and their goals and objectives are complementary. PI: Rhonda L. Hill, PhD, MCHES

12. Greenville Hospital System Employees with Uncontrolled Diabetes Mellitus, Disease Management Pilot with Wireless Meter and CDE Co-management. PI: John Bruch, MD; Co-PI Michelle Stancil, RN, CDE

13. The Role of Sphingolipids in the Development of Diabetic Nephropathy:
    The goal of this project is to examine the association and predictive ability of sphingolipids in relationship to diabetic nephropathy in individuals with type 1 diabetes using the DCCT/EDIC study population. Co-PIs: Maria Lopes-Virella and Rick Klein

14. Monitoring and Managing Newly Healed Chronic Leg and Foot Ulcer Skin Temperature: A Cooling Intervention (MUSTCOOL) to Prevent Ulcer Recurrence:
    The goal of this study is to test MUSTCOOL, a home-based self-monitoring and self-management ulcer prevention intervention for patients with newly healed chronic venous leg and diabetic foot ulcers. Most ulcers recur within 3 months of healing. During the six-month randomized clinic trial, skin temperature will be monitored daily, a maintenance dose of cooling gel pack or placebo will be applied three times weekly to the affected skin, and a bolus dose of cooling will be applied for 5 consecutive days if skin temperature becomes elevated. We will measure outcomes on the incidence of ulcer recurrence, pain, physical activity and quality of life. PI: Theresa Kelechi

15. Novel Intervention Linking Public Housing with Primary Care to Prevent Diabetes
    The goal of this R34 two-year planning project is to develop, implement, and evaluate a pilot translational, DPP intervention. We propose to partner with the City of Charleston Housing Authority and the Fetter Health Care Network (FHCN), a federally qualified health center (FQHC) primary care network to refine and pilot test a community-based, behavior focused DPP intervention to reduce obesity and diabetes risk in public housing residents who are already eligible for FHCN/FQHC services. This 2-year R34 project will use a randomized wait list control design to allocate participants to a translational community based DPP intervention or FHCN/FQHC usual care. PI: Gayenell Magwood
16. Personalized Biobehavioral Weight Loss Intervention for African American Women (aspects of tailored curriculum is being used in the current R34). Follow-up is ongoing with participants in this study. The broad goal of this research identified key components for a tailored bio-behavioral obesity/risk reduction intervention for AA women who are overweight/obese and low socioeconomic status (SES). Socio-cultural preferences are incorporated into behavioral change strategies, the communication of genetic information (genomic literacy/family health history), and the adaptation of the format and delivery of the evidence-based group Diabetes Prevention Program (DPP) materials and approaches to promote weight loss and disease prevention. Phase 1 is an exploratory study using genetic (GWAS) database secondary data analyses. Secondly, an intervention development phase, with 80 obese AA women living in subsidized housing neighborhoods in the Charleston, SC region. PI: Gayenell Magwood

17. Community-based Intervention under Nurse Guidance after Stroke (CINGS)-Wide Spectrum Investigation of Stroke Outcome Disparities on Multiple Levels (WISSDOM) Center
The researchers are developing a community-partnered approach (CBPR) for patients at highest risk for future stroke to design a system for a theoretical, multi-level, novel intervention to control the premier stroke risk factor, hypertension.

**SUMMARY OF RESEARCH GENERATED IN PARTNERSHIP WITH DSC**

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<td>2. LEADER Trial A. Rizvi</td>
<td>69,665</td>
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<td>3. SPRINT A. Rizvi</td>
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<td>4. LEADER Trial K. Hermayer</td>
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<td>5. TIDES L. Egede</td>
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<td>8. HEROIC L. Egede</td>
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<td>10. TPCMH-MCURP C. Jenkins</td>
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**Comment**

Yearly funding of programs in education, care, and clinical research focus on improving outcomes for people with diabetes in SC. Total funding is now at $44.3 million, and yearly funding is $9.2 million. This yearly extramural funding is more than 32.1 times our current state budget. Thus, the modest investment that the state has provided for the Diabetes Initiative of South Carolina’s core funding has paid very impressive dividends in attracting extramural support for 17 long-term projects which address a wide variety of issues relating to diabetes and its complications.
Diabetes Initiative of South Carolina
Outreach Council
January 1, 2015 – December 31, 2015
Annual Board Report

As defined by Section 44-39-50 amendment to 1976 Code of Laws for South Carolina, The Diabetes Outreach Council shall oversee and direct efforts in patient education and primary care including:

1. Promoting adherence to national standards of education and care.
2. Ongoing assessment of patient care, costs and reimbursement issues for persons with diabetes in South Carolina.
3. Preparing an annual report and budget proposal for submission to the Diabetes Initiative of South Carolina Board.

Ongoing Outreach Council Meetings and Activities
The Outreach Council of the Diabetes Initiative of South Carolina met 3 times in 2015.

Prominent Activities
- DSC website updates (www.musc.edu/diabetes).
- SC Guidelines for Diabetes Care, revised and updated.
- SC Inpatient Guidelines for Diabetes Care final review, adoption, and release.
- Collaborative efforts with the American Diabetes Association (ADA), American College of Endocrinology (ACE), American Association of Diabetes Educators (AADE), Joint Commission on Accreditation of Healthcare Organizations (JACHO), Juvenile Diabetes Research Foundation (JDRF), and Agency for Healthcare Research and Quality (AHRQ).
- Updated information on how to become a Certified Diabetes Educator (CDE).
- Updated patient literature and web links provided by governmental websites.

Programs and Activities of Outreach Council Partners to Address Diabetes
- South Carolina Vocational Rehabilitation Department received 421 new referrals, served 935 cases, and rehabilitated 201 people with diabetes disability.
- Diabetes education was provided for 15 deaf mental health patients.
- South Carolina Hospital Association continues to focus on improving diabetes control in hospitals in South Carolina. SC Inpatient Guidelines for Diabetes Care was adopted and released in March 2015.
- Camp Adam Fisher, the Carolina’s largest overnight camp for children with diabetes, siblings/friends, was held at the Cooper 4-H Leadership Center on Lake Marion, June 13-20, 2015, and hosted 220 campers.
- Family Practice Diabetes Education (Group) – 1st & 3rd Tuesday of every month.
- Family Practice Diabetes Education (Individual) – 2nd & 4th Tuesday and Wednesday
- Diabetes Advisory Committee (DAC), 3rd Wednesday of every month.
- “Medication Guidelines for Type 2 Diabetes.” AADE webinar, October 21, 2015.
• “Myths and Realities about Diabetes.” Diabetes education for PEBA employees - Columbia, November 12, 2015.
• AADE/DPP Regional Meeting, December 2, 2015 - Columbia.
• Bamberg (and surrounding counties) Transitions in Care for People with Diabetes—Partnership with MUSC SCTR, UNC-CH NTrACS Institute, Regional Medical Center, SC HHS to pilot and evaluate nurse telephone care coordination compared to community health worker in-home care coordination. Participant enrollment complete and study ongoing with interventions to be completed by April 2016. (See below for aims)
• MUSC College of Health Professions students from physical and occupational therapy-- 75 participants for 1 hour
• Georgetown Diabetes CORE Group—12 consultations to further improving diabetes outcomes for people at risk and with diabetes
• Consultations with community groups and faculty related to community interventions and grant funding for diabetes: 36 consultations for 2015
• 5 PhD dissertations on diabetes/diabetes prevention/obesity
• Developed Guidelines for Community Screening in collaboration with others. Integrative review of screening programs under development. Screened approximately 1000 persons from rural and underserved areas in SC for diabetes risks.

Programs/Grants

1. National Chronic Disease Screening Program: Screening for Diabetes in Underserved Rural Communities in South Carolina
PI: Carolyn Jenkins, DrPH, APRN-BC

Short description: Sanofi Diabetes Screening Program
Aim 1: Document the primary barriers and facilitators for diabetes screening and actions to reduce risks for diabetes in Bamberg County through formative focus group and key informant interview research with community members, ministers, and leaders; people with diabetes and their families; primary care, specialist providers, and public health practitioners.

Aim 2: Based on findings from the research literature on screening for diabetes and Aim 1, develop diabetes screening and action program for community residents that includes:
- Public awareness and recruitment of > 700 residents of Bamberg County and > 300 residents of surrounding areas (Allendale County) to complete a “state of the science” self-assessment for risks of prediabetes and diabetes.
- Developing mobile health technologies for direct linking of screening data to primary care.
- Screening > 500 (goal of 600) persons who are at increased risk for prediabetes and diabetes based on self-assessment of risk factors (using instrument developed in 2.a above). Screening will include: i) weight, height, waist circumference, BMI; ii) A1C and capillary glucose; iii) blood pressure; iv) lipids.
- Linking participants with community programs, primary care and follow-up for abnormal findings.
- Evaluation based on RE-AIM model and presentation of findings to community partners, participants, and scientific/practice communities.

Aim 3: Dissemination: Develop and disseminate a manuscript and toolkit to promote “best practices” for community screening of diabetes in rural communities.
2. Transforming Patient-Centered Medical Homes into Medical Communities for Underserved Rural Patients
PI: Carolyn Jenkins, DrPH, APRN-BC
2015 Funding: $79,000  Total funding: $150,000  Years: 2014-2016
The purpose of this study is to improve diabetes management from hospital to home.
Research specific aims are to:
Aim 1: Formative development of research: Document the primary barriers and facilitators of diabetes management and transitional care in Bamberg County through formative research with local hospital staff (at Orangeburg Regional Hospital as local hospital closed), primary care and specialist providers, public health practitioners, and high risk diabetes patients and their families. Using focus groups (FG) (i.e., qualitative approach), the following research questions will be addressed:
A. What are the individual, interpersonal, health system, and community barriers and facilitators to diabetes and associated disease management and discharge from hospital to home among Bamberg residents?
B. What are the recommended intervening strategies for reducing unnecessary hospital re-admissions and associated costs, and improve self-management success among individuals in Bamberg County?
Aim 2: Based on findings from the research literature and Aim 1, develop a medical home/community extender community health worker (CHW) intervention for high risk diabetes patients and their families that includes training in:
• monitoring and tracking A1c and blood pressure
• simple self-management coaching strategies
• accessing/enhancing resources supporting medication management, discharge plan adherence, problem solving, and improved diet and physical activity.
• addressing barriers and facilitators identified in Aim 1.
Aim 3: To test the impact and feasibility of a 3 month medical home/community extender CHW intervention for reducing unnecessary hospital re-admissions and associated costs, improve self-management success among individuals in Bamberg County, and conduct cost analyses of the intervention through a 3-group randomized control trial (RCT) feasibility pilot including:
  a) CHW in-home intervention;
  b) equipoise telephonic care by an RN;
  c) usual care.

3. Novel Intervention Linking Public Housing with Primary Care to Prevent Diabetes
PI: Gayenell Magwood, PhD, RN
The goal of this R34 two-year planning project is to develop, implement, and evaluate a pilot translational, DPP intervention. We propose to partner with the City of Charleston Housing Authority and the Fetter Health Care Network (FHCN), a federally qualified health center (FQHC) primary care network to refine and pilot test a community-based, behavior focused DPP intervention to reduce obesity and diabetes risk in public housing residents who are already eligible for FHCN/FQHC services. This 2-year R34 project will use a randomized wait list control design to allocate participants to a translational community based DPP intervention or FHCN/FQHC usual care. PI: Gayenell Magwood

4. Personalized Biobehavioral Weight Loss Intervention for African American Women (aspects of tailored curriculum is being used in the current R34). Follow-up is ongoing with participants in this study.
PI: Gayenell Magwood, PhD, RN
The broad goal of this research identified key components for a tailored bio-behavioral obesity/risk reduction intervention for AA women who are overweight/obese and low socioeconomic status (SES). Socio-cultural preferences are incorporated into behavioral change strategies, the
communication of genetic information (genomic literacy/family health history), and the adaptation of the format and delivery of the evidence-based group Diabetes Prevention Program (DPP) materials and approaches to promote weight loss and disease prevention. Phase 1 is an exploratory study using genetic (GWAS) database secondary data analyses. Secondly, an intervention development phase, with 80 obese AA women living in subsidized housing neighborhoods in the Charleston, SC region. PI: Gayenell Magwood

5. **Community-based Intervention under Nurse Guidance after Stroke (CINGS)-Wide Spectrum Investigation of Stroke Outcome Disparities on Multiple Levels (WISSDOM) Center**
   
   PI: Gayenell Magwood, PhD, RN
   
   2015 Funding: $264,850   Total funding: $1,059,400   Years: 2015-2019
   
   The researchers are developing a community-partnered approach (CBPR) for patients at highest risk for future stroke to design a system for a theoretical, multi-level, novel intervention to control the premier stroke risk factor, hypertension.
The Diabetes Strategies for the 21st Century program is intended to assist professionals in meeting the CE requirements for a non-CDE to work as a primary instructor in an ADA recognized program. This course reviews state-of-the-art diabetes care from pathophysiology to current trends in diabetes management and principles of teaching and learning, and will supplement study for certification as a diabetes educator.

- February 3, 2015 - attendance 86
- February 4, 2015 – attendance 78

Diabetes Under the Dome focuses on raising awareness of diabetes and its complications in the state of South Carolina. Free measurements will be performed for blood glucose levels, A1c levels, lipids, weight, blood pressure, and BMI. Representatives from the Diabetes Initiative of South Carolina, Medical University of South Carolina, Ralph H. Johnson VA Medical Center, REACH U.S. Diabetes Coalitions, American Diabetes Association, and PhRMA were on hand to discuss diabetes and its complications with the SC legislators and statehouse staff.

- March 25, 2015 – 57 individuals were evaluated/educated
  - Volunteers included 4 people from the Diabetes Initiative of SC; 5 people from Presbyterian College of Pharmacy, 4 people from Fortis College, 1 person from the Carolina’s Center for Medical Excellence, 1 person from MUSC, and 2 people from industry
  - Press conference held at 9:30 am – Dr. Kathie Hermayer addressed the press
  - Pharma provided financial support for the testing supplies
  - 2014 DSC Annual Report distributed to the SC Governor and SC Legislators

21st Annual Diabetes Fall Symposium for Primary Health Care Professionals is an annual 2 day state wide program that not only provides a comprehensive diabetes management update to all primary care professionals, but also an opportunity for professionals to obtain CME, CEUs, etc. at a low cost. Continuing education credits are provided for these health professionals who attend the Symposium: physicians, nurses, social workers, pharmacists, and registered dietitians. Outstanding local and national experts comprise the faculty, and interactive workshops provide exposure to and discussion of practical topics for attendees.

For the past 20 years, 30-35 individuals have submitted scientific posters each year for a very popular poster session. Attendance at these symposia has grown steadily over the years, from 121 in 1994 to 207 attendees in 2015. Close to 3000 health professionals have attended these Symposia.

- September 17 & 18, 2015, North Charleston Convention Center, North Charleston, SC.
- Attendees: Day 1 - 207; Day 2 - 166

Other Professional Education Activities
- Updated Diabetes Initiative of South Carolina Screening Forms:
  - Are You at Risk for Developing Diabetes?
  - Persons with Diabetes, What are Your Risks for Developing Complications or Problems?
- Updated South Carolina Adult Guidelines for Diabetes Care – 2015
- Developed South Carolina Adult Guidelines for Diabetes Care in the Hospital – 2015
- Planned 2nd Diabetes Symposium special edition of The American Journal of the Medical Sciences
- Conference call on DSC 10-year Strategic Plan
Certifications

Joint Commission Advanced Certification/MUSC Inpatient Diabetes Program
- Site visit – 12/3 & 4/15: no recommendations for improvement.
- Certification dates 12/4/2015 – 12/4/2017

MUSC – ADA Outpatient Education Recognition Program (2 sites)
- Annual Report - January 2015

Regularly Scheduled Meetings

MUSC Hospital Diabetes Task Force
- Hospital Quality Committee
- MUSC ADA Committee: Pamela Arnold, MSN, APRN, BC-ADM, CD
  Chair, Diabetes Advisory Committee

Publications

Diabetes Initiative of South Carolina
Surveillance Council
January 1, 2015 – December 31, 2015
Annual Board Report

Functions

The Surveillance Council was established in 1995 to develop and implement a state-of-the-art system for the assessment of diabetes in South Carolina, and to provide a mechanism to evaluate interventions and control programs. The Council consists of diabetes care providers, epidemiologists, program specialists and researchers, and is staffed by data specialists at the South Carolina Department of Health and Environmental Control and the Medical University of South Carolina. The Council operates with formal quarterly meetings and communications via email, reports, and conference presentations.

The Council has established the following objectives:

- Develop, implement and evaluate surveillance protocols and methodologies to assess diabetes awareness and knowledge, prevalence of diabetes, access to primary care, quality of diabetes self-management, and utilization of monitoring guidelines. This includes the evaluation of patient and professional education programs. Specific efforts include:
- Maintain a mechanism to analyze mortality, morbidity, hospitalization and survey data in production of reports to describe the burden of diabetes in South Carolina.
- Analyze the effects of co-morbidities with diabetes.
- Establish and maintain an ongoing evaluation of the role of insurance and managed care companies in control of diabetes.
- Function as a central unit composed of multiple organizations and disciplines involved in the surveillance of diabetes in South Carolina.
- Function as a data and information resource for DSC and DHEC and other organizations involved in diabetes control.
- Develop and maintain an Internet Website for distribution of information regarding diabetes in South Carolina.
- Establish a scientific forum to showcase diabetes research and projects in South Carolina.
- Establish a methodology to estimate the prevalence of diabetes in South Carolina based on clinical data.
- Establish a methodology to assess trends in diabetes-related outcomes and clinical practices.

Surveillance activities included diabetes-related outcomes trends, management of diabetes, and the continued use of the DSC webpage as a source of information and data regarding diabetes in South Carolina. The surveillance activities for outcomes trends identified several key findings focused on diabetes prevalence, mortality, amputations, cardiovascular disease hospitalizations, stroke hospitalizations, and emergency department utilization, identifying significant improvement in amputations and diabetes mortality. Challenges still remain. Diabetes-related renal disease rates continue to rise. Emergency department visit rates for diabetes are continuing to rise at an alarming rate.

The Council has worked with the professional education activities to identify gaps in knowledge, behavior, and outcomes regarding the management of diabetes. Evaluations have identified the DSC professional education programs as effective regarding education and behaviors associated with the management of diabetes. Gaps have been identified and used to direct the professional education programs and efforts from DSC. In addition to the traditional education needs regarding
the clinical guidelines and best practices associated with the management of diabetes, needs have been identified in patient education and the involvement of providers in the delivery of education materials and information.

The Council continued to coordinate the scientific poster session for the Diabetes Symposium in 2015. This event continues to increase in numbers and quality of research findings, and functions as a forum for describing diabetes research in South Carolina. The DCS webpage continues to be a major resource for information and data regarding diabetes in South Carolina.

A major accomplishment of the Surveillance Council for 2015 has been to increase collaborative networks of investigators and professionals focused on the assessment of diabetes in South Carolina. The Council is currently launching an upgrade to the DSC Webpages, and will continue to review and implement strategies for improvement in 2016.

**Accomplishments**

The summary of the major accomplishments follows:

- Development of a new DSC Strategic Plan
- Development and maintenance of a diverse group of investigators in South Carolina who focus their work on the study of diabetes
- Maintenance of DSC Webpage
- The Council has organized several reports and manuscripts focused on lower extremity amputations, cardiovascular disease, stroke hospitalizations, and hypertension in South Carolina and associated trends that identified a possible positive effect from DSC interventions
- Production of trends reports
- Production and distribution of data slides which can be downloaded from the webpage
- Coordination of the scientific poster session in conjunction with the 2015 Diabetes Symposium. Sixteen abstracts and posters were presented with three SC students receiving cash awards, two Clinical Practices cash awards, and two DSME Programs cash awards
- Maintenance of a working committee to use clinical databases to estimate the prevalence of diabetes in South Carolina
- Recruited new Co-Chairs: John Vena, PhD and Kelly Hunt, PhD
- Initiated review of the Council’s membership with appointments of new members in process.
The South Carolina Department of Health and Environmental Control (DHEC) is dedicated to the prevention of chronic disease disparities such as diabetes. DHEC’s overarching diabetes goals are to prevent complications, disabilities, and burden associated with diabetes as well as to eliminate diabetes-related health disparities.

Prominent 2015 Diabetes Related Initiatives That Have Assisted Us in Meeting Our Goals

I. State Involvements and Updates:

State Comprehensive Diabetes Prevention Plan
The Diabetes Advisory Council of SC (DAC) was reconvened under the leadership of Dr. Gerald Wilson, on September 23, 2015 to lead the development of the statewide comprehensive diabetes prevention plan. The plan will provide the course of action SC will take to expand the National Diabetes Prevention Program across the state. The DAC is structured to address the four pillars of diabetes prevention and cross-cutting areas such as communication, cultural competence and evaluation. The four pillars are:

Pillars:
- Pillar 1: Increase clinical screening, testing, and referral to the National Diabetes Prevention Program (National DPP)
- Pillar 2: Increase the availability of National DPPs
- Pillar 3: Increase participation in the National DPP
- Pillar 4: Increase health plan and employer coverage of the National DPP

Workgroups and committees have been established to develop objectives and activities which will serve as the foundation for the Statewide Comprehensive Diabetes Prevention Plan in South Carolina.

AADE’s Diabetes Prevention Program Regional Meeting - South Carolina
The Diabetes Prevention Program (DPP) of the American Association of Diabetes Educators (AADE) hosted a one-day regional meeting on Wednesday, December 2, 2015 in Columbia, SC. The AADE DPP convened this forum to discuss the National Diabetes Prevention Program (National DPP), and AADE’s national and local efforts to scale and sustain the program in South Carolina and around the country. The meeting was divided into morning and afternoon sessions and DHEC, DAC, and Diabetes Initiative of SC (DSC) presented during the morning session. The main conclusions of the meeting will be reflected and incorporated into AADE’s Diabetes Prevention Program’s Strategic Plan, as well as its state action plan for their three funded programs in South Carolina.

II. Diabetes Surveillance Systems:
Goal: Monitor the statewide diabetes burden and identify gaps to assist with planning, decision-making, and evaluation

Behavioral Risk Factor Surveillance System (BRFSS)
- The division has partnered with the Chronic Disease Epidemiology and Public Health Statistics and Information Services (PHSIS) to determine the modules to include in the 2016 BRFSS questionnaire. The following will be included:
  - Pre-Diabetes (two questions)
  - Diabetes risk assessment (one question)
  - Hypertension awareness (two questions)
  - Physical activity (eight questions)
Random Child Selection for CHAS (six questions)

- The modules will assist the division in their grant funded surveillance needs to make valid estimates about the population of South Carolina.

III. Health Systems Improvement:
Goal: To increase the number of health care providers engaged in professional education on recommended standards of care.
- The division sponsored the 13th annual Chronic Disease Prevention Symposium, which was held on March 13-14, 2015 in Myrtle Beach, South Carolina. The theme was, “Professional Collaboration for Chronic Disease Management: Innovative Approaches”. The goal of the symposium was to address the burden of diabetes, heart disease, stroke, and obesity in South Carolina through education to improve patient outcomes. Attendees included physicians (22), nurses (62), pharmacists (15), health educators, and other allied health professionals (40) for a total of 139. The evaluation findings included a survey of 41 questions evaluating each session (11) as well as the overall symposium. On average, respondents agreed that the speakers’ objectives were met, knowledge and skills learned would be useful to their jobs, the speaker(s) demonstrated expertise in the topic, and the sessions were appropriate to their level of expertise. Evaluation of the overall symposium showed respondents on average agreed that the conference met their expectations, the length of sessions was about right, the symposium provided a good mix of content time and “down” time, the symposium was a good use of time, the exhibit area contributed to the overall meeting, and the learning objectives were reflective of the overall purpose/goal of the symposium. Respondents on average also agreed that they will apply what they learned at the conference to their work environment, the educational content was scientifically sound and evidence based, the conference provided them with supporting resources and tools, and the conference was free of commercial bias.
- The division co-sponsored other provider education opportunities, including the SC Primary Health Care Association Clinical Network Meeting and the Diabetes Initiative of SC Fall Symposium.

IV. Community Awareness and Outreach:
Goal: Increase diabetes knowledge and awareness across disparate and hard to reach communities.
National Diabetes Prevention Program (National DPP)
- The division has established a network of staff in Central Office and the local public health regions, and is working with several partner organizations across the state to help not only meet the targets in the grants, but also create a sustainable system of health care providers and community organizations that provide the National DPP.
- Currently there are twenty-seven (27) National DPP sites working towards full recognition status in SC. There are twenty-one (21) SC DHEC supported National DPPs; three (3) AADE National DPPs, two (2) YMCA-DPPs; and two (2) community organizations pending recognition in SC.
- SC DHEC is partnering with Emory to host six (6) National DPP Lifestyle Coach Trainings over the next year. The first training took place on October 28-29, 2015 at the Spartanburg County Health Department. A total of 17 Lifestyle Coaches were trained, representing 9 organizations in the Upstate. Those trained are now conducting academic detailing to market the National DPP to providers to increase their awareness about prediabetes, screening, testing, and referring their patients into an active National DPP. The second training occurred in the Midlands Region on February 2-3, 2016 where 15 organizations were trained. The division’s Lifestyle Intervention Coordinator is currently working with the Pee Dee Region Prevention Coordinator to schedule a Lifestyle Coach Training for some time in March 2016.
Goal: Increase coverage for evidence-based supports for lifestyle change by working with network partners.

- The DAC’s Pillar 4 Work group is pursuing increasing health plan and employer coverage of the National DPP. The statewide comprehensive diabetes prevention plan will be partner driven and will need the commitment of South Carolina organizations that are focused on building healthier communities. Prediabetes and type 2 diabetes are growing concerns for South Carolina’s workforce, affecting the health and quality of life for millions. Offering the National DPP has financial benefits, as well as health benefits, and can be an important piece of any health plan. South Carolina is beginning conversations with employers and insurers for increasing coverage of the National DPP to provide reimbursement, which will help make the program sustainable. Strong advocacy efforts are needed to give diabetes prevention efforts such as reimbursement and providers that are screening, testing, and referring their patients a voice among a variety of audiences: payers, health systems, community organizations, academia, employers, insurers and public health leadership.

Health Care Provider Engagement:

- The American Medical Association (AMA) has made it their mission to bring together physicians in all practice settings and specialties with patients, communities and public and private-sector organizations, to help prevent two of the nation's most common chronic diseases: heart disease and type 2 diabetes. By collaborating with key stakeholders, they have developed new approaches to prevent progression of prediabetes to type 2 diabetes and to achieve better control of high blood pressure. The AMA/CDC Provider Toolkit, which was released in 2015, has proven to be an effective tool when reaching out to the health care provider community to screen, test, and refer patients with prediabetes or at risk for type 2 diabetes to CDC-recognized lifestyle change programs. DHEC region and central office staff are utilizing the toolkit to provide academic detailing to engage local health care providers to use the tool with their patients and on diabetes prevention.
Diabetes Initiative of South Carolina

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Advisory Member:
John A. Colwell, MD, PhD, CDE  Past DSC Board Chair; Professor Emeritus, MUSC
# Outreach Council

## Members

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<th>Title and Affiliation</th>
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<td>Spartanburg Regional Health System</td>
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22
Surveillance Council

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SC DHEC  
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<td>Rhonda L. Hill, PhD, MCHES</td>
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<td>Sandra Anderson, MA</td>
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Other Support Staff:
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