

The Connecticut Diabetes Prevention and Control Plan 2007 – 2012



The Connecticut Charter Oak

*Enhancing the lives of people affected by diabetes
through community partnerships &
a comprehensive system of prevention and care*



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Commissioner

J. Robert Galvin, M.D., M.P.H., M.B.A.

Public Health Initiatives Branch

Richard Edmonds, M.A., Branch Chief

AIDS and Chronic Diseases Section

Rosa M. Biaggi, M.P.H., M.P.A., Section Chief

Christian D. Andresen, Public Health Services Manager

Diabetes Prevention and Control Program

Cindy Kozak, R.D., M.P.H., C.D.E., Health Program Associate

Nancy Prevost, Secretary

Nadine Repinecz, M.P.A., Health Program Supervisor

Health Information System and Reporting Section Surveillance and Reporting Unit

Margaret M. Hynes, Ph.D., M.P.H., Supervising Epidemiologist

Betty C. Jung, R.N., M.P.H., C.H.E.S., Epidemiologist

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Permission to Copy Statement
CT Department of Public Health,
410 Capitol Avenue Hartford, CT 06134

Preface

The *Connecticut Diabetes Prevention and Control Plan* is the product of the combined knowledge, commitment, and collaboration of over seventy partners. The Advisory Council and its Executive Committee serve as the primary leadership that directed the development of the recommendations set forth in this plan.

This plan strives to address the needs of people already diagnosed with diabetes in order to prevent complications. It also addresses the prevention or delay of diabetes in high-risk individuals with pre-diabetes.

Diabetes Advisory Council

Christian D. Andresen, DPH

William Behan, RN, BS, DPH

Louise Butcher*, American Diabetes Association

Nanette Char*, Char Consulting

Marian Evans, MD, Bridgeport Health and Social Services

Jennifer Granger, MPH, CT Primary Care Association

Toni Nathaniel Harp, CT State Senator

Lewis Head, Health Educator, Mashantucket Pequot Tribal Nation

Margaret M. Hynes, PhD, MPH, DPH

Betty C. Jung, RN, MPH, CHES, DPH

Molly Kirschner, RD, CDE, CD-N, Juvenile Diabetes Research Foundation

Cynthia Kozak, RD, MPH, CDE, DPH

Jeffrey Palmer, OD, CT Association of Optometrists

William A. Petit, Jr.*, MD, FACP, FACE, Joslin Diabetes Center at the Hospital of Central Connecticut

Karana M. Pierre, DPM, Optimus Healthcare

Richard Roy*, CT State Representative

Katherine Schneider, MD, MPhil., Middlesex Health System

Eleanor Seiler*, MD, Anthem

Warren Wollschlager, DPH

* *Member of the Executive Committee*

Acknowledgements: *We would like to acknowledge the contributions of the work group members for their time and expertise. Their dedication to this process has made this plan possible. The work group members are listed alphabetically on the following pages.*

NAME	ORGANIZATION	WORK GROUP
Ann Agro	Yale Prevention Research Center	Access & Policy
Daren Anderson, MD	Community Health Center, Inc.	Disease Management
Chris Andresen	DPH	Access & Policy
Joni Arvai	American Heart Association	Access & Policy
Patricia Bak, RN, CDE	Windham Community Hospital	Education & Awareness
Stephanie Belding	Community Renewal Team	Surveillance
Rosa Browne	NAACP-Health Committee	Access & Policy, Disease Management, Education & Awareness, Prevention, Surveillance
Louise Butcher	American Diabetes Association	Education & Awareness (Co-Chair), Surveillance
Nanette Char	Char Consulting	Access & Policy (Co-Chair), Prevention
Mark Chasse, OD	Connecticut Association of Optometrists	Disease Management
Jyoti Chhabra, PhD	Hartford Hospital	Disease Management, Surveillance
Sally Cooney, RN, BSN, CDE	St. Francis Hospital and Medical Center	Education & Awareness
James Cox-Chapman, MD	ProHealth Physicians	Disease Management
Diane Creed	American Diabetes Association	Education & Awareness, Prevention
Gail D'Eramo Melkus, EdD, C-ANP, FAAN	Yale School of Nursing	Surveillance
Grace Damio, MS, CD/N	Hispanic Health Council	Surveillance
Kari Davis, APRN	Generations Family Health Center	Access & Policy
Steven Delaronde , MPH, MSW	ConnectiCare	Surveillance
Brenda DelGado, MS	AHEC	Access & Policy
Patricia DeWitt	Yale-New Haven Hospital	Access & Policy, Disease Management, Education & Awareness
Anne Elwell, RN, BS, MPH, CPHQ	Qualidigm	Surveillance
Linda Ferro, APRN, CDE	Norwalk Hospital	Education & Awareness
Linda J. Ferraro, RDH	Department of Public Health	Disease Management
R. Allen Frommelt, PhD	Connecticut Hospital Association	Surveillance
Marghie Giuliano, R Ph	Connecticut Pharmacists Association	Disease Management
Ana Lourdes Gomez, PhD	University of Connecticut	Disease Management, Prevention, Surveillance
Kimberly Hathaway, CEO	National Kidney Foundation of CT	Education & Awareness
Marcia Hilditch	National Kidney Foundation of CT	Education & Awareness
Shih-Yieh Ho, MPH, PhD	Qualidigm	Surveillance
Sheryl Horowitz, PhD	Griffin Hospital	Surveillance
Margaret M. Hynes, PHD, MPH	Department of Public Health	Surveillance (Co-Chair)
Georgia Jennings, MPH	Yale Prevention Research Center	Access & Policy
Betty C. Jung, RN, MPH, CHES	Department of Public Health	Surveillance
Brenda Kelley	AARP Connecticut	Surveillance
Michelle Kelvey-Albert	Qualidigm	Education & Awareness
Molly Kirschner, MS, RD	Juvenile Diabetes Research Foundation, Hartford and Western Massachusetts	Disease Management
Cynthia Kozak, RD, MPH, CDE	Department of Public Health	Access & Policy, Disease Management, Education & Awareness, Prevention, Surveillance
Paula Leibovitz, MS, RD, CD-N	Consultant Briarwood College	Education & Awareness, Prevention
Kevin Maloy	Pfizer	Surveillance
Kristin Mattocks, MPH, PhD	Qualidigm	Access & Policy

Barbara McCabe, APRN	AmeriCares clinic	Access & Policy
Susan McKenney	Anthem Blue Cross & Blue Shield	Surveillance
Kit McKinnon	Middlesex Hospital	Access & Policy
Thomas Meehan, MD, MPH, FACP	Qualidigm	Disease Management
Carolé Mensing, RN, MA, CDE	University of Connecticut Health Center	Disease Management, Prevention, Surveillance
Phillip Montgomery	Connecticut Business & Industry Association	Prevention
Rebecca Murray, MSN, FNP, CDE	West Side School-Based Health Center	Disease Management, Prevention
Kelley Newlin, DNSc	Yale University	Disease Management
Hilary Norcia	American Heart Association	Education & Awareness
Patricia O'Connell, MS, RD, CDE	Joslin Diabetes Center	Education & Awareness, Prevention
Rafael Perez-Escamilla PhD	University of Connecticut	Surveillance
William A. Petit, Jr., MD	Joslin Diabetes Center	Disease Management (Co-Chair)
Christine Pinette, APRN	Bristol Hospital	Disease Management, Prevention
James Rawlings	NAACP Health Committee	Surveillance
Cheryl-Ann Resha, RN, EdD	State Department of Education	Access & Policy
Joseph A. Rosa, MD	St. Vincent's Hospital	Disease Management
Richard Roy	CT State House of Representatives	Education & Awareness (Co-Chair)
Katherine Schneider, MD	Middlesex Hospital	Disease Management, Surveillance
Joan Schwartz, MS, RN, CDE	Eastern Connecticut Health Network	Education & Awareness
Eleanor Seiler, MD	Anthem Blue Cross & Blue Shield	Disease Management (Co-Chair)
Diane Sell	Consultant	Prevention
Laura Shuey	American Heart Association	Disease Management
Hilary Silver	Department of Social Services	Access & Policy
Maureen Smith	Office of the Health Care Advocate	Access & Policy
Anne Somsel, RN, MS	Fair Haven Community Health Center	Education & Awareness
Gary Spinner, PA	Hill Health Center	Access & Policy
Eric Triffin, Dir. of Health	City of West Haven	Surveillance
Carmela Valentino, MPH, CHES	Healthnet	Surveillance
Julie Wagner, PhD	University of Connecticut Health Center	Access & Policy
Maredia Warren	American Heart Association	Education & Awareness
Anne Wilson	CIGNA	Disease Management, Prevention
Ardell A. Wilson, D.D.S., M.P.H.	Department of Public Health	Disease Management
Jeffrey Yale, DPM	Griffin Hospital	Access & Policy
Donald Zetterval	The Diabetes Center	Disease Management
Jean Zimkus, RN	Bridgeport Hospital	Prevention, Surveillance

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Note: Members of the work groups and the DPH recognize the need to involve as many organizations and programs across the state as possible to ensure the success of the Connecticut Diabetes Prevention and Control Plan. To assist interested individuals, programs, and organizations in locating initiatives with which to partner, the group developed a resource list which can be found in Appendix D. The list includes programs sponsored by the Department of Public Health and those sponsored by community and private organizations. While the list provides a good sample of programs in Connecticut, it does not provide information on all programs in the state. Omission of a program should not be construed as judgment on the usefulness of the program.

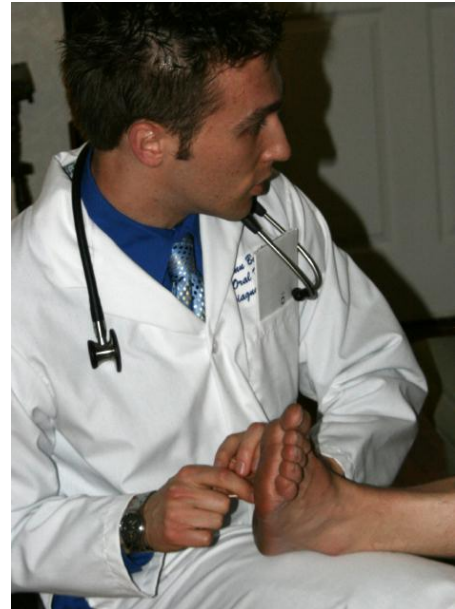
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EXECUTIVE SUMMARY

Mission: “The Connecticut Diabetes Prevention and Control Plan is to create an environment for change in which a comprehensive system of care and prevention will reduce or delay the onset of diabetes and its complications, and enhance the quality of life for people affected by diabetes. Successful implementation of the Plan will bring about measurable improvement in the quality of life for people with diabetes and prediabetes, resulting in healthier communities.”— Diabetes Advisory Council¹

Diabetes is a chronic metabolic disorder characterized by elevated levels of blood sugar which over time can ravage the body causing eye disease, kidney disease, nerve disease, and cardiovascular disease. An estimated 6.2% of Connecticut adults (163,000 people) have diagnosed diabetes (2003-05 data) with an additional 70,000 people with undiagnosed diabetes. According to the Centers for Disease Control and Prevention, diabetes cost Connecticut an estimated **\$1.7 billion in direct and indirect costs in 2003**. In 2005, the Connecticut Department of Public Health reported that approximately \$77 million was billed for hospitalizations due to diabetes as a principal diagnosis in 2002. In addition, almost \$39 million was billed for hospitalizations related to diabetes with a lower extremity amputation



Healthy People 2010, the national agenda for disease prevention and health promotion, calls for efforts to reduce the diabetes prevalence rate to 2.5% by the year 2010. Currently, the Connecticut rate is 6.2%. Closing that gap will prove increasingly difficult because Connecticut's population is growing older, specific high-risk groups for diabetes are increasing, and Connecticut's population tends to be increasingly overweight and sedentary. To address this public health issue, the Connecticut Diabetes Prevention and Control Program convened experts in five major topic areas: preventing diabetes, education/awareness, access/policy, disease management, and surveillance. The program is to promote Connecticut meeting the HP2010 goal to lower the prevalence rate by at least 0.5 percent by 2010. Priorities in implementing the plan include:

1. Develop support for efforts to ensure all persons with diabetes particularly those who are Medicaid eligible are enrolled and receiving medically appropriate preventive care and treatment, including podiatric and diabetes self-management education.

2. Develop a plan to seek legislative support for programs to provide free or low cost access to education, care and treatment for uninsured or underinsured people with diabetes.

Plan Development. The Connecticut Department of Public Health established a Connecticut Diabetes Partnership to identify how care and prevention systems could combat diabetes as a growing public health issue in our state. The Advisory Council and five work groups came together to form the Connecticut Diabetes Partnership and develop this Diabetes Prevention and Control Plan. The purpose of this plan is to help residents delay or prevent the onset of diabetes, reduce diabetes-related complications, and enhance the quality of life for people affected by diabetes.

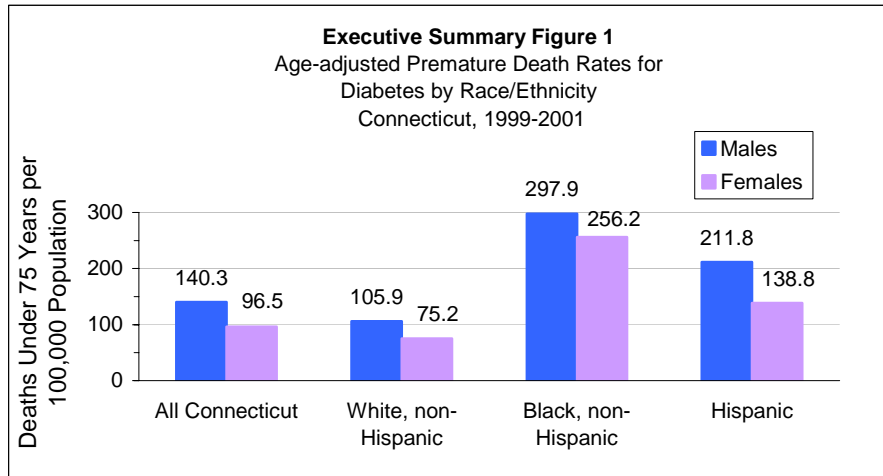
The Diabetes Advisory Council organized five work groups (Access and Policy, Education and Awareness, Disease Management, Prevention, and Surveillance) and assembled a wide range of experts and representatives from across all aspects of the disease: people with diabetes, health care providers, community health centers/clinics, hospitals, health maintenance organizations, visiting nursing associations, public health representatives, health care professionals, American Diabetes and Heart associations, managed care organizations, insurance groups, state representatives, and community and special interest groups. The five work groups analyzed policy, epidemiological data, and existing resources, and used the information as the basis to develop goals, objectives, strategies, and action steps. Work groups completed their tasks over a five-month period and submitted their recommendations to the Connecticut Diabetes Advisory Council for refinement and final approval.

Background. Diabetes occurs when the body produces no insulin at all (type 1 diabetes) or when the body produces insulin but does not use it properly (type 2 diabetes). Similar symptoms exist for both types of diabetes. High blood sugar (hyperglycemia) can cause: blurry vision, excessive thirst, frequent urination, feeling very hungry or tired, and/or unintended weight loss. Many of these symptoms can be overlooked as temporary consequences of lifestyle. In fact, many people live with symptoms for several years prior to a diagnosis of type 2 diabetes. The long term consequences of hyperglycemia include eye disease, kidney disease (nephropathy), nerve disease (neuropathy), and a significant increase for cardiovascular disease (heart attack and stroke). Diabetes can not be cured. Ultimately, untreated or poorly controlled diabetes can lead to death due to these complications. Annual medical costs for a person with diabetes average about \$13,000 (five times more per year than persons without diabetes).ⁱⁱ

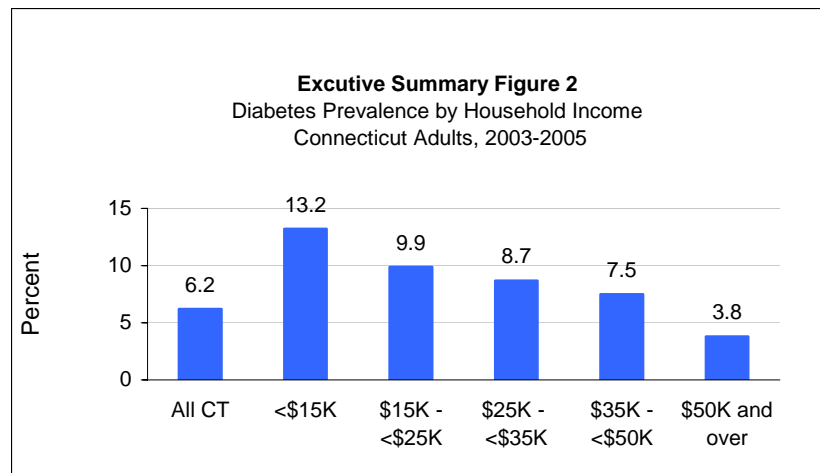
An estimated 6.2% of the Connecticut adult population or approximately 163,000 adults age 18 years and older have been diagnosed with diabetes (2003-05 data). The Centers for Disease Control and Prevention (CDC) estimates that about 30% of all diabetes cases are undiagnosed,

partly because symptoms develop gradually. An additional 70,000 Connecticut adults are estimated to have undiagnosed diabetes. Thus a total of 233,000 of Connecticut residents are estimated to have diagnosed or undiagnosed diabetes.

Diabetes disproportionately affects certain ethnic groups as well as those of lower socioeconomic status. Figures 1 and 2 below illustrate the socio demographic disparities associated with diabetes.



The cornerstones of diabetes care include rigorous monitoring and control of blood sugar, blood pressure, and cholesterol to decrease diabetes complications. Recent research has also shown with lifestyle changes, diabetes can even be prevented or delayed before it begins in high-risk individuals with a condition known as pre-diabetes.



Major Goals of the Plan. Preventing and managing diabetes are influenced by numerous factors including: lifestyle, such as food choices, exercise habits, and access to health care. To address these factors, the Connecticut Diabetes Partnership work groups developed specific recommendations and strategies for the *Connecticut Diabetes Prevention and Control Plan*. The

organization of the work groups is supported by the Chronic Care Model (See Figure 2. Connecticut's Chronic Care Model p. 50). The *Connecticut Diabetes Control and Prevention Plan* follows the Chronic Care Model, which incorporates both prevention and care elements from a variety of perspectives, including the individual, the health care provider, health care systems, and the community. All are intended to improve outcomes and reduce costs.

- The ***Prevention Work Group*** developed strategies to reverse pre-diabetes and to prevent or delay the progression of pre-diabetes to type 2 diabetes.
- The ***Disease Management Work Group*** developed strategies to: improve how health care providers diagnose and monitor diabetes; improve communication among health care providers and patients; clarify measurement of clinical outcomes; increase self-management practices among people with diabetes; increase screening for pre-diabetes and diabetes; and improve reporting of diabetes diagnoses.
- The ***Education and Awareness Work Group*** developed strategies for: people with diabetes who must manage and control diabetes; for health care providers to increase their knowledge and to increase participation in education programs; and for the general public to increase awareness about the symptoms, impact, and options related to diabetes.
- The ***Access and Policy Work Group*** developed strategies to: integrate and increase access to the various elements of successful care, including prevention, treatment, supplies, equipment, medication, diabetes self-management education, and nutrition therapy and to support the medical care system and communities in these efforts.
- The ***Surveillance Work Group*** developed strategies to capture and share relevant information about trends in diabetes statistics.

While this plan focuses on programs and policies to address diabetes we recognize the importance of stem cell research as an avenue to finding a cure for (type 1) diabetes.ⁱⁱⁱ

The full set of recommendations and strategies is shown in Executive Summary Table 1, beginning on p. vi.

2007 Work Plan. Of the final recommendations, the Diabetes Advisory Council selected two priorities for implementation in 2007:

- I. *The access and policy goal is to ensure that comprehensive diabetes care i.e., preventive care, treatment, supplies, equipment, diabetes self-management education, medical nutrition therapy, and medications are offered, available and affordable across the public and private sectors to every citizen in Connecticut in need. Specific strategies include: 1) support efforts to ensure that all Medicaid-eligible persons with diabetes are enrolled and receiving medically appropriate preventive care and treatment, in their community when possible,*

including podiatric care and diabetes education services; and 2) develop a plan to seek legislative support for a program with community clinics, hospitals, and other health care providers to provide free or low cost access to preventive education and care, and treatment for uninsured and underinsured persons with diabetes.

- II. *The education and awareness goal is to ensure that all people with diabetes, those at risk for diabetes, and their health care providers all have current knowledge and can apply evidence based guidelines.* Specific strategies include: 1) make available training curricula options for patient education; 2) train non-Certified Diabetes Educators (CDEs) to augment traditional education programs; 3) partner with grocery stores, libraries, and other public places to make diabetes, nutrition, and general better health information available; and 4) to engage HMOs to standardize diabetes education programs benefit availability.

Monitoring. During each year of the plan, the Connecticut Department of Public Health (CT DPH) and the Diabetes Advisory Council will prepare a report on the previous year's activities and results. Data will be collected and tabulated each year by the Diabetes Prevention and Control Program staff, and a report will be prepared by CT DPH and the Diabetes Advisory Council to update funding agencies, partnering health care organizations, and concerned citizens on the plan's progress. Based upon information in the annual report, the CT DPH in conjunction with the Diabetes Advisory Council will create an action plan for the subsequent year. The action plan will clearly state the objectives and the recommended strategies to achieve those objectives in the next calendar year. To fully implement the recommendations of *Connecticut's Diabetes Prevention and Control Plan*, a diverse group of funding sources, from state and federal government to private foundations, must be recruited.

Conclusion: Through this five year prevention and control plan – with careful attention to results of programs, initiatives and collaborative support of various public and private entities - the Connecticut Diabetes Partnership has made a commitment to lower the Connecticut diabetes prevalence rate from 6.2% to 5.7%, and to improving the quality of life for Connecticut residents with diabetes and pre-diabetes resulting in a healthier community.

Executive Summary Table 1

RECOMMENDED GOALS AND STRATEGIES

Prevention

Objective 1	By 2012, reduce by .5% the prevalence of type 2 diabetes by preventing or delaying the progression of pre-diabetes to diabetes.
Strategies	<ol style="list-style-type: none"> 1. Increase awareness of providers and people with pre-diabetes of the potential to prevent diabetes onset through lifestyle change. 2. Develop and promote pre-diabetes screening programs accessible to all at risk Connecticut residents with referrals to health care providers as appropriate. 3. Deliver cost-effective pre-diabetes interventions as efficiently as possible. 4. Change Connecticut's health system to support healthy lifestyles for residents of all ages. 5. Engage community organizations to ensure that messages about lifestyle modification are delivered in culturally relevant and positive ways. 6. Support interventions promoted by other programs, such as the CT DPH Obesity Program, that include modifications to school lunch programs to provide healthy school nutrition environments.

Disease Management

Objective 1	By 2012, increase by 50% the number of Connecticut physicians and other health care providers who use ADA and other evidence-based guidelines to diagnose and monitor pre-diabetes and diabetes as measured by the number of physicians recognized by the ADA.
Strategies	<ol style="list-style-type: none"> 1. Promote adoption and integration of ADA and other evidence-based guidelines into clinical practice to support early diabetes diagnosis and use of ABC (A1c, blood pressure, cholesterol) values. 2. Develop a pay-for-performance system that rewards physicians and patients for adhering to guidelines. 3. Engage employers in encouraging and supporting more managed care organizations to offer incentives.
Objective 2	By 2012, improve patient care by increasing the number of health care providers using electronic medical records or disease registries by 10% to establish a statewide health data exchange, increase outreach, and improve communication among providers.
Strategies	<ol style="list-style-type: none"> 1. Develop effective communication vehicles to demonstrate the value of reporting clinical outcomes to providers using evidenced based literature, peer-to-peer outreach and other means. Show providers how such clinical outcomes, reporting through incentive programs, or other vehicles can be valuable for their patients, their practices and others. 2. Work collaboratively with managed care organizations to identify the current communication barriers for effective disease management. With MCOs, promote a process to simplify referrals and communication linkages that will create administrative efficiencies. 3. Promote integrative processes among health plans to link diagnosis, treatment plans and education plans thus promoting communication among those who are providing services to persons with diabetes.
Objective 3	By 2012, establish a system of process and outcome measurement used by all health care providers on the patient care team.
Strategies	<ol style="list-style-type: none"> 1. Adopt evidence-based guidelines as evaluation benchmarks for clinical outcomes (e.g., A1c control, blood pressure control, lipid level controls, and smoking cessation). Highlight and communicate recommendations in these guidelines for provider accountability in monitoring clinical care. 2. Use a quality assurance process to assess outcomes (e.g., behavioral/functional outcomes, impact of education, outreach, effects on caregivers and family members with chronic disease, end of life care and impact on mental health). 3. Encourage employers to provide meaningful financial incentives for employees and their providers to reach established benchmarks.

Objective 4	By 2012, increase by 5% the percentage of adults age 18 and older who are conducting comprehensive self-management to control their disease.
Strategies	<ol style="list-style-type: none"> 1. Assess current disparities and create plans to remove identified disparities through culturally-focused diabetes care. 2. Involve community leaders in creating community health initiatives. 3. Train health care professionals, para-professionals and lay health workers in the community health setting on diabetes prevention, care and management. 4. Create a standard self-management education program that is simple and user friendly and that involves a program for health care literacy that is language appropriate and culturally sensitive. 5. Foster patient responsibility for diabetes care by adopting and promoting self-management education programs that engage the patient, and provide patient financial incentives and personalized nutrition guides and exercise plans. 6. Engage employers to work with managed care organizations in supporting the importance of simple, barrier-free self-management education. 7. Support interventions promoted by other programs such as the Department of Public Health's Obesity Program that include modifications to companies, restaurants, the workplace and school lunch programs to provide healthy nutrition environments.
Objective 5	By 2012, increase by 10% the proportion of at risk individuals who are screened for diabetes and pre-diabetes using evidence-based guidelines.
Strategy	<ol style="list-style-type: none"> 1. Promote new and enhanced screening programs in varied settings. 2. Promote increased use in clinical practice of ADA and other evidence-based criteria for diabetes diagnosis and pre-diabetes.
Objective 6	By 2012, increase by 10% the proportion of health care providers who adopt a uniform system of reporting, including the coding of diabetes diagnoses.
Strategy	<ol style="list-style-type: none"> 1. Promote and support standardized coding and reporting tools and processes for providers. 2. Promote linkage of diagnosis plans with education plans.
Education & Awareness	
Objective 1	By 2012, increase by 5%, the proportion of people with diabetes participating in diabetes self-management education programs in order to learn about controlling their diabetes.
Strategies	<ol style="list-style-type: none"> 1. Make available training curricula options for patient education. 2. Create partnerships with hospitals, CHCs, volunteer health organizations, CADH, AHA, and local health departments to ensure staff has information relevant to care through education resources added to organizational newsletters (hospitals, CT DPH, etc.) and Web sites. 3. Train non-CDEs, including school nurses, medical assistants, certified nurse aides, peer-to-peer educators, faith organization members, senior center staff, local health department educators, and lay persons as referral resources, to augment traditional education programs. 4. Engage HMOs to standardize access to education programs by taking advantage of Connecticut law that requires diabetes education for persons with diabetes. 5. Partner with grocery stores, libraries, senior centers, town halls, and other public places to make diabetes, nutrition, and general health information available. 6. Make people with pre-diabetes aware of the potential to prevent diabetes onset through lifestyle change. 7. Outreach to leaders of large group practices to encourage their members' physicians to refer to diabetes education programs.

Objective 2	By 2012, increase by 10% the number of providers who participate in continuing education programs focused on diabetes.
Strategies	<ol style="list-style-type: none"> 1. Expand physician participation in professional education programs by encouraging insurers and pharmaceutical companies to offer scholarships for doctors to attend the national scientific sessions or diabetes post graduate conferences and providing materials on these programs to physicians' office staff. 2. Conduct ongoing professional education with a curriculum that incorporates best practices and prevention (e.g., Grand Rounds, CMEs, etc.) for physicians involved in providing diabetes services. 3. Engage hospital and clinic administrators to foster mentoring or peer education to change physician behavior and to support the increased number of, and enrollment in, patient education programs; engage medical directors from MCOs and PHOs to encourage their members to receive regular diabetes education. 4. Make providers and people with pre-diabetes aware of the potential to prevent diabetes onset through lifestyle change. 5. Promote the use of relevant billing and reimbursement codes for screening, education and treatment
Objective 3	By 2012, improve public awareness of the impact of diabetes by increasing by 10% the number of partnerships with community organizations such as schools, libraries, the media, town halls, and other public places.
Strategies	<ol style="list-style-type: none"> 1. Engage schools, libraries, senior centers, town halls and other public places, workplaces, faith-based and community-based organizations to share information on the risks, burden, and impact of diabetes, and on the availability of screenings. 2. Train non-CDEs to provide accurate information on signs and symptoms of diabetes, and to refer people to formal education programs; develop a proficiency measure for community and peer diabetes health educators. 3. Launch an information campaign drawing on partnerships, existing programs, and national campaigns to highlight the rapid rise in diabetes diagnoses; connect with a public figure to promote the message. 4. Engage community organizations to ensure that messages about lifestyle modification are delivered in culturally relevant and positive ways.

Access and Policy

Objective 1	By 2012, increase by 5% the proportion of people who receive comprehensive diabetes care, i.e., diabetes preventive care, treatment, supplies, equipment, medication, education and medical nutrition therapy.
Strategies: Universal	<ol style="list-style-type: none"> 1. Demonstrate the cost-effectiveness of diabetes education programs and promote a partnership among CT DPH, private groups, and public groups to implement universal diabetes education. 2. Engage the state legislature to appropriate funds for pilot programs to spread the message about diabetes, both how to prevent it, and how to treat it. 3. Secure commitment of the health care delivery system to the Diabetes Bill of Rights, and expand the definition of those covered under the Diabetes Bill of Rights. 4. Encourage diabetes-friendly policies at employers and schools. 5. Determine how to find people at high-risk for diabetes and deliver cost-effective interventions as efficiently as possible.
Strategies: For Persons with Insurance Coverage	<ol style="list-style-type: none"> 1. Encourage insurers to cover diabetes preventive care, treatment, supplies, education, and treatment with co-payments that do not exceed 25% of the covered item's total cost, and include diabetes education and medical nutrition therapy as a reimbursable service across insurance programs. 2. Work to change Federal ERISA provisions to require self-insured employers to cover diabetes supplies, education, and treatment, and adopt the ADA Diabetes Bill of Rights to guide insurance regulation in Connecticut.

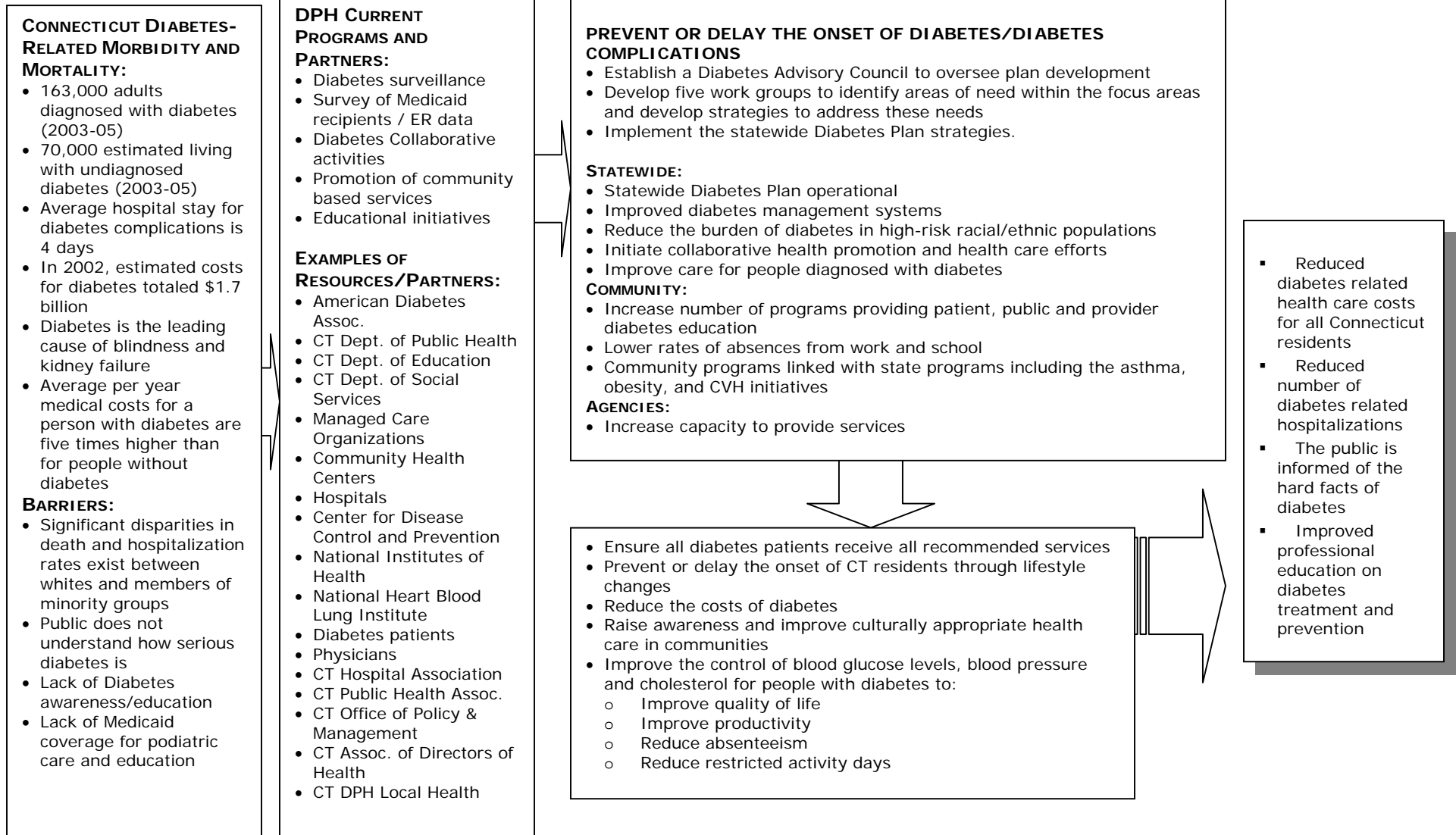
	3. Develop "Report Cards" for insurance plans on 1) what is covered and 2) on A1c levels including rates for flu shots, foot exams, and eye exams. (HEDIS /NCOA Measures)
Strategies: For persons covered under Medicaid	Support efforts to ensure all Medicaid eligible persons with diabetes are enrolled and receiving medically appropriate care and treatment, in their community when possible, including podiatric care and diabetes education services.
Strategies: For the Uninsured	<ol style="list-style-type: none"> 1. Pilot a program with appropriate legislative and private foundation support to provide lab tests, supplies, medicines, and education for uninsured people with diabetes through a variety of providers and settings. 2. Develop and seek legislative support for a program with community clinics, hospitals, and other health care providers to provide free or low cost access to preventive education and care, and treatment for uninsured or underinsured persons with diabetes. 3. Expand use of Patient Access Programs sponsored by major pharmaceutical companies.
Objective 2	By 2012, increase by 5% the number of diabetes education services and disease management supports for people with diabetes.
Strategies	<ol style="list-style-type: none"> 1. Assess diabetes public health infrastructure to determine system gaps and develop policies that encourage the development of strong, efficient networks of providers by engaging legislators and insurers to make them aware of the barriers that exist to proper care. 2. Develop improved capacity to address the behavioral causes of poor diabetes patient outcomes, including defining and addressing reimbursement issues that may inhibit access to psychologists' services. 3. Address shortages of specialists with focus on diabetes by expanding the number of nurse practitioners and physician assistants that specialize in diabetes care through educational incentives and policy development to support creation of teams of connected diabetes professionals. 4. Expand the role of licensed health care professionals to provide more diabetes care including more frequent follow-up. 5. Publish HEDIS measures related to diabetes for health plans; develop benchmarks on diabetes measures to inform policy; develop mandated reporting of specific diabetes-related measures by hospitals and other health providers.

Surveillance

Objective 1	By 2012, increase by 5% the number of hits to the diabetes surveillance Web page as a means of increasing accessibility to the diabetes prevalence, morbidity and mortality data.
Strategies	<ol style="list-style-type: none"> 1. Develop partnerships with large centers, registries, community-based organizations, CHCs, occupational health services, and use academia to assist in research and data collection projects. 2. Identify other data sources and data-collecting agencies to meet with state planning groups to determine how best to create data sharing networks. 3. Provide technical assistance on how to collect data to organizations that provide diabetes services. 4. Provide resources to community-based organizations to gather data about diabetes services. 5. Conduct surveillance of priority subpopulations, as limited resources allow, and make information resources available to non-DPH organizations as appropriate. 6. Disseminate available diabetes surveillance data to the general public through the CT DPH Web site and other appropriate venues.

Comprehensive System of Diabetes Care and Prevention

“The mission of the *Connecticut Diabetes Prevention and Control Plan* is to create an environment for change in which a comprehensive system of diabetes care and prevention will reduce or delay the onset of diabetes and its complications, and enhance the quality of life for people affected by diabetes. Successful implementation of the plan will bring about measurable improvement in the quality of life for people with diabetes and pre-diabetes, resulting in healthier communities.”—Advisory Council



1. DEFINING DIABETES

a. Characteristics of Diabetes

What is Diabetes?

Diabetes, as defined by the American Diabetes Association (ADA), is a group of diseases characterized by high levels of blood glucose resulting from defects in insulin secretion, insulin action, or both. The consequences of these elevated blood sugars can result in serious complications which pose a severe public health concern in Connecticut.

Types of Diabetes

Type 1 diabetes is an auto-immune disease which destroys the beta cells of the pancreas which normally produce insulin. Therefore, the person with type 1 diabetes must take multiple daily insulin injections. Type 1 accounts for 5-10% of diabetes cases.

Types 1 and 2

- Type 1 accounts for 5 to 10% of all diabetes cases
- Type 2 accounts for 90-95% of all cases of diabetes

Type 2 is the most common type of diabetes accounting for 90-95% of cases. This occurs when the body fails to make enough insulin or properly use it. Aspects of type 2 diabetes include:

- Gradual onset often with few or no symptoms.
- Some people with type 2 diabetes can control their blood sugars through meal planning and exercise. Others will need medication, including insulin.
- The majority of people with type 2 diabetes are over age 40; however, it is becoming increasingly more common among children and young adults.
- Risk factors for type 2 diabetes include: being overweight (defined as a body mass index over 25 kg/m²), having a family member with diabetes, having high blood pressure or cholesterol, having a history of gestational diabetes or delivering a baby over 9 pounds, being African American, Hispanic, Native American, Asian or Pacific Islander, and/or having pre-diabetes as described below.

Risk factors for Type 2

- Overweight
- Family member with diabetes
- High blood pressure/cholesterol
- Gestational diabetes
- Being African American, Native American, Asian or Pacific Islander, Hispanic American
- Pre-diabetes

Gestational diabetes is a form of diabetes that occurs in 4-8% of pregnancies. Gestational diabetes usually requires treatment only during pregnancy but puts the mother at high-risk for later development of diabetes. Treatment involves meal planning, physical activity, and in some cases insulin. Treatment helps to normalize maternal blood sugars and prevent complications in the infant, including low blood sugar at birth and larger size (greater than 9 lbs.). Risk factors

for gestational diabetes include being overweight, being an ethnic minority, and having a family history of diabetes.

Pre-diabetes is a condition in which a person's blood sugar levels are higher than normal, but are not high enough to be considered diabetes. People with pre-diabetes do not often exhibit any symptoms. They are, however, at greater risk for developing diabetes and having a heart attack or stroke. Diagnosis of pre-diabetes is a fasting blood sugar equal to or greater than 100 mg/dL, but less than 126 mg/dL or a two-hour blood sugar of 140-199 mg/dL after a 75 gram glucose challenge. Research conducted on people with pre-diabetes in the Diabetes Prevention Program at National Institutes of Health demonstrated that 5-7% weight loss could prevent or delay diabetes.

Diabetes **can be prevented or delayed** – a 5-7% weight loss could prevent or delay diabetes

Symptoms and Diagnosis

Symptoms of high blood sugar may include frequent thirst (polydipsia) and urination (polyuria), unexplained weight loss, fatigue, cuts that are slow to heal, frequent infections, tingling or numbness in the feet, legs or fingers, and blurred vision. Frequently though, no symptoms are present, and diabetes often goes undetected. Meanwhile, the damaging effects of high blood sugar are beginning.

The diagnosis of diabetes is made when symptoms are present and there is a random blood sugar greater than or equal to 200 mg/dL, or when a fasting blood sugar is greater than or equal to 126 mg/dL. These results should be confirmed by repeat testing on a different day. Alternately, diabetes can be diagnosed with a two-hour post-load blood sugar greater than or equal to 200 mg/dL during an oral glucose tolerance test using 75 grams of glucose.

Effects of Diabetes

The chronic effects of high blood glucose are associated with long-term damage to various organs, especially the eyes, kidneys, nerves, and blood vessels. The potential long term



complications of diabetes can include kidney failure, loss of vision, amputation (usually of the lower extremities), stroke, heart disease, complications of pregnancy, and gum disease. Research has also shown depression to be twice as prevalent among persons with diabetes than nondiabetic controls^{iv} and is associated with poor diabetes outcomes in quality of life,^v disability,^{vi} blood sugar control,^{vii} long-term complications,^{viii} mortality,^{ix} and healthcare costs^x. There are also acute or

immediate concerns associated with diabetes. These include hypoglycemia, diabetic ketoacidosis, and hyperglycemic hyperosmolar states.

b. Diabetes as a Self-Managed Disease

Research has shown that good blood sugar control can help avoid many complications associated with diabetes. The *Diabetes Control and Complications Trial* conducted with individuals with type 1 diabetes, and the *United Kingdom Prospective Diabetes Study* of people with type 2 diabetes, among others, have demonstrated that achieving good blood sugar control can decrease complications.

Treatment of diabetes varies with the type of diabetes, but there are many similarities. It is very much a self-managed disease. Successful management requires knowledge, skills and a willingness to modify behaviors related to food intake and physical activity, as well as blood sugar monitoring, medication adherence, and frequent medical follow-up.



2. THE CONNECTICUT DIABETES PARTNERSHIP

The **MISSION** of the Connecticut Diabetes Partnership is to create an environment for change in which a comprehensive system of prevention and care will prevent or delay the onset of diabetes, reduce its complications when diabetes is diagnosed, and enhance the quality of life for people affected by diabetes. Successful implementation of the plan will bring about measurable improvement in the quality of life for people with diabetes and pre-diabetes, resulting in healthier communities.

The Connecticut Department of Public Health (CT DPH) continues to respond to the changing demographics of its residents and the accompanying health issues that confront them. Increasingly, diabetes has become a topic of concern for the Commissioner of Public Health, the public health sector, health care providers, health insurers, families, and employers. Increased incidence and costs, both financial and psychological, associated with this chronic disease have raised the awareness for the need of a better system to prevent or delay the onset of diabetes and reduce its complications.

The CT DPH recognizes that the increasing prevalence of diabetes is a serious health issue for Connecticut. To better address the epidemic and to embark upon a statewide diabetes public health plan, Commissioner J. Robert Galvin, M.D., M.P.H., asked key individuals to provide guidance and recommendations to the Connecticut Diabetes Prevention and Control Program (CT DPCP), directing them to:

- An estimated 233,000 CT adults have diabetes but 70,000 of these are undiagnosed
- The diabetes prevalence among the Black population in CT is 10%, compared to 6.2% in CT overall
- Lower income adults are more likely to have diabetes than those with higher incomes

- Provide expert advice on emerging diabetes issues affecting care, treatment, and quality of life for people with diabetes or at risk for diabetes;
- Describe the burden of diabetes in Connecticut;
- Set diabetes priorities;
- Improve policy and legislative efforts; and
- Design and implement a diabetes plan, and influence the strategic planning of the CT DPCP.

Statewide Resources

The Connecticut Department of Public Health's Diabetes Prevention and Control Program (CT DPCP) operates within the AIDS and Chronic Diseases Section of the Public Health Initiatives Branch. The CT DPCP is primarily funded by the Centers for Disease Control and Prevention (CDC), Division of Diabetes Translation. The goal of the CDC program is to reduce the burden

of diabetes in the United States. It works to achieve this goal by combining support for public health oriented diabetes prevention and control programs and translating diabetes research findings into widespread clinical and public health practice. The mission of this division is, “To eliminate the preventable burden of diabetes through leadership, research, programs and policies that translate science into practice.” CDC is guided by the *Ten Essentials of Public Health Service* (see Appendix C).

The goals of the C DPCP are to improve care for people diagnosed with diabetes, initiate health promotion efforts in collaboration with other chronic disease programs, and reduce the burden of diabetes for people in high-risk racial and ethnic populations in Connecticut. The implementation of a statewide plan focuses on the Chronic Care Model and creative linkages among state initiatives (e.g., AIDS, asthma, cancer, diabetes, heart disease and stroke, obesity). To achieve a statewide Diabetes Prevention and Control Plan, CT DPH acknowledges the need to convene stakeholders, develop a common plan, and provide an ongoing forum for improvement to diabetes prevention and control.

The CT DPCP serves as a statewide resource for diabetes programs and information while providing a forum for stakeholders statewide. Significant efforts are made by the CT DPCP to reach out to providers of diabetes care and work with partners in managed care, health service delivery, and media to effect change within community-based programs, and increase health information communication. CT DPH maintains a diabetes surveillance system to continuously monitor and assess the burden of diabetes and to assist in the evaluation of programs. The CT DPCP collaborates on various projects such as quality improvement initiatives at community health centers, efforts to increase the number of bilingual certified diabetes educators, promotion of influenza and pneumococcal vaccinations, eye exams, foot exams and A1c testing (3 month average of blood sugars), and providing professional education for health care providers.^{xi} The current effort undertaken by the CT DPCP was to convene stakeholders to develop and implement a statewide diabetes plan.

Connecticut Success Stories

The following are examples of successful programs in Connecticut. It is the intent of the plan to engage and build upon these programs and others like them to realize the plan goals and recommendations.

- Currently the American Diabetes Association (ADA) recognizes 26 diabetes education programs across the state. Each program meets rigorous standards to achieve this designation; all offer both group educational classes and one-to-one counseling for diabetes. Some include on-site services of endocrinology, podiatry and optometry.

- *Learning and Diabetes: A Resource Guide for Connecticut Schools and Families* was developed through cooperation with key organizations and individuals committed to improving diabetes care for school children. It has been distributed to school nurses throughout the state and is posted on the Connecticut Department of Education Web site.
- *Bridgeport Mayor's Diabetes Awareness Initiative*: This city-wide program has brought together partners from the public and private sectors. The initiative consists of series of educational sessions at various locations around the city, coaching sessions, "dancing for diabetes" programs, and various media campaigns. Data is being collected on the impact on diabetes control.
- *World Without Limits Diabetes Health Fair* at the First Cathedral in Bloomfield, Connecticut is a faith-based initiative that has attracted over 1,000 African Americans each year. The event features screenings, informational presentations, diabetes product information, and entertainment. One of the outgrowths of this program is the "Each One, Teach One" Diabetes Support Group for African Americans held at the Urban League.
- Health Resources Services Administration's *Health Disparities Diabetes Collaborative*: Seven community health centers in Connecticut participate in the diabetes collaborative, which was developed to improve the way care is delivered. It is based on the Chronic Care Model, and through system redesign, the programs have been able to achieve remarkable improvements in diabetes metabolic control.
- *Robert Wood Johnson Advancing Diabetes Self-Management Program* at Community Health Center Inc., Middletown, CT: Over 500 patients have been enrolled in a program focusing on self-management goal setting and achievement to improve their diabetes control.
- *The American Diabetes Association Expo*: This annual event held in Hartford, Connecticut has grown to attract over 2,000 attendees. The day-long program features cooking demonstrations, screenings, diabetes product information, and informational presentations.
- *Partners Reducing the Effects of Diabetes: Initiatives through Collaboration and Teamwork* at the Yale Griffin Prevention Research Center. This project strives to develop strategies to prevent and reduce diabetes and diabetes complications among residents in New Haven and Bridgeport. It is a faith-based project tailored toward low-income African American residents. Project strategies include training community health advisors to promote good health.
- *Amigos en Salud* is a program at Hartford Hospital in which "Promotoras" (community-based lay health educators), specifically trained in behavior change strategies and diabetes, have formed partnerships with patients and help them design and implement changes that are consistent with their cultural beliefs and lifestyle.

The Background and Process

Responding to the rise in prevalence of diabetes in Connecticut and to a request by the Centers for Disease Control and Prevention (CDC), the Connecticut Department of Public Health (CT DPH) convened a diverse group of stakeholders to form the Diabetes Advisory Council in December 2005 to oversee creation of the state diabetes plan. The Advisory Council created an executive committee to manage work groups and to report on the groups' progress. Each member of the Executive Committee was assigned as co-chair of one of the five work groups.

DPH then sent invitations to individuals representing health care delivery, health insurance, government, business, education, and community organizations to serve on the work groups that would be responsible for identifying the barriers to effective diabetes prevention and control in Connecticut, and for creating the strategies to overcome those barriers. The work groups were convened at a large meeting of the planning partners on January 31, 2006. At that meeting, the planning partners were briefed on the current state of diabetes in Connecticut, and they selected the work group(s) to which they felt they could best contribute.

During early 2006, the five work groups—Access and Policy, Disease Management, Education and Awareness, Surveillance, and Prevention—met regularly to refine problem statements, to review research, and to determine the methods that would be most effective in combating diabetes in Connecticut. By early May 2006, each work group had a comprehensive list of the problems that existed in its work area and a set of recommendations to address each problem. All five work groups were reconvened on May 10, 2006 to brief one another on their accomplishments and to make their recommendations to create the Diabetes Prevention and Control Plan. In addition, the planning partners decided on a specific set of action steps to take in the first year of plan execution to produce meaningful success soon after the plan's release. Each work group had a specific focus.

- The *Access and Policy Work Group* was assigned the task of identifying and communicating the barriers that prevent people with diabetes and those at risk for diabetes from receiving the care or education they need to manage their health. The group then devised strategies to overcome those barriers.
- The *Disease Management Work Group* had the task of determining what problems inhibited effective diabetes management and creating recommendations to solve those problems.
- The *Education and Awareness Work Group* was responsible for identifying the gaps in diabetes self-management education, professional education and in general public awareness and for determining the best ways to bridge those gaps.
- The Diabetes Data and Surveillance Work Group of the Connecticut Department of Public Health was responsible for the *Surveillance* section of the plan. The group described the

barriers that still exist to accurate data gathering and sharing, and created recommendations to reduce those barriers.

- The *Prevention Work Group* was responsible for recommending strategies for primary prevention of diabetes in people with pre-diabetes. As planning progressed, primary prevention emerged as an issue that each work group's charge touched upon but did not explicitly address. Mindful that Connecticut's Diabetes and Prevention Control Plan was intended to reduce the incidence of diabetes, as well as, to reduce complications of diabetes among those living with the disease, the combined planning group decided to convene a prevention work group with representatives from the other four work groups. The recommendations coming from this work group are included in the plan.

Achieving the Goals

The *Connecticut Diabetes Prevention and Control Plan* has goals in two broad areas: the care system and care outcomes. While systems improvement is the structural change that the plan seeks, improvement in care outcomes is the ultimate goal of that structural change. Accordingly, the intended impacts of the plan can be organized under two categories: 1) comprehensive system of care and prevention, and 2) improved quality of life. For the purposes of this plan, comprehensive diabetes care is defined as a comprehensive system of care and prevention that includes diabetes preventive care, treatment, supplies, equipment, medication, diabetes self-management education, and medical nutrition therapy, that is offered, available and affordable across the public and private sectors to every citizen of Connecticut in need.

Many of the recommendations involve community groups and local jurisdictions. The National Public Health Performance Standards Program (NPHPSP) has developed *10 Essential Public Health Services* that should be provided in all communities. Consideration was given to the *10 Essential Public Health Services* in the development of the plan. These are included in the Appendix as a reference (see Appendix C).

Healthy People 2010 objectives for diabetes (Appendix B) were used to identify ways to address problems specific to Connecticut and to develop measurable outcome statements.



3. CONNECTICUT, ITS POPULATION AND DIABETES

Introduction

Connecticut is the southernmost New England state, bordered by Massachusetts to the north, Long Island Sound to the south, Rhode Island to the east, and New York to the west. Much of Connecticut's population lives in the larger cities along the coastal plain and in the river valley of the Connecticut River, which bisects the state from north to south. Connecticut is characterized by high social and economic contrast and racial and ethnic diversity. It is the third smallest in area, but fourth most densely populated state in the U.S.; about 88% of its population lives in urban areas.^{xii}

Whether in terms of health status, income, poverty, racial composition, or almost any other factor, statewide averages for Connecticut often are misleading. Striking disparities appear across town lines, among racial and ethnic groups, and among urban and rural populations. These differences have engendered the concept of “two Connecticut,”^{xiii} one for people who live in the wealthiest state in the nation, and the other for those living in some of the most severe and concentrated pockets of poverty in the U.S. Recently the notion of “five Connecticut” based on disparate social and economic factors has been proposed.^{xiv}

The overall health of Connecticut's people varies dramatically among its wealthiest and poorest communities. Connecticut's population is changing, and the demographic changes are reflected in both numbers and patterns of diabetes and evolving needs for health care and support services. Disparities in diabetes prevalence, treatment, clinical outcomes, and mortality were fundamental considerations in the development of the *Connecticut Diabetes Prevention and Control Plan*.

CONNECTICUT'S PEOPLE

The Aging of the Population

Diabetes prevalence increases with age. Connecticut's population is older, on average, compared to the U. S. population as a whole. Older adults are the fastest growing segment of our population. Between 1990 and 2000, the median age of Connecticut residents increased from 34.4 years to 37.4 years, or 2.1 years older than the national median age.^{xv} During the same period, the number of people 65 years of age and older grew by more than 24,000 (Table 1).

Shifts in Racial and Ethnic Composition

Diabetes rates and patterns vary demographically. From 1990 to 2000, the number and proportion of White persons in Connecticut decreased, whereas minority populations increased,

in some cases by 50% or more (Table 1). Connecticut’s population is still predominately White (81.6%) and non-Hispanic (90.6%); however, the racial and ethnic composition is dramatically different in the state’s largest cities. Racial and ethnic minorities account for 72% of the population in Hartford, 57% in New Haven, and 55% in Bridgeport, and Hispanics (of any race) represent 41%, 21%, and 32%, respectively, of the population in these three cities.^{xvi}

Hispanics are now the largest minority group in Connecticut and the United States, with the trend expected to continue.

Table 1 Population Changes for Certain Groups: Connecticut, 1990 to 2000

Population Group	1990		2000		Change from 1990 to 2000	
	Number	% of Total	Number	% of Total	Number	%
Total Population (all races and ages)	3,287,116	100	3,405,565	100	118,449	3.6
White	2,859,353	87.0	2,780,355	81.6	-78,988	-2.8
African American - Black	274,269	8.3	309,843	9.1	35,574	13.0
Asian American/Pacific Islander	50,698	1.5	83,679	2.5	32,981	65.1
American Indian/Alaskan Native	6,654	0.2	9,639	0.3	2,985	44.9
Hispanic/Latino (any race)	213,116	6.5	320,323	9.4	107,207	50.3
Older adults (65+ years of age)	445,907	13.6	470,183	13.8	24,276	5.4

Source: U.S. Census Bureau, 2000

Social and Economic Characteristics

Education Level: Compared to the American population as a whole, Connecticut residents have achieved higher levels of education (Table 2). In 2000, 84% of state residents 25 years of age and older were high school graduates or higher, 31% had completed a bachelor’s degree or more, and less than 6% had less than a 9th grade education. In contrast, in the cities of Hartford and Bridgeport, only 61% and 65% of residents, respectively, were high school graduates, only about 12% had a baccalaureate degree or higher, and 17% and 15%, respectively had less than a 9th grade education.

Table 2: Changes in Selected Social and Economic Characteristics: Connecticut, 1990 and 2000 and United States, 2000

Characteristic	Connecticut		U.S. (2000) ^{xvii}
	1990 ^{xviii}	2000 ^{xix}	
Less than 9th grade education (age 25+)	8.4%	5.8%	7.5%
High school graduates (age 25+)	79.2%	84.0%	80.4%
Bachelor's degree or higher	27.2%	31.4%	24.4%
Speak language other than English	15.2%	18.3%	17.9%
Do not speak English "very well"	6.0%	7.4%	8.1%
<i>Per capita</i> income PP ^{7PP}	\$20,198	\$28,766	\$21,587
Persons living below poverty level TTPP ^{xx}	6.6%	7.6%	12.4%

Source: U.S. Census Bureau, 2000

Language Spoken at Home

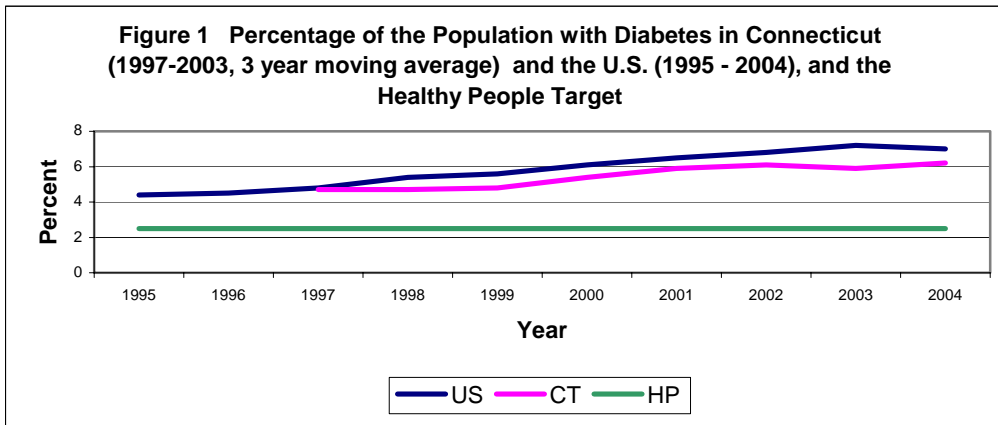
In 2000, nearly one in five Connecticut residents over 5 years of age spoke a language other than English, and more than 7% did not speak English "very well" (Table 2). In Hartford and Bridgeport, more than 40% of the population spoke a language other than English, and more than one in five of them spoke English less than "very well." People with a poor ability to read, write, and speak English often have a poor understanding of medical information and advice. As a result, they are more likely to engage in risky behaviors like smoking, they are less likely to access health services, such as screenings for diabetes, and they end up with poor health outcomes, compared to people with high English literacy.

4. BURDEN OF DIABETES IN CONNECTICUT

Prevalence

An estimated 6.2% of the Connecticut adult population, or approximately 163,000 adults 18 years and older, have diagnosed diabetes (2003-2005 data) compared with about 7% of the U.S. population.^{xxi, xxii} The Centers for Disease Control and Prevention (CDC) estimates that about 30% of all diabetes cases are undiagnosed, partly because symptoms develop gradually and severe symptoms may only occur after several years.^{xxiii} An additional 70,000 Connecticut adults are estimated to have undiagnosed diabetes. Thus, a total of 233,000 Connecticut residents are estimated to have either diagnosed or undiagnosed diabetes. Prevalence estimates reported below refer to diagnosed cases of diabetes.

National survey data suggest that diabetes has continuously increased since the mid-1990s.^{xxiv} The national Behavioral Risk Factor Surveillance System (BRFSS) survey estimated adult diabetes prevalence at 4.4% in 1995, 6.1% in 2000, and 7% in 2004. The prevalence of diabetes in Connecticut has gradually increased since 1999. Diabetes prevalence in the Connecticut adult population was 4.8% in 1998-2000 and 6.2% in 2003-2005.^{xxv} The U.S. *Healthy People 2010* target for diabetes prevalence is 2.5%.

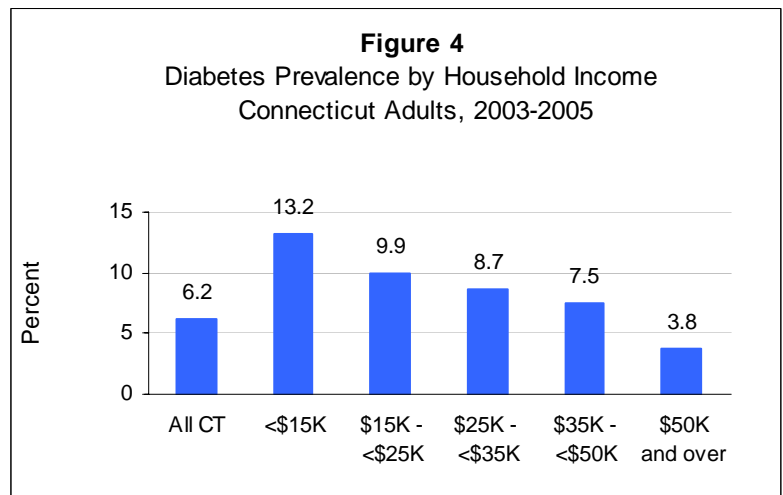
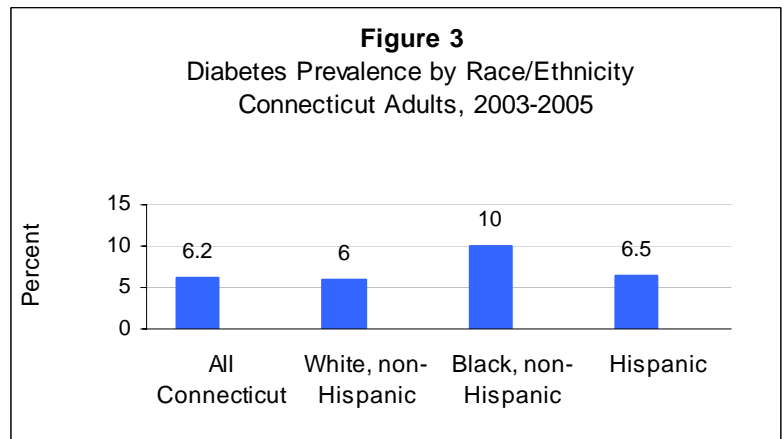
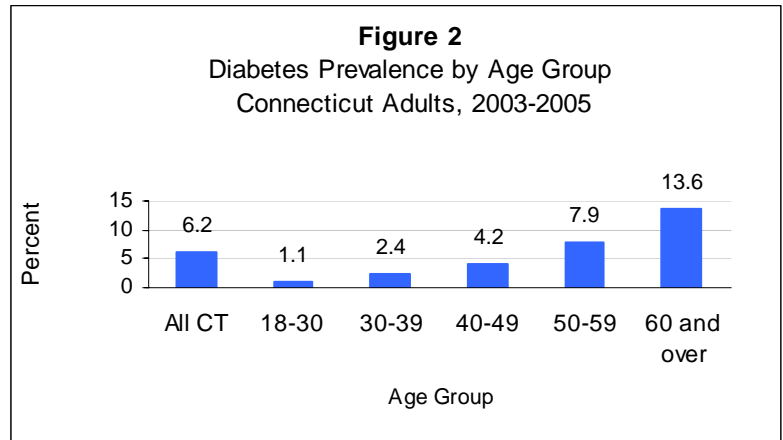


Sources: US Department of Health and Human Services, 1990; 2000; Centers for Disease Control and Prevention, 2005; Connecticut Department of Public Health, 2005.

Prevalence by Age, Race/Ethnicity and Household Income

Diabetes prevalence rates vary by age, race/ethnicity, and household income levels. Prevalence increases by age with Connecticut adults aged 60 and over having the highest rates and adults aged 18 to 29 having the lowest rates of diabetes (Figure 2). Among subpopulation groups, Black adults have significantly higher prevalence than White and Hispanic adults ($p < .05$) [Figure 3]. Lower-income adults are also more likely to have diagnosed diabetes than are higher-income adults in Connecticut (Figure 4).^{xxvi}

The prevalence of diabetes in Connecticut and the United States is likely to increase for a few reasons. First, large segments of both populations are aging. Second, the fastest-growing segment of the U.S. and Connecticut populations include Hispanic Americans and other minority groups, who are considered at higher risk for diabetes nationwide. Finally, Americans are increasingly overweight and sedentary. According to recent estimates, the prevalence of diabetes in the United States is predicted to reach 8.9% of the population by 2025.^{xxvii}



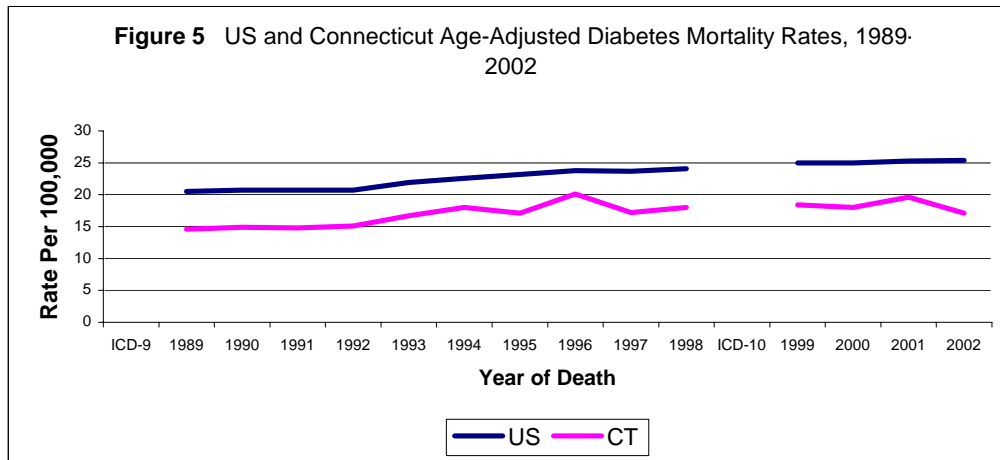
Source for Figures 2, 3, 4: Connecticut Department of Public Health. 2006.

Mortality

Diabetes is the seventh leading cause of death in Connecticut. Most people with diabetes die from related complications rather than directly from the disease itself; therefore, examination of diabetes as the underlying cause of death alone does not accurately represent its extensive contribution to overall mortality. While diabetes was the underlying or “primary” cause of deaths for 674 residents in 2002, it was listed as a primary or secondary (“diabetes-related”) cause of death for 2,771 Connecticut residents.^{xxviii} National data suggest that diabetes is underreported on death certificates.^{xxix}

Trends in Mortality

Age-adjusted death and premature mortality rates due to diabetes increased significantly in Connecticut during the 1990s ($p < .001$).^{xxx} This increase mirrors a similar trend nationwide.^{xxxi} Age-adjusted diabetes mortality rates for Connecticut residents have been consistently lower than comparable national rates (Figure 5). Diabetes-related mortality rates for Connecticut residents did not change significantly during the 1990s.^{xxxii}



Sources: Centers for Disease Control and Prevention; Connecticut Department of Public Health, 2005.
Note: Cause-of-death coding changed from ICD-9 to ICD-10 in 1999.

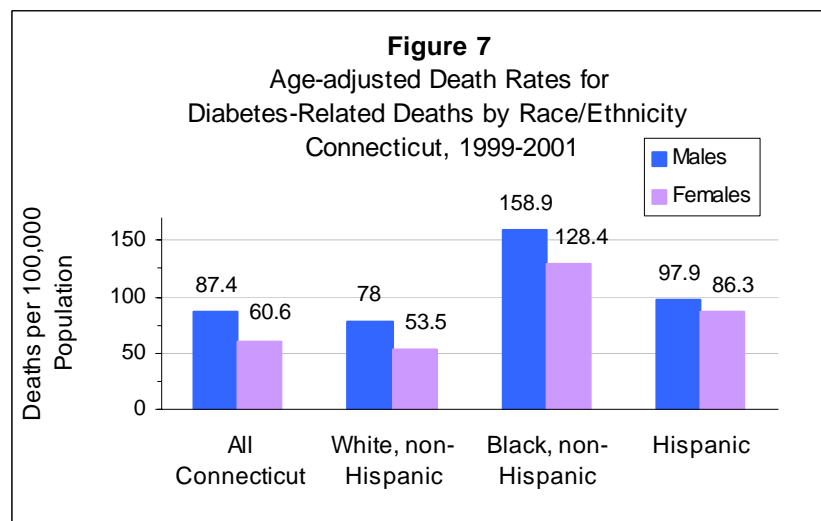
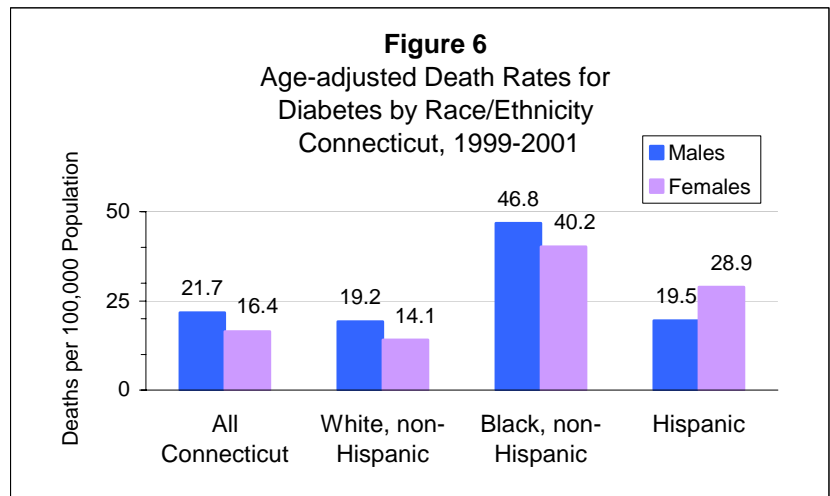
Diabetes Mortality by Gender, Race, and Ethnicity

Connecticut male residents have significantly higher mortality rates from both diabetes and diabetes-related causes than do Connecticut females ($p < .01$ for both comparisons) [Figures 6 and 7].^{xxxiii} These findings are consistent with national data showing slightly higher diabetes mortality rates among males.

Of all subpopulation groups, Black (non-Hispanic) males and females have the highest mortality rates due to diabetes and diabetes-related causes and significantly higher mortality than the respective White (non-Hispanic) and Hispanic populations. Black males have 2.4 times the risk of death due to diabetes and twice the risk of diabetes-related deaths compared with White males ($p < .01$ for both comparisons).

Black females have 2.9 times the risk of death due to diabetes and 2.4 times the risk of diabetes-related deaths compared with White females ($p < .01$ for both comparisons) [Figures 6 and 7].^{xxxiv}

The diabetes and diabetes-related mortality rates of Hispanic males are not significantly different than the respective rates for White males. Hispanic females have twice the risk of diabetes death ($p < .01$) and 1.6 times the risk of diabetes-related



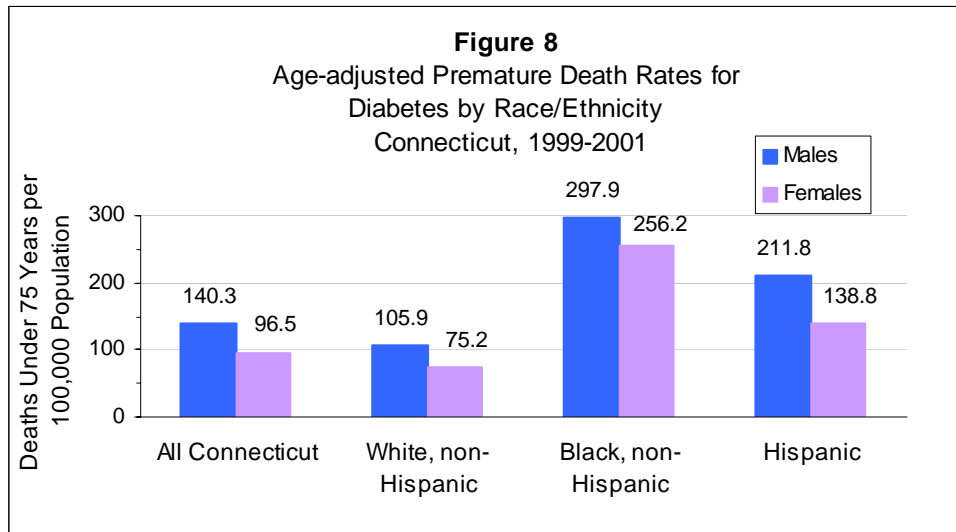
Source for figures 6, 7: Amadeo and Mueller, Connecticut Department of Public Health, 2005

death ($p < .01$) rates compared with White females (Figures 6 and 7).^{xxxv}

Premature Mortality by Gender, Race, and Ethnicity

Premature mortality, defined as the “years of potential life lost before age 75,” emphasizes deaths that occur at younger ages. For example, a person who dies at age 45 is considered to have lost 30 years of life, and a person who dies at 70 is considered to have lost 5 years of life.^{xxxvi}

Premature mortality (to age 75) due to diabetes is significantly higher among Black (non-Hispanic) males and females compared with the respective White (non-Hispanic) and Hispanic populations ($p < .01$ for both comparisons). Black males have 2.8 times the risk of premature death due to diabetes compared with White males. Black females have 3.4 times the risk of premature death due to diabetes compared with White females (Figure 8).^{xxxvii}



Source: Amadeo and Mueller, Connecticut Department of Public Health, 2005.

Hispanic females have 1.8 times the risk of premature death due to diabetes compared with White females, but this difference is not statistically significant. Hispanic males have twice the risk of premature death due to diabetes compared with White males ($p < .01$), and this difference is statistically significant (Figure 8).^{xxxviii}

Morbidity

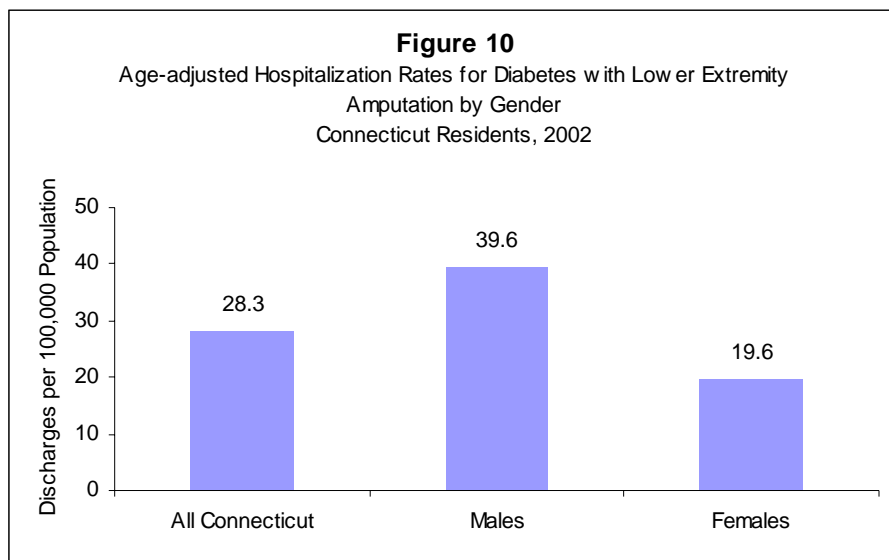
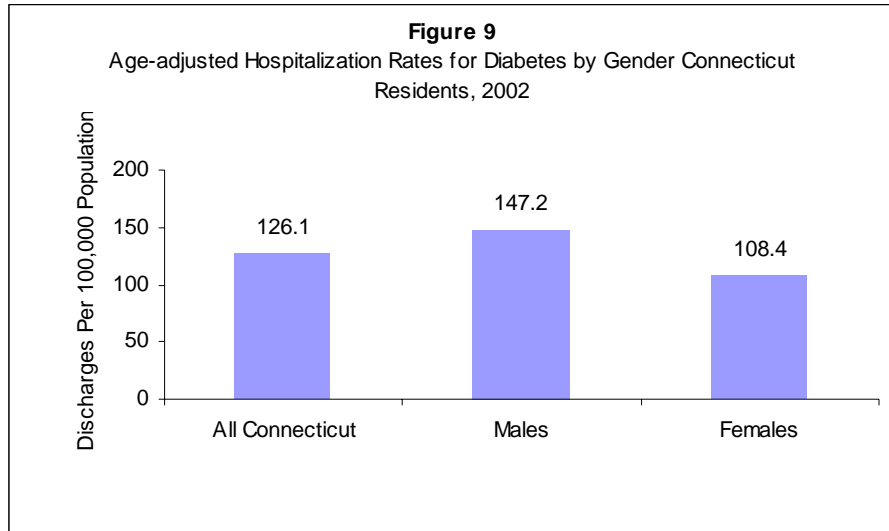
Lack of timely, appropriate medical care may contribute to the complications of diabetes, such as lower extremity amputations, end-stage renal disease, and blindness. For people living with diabetes, the impact of this disease may extend over many years.

Cardiovascular disease and lower extremity amputations are significantly more likely to occur in patients with diabetes. For example, national data show that the risk of hospitalization from cardiovascular disease is two to four times higher for women with diabetes than women without the disease. Those hospitalized with diabetes are 28 times more likely to have an amputation than those without the disease.^{xxxix}

Multiple hospitalizations are common among persons with diabetes. Nearly one-third are hospitalized two or more times in the same year due to complications associated with diabetes. Low-income people with diabetes are more likely to experience multiple hospitalizations. About 30% of all diabetes patients who are hospitalized are re-hospitalized in a one-year period.^{xi}

Hospitalization Rates by Gender

Connecticut males are significantly more likely to be hospitalized for diabetes and lower-extremity amputations compared with Connecticut females ($p < .05$ for both comparisons). Connecticut males have 1.4 times the rate of hospitalization for diabetes and twice the rate of lower-extremity amputations compared with Connecticut females (Figures 9 and

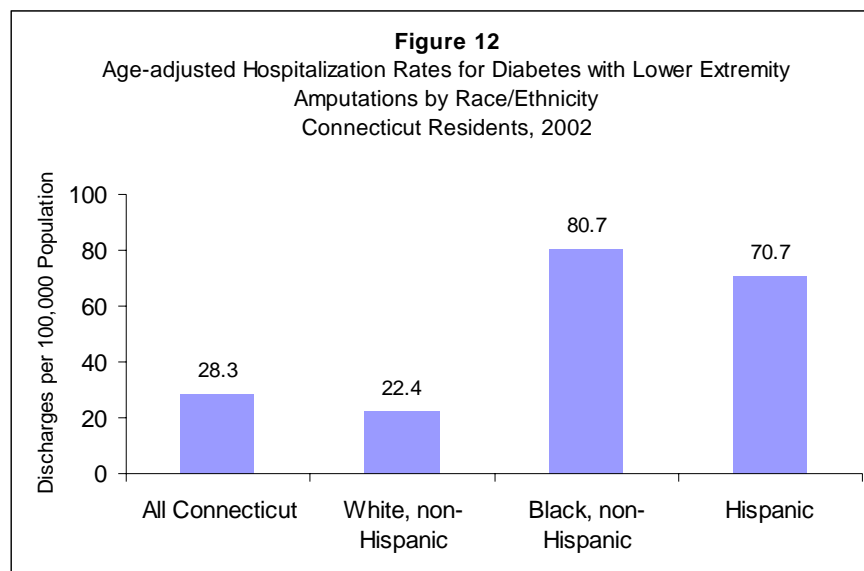
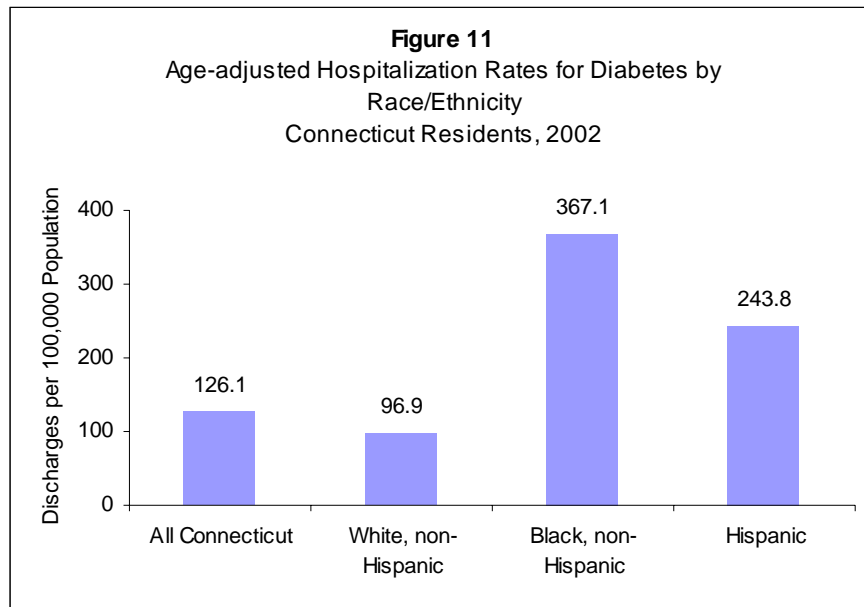


Source: Connecticut Department of Public Health, Hospital Discharge and Abstract Billing Data Base, 2005

10).^{xli}

Hospitalization Rates by Race and Ethnicity

Black (non-Hispanic) and Hispanic Connecticut residents have significantly higher rates of hospitalizations for diabetes and for lower-extremity amputations than do White (non-Hispanic) residents ($p < .05$ for both comparisons). Black residents have 3.8 times the rate of diabetes hospitalizations and 3.6 times the rate of lower extremity amputations due to diabetes compared with White residents. Hispanics have 2.5 times the rate of diabetes hospitalizations and 3.2 times the rate of lower-extremity amputations due to diabetes compared with White (non-Hispanic) residents ($p < .05$ for both comparisons) [Figures 11



Source for figures 11,12: Connecticut Department of Public Health, Hospital Discharge and Abstract Billing Data Base, 2005.

and 12].^{xlii}

Economic Costs

The cost of diabetes in Connecticut was estimated at \$1.7 billion in 2003.^{xliii} This estimate includes direct (medical) costs and indirect costs associated with lost productivity from illness and premature death. Diabetes can accrue enormous indirect costs. It is a major cause of disability and the ability to live independently. It can severely affect the quality of life for individuals and families.

Approximately \$77 million was billed for hospitalizations in Connecticut due to diabetes as a principal diagnosis in 2002. Almost \$39 million was billed for hospitalizations related to diabetes with a lower extremity amputation.^{xliv}

Risk Factors for Diabetes

Risk factors for diabetes are classified as non-modifiable and modifiable factors. Non-modifiable risk factors include increasing age over 45 years; having a parent, brother or sister with diabetes; having a family background that is African American/Black, American Indian, Asian American, Pacific Islander, or Hispanic/Latino; and having had gestational diabetes, or giving birth to at least one baby weighing more than nine pounds. Modifiable risk factors include overweight or obesity; a blood pressure of 140/90 or higher; HDL cholesterol of 35 mg/dL or lower; triglyceride levels of 250 mg/dL or higher; and lack of physical activity.^{xlv} Obesity is considered the chief modifiable risk factor for diabetes. People who are 20% or more above their desired weight have four times the risk of developing diabetes compared with those of normal weight.^{xlvi}

Lower socioeconomic status has been consistently linked to higher prevalence of type 2 diabetes.^{xlvi, xlviii, xlix} Low-income persons are less likely than higher-income persons to have an adequate diet, sufficient physical activity, and access to medical care, factors known to affect progression of the disease.

Table 1. Modifiable and Non-modifiable Risk Factors for Diabetes

Modifiable	Non-Modifiable
<ul style="list-style-type: none">• Overweight or obesity• Blood pressure of $\geq 140/90$ mmHg• HDL cholesterol ≤ 35 mg/dL• Triglyceride levels of ≥ 250 mg/dL• Lack of physical activity	<ul style="list-style-type: none">• Increasing age over 45 years• Family history• Black, Hispanic, Asian, Pacific Islander, American Indian family background• History of gestational diabetes• Having given birth to a baby > 9 lbs.

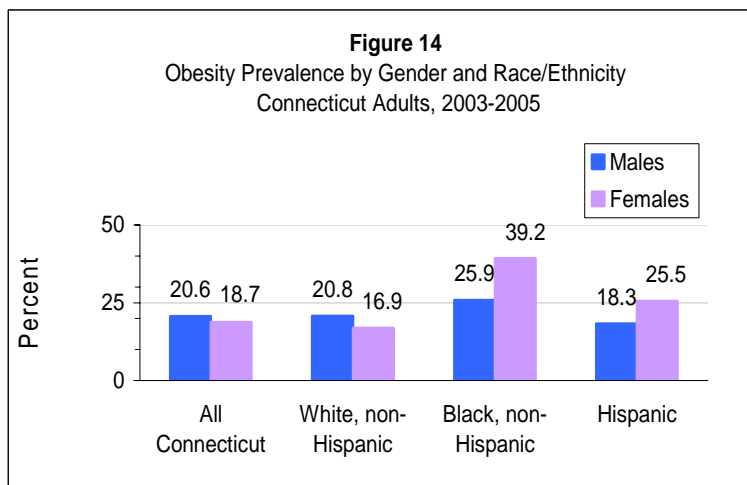
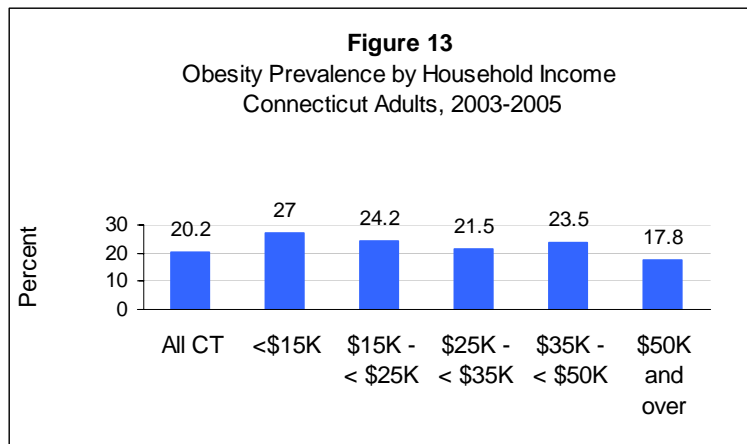
Overweight and Obesity as Modifiable Risk Factors

Body mass index (BMI), or weight adjusted for height, is a widely used screening method for obesity. Medical guidelines identify normal/desirable weight as a BMI under 25, overweight as a BMI of 25 to 29.9, and obese as a BMI of 30 or more.¹ People who are overweight are at much greater risk of developing type 2 diabetes than are normal weight individuals. Being overweight puts added pressure on the body's ability to properly control blood sugar, therefore making it much more likely for diabetes to develop. Almost 90% of people with type 2 diabetes are overweight.^{li} Obesity is a metabolic disorder, which can be explained by a combination of hereditary and environmental factors. High calorie diets along with less physical activity have contributed to the obesity epidemic.^{lii} Abdominal obesity has been found to place individuals at higher risk for health

problems, including high blood pressure, high blood cholesterol, high triglycerides, diabetes, and heart disease.^{liii}

Approximately 20% of Connecticut adults are obese, about 37% are overweight, and 43% are normal or desired weight.^{liv} Lower-income adults are more likely to be obese than higher-income adults (Figure 13).^{lv}

Black females are more likely to be



Source Figures 13 & 14: Connecticut Department of Public Health, BRFSS Survey. 2006.

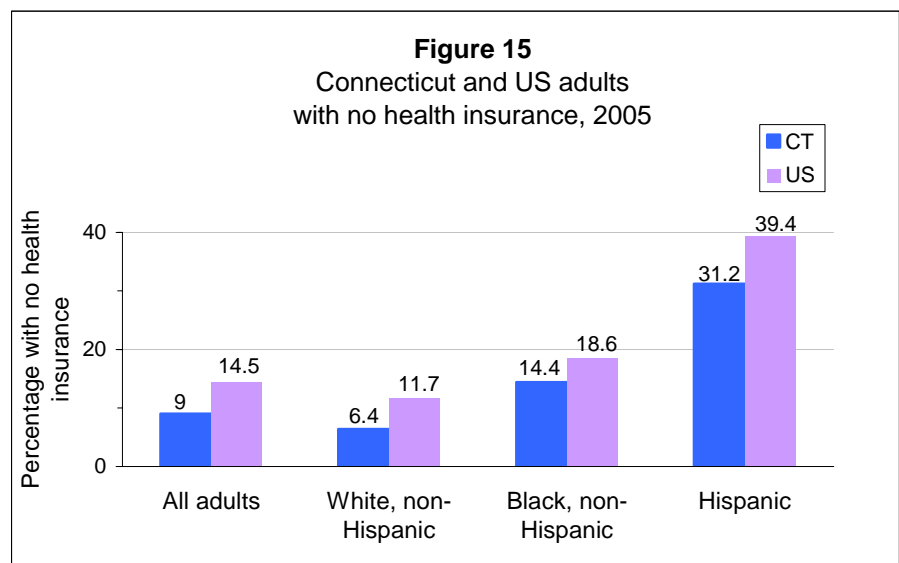
obese compared with White and Hispanic females ($p < .05$ for both comparisons). There are no significant differences in obesity among Connecticut adult males by race or Hispanic ethnicity (Figure 14).^{lvi}

Access to Health care

Access to health care is key to the prevention, treatment, and management of heart disease and stroke. People without health insurance are less likely than others to have a usual source of care, to receive preventive health care services, and appropriate medical management of chronic conditions. About 9% of Connecticut adults aged 18 and over do not have health insurance compared with almost 15% of adults nationwide. Hispanic adults in Connecticut are least likely to report having health insurance (about 31%),

followed by Black adults (14%), and White adults (6%). Comparable national figures show that about 31% of Hispanic adults, 19% of Black adults, and 12% of White adults nationwide reported having no health insurance (Figure 15).^{lvii}

The health status of the entire Connecticut population is compromised when large numbers of residents are uninsured, and it imposes a significant additional financial burden on our state.



Source: Centers for Disease Control & Prevention, BRFSS Survey, 2006.

Targeting High-Risk Populations

Black and lower-income adults in Connecticut have higher prevalence rates of diagnosed diabetes compared with non-Black and higher-income adults, respectively. Black and Hispanic Connecticut residents experience higher rates of premature mortality due to

diabetes and higher rates of hospitalization due to diabetes and lower-extremity amputations. They are significantly less likely than White residents to have health insurance, and thus access to preventive health care services. Targeted public health interventions that address the risk factors for the development of diabetes, timely diagnosis of the disease, as well as appropriate preventive care for those with diagnosed diabetes are warranted for the Connecticut Black, Hispanic, and low-income populations.

5. PREVENTING DIABETES BEFORE IT STARTS

Prevention Work Group

Rosa Browne	NAACP-Health Committee
Diane Creed	American Diabetes Association
Ana Lourdes Gomez, PhD	University of Connecticut
Paula Leibovitz, MS, RD, CD-N	Consultant, Briarwood College
Kevin Maloy	Pfizer
Phillip Montgomery	Connecticut Business and Industry Association
Rebecca Murray, MSN, FNP, CDE	West Side School-Based Health Center
Patricia O'Connell, MS, RD, CDE	Joslin Diabetes Center
Diane Sell	Consultant
Anne Wilson	CIGNA
Jean Zimkus, RN	Yale New Haven Hospital

GOAL: *Connecticut residents with pre-diabetes will have their pre-diabetes reversed or their progression to diabetes significantly slowed with an overall goal to reduce or prolong conversion to type 2 diabetes.*

Identified Problems:

- Inappropriate or insufficient education related to lifestyle change (including meal planning and physical activity) to prevent or decrease the risk of advancing from pre-diabetes to diabetes.
- Insufficient capacity to provide diabetes prevention education and intervention to all people in Connecticut with pre-diabetes.
- Public and private policies, insurance re-imburement in particular, are obstacles to appropriate diabetes preventive care.
- There is a lack of knowledge among health care providers of how to screen for and treat pre-diabetes and how to code for pre-diabetes.

Rationale:

Overview

Results from the federal Diabetes Prevention Program (DPP) pilot indicate diabetes can be prevented or delayed in people with pre-diabetes who participate in intensive behavioral interventions to decrease their risk of progressing to diabetes.

The American Diabetes Association defines pre-diabetes as a metabolic disorder characterized by plasma glucose levels that are abnormally high but not sufficiently high for a diagnosis of diabetes. There are two methods to diagnose pre-diabetes: the Fasting Plasma Glucose (FPG) test and the Oral Glucose Tolerance Test (OGTT). Glucose levels equal to or greater than 100mg/dL, but less than 126 mg/dL in the FPG signal impaired fasting glucose (IFG) and are diagnostic for pre-diabetes. Random glucose levels greater than 140 mg/dL, but less than 200 mg/dL signal impaired glucose tolerance (IGT) and are also diagnostic for pre-diabetes.^{lviii} The National Diabetes Education Program (NDEP) further suggests using the two-hour OGTT to screen for pre-diabetes because it is more sensitive than the FPG test, detecting people who might not be detected by the FPG test.

Obesity and lack of exercise contribute to developing diabetes, and are extremely common among Connecticut's residents. The widespread nature of behavioral risk factors for diabetes makes the task of selecting a group on which to focus prevention efforts difficult. The medical community describes the metabolic syndrome (abdominal obesity, dyslipidemia, elevated blood pressure, insulin resistance, etc.) as an intermediate state between normal metabolism and the cascade of events that lead to diabetes.

Targeting people with the metabolic syndrome would have the greatest impact in averting diabetes in the greatest number of people. Yet, ill-defined guidelines for diagnosing the syndrome combined with the number of people believed to have the metabolic syndrome currently make such interventions impractical. The Prevention Work Group of the *Connecticut Diabetes Prevention and Control Plan* focused most of its efforts on people who meet the ADA criteria for pre-diabetes. Even though the committee recognized that it could not fully address the problem of the metabolic syndrome, it did devise recommendations for public information campaigns to alert at risk people of the need to be tested for diabetes and to change their behavior, and healthy people of the need to remain vigilant in preserving their health.

In the DPP, moderate weight loss (5-7%), increased physical exercise, and healthier food choices, when combined in a comprehensive program of health maintenance, were adequate to prevent or delay diabetes. An example of a prevention program that is successfully being implemented in Connecticut is the Diabetes Prevention Program at the

Hill Health Center. The Hill Health Center is one of five community health centers in the nation selected to be part of the Bureau of Primary Health Care Diabetes Prevention Pilot. The system of care was redesigned through implementation of the Care Model. This allowed for organizational intervention by identifying individuals at risk for the development of diabetes, and assisting them to achieve and sustain a 7% weight loss and an increase in physical activity of >150 minutes/week (for example, 30 minutes/day, 5 days/week).

PREVENTION OBJECTIVE 1: By 2012, reduce by 0.5% the prevalence of type 2 diabetes by preventing the progression of pre-diabetes to diabetes.

Recommended Strategies

- Increase awareness of providers and people with pre-diabetes of the potential to prevent diabetes onset through lifestyle change.
- Develop and promote pre-diabetes screening programs accessible to all at risk Connecticut residents with referrals to health care providers as appropriate.
- Deliver cost-effective pre-diabetes interventions as efficiently as possible.
- Change Connecticut's health system to support healthy lifestyles for residents of all ages.
- Engage community organizations to ensure that messages about lifestyle modification are delivered in culturally relevant and positive ways.
- Support interventions promoted by other programs, such as the CT DPH Obesity Program, that include modifications to school lunch and physical education programs to provide healthy school environments.

How this objective will be measured:

- Data source: BRFSS
- Baseline value: 6.2%
- Target value: 5.7%



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6. DISEASE MANAGEMENT

Disease Management Work Group

Daren Anderson, MD	Community Health Center, Inc.
Rosa Browne	NAACP-Health Committee
Mark Chasse, OD	Connecticut Association of Optometrists
Jyoti Chhabra, PhD	Hartford Hospital
James Cox-Chapman, MD	ProHealth Physicians
Patricia DeWitt	Yale-New Haven Hospital
Linda J. Ferraro, RDH	Department of Public Health
Marghie Giuliano, R Ph	Connecticut Pharmacists Association
Ana Lourdes Gomez, PhD	University of Connecticut
Molly Kirschner, MS, RD	Juvenile Diabetes Research Foundation, Hartford & Western Massachusetts
Thomas Meehan, MD, MPH, FACP	Qualidigm
Carolé Mensing, RN, MA, CDE	University of Connecticut Health Center
Rebecca Murray, MSN, FNP, CDE	West Side School-Based Health Center
Kelley Newlin, DNSc	Yale University
William A. Petit, Jr., MD, Co-Chair	Joslin Diabetes Center
Christine Pinette, APRN	Bristol Hospital
Joseph A. Rosa, MD	St. Vincent's Hospital
Katherine Schneider, MD	Middlesex Hospital
Eleanor Seiler, MD, Co-Chair	Anthem
Laura Shuey	American Heart Association
Anne Wilson	CIGNA
Ardell A. Wilson, D.D.S., M.P.H.	Department of Public Health
Donald Zeterval, Rph, CDE	The Diabetes Center

GOAL: *Connecticut health care providers adopt the widespread use of disease management practices in the treatment of diabetes.*

Identified Problems

- Evidenced based practices (American Diabetes Association and American Association of Clinical Endocrinology) are not consistently applied.
- Lack of process/clinical outcomes measurement, evaluation and management.
- Lack of collaborative practice models that include physicians and support service providers.
- Lack of a routine reporting feedback loop.
- Insufficient patient self-management education.
- Many people with diabetes are undetected and many patients with diagnosed diabetes are lost to follow-up.

Rationale:

Overview

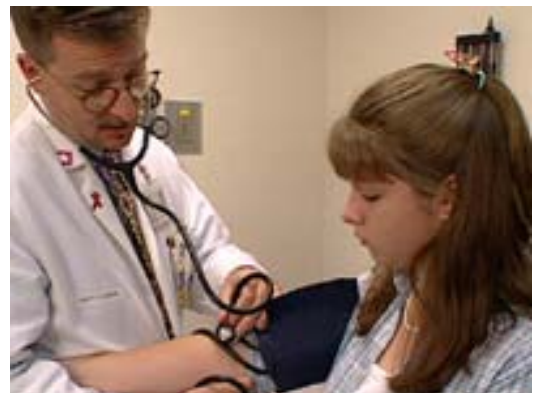
Disease management is the delivery of quality care to those with chronic disease. An effective disease management program helps the person living with diabetes to understand their disease and the importance of their role as part of their own care and treatment team. Disease management may be the most significant factor in improving adherence, health outcomes, quality of life, and productivity. This translates into more efficient use of health care resources.

To ensure a common understanding of what disease management is, the work group agreed to adopt the Disease Management Association of America's definition of disease management. Disease management is a system of coordinated health care interventions and communications for populations with conditions in which patient self-care efforts are significant. Disease management includes:

- Support of the physician or practitioner/patient relationship and plan of care;
- Emphasis of prevention of exacerbations and complications utilizing evidence-based practice guidelines and patient empowerment strategies;
- Evaluation of clinical, humanistic, and economic outcomes on an on-going basis with the goal of improving overall health while using health care resources efficiently.

Full service disease management programs include the following six components:

1. Population identification processes;
2. Evidence-based practice guidelines;
3. Collaborative practice models to include physician and support-service providers;
4. Patient self-management education (may include primary prevention, behavior modification programs, and compliance/surveillance);
5. Process and outcomes measurement, evaluation, and management; and
6. Routine reporting/feedback loop (may include communication with patient, physician, health plan and ancillary providers, and practice profiling). ^{lix}



Disease Management Best Practices

Best practices for diabetes management are those clinical strategies that research studies have shown to be effective in improving the health status of individuals with this chronic disease. Given the limited time providers have to interact with patients, interventions must be based upon the most up-to-date knowledge. Adoption of best practices helps to ensure that all patients receive comparable treatment, and helps to increase the number of patients with positive care outcomes.

DISEASE MANAGEMENT OBJECTIVE 1: Best Practices: By 2012, increase by 50% the number of Connecticut physicians who use ADA and other evidence based guidelines to diagnose and monitor pre-diabetes and diabetes as measured by the number of physicians recognized by the ADA.

Recommended Strategies

- Promote adoption and integration of ADA and other evidence-based guidelines into clinical practice to support early diabetes diagnosis and use of ABC (A1c, blood pressure, cholesterol) values.
- Develop a pay-for-performance system that rewards physicians and patients for adhering to guidelines.^{lx}
- Engage employers in encouraging and supporting more managed care organizations to offer incentives.

How this objective will be measured:

- Data source: ADA
- Baseline value: 34 Physicians (2006)
- Target value: 51 physicians

Effective Communication in a Comprehensive System of Diabetes Care

Disease registries and effective communication among providers and patients will help to reduce duplicated efforts and to improve outcomes. With increasing specialization of health care, it is possible that not all members of a patient's health care team have access to the same information. Discrepancies or deficiencies in knowledge about a specific patient could result in providers pursuing conflicting management approaches. Sharing information and maintaining regular communication will minimize the risks of treatment errors.

Note: EHEALTH Connecticut is a multi-stakeholder statewide data project that is currently being funded by the Department of Public Health and other sources. The

purpose of this project is to develop a system to compile health data, similar to proposed common disease registries, to facilitate the *real time* access to patient data to provide optimal care. Although currently not in place, the hope is that this project will be used for the care of persons living with chronic diseases such as diabetes.

DISEASE MANAGEMENT OBJECTIVE 2: Effective Communication in a Comprehensive System of Diabetes Care: By 2012, improve patient care by increasing the number of health care providers using Electronic Medical Records (EMRs) or disease registries by 10% to establish a statewide health data exchange, increase outreach and improve communication among providers.

Recommended Strategies

- Develop effective communication vehicles to demonstrate the value of reporting clinical outcomes to providers using evidenced based literature, peer-to-peer outreach and other means. Show providers how such clinical outcomes, reporting through incentive programs, or other vehicles can be valuable for their patients, their practices and others.
- Work collaboratively with managed care organizations to identify the current communication barriers for effective disease management. With MCOs, promote a process to simplify referrals and communication linkages that will create administrative efficiencies.
- Promote integrative processes among health plans to link diagnosis, treatment plans and education plans thus promoting communication among those who are providing services to persons with diabetes.

How this objective will be measured:

Periodic survey of physicians in Connecticut

- Data source: Survey response regarding number of health care providers using EMR/registries
- Baseline value: To be determined
- Target value: 10% over baseline

* Baseline value to be determined during first year of plan implementation

Measuring Clinical Outcomes

Measuring clinical outcomes provides data that individual providers can use to improve their own practices and that insurers can use to reward providers whose patients demonstrate clinical outcomes that evidence based research has shown to improve health status.

DISEASE MANAGEMENT OBJECTIVE 3: Measuring Clinical Outcomes: By 2012, establish a system of process and outcome measurement used by all health care providers on the patient care team.

Recommended Strategies

- Adopt evidence-based guidelines as evaluation benchmarks for clinical outcomes (e.g., A1c control, blood pressure control, lipid level controls, and smoking cessation). Highlight and communicate recommendations in these guidelines for provider accountability in monitoring clinical care.
- Use a quality assurance process to assess outcomes (e.g., behavioral/functional outcomes, impact of education, outreach, effects on caregivers and family members with chronic disease, end of life care and impact on mental health).
- Encourage employers to provide meaningful financial incentives for employees and their providers to reach established benchmarks.

How this objective will be measured:

Data source, Baseline and target values to be determined during first year of plan implementation

Self-Management

It is not realistic or cost-effective to require providers to be responsible for all aspects of diabetes care at all times. To maintain good control and to maintain or improve their health, people with diabetes must be involved in their own treatment programs. Greater patient understanding and adherence to treatment recommendations allows providers to assist more patients, especially those whose disease is more complex. Although this is important for all patients with diabetes, it may be more challenging for underserved populations due to additional complexities including language barriers, unsafe neighborhoods for walking, limited budgets for healthy food and medical supplies, access to dental care and other challenges.

DISEASE MANAGEMENT OBJECTIVE 4: Self-Management: By 2012, increase by 5% the percentage of adults age 18 and older with diabetes who are conducting comprehensive self-management to control their disease.

Recommended Strategies

- Assess current disparities and create plans to remove identified disparities through culturally-focused diabetes care.
- Involve community leaders in creating community health initiatives.
- Train health care professionals, including dental professionals, para-professionals and lay health workers in the community health setting on diabetes prevention, care and management.
- Create a standard self-management education program that is simple and user friendly and that involves a program for health care literacy that is language appropriate and culturally sensitive.
- Foster patient responsibility for diabetes care by promoting self-management education programs that engage the patient and provide patient financial incentives and personalized nutrition guides and exercise plans.
- Engage employers to work with managed care organizations in supporting the importance of simple, barrier-free self-management education.
- Support interventions promoted by other programs such as the Department of Public Health's Obesity Program that include modifications to companies, restaurants, the workplace, and school lunch programs to provide healthy nutrition environments.
- Collaborate with the Department of Public Health's Office of Oral Public Health to promote the integration of oral health and periodontal disease management into diabetes disease management practices including annual dental exams and the systemic effects of periodontal disease on people with diabetes.

How this objective will be measured:

- Data Source: BRFSS- class attendance and daily self monitoring of blood glucose
- Baseline: class attendance=47.7%, daily self monitoring=67.7%
- Target: Add 5% to each baseline

Screening and Follow-up

In some cases, people do not know they are at risk for diabetes. Screening services to diagnose diabetes or pre-diabetes can be helpful to motivate people to change risky behaviors. Often, however, a screened individual is lost to follow-up, or there are reporting problems that hamper providers and insurers from tracking diagnosed patients. Improved screening and proper disease reporting will reduce the number of individuals who are unaware of their increased risk and will improve follow-up for those who have been identified.

DISEASE MANAGEMENT OBJECTIVE 5: Screening: By 2012, increase by 10%, the proportion of at risk individuals who are screened for diabetes and pre-diabetes using evidence-based guidelines.

Recommended Strategies

- Promote new and enhanced screening programs in varied settings.
- Promote increased use in clinical practice of ADA and other evidence-based criteria for diabetes and pre-diabetes diagnosis.

How this objective will be measured:

Data source, Baseline and target values to be determined during first year of plan implementation

Reporting

A routine reporting/feedback loop is an important component of disease management. This includes communication with the patients, the health care provider, ancillary providers, and the health plan.

DISEASE MANAGEMENT OBJECTIVE 6: Reporting: By 2012, increase by 10% the proportion of providers who adopt a uniform system of reporting including the coding of diabetes diagnoses.

Recommended Strategy

- Promote and support standardized reporting tools and processes across providers.

How this objective will be measured:

Baseline and target values to be determined during first year of plan implementation

- Promote linkage of diagnosis plans with education plans.

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- ⁱⁱ National statistics reveal that in 2002 a person with diabetes spent an average of \$13,243 on health care compared to \$2,560 for his or her counterpart without diabetes.
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7. EDUCATION AND AWARENESS

Education and Awareness Work Group

Patricia Bak, RN, CDE	Windham Community Memorial Hospital
Rosa Browne	NAACP-Health Committee
Louise Butcher, Co-Chair	American Diabetes Association
Anne Somsel, RN, MS	Fair Haven Community Health Center
Sally Cooney, RN, BSN, CDE	St. Francis Hospital and Medical Center
Diane Creed	American Diabetes Association
Patricia DeWitt	Yale-New Haven Hospital
Linda Ferro, APRN, CDE	Norwalk Hospital
Kimberly Hathaway, CEO	National Kidney Foundation of CT
Marcia Hilditch	National Kidney Foundation of CT
Michelle Kelvey-Albert	Qualidigm
Paula Leibovitz, MS, RD, CD-N	Briarwood College
Hilary Norcia, MPH	American Heart Association
Patricia O'Connell, MS, RD, CDE	Joslin Diabetes Center
Richard Roy, Co-Chair	CT State House of Representatives
Joan Schwartz, MS, RN, CDE	Eastern Connecticut Health Network
Maredia Warren	American Heart Association

GOAL: *To ensure that all people with diabetes and at risk for diabetes and their health care providers all have current knowledge and can apply evidence-based guidelines.*

Identified Problems:

- The general public is unaware of:
 - Behaviors and risk factors that lead to diabetes and the seriousness of diabetes diagnosis
 - Economic and quality of life burden that diabetes imposes on the state of Connecticut
- Many primary care providers have not received adequate up-to-date professional education.

Rationale:

Overview

The treatment of diabetes has advanced rapidly in the last decade. Since the Diabetes Control and Complications Trial, the United Kingdom Prospective Diabetes Study, and other landmark studies showing tight control decreases diabetes complications, new medications, new insulin delivery mechanisms, and new treatment regimens have been

developed. Staying current with these advances is difficult for the primary care provider, as well as for the person with diabetes.

Diabetes Self-Management Education (DSME)

Diabetes is a chronic disease that requires the patient to learn how to manage their disease (self-management). Although the health care provider role is important for prescribing medication, monitoring lab results, and following up with patients, the patient must take on the majority of diabetes management including blood glucose monitoring, nutrition choices, and physical activity. Learning and applying these skills is critical to diabetes self-management. They are the primary determinants of diabetes-related health outcomes. Positive clinical outcomes are only possible if patients receive and internalize effective disease management education.

EDUCATION AND AWARENESS OBJECTIVE 1: Patient Education: By 2012, Increase by 5% the proportion of people with diabetes participating in diabetes self-management education programs in order to learn about controlling their diabetes.

Recommended Strategies

For Patients with Diabetes:

- Make available training curricula options for patient education.
- Create partnerships with hospitals, Community Health Centers (CHCs), volunteer health organizations, Connecticut Association of Directors of Health (CADH), American Heart Association (AHA), and local health departments to ensure staff has information relevant to care through education resources added to organizational newsletters (hospitals, CT DPH, etc.) and Web sites.
- Train non-Certified Diabetes Educators (CDE), including school nurses, medical assistants, certified nurse aides, peer-to-peer educators, faith organization members, senior center staff, local health department educators, and lay persons as referral resources, to augment traditional education programs.
- Engage Health Maintenance Organizations (HMO) to standardize access to education programs by taking advantage of Connecticut law that requires diabetes education for persons with diabetes.

How this objective will be measured:

- Data source: BRFSS
- Baseline value: 47.7%
- Target value: 52.7%

- Partner with grocery stores, libraries, senior centers, town halls, and other public places to make diabetes, nutrition, and general health information available.
- Outreach to leaders of large group practices to encourage their members' physicians to refer to diabetes education programs.
- Make people with pre-diabetes aware of the potential to prevent diabetes onset through lifestyle change.

For Education of Primary Care Providers:

Often best practices have changed since health professionals have completed their training. Therefore, professional education is critical to ensure that providers are treating their patients according to the most recent standards. Given the long lag between when best practices are approved by national organizations, and when individual providers regularly make use of best practices, professional education is an essential tool to improve clinical outcomes in people with diabetes.

EDUCATION AND AWARENESS OBJECTIVE 2: Professional Education: Increase by 10% the number of providers who participate in continuing education programs focused on diabetes.

Recommended Strategies

- Expand physician participation in professional education programs by encouraging insurers and pharmaceutical companies to offer scholarships for doctors to attend the national scientific sessions or diabetes post graduate conferences and providing materials on these programs to doctor office staff.
- Conduct ongoing professional education with a curriculum that incorporates best practices and prevention (e.g., Grand Rounds, continuing medical education [CMEs], etc.) for physicians involved in providing diabetes services.
- Engage hospital and clinic administrators to foster mentoring or peer education to change physician behavior and to support the increased number of, and enrollment in, patient education programs; engage medical directors from Managed Care Organizations and Physicians Health Organizations to encourage their members to receive regular diabetes education.

How this objective will be measured:

Data source, Baseline and target values to be determined during first year of plan implementation

- Promote the use of relevant billing and reimbursement codes for screening, education, and treatment.

General Awareness

Effective disease management through patient and professional education will reduce costs and improve outcomes in people with diabetes, but to make substantial reductions in new diabetes cases, an effective information campaign for the at risk public is needed. Increased public awareness of the dangers of diabetes, and just as importantly, of the methods to reduce the risk of developing diabetes, has the potential to save many lives in Connecticut. Per person costs of public information campaigns are much lower than per person costs for disease management, so an effective public education campaign makes good economic sense as well as good public health sense.

EDUCATION AND AWARENESS OBJECTIVE 3: Public Awareness: By 2012, improve public awareness of the impact of diabetes by increasing by 10% the number of partnerships with community organizations such as schools, libraries, media, town halls and other public places.

Recommended Strategies

- Engage schools, libraries, senior centers, town halls and other public places, workplaces, faith-based and community-based organizations to share information on the risks, burden, and impact of diabetes, and on the availability of screenings.
- Train non-CDEs to provide accurate information on signs and symptoms of diabetes and to refer people to formal education programs; develop a proficiency measure for community and peer diabetes health educators.
- Launch an information campaign drawing on partnerships, existing programs, and national campaigns to highlight the rapid rise in diabetes diagnoses; connect with a public figure to promote the message.
- Engage community organizations to ensure that messages about lifestyle modification are delivered in culturally relevant and positive ways.

How this objective will be measured:

Data source, Baseline and target values to be determined during first year of plan implementation

8. ACCESS AND POLICY: ASSURING ACCESS TO TREATMENT

Access & Policy Workgroup

Ann Agro	Yale Prevention Research Center
Joni Arvai	American Heart Association
Patricia Bak, RN, CDE	Certified Diabetes Educator
Rosa Browne	NAACP-Health Committee
Nanette Char	Consultant
Kari Davis, APRN	Generations Family Health Center
Brenda DelGado, MS, Exe. Dir.	Area Health Education Center
Patricia DeWitt	Yale-New Haven Hospital
Georgia Jennings, MPH	Yale Prevention Research Center
Kristin Mattocks, MPH, PhD	Qualidigm
Barbara McCabe, APRN	AmeriCares Clinic
Kit McKinnon, RN, CDE	Middlesex Hospital
Cheryl Resha, RN, EdD	CT State Department of Education
Hilary Silver	Department of Social Services
Maureen Smith, Dir. Consumer Rel.	Office of the Health Care Advocate
Gary Spinner, PA	Hill Health Center
Julie Wagner, PhD	University of Connecticut Health Center
Jeffrey Yale, DPM	Griffin Hospital

GOAL: *Comprehensive diabetes care, i.e., diabetes preventive care, treatment, supplies, equipment, medication, diabetes self-management education, and medical nutrition therapy is offered, available and affordable across the public and private sectors to every citizen in Connecticut in need.*

Identified Problems:

- Many people with diagnosed or undiagnosed diabetes do not have regular access to preventive education, care, and medications (e.g., the uninsured, underinsured, migrant workers and employees of companies that are self insured).
- Insufficient capacity in our medical care system and communities to prevent and treat diabetes (e.g., insufficient numbers of specialists and certified diabetes educators).

Rationale:

Overview

The Connecticut Diabetes Bill of Rights states all Connecticut based health insurance policies must cover diabetes medications, supplies, and education. People with an insurance policy not based in Connecticut, those on Medicaid, and those without insurance at all, however, are not afforded these rights. Consequently, their access to comprehensive diabetes care is often compromised.

Accessible Services

Making diabetes services accessible will increase the number of people who receive effective disease management or preventive training. Increased accessibility, in turn, will yield better outcomes in patients with diabetes and help to prevent additional cases thereby decreasing complications and the social and economic impact of this disease.

ACCESS AND POLICY OBJECTIVE 1: Accessible Services/Comprehensive Diabetes Care: By 2012, increase by 5% the proportion of people who receive comprehensive diabetes care, i.e., diabetes preventive care, treatment, supplies, equipment, medication, diabetes self-management education, and medical nutrition therapy.

Recommended Strategies

Universal

- Demonstrate the cost-effectiveness of diabetes education programs and promote a partnership among CT DPH, private groups, and public groups to implement diabetes education.
- Engage the state legislature to appropriate funds for pilot programs to spread the message about diabetes, both how to prevent it, and how to treat it.
- Secure commitment of the health care delivery system to the Diabetes Bill of Rights, and expand the definition of those covered under the Diabetes Bill of Rights.
- Encourage diabetes-friendly policies at businesses and schools.
- Determine how to find people at high-risk for diabetes and deliver cost-effective interventions as efficiently as possible.

How this objective will be measured:

- Data source: BRFSS
- Baseline value: Seeing health care professional 86%, obtaining foot exam 72%, getting dilated eye exam 78%, self monitoring blood sugar: 68%, attending class: 47.7%
- Target value: Plus 5%

For Persons with Insurance Coverage

- Encourage insurers to cover diabetes preventive care, treatment, supplies, education, and treatment with co-payments that do not exceed 25% of the covered item's total cost, and include diabetes education and medical nutrition therapy as a reimbursable service across insurance programs.
- Work to change Federal ERISA provisions to require self-insured employers to cover diabetes supplies, education, and treatment, and adopt the ADA Diabetes Bill of Rights to guide insurance regulation in Connecticut.
- Develop "Report Cards" for insurance plans on 1) what is covered and 2) on A1c levels and rates for flu shots, foot exams, and eye exams. (HEDIS /NCQA Measures).

For Persons Covered under Medicaid

- Support efforts to ensure all Medicaid eligible persons with diabetes are enrolled and receiving medically appropriate care and treatment, in their community when possible, including podiatric care and diabetes education services.

Uninsured

- Pilot a program with appropriate legislative and private foundation support to provide lab tests, supplies, medicines, and education for uninsured people with diabetes through a variety of providers and settings.
- Develop and seek legislative support for a program with community clinics, hospitals, and other health care providers to provide free or low cost access to preventive education and care, and treatment for uninsured or underinsured persons with diabetes.
- Expand use of patient access programs sponsored by major pharmaceutical companies.

Public Health Infrastructure

With the exception of those recommendations dealing with education for the general public, all the other recommendations within this plan rely upon increased capacity in the diabetes care system. Education services, disease management support, and insurance coverage must be in place to allow the community-level efforts to be effective. Increased capacity will result in better outcomes when diabetic emergencies arise and will help to prevent such emergencies and even diabetes onset.

ACCESS AND POLICY OBJECTIVE 2: Public Health Infrastructure: By 2012, increase by 5% the number of diabetes education services, disease management supports, and insurance coverage for people with diabetes.

Recommended Strategies

- Assess diabetes public health infrastructure to determine system gaps and develop policies that encourage the development of strong, efficient networks of providers by engaging legislators and insurers to make them aware of the barriers that exist to proper care.
- Develop improved capacity to address the behavioral causes of poor diabetes patient outcomes, including defining and addressing reimbursement issues that may inhibit access to psychologists' services.
- Address shortages of specialists with focus on diabetes by expanding the number of nurse practitioners and physician assistants that specialize in diabetes care through educational incentives and policy development to support creation of teams of connected diabetes professionals.
- Expand the role of licensed health care professionals to provide more diabetes care including more frequent follow-up.

How this objective will be measured:*

- Data source: Delphi technique using key informants
- Baseline and target values to be determined during first year of plan implementation

- Publish HEDIS measures related to diabetes for health plans; develop benchmarks on diabetes measures to inform policy; and develop mandated reporting of specific diabetes-related measures by hospitals and other health providers.

9. SURVEILLANCE: TRACKING AND MONITORING

Surveillance Work Group

Christian D. Andresen	CT Department of Public Health
Stephanie Belding	Community Renewal Team
Rosa Browne	NAACP-Health Committee
Louise Butcher	American Diabetes Association CT chapter
Jyoti Chhabra, PhD	Hartford Hospital
Grace Damio, MS, CD/N	Hispanic Health Council
Steven Delaronde, MPH, MSW	ConnectiCare
Gail D'Eramo Melkus, EdD, C-ANP, FAAN	Yale School of Nursing
Anne Elwell, RN, BS, MPH, CPHQ	Qualidigm
R. Allen Frommelt, PhD	Connecticut Hospital Association
Ana Lourdes Gomez, PhD	University of Connecticut
Shih-Yieh Ho, MPH, PhD	Qualidigm
Sheryl Horowitz, PhD	Griffin Hospital
Margaret M. Hynes, PhD, MPH, Co-Chair	Department of Public Health
Betty C. Jung, RN, MPH, CHES, Co-Chair	CT Department of Public Health
Brenda Kelley, Dir. Connecticut chapter	AARP Connecticut
Cynthia Kozak, RD, MPH, CDE	CT Department of Public Health
Kevin Maloy	Pfizer
Carolé Mensing, RN, MA, CDE	University of Connecticut
Susan McKenney	Anthem Blue Cross & Blue Shield
Rafael Perez-Escamilla PhD	University of Connecticut
James Rawlings	NAACP Health Committee
Katherine Schneider, MD	Integrated Resources Middlesex Area (IRMA)
Eric Triffin, Dir. of Health	City of West Haven
Carmela Valentino, MPH, CHES	Healthnet
Jean Zimkus, RN	Yale-New Haven Hospital

GOAL: *Diabetes surveillance data are available to all state partners and the general public.*

Identified Problems:

- Inadequate data on racial, ethnic, and economic disparities.

- Incomplete information on sub populations within the state including town-specific and race/ethnic group specific data on diabetes.
- Inadequate information sharing with statewide partners.

Rationale:

Public health interventions addressing the burden of diabetes in Connecticut can be effectively implemented when those populations most affected by the disease are identified through surveillance efforts. The dissemination of diabetes surveillance data can enhance statewide efforts to assess the needs of population subgroups, and form the basis for monitoring progress and evaluating the effectiveness of interventions.

SURVEILLANCE OBJECTIVE 1: Increase Hits to Web Page: By 2012, increase by 5% the number of hits to the Diabetes Surveillance Web page as a means of increasing the accessibility to diabetes prevalence, morbidity and mortality data.

Recommended Strategies

- Develop partnerships with a variety of organizations collecting and/or using health risk and health outcome information on diabetes.
- Identify other data sources and data-collecting agencies to meet with state planning groups to determine how best to create data sharing networks.
- Provide technical assistance on how to collect data to organizations that provide diabetes services.
- Provide resources to community-based organizations to gather data about diabetes services.
- Conduct surveillance of priority subpopulations, as limited resources allow, and make information resources available to non-DPH as appropriate.

How this objective will be measured:

- Data source: Connecticut vital records, mortality files, BRFSS, YRBS, Connecticut Hospital Discharge Abstract Billing Data Base
- Baseline value: Seventy-five hits a month to the Diabetes Surveillance Web page.
- Target value: Seventy-nine hits a month to the Diabetes Surveillance Web page.

- Disseminate available diabetes surveillance data to the general public through the CT DPH Web site and other appropriate venues.

10. CROSS-CUTTING ISSUES

The planning partners have agreed on the adoption of The Chronic Care Model as an approach for diabetes care in Connecticut. Developed in 1993 by Edward Wagner, MD, MPH at the Robert Wood Johnson Foundation to address deficiencies in the process that care for chronically ill patients, the model's goal is to transform health care from a system that is essentially reactive (responding mainly when a person is sick) to one that is proactive with the goal of keeping the person as healthy as possible.

The Chronic Care Model is founded on the belief that chronically ill patients can become successful self-managers when provided with adequate education and planned, informative structured primary care visits. The six elements of the model are described below.

The Chronic Care Model Recommends Six Health System Improvements to improve health outcomes in people with chronic diseases: (See Figure I following.)

- 1) **The Community** - Resources and Policies: Encourage patients to participate in effective community programs and work with community organizations to develop programs to fill in gaps in the care system; advocate for policies to improve patient care.
- 2) **Health System** - Organization of Health Care: Support improvement at all levels of health organizations; promote comprehensive system change; encourage open handling of errors and quality problems to improve care; provide incentives based on quality of care and adherence to guidelines; develop agreements between organizations to ease cooperation in health care delivery.
- 3) **Self-Management Support** Emphasize patients' central role in managing their health and connect them with appropriate internal and community resources to provide on-going self-management support; use effective self-management support strategies that include assessment, goal-setting, action planning, problem-solving and follow-up.
- 4) **Delivery System Design**: Define roles and distribute tasks among team members and use planned interactions to support evidence-based care; provide clinical case management for complex patients and ensure regular follow-up by the care team for all patients; deliver care that patients understand and that fits with their cultural background.
- 5) **Decision Support**: Use evidence-based guidelines in daily clinical practice and educate patients in evidence-based guidelines to encourage their participation; use proven provider education methods; integrate specialist expertise with primary care to ensure patients receive comprehensive care.

6) **Clinical Information Systems:** Support individual patient care planning and provide timely reminders to patients and providers. Identify subpopulations to receive pre-emptive care. Establish a disease registry and distribute information to patients and providers to coordinate care. Using disease registries, monitor performance of providers and of the whole care system.

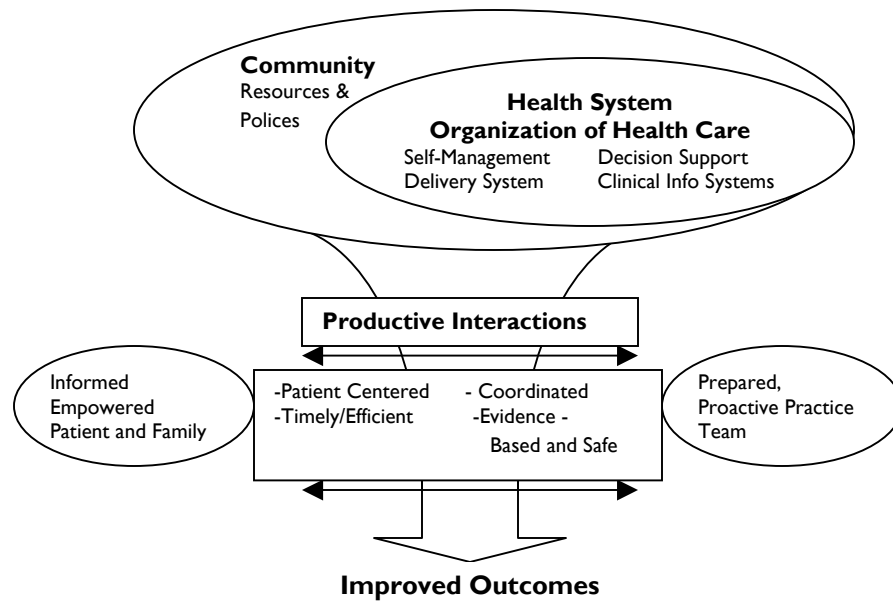


Figure I. Wagner Model of Chronic Care

For more detail on the model see:

<http://www.improvingchroniccare.org/change/model/components.html>.

A Chronic Care Model Approach for Connecticut

The Connecticut planning partners worked with the Robert Wood Johnson Chronic Care Model and recommend the following elements that should be part of Connecticut's Chronic Disease Model: (See Figure 2. CT's adaptation of the RWJ Wagner Model p.50)

- **Productive Interactions among Patients and Provider Teams:** Communication should be regular and useful. Providers should communicate in ways that are easy for patients to understand, and patients should use time with providers to ask questions and make certain their providers understand their needs.
- **Regular Assessment of Patients:** Patients should receive laboratory testing and face-to-face meetings with providers according to best practice guidelines.

- **Development of Treatment Plans** that consider cultural, linguistic, psychosocial, and physiological needs of the patient.
- **Systematic Application of Proven Therapies:** Providers integrate accepted best practices into their clinical practices.
- **Sustained Follow-up for Treatment Adherence:** Patient compliance with disease management protocols is one of the best ways to reduce costs and improve outcomes.
- **User Friendly Delivery System:** Patients are more likely to be compliant with their treatment programs when they are treated with respect, and when accessing needed services is easy.
- **Scheduling of Appointments:** managed care organizations and providers communicate to allow scheduling of all related appointments in one day. The current fragmentation of services is a barrier to many seeking care.
- **Get Managed Care Organizations to Recognize Barriers:** In some cases, payers may not be aware of the steps they can take to improve chronic disease management.
- **Address Payment Issues:** In some cases, insurance does not cover a service or treatment necessary to proper chronic disease management.
- **Set Up Communication Protocols:** Regular communication among patients, providers, and payers will help to eliminate some of the misunderstanding that can hamper good care.
- **Accepted/Uniform Provider Responsibilities:** Best practices should be in place for all providers in the state and provider responsibilities should be standardized for all payer organizations.
- **Multi-Pronged Case Finding Approach:** Develop multiple surveillance strategies to document chronic disease cases because not all patients access care the same way.

The system proposed by the planning partners will allow for comprehensive care of Connecticut residents living with chronic diseases. The benefits of putting Connecticut's Chronic Care Model into practice include decreased sick days, lowered health care costs, and higher quality of life for people living with chronic disease.

Significant barriers still exist, both to establishing Connecticut's Chronic Care Model, and to stopping the rise in chronic disease burden. The planning partners recognize the following as the most important challenges in the area of chronic disease prevention and control:

- **Preventing Chronic Disease:** Often, there are many people at risk for chronic disease but they do not realize it. Even those individuals who are aware of the risk may not know what steps they can take to improve their health.
- **Academic Detailing/Provider Attention:** There is too often a lag between when best practices are recommended and when providers begin using them in their daily clinical practice. Using academic detailing, peer-reviewed research, and peer-to-peer interactions will accelerate the pace of best practice adoption.
- **Systemic Change/Creating a User-Friendly System:** A simple system will increase compliance among patients and providers. Frustration with the current system can lead those who need care to abandon their search for care.
- **Insurance/Ensuring Access to Services:** All insurers must agree to provide a level of coverage for chronic disease services that is sufficient to maintaining good health. Basic covered services should be invariant among insurers.
- **Disparities:** There are substantial differences in care outcomes among patients from different racial/ethnic groups and different socioeconomic backgrounds. Public assistance must provide a minimum level of coverage to ensure that all people have access to needed services.
- **Coding Issues:** Though disease coding has become standardized, some providers still do not fill out forms such as death certificates with sufficient detail. Improving reporting will allow public health officials to have an accurate picture of chronic diseases in the state.
- **Referral/Follow-up/Tracking/Monitoring Patients:** Many diagnosed patients are lost to the care system and do not receive the treatment they need. Linking chronic disease efforts to community groups will expand the ability of the care system to retain patients.

A successful example of the application of the chronic care model is The Middlesex Center for Chronic Care Management.ⁱ This program and others like it demonstrate the Chronic Care Model conscientiously applied results in significant cost savings and improved health outcomes. The disease management program includes case managers who assist the referred populations with congestive heart failure, smoking behaviors, asthma, and diabetes in varied aspects of living with a chronic condition.ⁱⁱ Patients receive a one-to-one initial assessment appointment for education, medication adherence, blood sugar monitoring, and assessment of barriers. These include, but are not limited to, out of pocket expenses,

Diabetes Care in a Chronic Care Model

- Middlesex Center for Chronic Care Management incorporates all care managers in a central, integrated program model that includes diabetes education and disease management programs in practice and infrastructure to improve care of chronic conditions.

such as, co-pay, impact of “not preferred” products, health literacy issues, and psychosocial issues, including a screening for depression.

Patients enrolled in disease management programs are offered follow-up based on agreed upon self-management goals. This includes additional appointments and telephone contact to assess progress. The integration of chronic disease management programs allows the patient exponential benefit as people generally have co-morbid conditions.

For instance, a patient with diabetes, hospitalized with an acute asthma exacerbation, and referred to the asthma program, is able to work with a smoking intervention counselor, attend a diabetes education group class, and work with a registered dietician to avoid weight gain

associated with giving up smoking. All these services are “under one roof,” which provides the patient participating in one program ease and comfort when accessing additional services.

Outcomes in the Middlesex Chronic Care Model

- % of patients with A1C<9: Before enrollment 38%, six months after enrollment 79%.
- % of patients reporting daily foot self-care goes from 49% to 98%
- % of patients reporting a physician foot exam in past year goes from 75% to 100%
- % of patients reporting a dilated retinal exam in past year goes from 41% to 87%
- \$71,000 in avoided hospital costs in one year

Measured outcomes have included better disease control in patients with diabetes. Some recent specific outcomes for the diabetes disease management program (this is for patients referred for active case management not just education) are included in the outcomes box.

Connecticut's Comprehensive Public Health System Model for Chronic Care - Diabetes

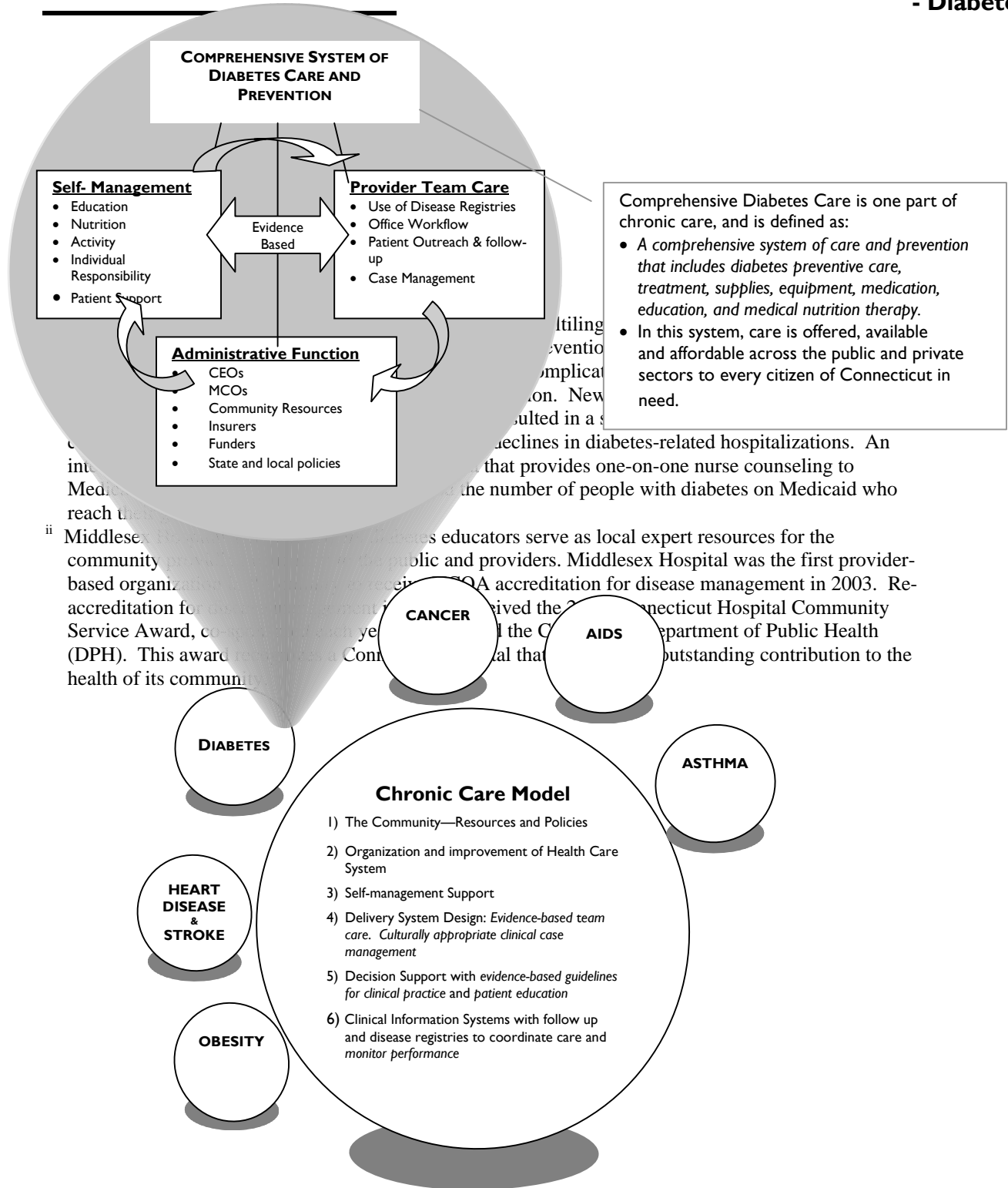


Figure 2. CT's Chronic Care Model

11. IMPLEMENTATION AND FUNDING

a. Phase I - The Plan for 2007

During the May 10, 2006 meeting, the combined work groups evaluated the recommendations of all five work groups to select outcomes and strategies to pursue for the first year of plan execution. The group agreed on the need for the Plan to yield significant results during its first year of execution to attract additional funding to diabetes prevention and control efforts in Connecticut. Two outcomes and strategies have been selected as the foundation for the 2007 Diabetes Work Plan. Please note that the order in which these objectives and strategies are listed should **not** be taken as an indication of which order the planning group intends them to be accomplished. They should be pursued simultaneously during the first year:

Access and Policy Objective 1: Accessible Services/Comprehensive Diabetes Care:

By 2012, increase by 5% the proportion of people who receive comprehensive diabetes care; i.e., diabetes preventive care, treatment, supplies, equipment, medication, diabetes self-management education, and medical nutrition therapy.

Recommended Strategies

- Support efforts to ensure that all Medicaid-eligible persons with diabetes are enrolled and receiving medically appropriate preventive care and treatment, in their community when possible, including podiatric care and diabetes self-management education services.
- Develop a plan to seek legislative support for a program with community clinics, hospitals, and other health care providers to provide free or low cost access to preventive education and care, and treatment for uninsured and underinsured persons with diabetes.

Education and Awareness Objective 1: Patient Education: By 2012, increase by 5% the proportion of people with diabetes participating in diabetes self-management education programs in order to learn about controlling their diabetes.

Recommended Strategies

- Make available training curricula options for patient education.
- Train non-CDEs to augment traditional education programs.
- Partner with grocery stores, libraries, and other public places to make diabetes, nutrition, and general better health information available.
- Engage HMOs to standardize access to education programs.

b. Phase II – 2008 to 2011

Annual Reports on Progress

During each year of the plan, the CT DPH and the Diabetes Advisory Council will prepare a report that describes the activities undertaken in the previous year and the results of those activities. The reports may be used in support of funding applications and in media campaigns publicizing the activities and successes of the Diabetes Prevention and Control Plan.

Action Steps for the Subsequent Year

Based upon information in the annual report, the CT DPH in conjunction with the Diabetes Advisory Council will create an action plan for the subsequent year. The action plan will clearly state the objectives and the recommended strategies to realize those objectives in the next calendar year. The action plan will also include specific steps to be taken with specific groups and individuals to forward the plan's goals.

c. Funding

To fully implement the recommendations of Connecticut's Diabetes Prevention and Control Plan, a diverse group of funding agencies, from state and federal government to private foundations, must be recruited. In 2007 diabetes control efforts in the state received \$111,000 from the state government in salary, fringe and indirect costs, and \$280,000 from the CDC. While government provides a useful starting point for diabetes prevention and control efforts, additional funding sources will be needed to realize a comprehensive system of diabetes care and prevention. The list of philanthropic organizations included in the appendix provides examples of funders in Connecticut and in the nation that have a history of contributing funds to public health initiatives, or whose mission of furthering the health of the public makes them likely supporters of public health projects. The list is not intended to be comprehensive, however, it is meant to be used as a resource for organizations seeking funding to implement diabetes activities.

d. Evaluation

DPH and its partners will be responsible for measuring progress towards each of the results in the previous section. While some of the results can be measured by the CT DPH epidemiology section, others, such as numbers of doctors achieving ADA recognition, will be monitored by Connecticut CT DPH partners. All data collected will be tabulated each year by the Diabetes Prevention and Control Program staff and a report will be prepared by CT DPH and the Diabetes Advisory Council to update funding agencies, partner health care organizations, and concerned citizens on the plan's progress.

Using information contained in the evaluation report, CT DPH and the DAC will plan future activities and adjust expectations as needed.