

Submitted by  
Chair Haines

Testifying in Support of HB 5204 & Biographies

Jim McGowan	American Diabetes Association – Director of State Advocacy
Tom Boyer	Novo Nordisk, Inc. – Director of Government Affairs Director Diabetes Care Coalition – Former Executive
Dr. Robert Kocembo	American Association of Diabetes Educators – Board Member Optometric Physician – Bellville, MI (Rep. Dian Slavens)
R. Stewart Perry	American Diabetes Association – Former National Chair & Board Member
<i>*Bob Babbage</i>	<i>Former Kentucky Secretary of State and State Auditor</i>
<i>*Michael Mawby</i>	<i>Novo Nordisk, Inc. – Chief Government Affairs Officer American Diabetes Association – Former Vice President</i>

*\* Mr. Babbage and Mr. Mawby – At this time they are not planning to directly testify before the committee on HB 5204, however they will be attending and available to answer or provide clarifying remarks to questions regarding other states and their legislative action plans and budget implications, particularly with respect to Kentucky and Texas.*

**Jim McGowan – State Advocacy Director, Midwest**

American Diabetes Association

(IA, IL, IN, KY, MI, MN, OH, WI, WV)

In the 22 years since his son, Kilty, was diagnosed with type 1 diabetes at the age of 3, Jim McGowan has been an advocate on behalf of people at-risk of, or living with, diabetes. Jim has played a leadership role in many public policy and legislative successes in his home state of Minnesota and at the Federal level. Prior to joining the staff of the American Diabetes Association last year as the Midwest State Advocacy Director, Jim has served in several roles as a volunteer with the ADA. As Chair of Government Relations for the Minnesota Area American Diabetes Association, Jim led a state initiative that required insurance coverage to match the American Diabetes Association's Standard of Care. He recently completed a 3-year term as Chair of the Minnesota Diabetes Steering Committee, which advises the Minnesota State Department of Health Diabetes Prevention and Control Program (DPCP). During that time, the DPCP began several new initiatives aimed at diabetes prevention and treating pre-diabetes, including the development of pre-diabetes algorithms for both adults and youth, and the development of community-based prevention programs. A former member of the American Diabetes Association's National Prevention Committee, Jim also served as a member of the ADA's Legislative Subcommittee, which recommends state and federal initiatives to the ADA Board of Directors. Jim has been recognized with several state and national awards for his service to the diabetes community.

Jim brings a strong, tireless, personal dedication to the fight to Stop Diabetes.





March 1, 2011

The Honorable Gail Haines  
Chair, House Health Policy Committee  
Anderson House Office Building  
124 North Capitol Avenue  
P.O. Box 30014  
Lansing, MI 48909-7514

Dear Chair Haines and Members of the Committee:

I am grateful that the Michigan House of Representatives Health Policy Committee scheduled time today to discuss HB 5204 legislation aimed to review and assess Michigan's efforts in battling, controlling and preventing diabetes. My name is Tom Boyer and I am proud to represent Novo Nordisk, a global leader in diabetes care. Personal passion about the well-being of people with diabetes has always been at the heart of this company. Novo Nordisk's history reaches all the way back to 1923 to a man driven to find an innovative treatment for his wife, suffering from diabetes. This foundation steered our commitment over eight decades and across the globe to help people dealing with this disease.

HB 5204 has a wide range of support from groups including the Council of State Governments (CSG) which recently supported the Diabetes Action Plan legislation as suggested state legislation and the National Conference of State Legislatures (NCSL) featured this legislation in publications as a potential step in battling the reach and scope of diabetes. Also, as you see here today the American Diabetes Association (ADA), American Association of Diabetes Educators, and others support this Diabetes Action Plan legislation.

The legislation aims to establish collaboration among state agencies with a vested interest in containing the reach of the diabetes epidemic by directing them to develop a plan of action to confront the disease. The bill also empowers these agencies and the legislature to tackle diabetes via action in the near term.

#### PREVALENCE OF DIABETES IN MICHIGAN: YESTERDAY, TODAY & TOMORROW

The reality is diabetes is a serious issue for Michigan. Unlike other chronic diseases, diabetes is the only one with prevalence trends increasing. Diabetes knows no boundaries. It affects men and women, all races and ethnicities, age groups, education levels and income brackets. However, research shows there are overwhelming disparities among the elderly, minority populations, and lower income and education levels.

We know that the numbers behind us are grim. The next questions to be asked are: what is the path ahead of us and what is the economic burden?

Beyond the drastic personal toll of diabetes in Michigan, there is an unrecognized economic impact on the state. Novo Nordisk recently commissioned the Institute for Alternative Futures to project what diabetes will look like in the years ahead. Our rationale involved needing a clear sense of what the future holds for diabetes rather than simply saying things are getting worse. Only with having awareness of the looming impact can we take more decisive action. The research findings highlight the legislative need while also sounding an alarm within Michigan.

More than 1,156,300 Michigan residents lived with diabetes in 2010, compared with 625,800 in 2000. This represents an almost 85% increase in just the past 10 years. An additional 2,629,600 Michigan residents were living with pre-diabetes in 2010. Taken together, more than one in every three people in Michigan today lives with diabetes or its precursor pre-diabetes.

The burden of diabetes will only continue to grow in Michigan. Projections are that in 2025 1,639,900 Michigan residents will live with diabetes, representing a 41.8% increase from 2010. The population with pre-diabetes will also grow to 2,728,800 up 19.6% from 2010. And, in 2025, Michigan and nine other states will collectively bear care for half the diabetes population in the USA and related costs of caring for this population.<sup>1</sup>

#### THE HUMAN TOLL OF DIABETES IN MICHIGAN

The prevalence numbers tell only part of the story as Representative Womack pointed out in December. "People are often treated after the fact as opposed to receiving preventive care." This is precisely the problem.

Diabetes, if it is not diagnosed, treated, and controlled, can lead to devastating complications such as visual impairment that can lead to blindness; kidney failure; and amputations of lower extremities. Compared with rates in 2010, projections suggest that in 2025, there will be an increase of 56% in the number of annual cases in Michigan of visual impairment due to diabetes; a 38% increase in annual cases of renal failure; and a 19% increase in the annual number of lower extremity amputations.

Uncontrolled and inappropriately managed diabetes can shed years of productivity and increase chances of premature death. Michigan residents with diabetes are twice as likely to report depression while also having increased rates

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<sup>1</sup> Diabetes Data & Forecasts. 2025 Diabetes Forecasts for State and Metropolitan Areas Study by the Institute for Alternative Futures. This study utilizes: a national model from Narayan. Impact of Recent Increase in Incidence on Future Diabetes Burden. *Diabetes Care* 2006, 29:2114-2116; the latest CDC projections by Boyle; US Census Bureau population estimates; and latest CDC national diabetes statistics and state prevalence rates. [www.altfutures.org/diabetes2025](http://www.altfutures.org/diabetes2025)

of heart attacks and strokes, blindness, kidney failure and amputations. The heart attack risk alone for people with diabetes is four times greater than those living without the disease.

#### THE COST OF DIABETES TODAY AND TOMORROW

The total financial burden of diabetes in America reached \$299 billion in 2010, and diabetes and its complications today consume more than one in every 10 of America's health care dollars. The total estimated medical costs for diabetes in 2010 in Michigan alone were \$10.6 billion, while hospitalization costs totaled over \$5.3 billion. According to 2025 projections, the cost of diabetes in Michigan will reach \$15.8 billion – representing a 49% increase from 2010.

#### HOW MICHIGAN ARRIVED HERE AND NEXT STEPS

Federal and state resources available to help Michigan fight the diabetes epidemic are limited. The Centers for Disease Control and Prevention (CDC) in 2010 allotted \$947,905 to Michigan to fight diabetes. When combined with other state and federal sums a total of \$1.777 million was available statewide to battle diabetes and kidney disease. Such limited funding makes it all the more imperative for Michigan state agencies with an interest in diabetes to coordinate their efforts and resources, as called for in the Diabetes Action Plan legislation.

Passing HB 5204 allows Michigan to take the first step in recognizing the challenge of diabetes. A fundamental premise of the legislation is that state officials charged with safeguarding the health of Michigan residents are best equipped to assess current state activities, develop future plans and guide the legislature in structuring efforts to battle the epidemic. Legislation similar to that before you was recently signed into law in Kentucky and Texas. In each case the legislation passed the legislature with unanimous votes of support coupled with enthusiastic signatures provided by governors enacting the provisions into law.

The legislation aims to achieve many objectives including ...

1. Requiring state agencies and related entities that devote resources to battling diabetes to conduct biennial assessments of the impact of the disease on state programs;
2. Requiring agencies and entities that devote resources to battling diabetes to conduct detailed biennial assessments of the benefits of implemented programs and activities. Such assessments should also document the amount and source for any funding directed to the agency or entity for programs and activities aimed at reaching those with diabetes;
3. Requiring state agencies and entities that are charged with battling or paying for diabetes to develop and revise biennially detailed action plans

for battling the disease. These plans should identify proposed action steps to reduce the impact of diabetes, pre-diabetes and related complications upon the program, taxpayers and state; and

4. Requiring state agencies and entities charged with battling diabetes or paying for health care services to care for people with diabetes to develop a detailed budget blueprint identifying needs, costs and resources required to implement their biennial diabetes action plans.

As means to achieve these goals at no cost to the state I offer enthusiastic support to an amendment referenced by the American Diabetes Association. This proposed amendment helps ensure affected agencies assess on-going activities via existing data already readily available and develop plans to combat diabetes from this information.

#### CONCLUSION

Enacting the Diabetes Action Plan legislation is a reasonable first step in battling diabetes in Michigan. Considering and passing this legislation will help turn Michigan into a leader in the battle against diabetes and provide the public with an understanding of what the state is doing to combat the disease. Such plans and assessment tools will also greatly help legislators when prioritizing resources available to battle diabetes and its complications.

This bill offers options and opportunities you can seize today to ensure that the future health of Michigan's children is not dictated by diabetes. Rather, by passing HB 5204, Michigan can begin to dictate the terms by which its citizens will engage diabetes. The bill will bring together the best and the brightest in the government ranks to provide their best thinking on how to battle diabetes. It will allow them to map out a future battle plan so you can act upon these plans. As Chair Haines said in December when describing this bill, "It makes sense to take an inventory of what is being done in the state to battle the disease and its implications."

Thank you for the opportunity to comment during this important hearing. I look forward to working with you and all the supporting entities on any and all matters related to diabetes over the months ahead. I sincerely appreciate your time and appropriate consideration of my remarks.

Tom Boyer  
Director, Government Affairs  
Novo Nordisk Inc.

## **Biography of Tom Boyer**

Possessing over 20 years of professional experience in health care government relations activities focused on diabetes, Tom Boyer currently serves as director, government affairs for Novo Nordisk Inc. The focus of his work involves handling government affairs issues for the company before elected officials who serve west of the Mississippi River.

Prior to joining Novo Nordisk Inc., Tom served as executive director of the Diabetes Care Coalition (DCC). A leader in transforming the state of diabetes care, the DCC was a broad coalition led by the American Diabetes Association (ADA) and the Juvenile Diabetes Research Foundation International (JDRF) with additional assistance provided by the American Association of Diabetes Educators (AADE) and the National Council of La Raza (NCLR). The coalition had a singular focus on increasing awareness among people with diabetes of the importance of the A1C test in helping manage the disease.

Other responsibilities undertaken by Mr. Boyer previously included representing the American Diabetes Association in legislative and public relations efforts that worked to improve the lives of people living with diabetes. His work secured coverage for diabetes therapies by Medicare, Medicaid and private insurance programs. Working directly with the diabetes community, he crafted the supporting program materials that helped convince President Bill Clinton and Speaker Newt Gingrich of the need to improve diabetes coverage for the Medicare population. More recently, he worked with Members of Congress and the Bush Administration to draft legislation that provides coverage for diabetes needs in a prescription drug program for America's senior citizens.

Additional experience for Mr. Boyer was obtained via his work on behalf of GCI Group, Fleishman-Hillard and Edelman public relations. He served clients in the biotechnology, medical device, non-profit healthcare and pharmaceutical industries. He also worked in an official capacity to establish an international and US presence for the agencies in the medical field of endocrinology and diabetes care.

Tom received his Bachelor of Arts Degree in Political Science from Hope College in Holland, Michigan. His outside interests include travelling the world to see and hear live music, volunteering for a variety of diabetes interests on national and local levels, tennis, and downhill skiing.

March 1, 2011

The Honorable Gail Haines  
Chair, House Health Policy Committee  
Anderson House Office Building  
124 North Capitol Avenue  
P.O. Box 30014  
Lansing, MI 48909-7514

Dear Chair Haines and Members of the Committee:

Thank you for the opportunity to be here and testify on behalf of the American Association of Diabetes Educators. My name is Dr. Robert Kocembo and I am happy to lend the enthusiastic support of diabetes educators to the effort to pass and enact HB 5204; legislation to create a true diabetes action plan for the state of Michigan.

Members of the committee, I am a relatively simple and straightforward doctor who focused his time on helping patients fight the good fight against diabetes over the past 29 years. I hope my simple and straightforward approach is welcomed by the committee.

I think it is fair to say we have a massive problem with diabetes in the state of Michigan and it is growing worse by the day. To address this problem, we need to develop the common voice, common measures and hopefully consistent outcomes envisioned by this legislation and championed by Chair Haines and many members of this committee. It is surprising that we have not collectively reached this point prior to now given the reach and scope of the disease but it is good to know we are ready to move forward today.

We have a situation today where it appears that important aspects of state government with a vested interest in containing the diabetes epidemic rarely connect or speak with each other. How can we possibly hope to impact this disease with such an approach to contain it? Yes, we have an eleven billion dollar problem lacking in serious solutions by those who pay the bills.

If projections are to be believed and history provides valuable lessons, we cannot continue fighting diabetes with current approaches. This said we also need to recognize that existing state budget pressures provide a fiscal climate that dictates common sense no cost solutions being our only way forward. This is just the fine line that HB 5204 hopes and helps to achieve.

The Diabetes Action Plan legislation and proposed amendment before you direct state government interests with a role in containing diabetes to jointly assess how the fight is going, develop a plan to continue the good fight and draft a budget for the legislature to review. And, per the proposed amendment, the basis for this work is grounded solely within existing data and information available to the departments so the proverbial wheel is not

reinvented. This all sounds to me like a common sense game plan for any of us regardless of political affiliation.

The absence of action on diabetes in Michigan is a scary thought. As an aside, I wish you could experience what I deal with daily which is communicating to someone that they will lose their sight because they lived with unmanaged diabetes for so long. This experience would help you appreciate how heartbreaking and devastating diabetes is. This experience would contribute life reality to the financial reality of diabetes facing the state.

Inaction today takes the cost of diabetes to sixteen billion dollars from eleven billion dollars in just over ten years. Inaction today means 216,300 new African Americans, 50,600 new Hispanic Americans and 7,600 new Native Americans develop diabetes in Michigan this year alone. Inaction today means more than 131,800 taxpayers lose some of their sight this year to diabetes in Michigan.

Allow me to close by commending this committee for its fine work in not accepting the status quo and inaction when it comes to fighting diabetes. The status quo is no longer acceptable and we need to get smart when it comes to combating the diabetes epidemic. I can think of nothing smarter than passing HB 5204 out of committee with the amendment proposed by the American Diabetes Association and others as a means to take an important step forward in containing diabetes in Michigan. The seriousness of diabetes, and its impact on our state, demands nothing less.

Sincerely,

Robert Kocembo, OD, CDE  
Belleville, MI

Curriculum Vitae – Robert T. Kocembo, BVSc, OD, Dipl. ABO, FABCO, FNAO(R), FCLSA, HFOAA, CDE

Diplomate, American Board of Optometry

Adjunct Faculty and Clinic Preceptor, Pennsylvania College of Optometry, Salus University

Fellow, American Board of Clinical Optometry

Fellow, National Academy of Opticianry, Retired

Fellow, Contact Lens Society of America

Honored Fellow, Opticians Association of America

Certified Diabetes Educator, BC-ADM Candidate 2012

Candidate for Fellow, Differential Equations in Wavefront Theory - American Mathematical Society

Executive Board Candidate, Optometric Historical Society, American Optometric Association

InfantSEE™ Provider, VisionUSA™ Participating Provider, American Optometric Association

Robert T. Kocembo, OD, PLLC Consultants, 40566 Alden Dr, Ste A-1, Belleville, MI 48111-2852

COPE CE/CEE Course Reviewer: ARBO, AMSUS Literature Reviewer, COA Evaluator, ACOE Consultant

FCOVD Candidate 2011, BC-ADM and FAAO Candidate 2012

FNORA Candidate 2014, FAMS Candidate 2015, FAADE Candidate 2016

NBEO Item Writer and PAM Contributor, CSC Examiner 3898; ARBO Tracker 517917

PCO Preceptor #1076, CQI Director, Heritage Vision Plans

19010 Livernois Ave, Detroit, MI 48221-4231, 313-863-9581, fax 313-863-7710

Professional Activities Practice:

1987-Present: Senior Optometric Physician, Independent/Private Practice, Heritage Optical Centers, Inc.

1987-Present: Independent/Private Practice Optometric Services Provider and Consultant.

1987-Present: Ophthalmic Services Training Facilitator, Crockett Vocational Center, Detroit, MI.

1989-Present: ABO Board Certified in Ophthalmics, NCLE Board Certified in Contact Lens Practice.

1989-Present: AOA-ORA Optometric Recognition Award.

Professional Activities, Education, Leadership and Administration:

- 1989-Present: Established AOA-ORA Award as MOC for Senior OD Rank at Heritage Optical.
- 1993-Present: CQI Director, Heritage Vision Plans, Detroit, MI.
- 1993-Present: Ophthalmic Instructor, Everest Academy.
- 1993-Apr2002: Chief Optometric Physician, Baird Correctional Facility, Wayne Co. Jail, Detroit, MI.
- 1993-Oct2006: Director, Safety Eyewear Program, Chrysler Jefferson North Assembly Plant.
- 2003-Present: PCO Preceptor and NBEO Examiner, CSC.
- 2009, 1985-6: ACMO (82), ABS (670), PAM (697), TMOD (93). 95 on Immunology, 95 on Optics.
- 2009-Present: Board Member, EHR Committee, Wayne County Community College District.
- 2008-Present: Emergency On-Call CSE Examiner: Apr-May, SCO, IUCO, PCO and MCO Testing sites.
- 2010-Present: NCCTO CSC Directorship Position – Final Candidate Pool, San Francisco, CA.
- 2010-Present: AOA Leadership Series and AAO Merton Flom InVision Leadership Series Attendee.
- 2011-Present: MCO-AA Trustee, Western University College of Optometry Clinic Preceptor.

Personal Activities:

- 1988-2011: Successful Detroit Marathon Participant. Retired from Marathon at Academy, 2010.
- 2004-Awards: 1<sup>st</sup> Place, Mile, 2<sup>nd</sup> Place, 10,000 Meters, Huron Applefest Run.
- 2011-Present: Entrant/Volunteer, Boston Marathon, Patriot's Day.
- 1991-Present: Member, American and International MENSA.
- 2001-Present: 11 -Time Master Angler, also Master Angler Coach.
- 2002-Present: Fred Trost Award Recipient – 5<sup>th</sup> Largest Catch and Release MI Channel Catfish.
- 1997-Present: 6 holes-in one in 6 consecutive years, 1997-2002. 7<sup>th</sup> Ace on 6/22/10.
- 2007-Present: ACOE "Each One Reach One" Participant.
- 2009-Present: Proctor, American MENSA, International MENSA.
- 2010-Present: Silver Life Member, NAACP

Professional Memberships:

1983-Present: AOA, MOA -Michigan/Metro Detroit Optometric Society (MDOS).

1983-Present: Omicron Delta Kappa, National Leadership and Honor Society (ODK).

1983-Present: Life Member, Alpha Phi Omega, National Service Society (APO).

1985-Present: AOA Vision Rehabilitation, Contact Lens and Sports Vision Sections (VRS, CLS, SVS).

1985-2011: Optometric Institute and Clinic of Metropolitan Detroit (OICMD).

1986-Present: Ferris State University Michigan College of Optometry Alumni Association (MCO-AA).

1987-Present: National Association of Veterans Administration Optometrists (NAVAO).

1991-Present: American MENSA, International MENSA.

2005-Present: American Mathematical Society (AMS).

2005-Present: Wayne State University Alumni Association (WSUAA).

2005-Present: American Association of University Professors (AAUP).

2007-Present: American Diabetes Association.

2009-Present: Society for Industrial and Applied Mathematics (SIAM).

2009-Present: American Public Health Association (APHA).

2010-Present: American Association for Diabetes Educators (AADE).

Member: American Academy of Optometry.

Member: College of Optometrists in Vision Development (COVD).

Member: Optometric Education Program (OEP).

Member: Florida Optometric Association.

Member: Pennsylvania Optometric Association.

Member: Philadelphia County Optometric Association.

Member: Michigan Optometric Association.

### Biography of R. Stewart Perry

R. Stewart Perry is known as a passionate and tenacious advocate of diabetes and insurance related issues on both a state and federal level. Mr. Perry is a longtime volunteer for the American Diabetes Association, having served in numerous leadership positions in Kentucky for the ADA.

In the early 2000's he was elected and served for three years as a member of the National Board of Directors and rose through the national volunteer ranks to serve as Vice-Chair, Chair-Elect and National Chair of the Board. Stewart is a member of the Kentucky Diabetes Network and a founding member of the Fayette County Diabetes Coalition. He was appointed by two Governors of Kentucky to the Get Fit KY Board, the Diabetes Research Trust Board, and the Sixth District Judicial Nominating Committee.

Mr. Perry is and has been very involved in many community and civic activities. He is Past Chairman of the Lexington Fayette County Parks board, Past-President of Southeastern Babe Ruth Baseball League, Past-President of the Bluegrass Association of Insurance and Financial Professionals, Past-President of the Cumberland Hill Neighborhood Association, Past-Chairman of the UK Wesley Foundation, Past Vice-President, & Currently a board member and Treasurer of Equestrian Events (The Rolex KY 3 Day Event). Stewart is a member of and involved on many committees and projects of such organizations as, the Chamber of Commerce, Better Business Bureau, Lexington Lions Club, Lexington Rotary Club, The Pyramid Club, and Southern Hills United Methodist Church

Mr. Perry grew up in Lexington and attended the University of Kentucky, Lexington Community College and the American College. He is the co-owner of Perry & Perry State Farm Insurance and is a Diabetes Consultant and Advocate. He is married to the former Judy Wriston Briggs of Charleston WV and has a son John-Stewart Perry age 26 and two step-daughters Samantha Briggs age 10 and Laura Briggs age 14.

## Biography of Bob Babbage

Bob Babbage manages local, state and federal public decisions with major corporations, assisting CEOs, executive teams and organizations through change initiatives and advocacy. Bob has worked for executives from the Global Fortune 100 to America's Fortune 1000 to numerous regional companies, start-ups and leading associations on all aspects of lobbying, communications and business strategy.

Bob served as Kentucky's elected Secretary of State, 1992-96 and State Auditor, 1988-92. For both offices he led the ticket in statewide vote totals. As Secretary of State, Bob worked with numerous leaders and groups for successful passage of the historic federal Motor Voter legislation, sponsored by Kentucky's senior U.S. Senator Wendell H. Ford. Bob's analysis of Motor Voter trends put him on the front page of the Sunday New York Times. In 1994 Bob's team worked to get Kentucky General Election reported on the internet, a Kentucky first. He co-chaired an election reform commission with the attorney general leading to sweeping vote fraud legislation in concert with state Senate leaders and local officials.

As state auditor Bob conducted accountability audits of the state lottery and local school systems. Local government audits, far behind, were brought up-to-date during the Babbage term, and cases of fraud were aggressively pursued. Bob was a Lexington City Council at-large member, 1981-87, where he sponsored one of the early 911 emergency systems in the nation.

A charter class member of Leadership Lexington, he is the originator of Leadership Kentucky and helped start the Lexington Forum, the Louisville Forum and the Hugh O'Brien Program. He served as assistant to the president of the University of Kentucky and director of the Equine Research Foundation, 1984-86. Bob serves on the ownership group for the Lexington Legends (Single-A) professional league baseball team, a Houston Astros affiliate.

Bob concentrates on executive, agency, legislative, appropriations and public contract decisions. He works with clients on major concerns in the broad area of health care and chronic disease, especially the impact of diabetes and solutions for changing the epidemic. He covers issues ranging from technology to financial services and higher education; from energy efficiency and engineering to manufacturing; from Kentucky's Fortune 1000 chemical and aluminum production to Louisville's signature Woodford Reserve and Jack Daniels, a global icon.

Bob also targets special initiatives in the states of Indiana, Ohio and Tennessee, particularly related to innovations, energy efficiency and improved operations in major areas as well as major health care issues and achievements.

Bob is widely acknowledged for creating new models for issue management, such as the state-level caucus movement, most notably Leaders for Diabetes Action. Bob chairs the board of Public Precedent, sponsor of a series of health summits in 2008, involving leading journalists, experts, corporate leaders and lawmakers. He initiated the first Study Group for e-Health, a forerunner to the successful state legislation creating Kentucky's e-Health progress. He donates his "Advocacy Audit" to not-for-profits to clarify and sharpen lobby efforts.

Known for helping create strategic advantages, he ran the “issues war room” for the Tobacco Buyout, a \$10 billion element of the 2004 Jobs Creation Act led by U.S. Senator Mitch McConnell, now Senate Republican Leader, signed into law by President Bush. Kentuckians for Progress, the bipartisan effort behind Kentucky's historic vote in 2000 for annual sessions of the legislature, was chaired by Bob working with the Democratic House Speaker and the Republican Senate President along with corporate and civic leaders.

After finishing second of four in the 1995 Democratic primary election for governor of Kentucky, Bob was named Democratic Party Chair and CEO, nominated by Governor Paul Patton. During the mid-90s Bob worked as vice president of U.S. Corrections Corporation and as a senior fellow at the Council of State Governments in criminal justice.

President Clinton appointed Bob to the Coordinating Council on Juvenile Justice chaired by Attorney General Janet Reno and later by Attorney General John Ashcroft. Secretary of State Colin Powell named Bob to the Advisory Committee for Cultural Diplomacy.

Married 31 years, Bob and Laura Babbage live in Lexington. They are the parents of Robert (23), an investment banker in New York City (Virginia, M.S., '10, Vassar, B.A., '09); Julie (19), a Vanderbilt University sophomore; and Brian (17), a junior at Lexington Catholic High. Bob and Laura are graduates of Eastern Kentucky University and the Patterson School of Diplomacy (M.A.) at the University of Kentucky. Laura received a Master of Divinity degree from Lexington Theological Seminary in 2007, where Bob received an M.A. in social ethics. Laura is a part-time hospital chaplain at St. Joseph. They are active members of the Catholic Newman Center.

Additionally, Bob completed the Senior Executives Program at Harvard's Kennedy School of Government. For “creative, legacy-making, extraordinary public service,” Bob was awarded an honorary degree, Doctor of Public Administration, by Campbellsville University. He was recently honored with Commerce Lexington's first public advocacy award and then named to the Henry Clay Hall of Fame.

### **Biography of Michael L. Mawby**

MICHAEL L. MAWBY is currently the Chief Government Affairs Officer for Novo Nordisk Inc., a focused healthcare company primarily in the diabetes space. Mr. Mawby joined Novo Nordisk in January 2004 when he opened the first ever Washington Office for this now \$10 billion, multi-national company. His primary responsibilities include creating and maintaining links with federal policymakers; monitoring and impacting federal and state legislation and regulations of interest to the company; developing and implementing patient-focused diabetes programs and promoting and supporting federal policies that will improve diabetes treatment and care in the United States. Before joining the company, Mr. Mawby was the National Vice President for Government Relations and Advocacy for the American Diabetes Association, where he worked for nearly 10 years. From 1977 to 1994, he held legislative and senior management positions for several non-profit organizations. Mr. Mawby is a graduate of the University of Michigan and lives in Fairfax, Virginia with his wife and three children.

## List of Supporters for HB 5204

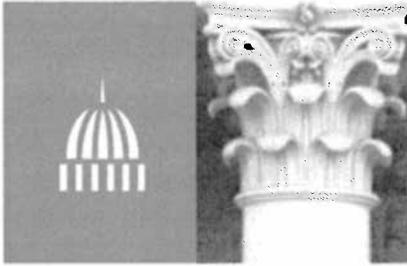
Council of State Governments (CSG)

National Council of State Legislatures (NCSL) – see attached document

American Diabetes Association (ADA)

American Association of Diabetes Educators

Senator Tom Buford – Commonwealth of Kentucky – see attached document



# National Conference of State Legislatures

# LEGISBRIEF

BRIEFING PAPERS ON THE IMPORTANT ISSUES OF THE DAY

AUGUST-SEPTEMBER 2011

VOL. 19, No. 31

## State Approaches to Prevent and Control Diabetes

By Katherine Mason

*Diabetes is expected to become more prevalent.*

Approximately 25.8 million Americans live with diabetes. This number has more than doubled during the past two decades, and researchers expect diabetes to become even more prevalent in coming years.

Diabetes is a medical condition in which the body does not produce or properly use insulin. Although there is no cure, effective treatments exist that allow most patients to live relatively normal lives. With proper education in self-management of the disease, and with appropriate supplies and equipment for administering medication and monitoring blood glucose levels, most people with diabetes can treat and manage their disease with minimal supervision from health professionals.

*Approximately 10 percent of all U.S. health care spending is for diabetes.*

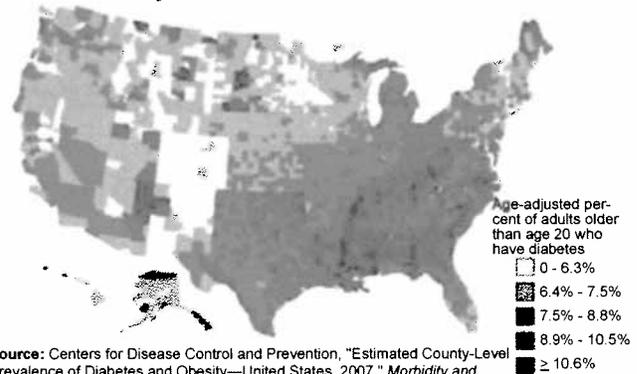
Researchers attribute approximately 10 percent of all U.S. health care spending to diabetes. In 2007, diabetes cost the nation more than \$174 billion—\$116 billion on direct treatment, and an estimated \$58 billion on lost productivity. According to an American Diabetes Association report, “People with diagnosed diabetes, on average, have medical expenditures that are approximately 2.3 times higher than the expenditures would be in the absence of diabetes.”

**Federal Action** The Centers for Disease Control and Prevention (CDC) provides funding and technical assistance for diabetes prevention and control programs (DPCPs) in all 50 states, the District of Columbia, and some U.S. territories. The CDC awards state health departments an average of \$725,000 annually. The programs help to prevent diabetes among those at highest risk, adopt diabetes care guidelines in health care delivery settings, educate providers and the public about the best care and self-management techniques, and involve communities in controlling the onset of the disease.

*State programs help improve diabetes prevention and treatment.*

**State Action** State diabetes prevention and control programs have been associated with noticeable improvements in diabetes prevention and treatment. State research and experience demonstrate that these programs help to delay and potentially prevent the development of type 2 diabetes, manage both type 1 and type 2 diabetes effectively, and prevent long-term complications that are responsible for high costs and diminished quality of life for those with diabetes.

County-Level Diabetes Prevalence, 2007



Source: Centers for Disease Control and Prevention, “Estimated County-Level Prevalence of Diabetes and Obesity—United States, 2007,” *Morbidity and Mortality Weekly Report* 58, no. 45 (Nov. 20, 2009): 1259-1263.

National Conference  
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Washington, D.C. 20001  
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In 2010, the Georgia Diabetes Control Grant Program was established to develop, establish and promote a statewide effort to address the proliferation of type 2 diabetes and pre-diabetes. The program's advisory committee, appointed by the governor, includes a physician, a registered nurse, a pharmacist, a dietitian, a diabetes educator, a business community representative and a consumer who has diabetes. Grants to promote diabetes understanding and prevention will be awarded to fund new, expanded or innovative approaches, and are to include middle and high schools. The grants also can be used by health care providers to support effective diabetes programs for education, screening, disease management and self-management for those at greatest risk for pre-diabetes, diabetes and the complications of diabetes. Grants also may be awarded to address evidence-based activities that focus on policy, systems and environmental changes that support diabetes prevention, early detection and treatment.

Some states also have created statewide diabetes action plans. In 2011, Kentucky and Texas passed legislation to develop such plans. Similar legislation in Oregon failed.

The Texas plan was developed in response to concerns of the Texas Health and Human Services Commission, which released data indicating that Medicaid clients were seen most often for diabetes. The Texas Health Institute worked with lawmakers to develop the action plan, which includes several no-cost options such as requiring agencies to assess current activities aimed at treating or preventing diabetes, refocusing agency activities on those currently living with diabetes, and planning for the coming years. The action plan also requires a biannual Medicaid report on priorities for battling diabetes, and calls for agencies with a financial role in managing diabetes to develop a budget blueprint to guide legislators. The law requires a statewide screening program, expanded self-management training for Medicaid patients with diabetes, and more equal Medicaid and CHIP benefits for pregnant mothers. Under CHIP, perinatal benefits allow access to essential supplies for monitoring and managing gestational diabetes.

Kentucky's law is similar. It requires the Department for Medicaid Services, the Department for Public Health, the Office of Health Policy and the Personnel Cabinet to collaborate to identify goals and benchmarks to reduce the incidence of diabetes, improve care and control complications. The law requires each agency to report on the results of its programs and activities for controlling and preventing diabetes, develop new action plans to address the disease, and create budget plans for programs that address diabetes.

**Contact for More Information**

Katherine Mason  
NCSL—Denver  
katherine.mason@ncsl.org  
(303) 364-7700, ext. 1474

*Some statewide diabetes action plans exist.*

*Texas law requires statewide diabetes screening.*

# Commonwealth of Kentucky

Senate

Senator Tom Buford  
409 West Maple  
Nicholasville, KY 40356



State Capitol  
Frankfort, KY 40601  
(502) 564-8100  
tom.buford@lrc.ky.gov

**Senator Tom Buford**

Representative Gail Haines  
Anderson House Office Building  
124 N. Capitol  
N-832 House Office Building  
Lansing, MI 48933

Dear Representative Gail Haines:

Please let me say how encouraged I am to learn that Michigan is taking a leadership role with creation of a diabetes action plan. As we both know diabetes is taking an enormous toll on our respective states and the country as a whole, which is why I introduced a similar measure in Kentucky. We were able to pass the bill and have it signed into law last year in Kentucky. I thought you should know that the process of reviewing our current state program activities is already making a difference.

Our major agencies are likely similar, and I assure you the programs in Kentucky are being reviewed and the action plan developed without additional resources having to be allocated or re-programmed within our departments. The information and reports we requested from our agencies is accessible and already available, but unfortunately for too long was just not coordinated effectively or reported to the legislature in a way that showed us true outcomes.

My hope is that our states will lead our country in taking a strong look at the financial and programmatic outcomes of diabetes and other chronic diseases. I applaud your leadership and wish you the best of luck during consideration of your bill.

Sincerely,

A handwritten signature in cursive script that reads "Tom Buford".

Senator Tom Buford  
Commonwealth of Kentucky

## House Bill 5204 (2011) rss

### Sponsors

Gail Haines - (primary)  
 Ray Franz, Kenneth Kurtz, Dale W. Zorn,  
 Nancy Jenkins, Bruce Rendon, Joel Johnson,  
 Holly Hughes, Dave Agema, Paul Opsommer,  
 Bill Rogers, Harold L. Haugh, Lesia Liss,  
 Jimmy Womack

**Categories** Health, diseases; State agencies (existing), community health; State agencies (existing), human services; Human services, medical services

Health; diseases; impact study of the impact of diabetes on state programs; require, and create a diabetes action plan. Amends 1978 PA 368 (MCL 333.1101 - 333.25211) by adding sec. 5410.

### Bill Document Formatting Information

(gray icons indicate that the action did not occur or that the document is not available)

### Documents



#### House Introduced Bill

Introduced bills appear as they were introduced and reflect no subsequent amendments or changes.



#### As Passed by the House

As Passed by the House is the bill, as introduced, that includes any adopted House amendments.



#### As Passed by the Senate

As Passed by the Senate is the bill, as received from the House, that includes any adopted Senate amendments.



#### House Enrolled Bill

Enrolled bill is the version passed in identical form by both houses of the Legislature.

### History (House actions in lowercase, Senate actions in UPPERCASE)

Date ▲	Journal	Action
12/8/2011	HJ 99 Pg. 2822	introduced by Representative Gail Haines
12/8/2011	HJ 99 Pg. 2822	read a first time
12/8/2011	HJ 99 Pg. 2822	referred to Committee on Health Policy
12/13/2011	HJ 100 Pg. 2846	printed bill filed 12/08/2011

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# HOUSE BILL No. 5204

December 8, 2011, Introduced by Reps. Haines, Franz, Kurtz, Zorn, Jenkins, Rendon, Johnson, Hughes, Agema, Opsommer, Rogers, Haugh, Liss and Womack and referred to the Committee on Health Policy.

A bill to amend 1978 PA 368, entitled  
"Public health code,"  
(MCL 333.1101 to 333.25211) by adding section 5410.

THE PEOPLE OF THE STATE OF MICHIGAN ENACT:

1           SEC. 5410. (1) THE DEPARTMENT OF HUMAN SERVICES, THE  
2 DEPARTMENT OF COMMUNITY HEALTH, AND THE MEDICAL SERVICES  
3 ADMINISTRATION SHALL COLLABORATE TO IDENTIFY GOALS AND BENCHMARKS  
4 TO REDUCE THE INCIDENCE OF DIABETES IN THIS STATE, IMPROVE DIABETES  
5 CARE, AND CONTROL COMPLICATIONS ASSOCIATED WITH DIABETES. THE  
6 DEPARTMENT OF HUMAN SERVICES, THE DEPARTMENT OF COMMUNITY HEALTH,  
7 AND THE MEDICAL SERVICES ADMINISTRATION SHALL EACH DEVELOP AN  
8 INDIVIDUAL ENTITY PLAN TO REDUCE THE INCIDENCE OF DIABETES IN THIS

1 STATE, IMPROVE DIABETES CARE, AND CONTROL COMPLICATIONS ASSOCIATED  
2 WITH DIABETES.

3 (2) ON OR BEFORE JANUARY 10 OF EACH ODD-NUMBERED YEAR, THE  
4 DEPARTMENT OF HUMAN SERVICES, THE DEPARTMENT OF COMMUNITY HEALTH,  
5 AND THE MEDICAL SERVICES ADMINISTRATION SHALL COLLABORATE TO SUBMIT  
6 A REPORT TO THE LEGISLATURE THAT CONTAINS ALL OF THE FOLLOWING:

7 (A) THE FINANCIAL IMPACT AND THE REACH THAT DIABETES OF ALL  
8 TYPES IS HAVING ON THIS STATE AND LOCAL UNITS OF GOVERNMENT IN THIS  
9 STATE. THE ASSESSMENT UNDER THIS SUBDIVISION SHALL INCLUDE THE  
10 NUMBER OF LIVES WITH DIABETES IMPACTED OR COVERED BY THE DEPARTMENT  
11 OF HUMAN SERVICES, THE DEPARTMENT OF COMMUNITY HEALTH, AND THE  
12 MEDICAL SERVICES ADMINISTRATION; THE NUMBER OF LIVES WITH DIABETES  
13 AND FAMILY MEMBERS IMPACTED BY PREVENTION AND DIABETES CONTROL  
14 PROGRAMS IMPLEMENTED BY THE DEPARTMENT OF HUMAN SERVICES, THE  
15 DEPARTMENT OF COMMUNITY HEALTH, AND THE MEDICAL SERVICES  
16 ADMINISTRATION; THE FINANCIAL TOLL OR IMPACT THAT DIABETES AND ITS  
17 COMPLICATIONS PLACE ON EACH PROGRAM; AND THE FINANCIAL TOLL OR  
18 IMPACT THAT DIABETES AND ITS COMPLICATIONS PLACE ON EACH PROGRAM IN  
19 COMPARISON TO OTHER CHRONIC DISEASES AND CONDITIONS.

20 (B) AN ASSESSMENT OF THE BENEFITS OF IMPLEMENTED PROGRAMS AND  
21 ACTIVITIES AIMED AT CONTROLLING DIABETES AND PREVENTING THE  
22 DISEASE. THE ASSESSMENT UNDER THIS SUBDIVISION SHALL DOCUMENT THE  
23 AMOUNT AND SOURCE FOR ANY FUNDING DIRECTED TO THE DEPARTMENT OF  
24 HUMAN SERVICES, THE DEPARTMENT OF COMMUNITY HEALTH, AND THE MEDICAL  
25 SERVICES ADMINISTRATION BY THE LEGISLATURE FOR PROGRAMS AND  
26 ACTIVITIES AIMED AT REACHING THOSE WITH DIABETES.

27 (C) A DESCRIPTION OF THE LEVEL OF COORDINATION EXISTING

1 BETWEEN THE DEPARTMENT OF HUMAN SERVICES, THE DEPARTMENT OF  
2 COMMUNITY HEALTH, AND THE MEDICAL SERVICES ADMINISTRATION ON  
3 ACTIVITIES, PROGRAMMATIC ACTIVITIES, AND MESSAGING ON MANAGING,  
4 TREATING, OR PREVENTING ALL FORMS OF DIABETES AND ITS  
5 COMPLICATIONS.

6 (D) THE DEVELOPMENT OR REVISION OF A DETAILED ACTION PLAN FOR  
7 BATTLING DIABETES WITH A RANGE OF ACTIONABLE ITEMS FOR  
8 CONSIDERATION BY THE LEGISLATURE. THE ACTION PLAN UNDER THIS  
9 SUBDIVISION SHALL IDENTIFY ALL OF THE FOLLOWING:

10 (i) PROPOSED ACTION STEPS TO REDUCE THE IMPACT OF DIABETES,  
11 PREDIABETES, AND RELATED DIABETES COMPLICATIONS.

12 (ii) EXPECTED OUTCOMES OF THE ACTION STEPS PROPOSED IN THE  
13 FOLLOWING BIENNIUM WHILE ALSO ESTABLISHING BENCHMARKS FOR  
14 CONTROLLING AND PREVENTING RELEVANT FORMS OF DIABETES.

15 (E) THE DEVELOPMENT OF A DETAILED BUDGET BLUEPRINT IDENTIFYING  
16 NEEDS, COSTS, AND RESOURCES REQUIRED TO IMPLEMENT THE ACTION PLAN  
17 UNDER SUBDIVISION (D). THE BLUEPRINT UNDER THIS SUBDIVISION SHALL  
18 INCLUDE A BUDGET RANGE FOR ALL OPTIONS PRESENTED IN THE ACTION PLAN  
19 UNDER SUBDIVISION (D) FOR CONSIDERATION BY THE LEGISLATURE.

Proposed Amendment

HB 5204 – Representative Gail Haines  
Diabetes Action Plan

House Health Policy Committee Hearing  
March 1, 2012

Add: Section 3

*The requirements of Sections 1 and 2 of this Act shall be limited to the diabetes information, data, initiatives, and programs within each agency prior to the effective date of this Act, unless there is unobligated funding for diabetes in each agency that may be used for new research, data collection, reporting, or other requirements of Sections 1 and 2 of this Act.*

AN ACT relating to diabetes.

*Be it enacted by the General Assembly of the Commonwealth of Kentucky:*

→SECTION 1. A NEW SECTION OF KRS CHAPTER 211 IS CREATED TO READ AS FOLLOWS:

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

→SECTION 2. A NEW SECTION OF KRS CHAPTER 211 IS CREATED TO READ AS FOLLOWS:

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

- (1) The financial impact and reach diabetes of all types is having on the entity, the Commonwealth, and localities. Items included in this assessment shall include the number of lives with diabetes impacted or covered by the entity, the number of lives with diabetes and family members impacted by prevention and diabetes control programs implemented by the entity, the financial toll or impact diabetes and its complications places on the program, and the financial toll or impact diabetes and its complications places on the program in comparison to other chronic diseases and conditions;*
- (2) An assessment of the benefits of implemented programs and activities aimed at controlling diabetes and preventing the disease. This assessment shall also document the amount and source for any funding directed to the agency or entity from the Kentucky General Assembly for programs and activities aimed at reaching those with diabetes;*

- (3) A description of the level of coordination existing between the entities on activities, programmatic activities and messaging on managing, treating, or preventing all forms of diabetes and its complications;
- (4) The development or revision of detailed action plans for battling diabetes with a range of actionable items for consideration by the General Assembly. The plans shall identify proposed action steps to reduce the impact of diabetes, pre-diabetes, and related diabetes complications. The plan shall also identify expected outcomes of the action steps proposed in the following biennium while also establishing benchmarks for controlling and preventing relevant forms of diabetes; and
- (5) The development of a detailed budget blueprint identifying needs, costs, and resources required to implement the plan identified in subsection (4) of this section. This blueprint shall include a budget range for all options presented in the plan identified in subsection (4) of this section for consideration by the General Assembly.

**LEGISLATIVE BUDGET BOARD**  
**Austin, Texas**

**FISCAL NOTE, 82ND LEGISLATIVE REGULAR SESSION**

**April 30, 2011**

**TO:** Honorable Lois W. Kolkhorst, Chair, House Committee on Public Health

**FROM:** John S O'Brien, Director, Legislative Budget Board

**IN RE:** ~~SB796~~ by Nelson (Relating to reporting on and assessing programs for the prevention and treatment of diabetes in the state.), **As Engrossed**

**No significant fiscal implication to the State is anticipated.**

The Department of State Health Services (DSHS) anticipates any additional work resulting from the passage of the bill could be reasonably absorbed within current resources.

**Local Government Impact**

No fiscal implication to units of local government is anticipated.

**Source** 529 Health and Human Services Commission, 537 State Health Services,  
**Agencies:** Department of  
**LBB Staff:** JOB, CL, MB

1 AN ACT

2 relating to reporting on and assessing programs for the prevention  
3 and treatment of diabetes in the state.

4 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

5 SECTION 1. Subtitle D, Title 2, Health and Safety Code, is  
6 amended by adding Chapter 95A to read as follows:

7 CHAPTER 95A. REPORTS ON PREVENTION AND TREATMENT OF DIABETES

8 Sec. 95A.001. DEFINITIONS. In this chapter:

9 (1) "Commission" means the Health and Human Services  
10 Commission.

11 (2) "Council" means the Texas Diabetes Council.

12 Sec. 95A.002. BIENNIAL REPORT ON COMMISSION'S PRIORITIES  
13 FOR ADDRESSING DIABETES. (a) The commission, in coordination with  
14 the council, shall prepare a biennial report that identifies the  
15 commission's priorities for addressing diabetes within the  
16 Medicaid population.

17 (b) Not later than December 1 of each even-numbered year,  
18 the commission shall submit the report to the legislature and the  
19 governor.

20 Sec. 95A.003. REPORT ON COSTS OF PREVENTING AND TREATING  
21 DIABETES. (a) Not later than December 1, 2012, the commission and  
22 the council shall prepare and post on the commission's Internet  
23 website a report for elected officials and other policy makers that  
24 contains an estimate of the annual direct and indirect costs to both

1 the public and private sectors of preventing diabetes and treating  
2 individuals with diabetes in this state.

3 (b) This section expires September 1, 2013.

4 SECTION 2. Chapter 103, Health and Safety Code, is amended  
5 by adding Section 103.0131 to read as follows:

6 Sec. 103.0131. ASSESSMENT OF PROGRAMS TO PREVENT AND TREAT  
7 DIABETES. (a) In conjunction with developing each state plan  
8 described in Section 103.013, the council shall conduct a statewide  
9 assessment of existing programs for the prevention of diabetes and  
10 treatment of individuals with diabetes that are administered by the  
11 Health and Human Services Commission or a health and human services  
12 agency, as defined by Section 531.001, Government Code. As part of  
13 the assessment, the council shall collect data regarding:

- 14 (1) the number of individuals served by the programs;  
15 (2) the areas where services to prevent diabetes and  
16 treat individuals with diabetes are unavailable; and  
17 (3) the number of health care providers treating  
18 individuals with diabetes under the programs.

19 (b) Not later than November 1 of each odd-numbered year, the  
20 council shall submit to the governor, the lieutenant governor, and  
21 the legislature a written report containing the findings of the  
22 assessment conducted under Subsection (a).

23 SECTION 3. (a) Not later than December 1, 2012, the Health  
24 and Human Services Commission shall submit the initial report  
25 required by Section 95A.002, Health and Safety Code, as added by  
26 this Act.

27 (b) Not later than November 1, 2013, the Texas Diabetes

1 Council shall conduct and submit a report on the initial assessment  
2 required by Section 103.0131, Health and Safety Code, as added by  
3 this Act.

4 SECTION 4. This Act takes effect September 1, 2011.

\_\_\_\_\_  
President of the Senate

\_\_\_\_\_  
Speaker of the House

I hereby certify that S.B. No. 796 passed the Senate on  
March 17, 2011, by the following vote: Yeas 31, Nays 0.

\_\_\_\_\_  
Secretary of the Senate

I hereby certify that S.B. No. 796 passed the House on  
May 23, 2011, by the following vote: Yeas 142, Nays 0, one  
present not voting.

\_\_\_\_\_  
Chief Clerk of the House

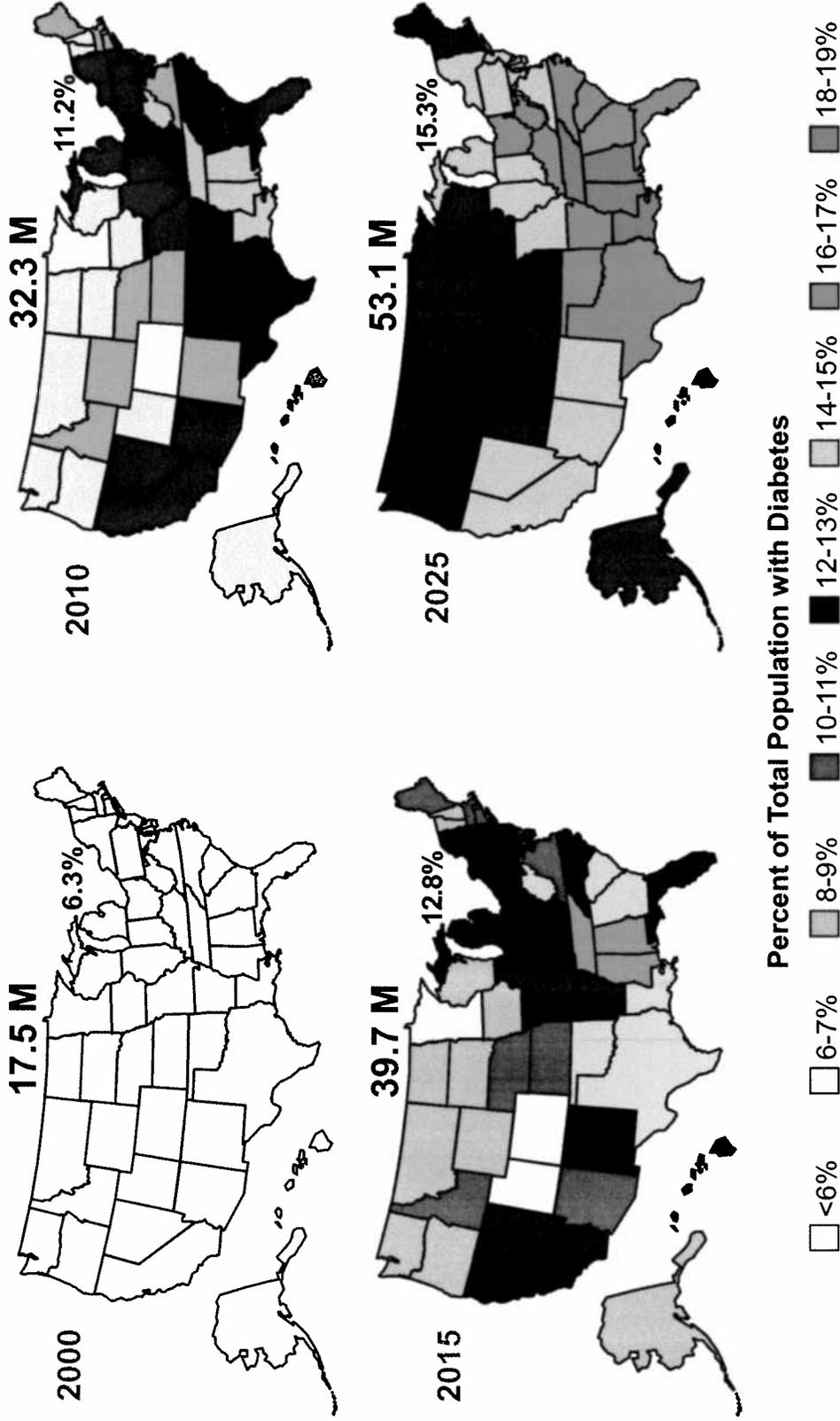
Approved:

\_\_\_\_\_  
Date

\_\_\_\_\_  
Governor

# Progression of Diabetes

## Increasing Prevalence

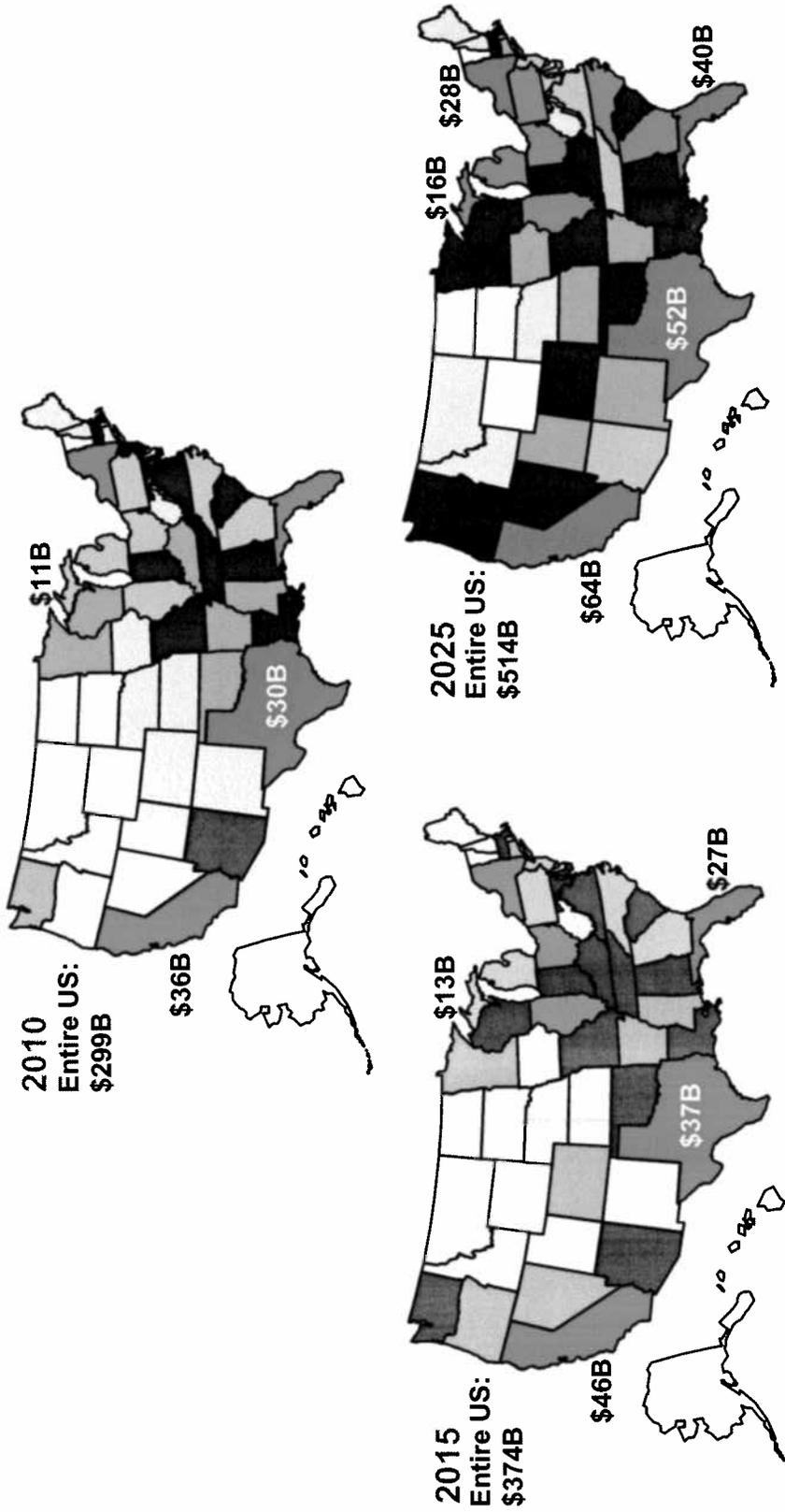


*Improvements in therapies and medical management over time are factored in*

2000 diabetes prevalence by state map - CDC Behavioral Risk Factor Surveillance System prevalence of diabetes maps, <http://www.cdc.gov/diabetes/statistics/maps/>;  
 2010, 2015 & 2025 - IAF Diabetes 2025 Model <http://www.alfutures.org/diabetes2025> utilizing latest national projections from Boyle, Projection of the year 2050 burden of diabetes in the US adult population, *Population Health Metrics*, 2010, <http://www.pophealthmetrics.com/content/8/1/29>

# Progression of Diabetes

## Increasing Annual Diabetes Cost in \$ Billions\*



## Total Annual Direct Medical and Indirect Societal Costs of Diabetes in Billions of Dollars\*



\*Constant 2010 Dollars

IAF Diabetes 2025 Model <http://www.alifutures.org/diabetes2025> utilizing cost estimates by: Zhang Y. Medical Costs Associated with Prediabetes. *Population Health Management*. 2009; 12(2):95-101; Dall TM, et al. Distinguishing the Economic Costs Associated with Type 1 and Type 2 Diabetes. *Population Health Management*. 2009; 12(2):103-110.

# Increasing Prevalence of Diabetes

## DIABETES IN MICHIGAN

2000                      2010                      2025

<b>Total Diabetes</b>	<b>625,800</b>	<b>1,156,300</b>	<b>1,639,900</b>
<b>Pre-diabetes</b>	<b>1,452,700</b>	<b>2,629,600</b>	<b>2,728,800</b>
<b>Annual Cost</b>	<b>\$4.8B*</b>	<b>\$10.6B</b>	<b>\$15.8B</b>

*\* Cost of diagnosed diabetes only*

Rowley W, Bezold C. Creating Public Awareness: State Diabetes Forecasts. *Publication Health Management*, accepted for publication. This study utilizes a national diabetes model by Boyle, Projection of the year 2050 burden of diabetes in the US adult population, *Population Health Metrics*, 2010, <http://www.pophealthmetrics.com/content/8/1/29>; US Census Bureau population estimates; latest CDC national diabetes statistics and state prevalence rates.

# Increasing Prevalence of Diabetes

## DIABETES COMPLICATIONS IN MICHIGAN



**131,800**

**Total Visual Impairment**



**1,770**

**New Kidney Failure**



**2,300**

**New Amputations**

Rowley W, Bezold C. Creating Public Awareness: State Diabetes Forecasts. *Publication Health Management*, accepted for publication. This study utilizes a national diabetes model by Boyle, Projection of the year 2050 burden of diabetes in the US adult population, *Population Health Metrics*, 2010, <http://www.pophealthmetrics.com/content/8/1/29>; US Census Bureau population estimates; latest CDC national diabetes statistics and state prevalence rates.

# Michigan: Race and Hispanic Origin

## AFRICAN AMERICANS



- 216,300 cases of diabetes
- Twice as likely to be diagnosed with diabetes\*
- Almost twice as likely to die from diabetes\*

\*Compared to non-Hispanic Whites

## HISPANIC AMERICANS



- 50,600 cases of diabetes
- 90% greater risk of developing diabetes\*
- 70% greater risk of renal failure\*
- 50% greater risk of dying from diabetes\*

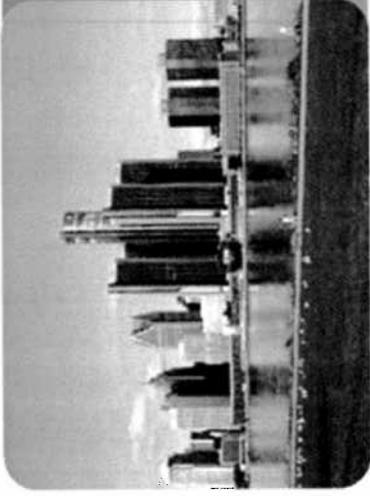
## NATIVE AMERICANS



- 7,600 cases of diabetes
- Twice as likely to be diagnosed with diabetes\*
- Over twice the risk of renal failure & amputations\*
- Life span shortened 13-17 years

Rowley W, Bezold C. Creating Public Awareness: State Diabetes Forecasts. *Publication Health Management*, accepted for publication. This study utilizes a national diabetes model by Boyle, Projection of the year 2050 burden of diabetes in the US adult population, *Population Health Metrics*, 2010, <http://www.pophealthmetrics.com/content/8/1/29>; US Census Bureau population estimates; latest CDC national diabetes statistics and state prevalence rates.

# Increasing Prevalence of Diabetes



## DIABETES IN METRO DETROIT

2000

2010

2025

<b>Total Diabetes</b>	<b>288,900</b>	<b>512,000</b>	<b>703,000</b>
<b>Pre-diabetes</b>	<b>649,400</b>	<b>1,131,700</b>	<b>1,130,100</b>
<b>Annual Cost</b>	<b>\$2.2 B*</b>	<b>\$4.7 B</b>	<b>\$6.8 B</b>

*\*Cost of diagnosed diabetes only*

Diabetes Data & Forecasts. 2025 Diabetes Forecasts for State and Metropolitan Areas Study by the Institute for Alternative Futures. This study utilizes: a national model from Narayan. Impact of Recent Increase in Incidence on Future Diabetes Burden. Diabetes Care 2006, 29:2114-2116; the latest CDC projections by Boyle; US Census Bureau population estimates; and latest CDC national diabetes statistics and state prevalence rates.

# Diabetes and America's Seniors

## SENIOR POPULATION IN MICHIGAN

<b>65 and older</b>	<b>1,334,500</b>
<b>Known diabetes</b>	<b>262,100</b>
<b>Undiagnosed diabetes</b>	<b>96,900</b>
<b>Pre-diabetes</b>	<b>667,200</b>
<b>Must find these:</b>	<b>764,100</b>

A National Drive to  
Find the Undiagnosed  
**Medicare Diabetes**  
Screening Project

**Medicare pays for screening, but early  
on only 10% utilized it**

Centers for Disease Control and Prevention, National Diabetes Fact Sheet, 2011. [http://www.cdc.gov/diabetes/pubs/pdf/ndfs\\_2011.pdf](http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf);  
Institute for Alternative Futures Diabetes 2025 Methodology, <http://www.altfutures.org/diabetes2025>; Ask.Screen.Know. Brochure.

# Diabetes in Counties



CDC. County Level Estimates of Diagnosed Diabetes. Accessed 3/25/11.  
[http://apps.nccd.cdc.gov/DDT\\_STRS2/nationaldiabetesprevalenceestimates.aspx?mode=DBI](http://apps.nccd.cdc.gov/DDT_STRS2/nationaldiabetesprevalenceestimates.aspx?mode=DBI).

## Michigan's Diabetes Crisis: Today and Future Trends

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A recently released study<sup>2</sup> and the 2011 National Diabetes Fact Sheet<sup>6</sup> from the Centers for Disease Control and Prevention (CDC) predict a dramatic increase in diabetes between 2010 and 2050. Using this new information from the CDC, the Institute for Alternative Futures diabetes model estimates that the number of Michigan residents living with diabetes (diagnosed and undiagnosed) will increase 42% by 2025 from 1,156,300 to 1,639,900.<sup>1</sup> The resulting medical and societal cost of diabetes will be \$15.8 billion – a 49% increase from 2010.<sup>1</sup>

In 2010, there were 1,156,300 people in Michigan with diabetes.<sup>1</sup> Some 429,600 of them were undiagnosed<sup>1</sup> and possibly beginning to suffer from the common complications of diabetes, including eye, kidney, lower extremity, and heart damage.<sup>3</sup> Another 2,629,600 people had pre-diabetes,<sup>1</sup> a condition in which the blood sugar level is higher than normal but not yet in the range for diabetes.<sup>4</sup> If they do not take action, individuals with pre-diabetes can often progress to diabetes within 10 years.<sup>4</sup>

Diabetes is frequently associated with obesity, high blood pressure, high cholesterol, and depression.<sup>4,5</sup> It can result in many debilitating complications<sup>6</sup> and shorten life span by about 4 to 23 years depending on age, sex, and ethnicity.<sup>7</sup> About 68% of deaths among seniors with diabetes are due to heart disease and 16% are due to a stroke related to their disease.<sup>6</sup> In 2010, some 131,800 people in Michigan were visually impaired, some even blind, because of diabetes.<sup>1</sup> Another 1,770 developed kidney failure, and 2,310 people underwent lower extremity amputations as a result of their diabetes.<sup>1</sup> On the whole, diabetes contributed to more than 9,680 deaths.<sup>1</sup> The total cost of diabetes in Michigan, including medical expenses and lost productivity, was \$10.6 billion in 2010.<sup>1</sup>

The risk of developing diabetes is much higher as one gets older, especially after the age of 45.<sup>8</sup> There were 1,334,500 seniors<sup>24</sup> living in Michigan in 2010 and approximately 77% of them had either diabetes or pre-diabetes.<sup>6</sup> Of the 359,000 seniors living with diabetes in 2010, some 262,100 had diagnosed diabetes and another 96,900 had diabetes that had not yet been diagnosed<sup>1</sup> and was possibly beginning to cause organ damage.<sup>3</sup> The 667,200 seniors in Michigan with pre-diabetes<sup>1</sup> also were largely unaware of their condition<sup>9</sup> and continue to have a significant risk of eventually developing diabetes.<sup>4</sup>

The American Diabetes Association recommends that testing for diabetes be considered for adults of any age who are overweight or obese and also have one or more risk factors for diabetes. For those without these risk factors, testing should begin at age 45. If test results are normal, repeat testing should occur at least every three years.<sup>10</sup> The risk of diabetes increases as one gets older,<sup>8</sup> so it is especially important for seniors to be tested for diabetes – a benefit that Medicare now covers.<sup>11</sup>

We now understand more about delaying or even preventing the onset of diabetes as well as how to effectively treat it, resulting in a dramatic reduction of complications and premature death.<sup>12,13,14</sup> In fact, many scientific studies have shown that relatively simple lifestyle changes, such as modest weight loss and increases in regular physical activity, can often prevent those most at risk, including those with pre-diabetes, from developing diabetes, or significantly delay the onset of the disease.<sup>14,15</sup> If 50% of people with pre-diabetes successfully made these lifestyle changes, it could reduce the number of new cases of diabetes in Michigan by about 11,200 a year.<sup>1,2,14</sup> Between now and 2025 that would be a reduction of over 141,900 people with diabetes with a cumulative savings of about \$9.0 billion.<sup>1</sup> Likewise, if 50% of

the people with diagnosed diabetes received high quality medical care and complied with their doctors' recommendations, the number of lower extremity amputations could be reduced by over 790 per year and result in 11,400 fewer amputations by 2025.<sup>1,6</sup> Similarly, almost 9,400 fewer people could develop end-stage renal failure by 2025.<sup>1,6</sup> However, even with these interventions, there would still be 1,498,000 people living with diabetes in Michigan.<sup>1</sup>

<b>Michigan Diabetes Data and Forecasts<sup>1</sup></b>	<b>2000</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>
<b>Population</b>	9,970,300	10,324,400	10,599,100	10,713,700
<b>Pre-diabetes</b>	1,452,700	2,629,600	2,699,600	2,728,800
<b>Diagnosed diabetes</b>	438,000	726,700	912,000	1,195,200
<b>Undiagnosed diabetes</b>	187,700	429,600	449,100	444,700
<b>Total with diabetes (diagnosed and undiagnosed)</b>	625,700	1,156,300	1,361,100	1,639,900
<b>Complications:</b>				
<b>Visual impairment</b>	90,400	131,800	161,700	205,800
<b>Renal failure</b>	1,460	1,770	2,060	2,440
<b>Leg amputations</b>	2,915	2,310	2,480	2,755
<b>Annual deaths attributable to diabetes</b>	7,510	9,680	11,300	12,500
<b>Total annual cost (2010 dollars)*</b>	<b>\$4.8 B</b>	<b>\$10.6 B</b>	<b>\$12.7 B</b>	<b>\$15.8 B</b>
<b>Annual medical costs</b>	<b>\$3.3 B</b>	<b>\$7.5 B</b>	<b>\$8.9 B</b>	<b>\$11.1 B</b>
<b>Annual nonmedical costs</b>	<b>\$1.5 B</b>	<b>\$3.1 B</b>	<b>\$3.8 B</b>	<b>\$4.7 B</b>

\* Costs in 2000 only for diagnosed diabetes, other years also include undiagnosed and pre-diabetes costs

<b>2010 Michigan Diabetes Statistics for Seniors (65 &amp; older) and Minorities<sup>1</sup></b>					
<b>Subgroups</b>	<b>Seniors</b>	<b>African Americans</b>	<b>Hispanic Americans</b>	<b>Asian Americans</b>	<b>Native Americans</b>
<b>Population</b>	1,334,500	1,491,300	417,100	229,400	52,100
<b>Pre-diabetes</b>	667,200	379,800	106,200	58,400	13,300
<b>Diagnosed diabetes</b>	262,100	135,900	31,800	15,200	4,800
<b>Undiagnosed diabetes</b>	96,900	80,300	18,800	9,000	2,800
<b>Total diabetes (diagnosed and undiagnosed)</b>	359,000	216,200	50,600	24,200	7,600
<b>Complications:</b>					
<b>Visual impairment</b>	53,300	24,300	5,700	2,770	850
<b>Renal failure</b>	670	550	100	30	19
<b>Leg amputations</b>	900	670	155	40	23
<b>Annual deaths attributable to diabetes</b>	3,630	3,090	520	135	95
<b>Total annual cost</b>	<b>\$3.5 B</b>	<b>\$1.9 B</b>	<b>\$460 M</b>	<b>\$224 M</b>	<b>\$67 M</b>
<b>Annual medical costs</b>	<b>\$2.5 B</b>	<b>\$1.3 B</b>	<b>\$325 M</b>	<b>\$159 M</b>	<b>\$47 M</b>
<b>Annual nonmedical costs</b>	<b>\$1.0 B</b>	<b>\$0.6 B</b>	<b>\$135 M</b>	<b>\$65 M</b>	<b>\$20 M</b>

Reducing the future burden of diabetes in Michigan depends upon the promotion of targeted screening for asymptomatic adults to identify those with pre-diabetes and undiagnosed diabetes, improved access to quality medical care, and increased patient compliance with therapy.<sup>14,15,16</sup> However, halting the "twin epidemics" of diabetes and obesity will also require fundamental change in all segments of society, including greater access to opportunities for physical activity in our schools, workplaces, and communities and a significant shift in the American diet away from sugar, salt, refined carbohydrates, and saturated fats and toward more fruits and vegetables.<sup>15</sup> In short, we all play an important role in conquering diabetes.

These forecasts are based on available national diabetes data, including population projections extrapolated to the state, and the CDC's 2011 National Diabetes Fact Sheet and latest diabetes prevalence projections to 2050. They assume a steady, but conservative, reduction in the number of people with complications due to better awareness of the risks of diabetes, earlier screening and intervention, and more effective therapies.

**For endnote references and details on the Institute for Alternative Futures Diabetes 2025 Forecasting Model Methodology, visit [www.altfutures.org/diabetes2025](http://www.altfutures.org/diabetes2025).**

*Research funded by Novo Nordisk Inc.*

# Diabetes 2025 Forecasts, 2011

## Michigan Diabetes Data & Forecasts<sup>1</sup>



Population	2000	2010	2015	2025
State Population	9,970,300	10,324,400	10,599,100	10,713,700
Pre-diabetes	1,452,700	2,629,600	2,699,600	2,728,800
Diagnosed diabetes	438,000	726,700	912,000	1,195,200
Undiagnosed diabetes	187,700	429,600	449,100	444,700
Total with diabetes (diagnosed and undiagnosed)	625,700	1,156,300	1,361,100	1,639,900
<b>Complications:</b>				
Visual Impairment	90,400	131,800	161,700	205,800
Renal failure	1,460	1,770	2,060	2,440
Leg amputations	2,915	2,310	2,480	2,755
Annual deaths attributable to diabetes	7,510	9,680	11,300	12,500
Total annual cost (2010 dollars)*	\$4.8 B	\$10.6 B	\$12.7 B	\$15.8 B
Annual medical costs	\$3.3 B	\$7.5 B	\$8.9 B	\$11.1 B
Annual nonmedical costs	\$1.5 B	\$3.1 B	\$3.8 B	\$4.7 B

\* Costs in 2000 only for diagnosed diabetes, other years also include undiagnosed and pre-diabetes costs

2010 Statistics for Seniors (65 & older) and Minorities <sup>1</sup>					
Subgroups	Seniors	African Americans	Hispanic Americans	Asian Americans	Native Americans
Population	1,334,500	1,491,300	417,100	229,400	52,100
Pre-diabetes	667,200	379,800	106,200	58,400	13,300
Diagnosed diabetes	262,100	135,900	31,800	15,200	4,800
Undiagnosed diabetes	96,900	80,300	18,800	9,000	2,800
Total diabetes (diagnosed and undiagnosed)	359,000	216,200	50,600	24,200	7,600
<b>Complications:</b>					
Visual Impairment	53,300	24,300	5,700	2,770	850
Renal failure	670	550	100	30	19
Leg amputations	900	670	155	40	23
Annual deaths attributable to diabetes	3,630	3,090	520	135	95
Total annual cost	\$3.5 B	\$1.9 B	\$460 M	\$224 M	\$67 M
Annual medical costs	\$2.5 B	\$1.3 B	\$325 M	\$159 M	\$47 M
Annual nonmedical costs	\$1.0 B	\$0.6 B	\$135 M	\$65 M	\$20 M

These forecasts are based on available national diabetes data, including population projections extrapolated to the state, and the CDC's 2011 National Diabetes Fact Sheet and latest diabetes prevalence projections to 2050. They assume a steady, but conservative, reduction in the number of people with complications due to better awareness of the risks of diabetes, earlier screening and intervention, and more effective therapies.

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Research funded by Novo Nordisk Inc.

## Detroit's Diabetes Crisis: Today and Future Trends



### Detroit Metropolitan Statistical Area (MSA)

The Detroit MSA spans six counties in Michigan including Detroit, Warren, and Livonia, with a population of 4,443,200.<sup>25,26</sup>

A recently released study<sup>2</sup> and the 2011 National Diabetes Fact Sheet<sup>6</sup> from the Centers for Disease Control and Prevention (CDC) predict a dramatic increase in diabetes between 2010 and 2050. Using this new information from the CDC, the Institute for Alternative Futures diabetes model estimates that the number of people living with diabetes (diagnosed and undiagnosed) in the Detroit Metropolitan Statistical Area will increase 37% by 2025 from 512,000 to 703,000.<sup>1</sup> The resulting medical and societal cost of diabetes will be \$6.8 billion – a 45% increase from 2010.<sup>1</sup>

In 2010, there were 512,000 people in the Detroit MSA with diabetes.<sup>1</sup> Some 190,200 of them were undiagnosed<sup>1</sup> and possibly beginning to suffer from the common complications of diabetes, including eye, kidney, lower extremity, and heart damage.<sup>3</sup> Another 1,131,700 people had pre-diabetes,<sup>1</sup> a condition in which the blood sugar level is higher than normal but not yet in the range for diabetes.<sup>4</sup> If they do not take action, individuals with pre-diabetes can often progress to diabetes within 10 years.<sup>4</sup>

Diabetes is frequently associated with obesity, high blood pressure, high cholesterol, and depression.<sup>4,5</sup> It can result in many debilitating complications and shorten life span by about 4 to 23 years depending on age, sex, and ethnicity.<sup>7</sup> About 68% of deaths among seniors with diabetes are due to heart disease and 16% are due to a stroke related to their disease.<sup>6</sup> In 2010, some 58,300 people in the Detroit MSA were visually impaired, some even blind, because of diabetes.<sup>1</sup> That year diabetes also caused 850 cases of renal failure and 1,090 lower extremity amputations.<sup>1</sup> On the whole, diabetes contributed to more than 4,660 deaths.<sup>1</sup> The total cost of diabetes in the Detroit MSA, including medical expenses and lost productivity, was \$4.7 billion in 2010.<sup>1</sup>

The risk of developing diabetes is much higher as one gets older, especially after the age of 45.<sup>8</sup> There were 568,700 seniors<sup>27</sup> living in the Detroit MSA in 2010 and approximately 77% of them had either diabetes or pre-diabetes.<sup>6</sup> Of the 153,000 seniors living with diabetes in 2010, some 111,700 had diagnosed diabetes<sup>1</sup> and another 41,300 had diabetes that had not yet been diagnosed<sup>1</sup> and was possibly beginning to cause organ damage.<sup>3</sup> The 284,400 seniors in the Detroit MSA with pre-diabetes<sup>1</sup> also were largely unaware of their condition<sup>9</sup> and continue to have a significant risk of eventually developing diabetes.<sup>4</sup>

The American Diabetes Association recommends that testing for diabetes be considered in adults of any age who are overweight or obese and also have one or more risk factors for diabetes. In those without these risk factors, testing should begin at age 45. If test results are normal, repeat testing should occur at least every three years.<sup>10</sup> The risk of diabetes increases as one gets older,<sup>8</sup> so it is especially important for seniors to be tested for diabetes – a benefit that Medicare now covers.<sup>11</sup>

We now understand more about delaying or even preventing the onset of diabetes as well as how to effectively treat it, resulting in a dramatic reduction of complications and premature death.<sup>12,13,14</sup> In fact,

many scientific studies have shown that relatively simple lifestyle changes, such as modest weight loss and increases in regular physical activity, can often prevent those most at risk, including those with pre-diabetes, from developing diabetes, or significantly delay the onset of the disease.<sup>14,15</sup> If 50% of people with pre-diabetes successfully made these lifestyle changes, it could reduce the number of new cases of diabetes in the Detroit MSA by about 4,800 a year.<sup>1,2,14</sup> Between now and 2025 that would be a reduction of about 58,800 people with diabetes with a cumulative savings of about \$3.7 billion.<sup>1</sup> Likewise, if 50% of the people with diagnosed diabetes received high quality medical care and complied with their doctors' recommendations, the number of lower extremity amputations could be reduced by about 350 per year and result in 4,900 fewer amputations by 2025.<sup>1,6</sup> Similarly, 4,000 fewer people could develop end-stage renal failure by 2025.<sup>1,6</sup> However, even with these interventions, there would still be 644,200 people living with diabetes in the Detroit MSA.<sup>1</sup>

Detroit Metro Diabetes Statistics <sup>1</sup>	2000	2010	2015	2025
Population	4,457,500	4,443,200	4,472,900	4,436,900
Pre-diabetes	649,500	1,131,700	1,139,200	1,130,100
Diagnosed diabetes	202,200	321,800	396,900	512,400
Undiagnosed diabetes	86,700	190,200	195,500	190,600
Total with diabetes (diagnosed and undiagnosed)	288,900	512,000	592,400	703,000
<b>Complications:</b>				
Visual impairment	41,900	58,300	70,300	88,100
Renal failure	730	850	980	1,140
Leg amputations	1,360	1,090	1,150	1,270
Annual deaths attributable to diabetes	3,820	4,660	5,360	5,860
Total annual cost (2010 dollars)*	\$2.2 B	\$4.7 B	\$5.5 B	\$6.8 B
Annual medical costs	\$1.5 B	\$3.3 B	\$3.9 B	\$4.8 B
Annual nonmedical costs	\$0.7 B	\$1.4 B	\$1.6 B	\$2.0 B

\* Costs in 2000 only for diagnosed diabetes, other years also include undiagnosed and pre-diabetes costs

2010 Detroit Metro Diabetes Statistics for Seniors (65 & older) and Minorities <sup>1</sup>					
Subgroups	Seniors	African Americans	Hispanic Americans	Asian Americans	Native Americans
Population	568,700	1,017,500	168,800	160,000	13,300
Pre-diabetes	284,400	259,200	43,000	40,700	3,400
Diagnosed diabetes	111,700	92,700	12,900	10,600	1,220
Undiagnosed diabetes	41,300	54,800	7,600	6,300	720
Total diabetes (diagnosed and undiagnosed)	153,000	147,500	20,500	16,900	1,940
<b>Complications:</b>					
Visual Impairment	22,700	16,600	2,300	1,900	220
Renal failure	285	380	40	21	5
Leg amputations	385	460	65	28	6
Annual deaths attributable to diabetes	1,550	2,110	210	90	24
Total annual cost	\$1.5 B	\$1.3 B	\$186 M	\$156 M	\$17 M
Annual medical costs	\$1.1 B	\$0.9 B	\$131 M	\$111 M	\$12 M
Annual nonmedical costs	\$0.4 B	\$0.4 B	\$55 M	\$45 M	\$5 M

Reducing the future burden of diabetes in the Detroit MSA depends upon the promotion of targeted screening for asymptomatic adults to identify those with pre-diabetes and undiagnosed diabetes,

improved access to quality medical care, and increased patient compliance with therapy.<sup>14,15,17</sup> However, halting the “twin epidemics” of diabetes and obesity will also require fundamental change in all segments of society, including greater access to opportunities for physical activity in our schools, workplaces, and communities and a significant shift in the American diet away from sugar, salt, refined carbohydrates and saturated fats and toward more fruits and vegetables.<sup>15</sup> In short, we all play an important role in conquering diabetes.

These forecasts are based on available national diabetes data, including population projections extrapolated to the state, and the CDC’s 2011 National Diabetes Fact Sheet and latest diabetes prevalence projections to 2050. They assume a steady, but conservative, reduction in the number of people with complications due to better awareness of the risks of diabetes, earlier screening and intervention, and more effective therapies.

**For endnote references and details on the Institute for Alternative Futures Diabetes 2025 Forecasting Model Methodology, visit [www.altfutures.org/diabetes2025](http://www.altfutures.org/diabetes2025).**

*Research funded by Novo Nordisk Inc.*

# Detroit Metropolitan Area Diabetes Data & Forecasts<sup>1</sup>



Includes Detroit — Warren — Livonia, MI

Population	2000	2010	2015	2025
State Population	4,457,500	4,443,200	4,472,900	4,436,900
Pre-diabetes	649,500	1,131,700	1,139,200	1,130,100
Diagnosed diabetes	202,200	321,800	396,900	512,400
Undiagnosed diabetes	86,700	190,200	195,500	190,600
Total with diabetes (diagnosed and undiagnosed)	288,900	512,000	592,400	703,000
<b>Complications:</b>				
Visual impairment	41,900	58,300	70,300	88,100
Renal failure	730	850	980	1,140
Leg amputations	1,360	1,090	1,150	1,270
Annual deaths attributable to diabetes	3,820	4,660	5,360	5,860
Total annual cost (2010 dollars)*	\$2.2 B	\$4.7 B	\$5.5 B	\$6.8 B
Annual medical costs	\$1.5 B	\$3.3 B	\$3.9 B	\$4.8 B
Annual nonmedical costs	\$0.7 B	\$1.4 B	\$1.6 B	\$2.0 B

\* Costs in 2000 only for diagnosed diabetes, other years also include undiagnosed and pre-diabetes costs

2010 Statistics for Seniors (65 & older) and Minorities					
Subgroups	Seniors	African Americans	Hispanic Americans	Asian Americans	Native Americans
Population	568,700	1,017,500	168,800	160,000	13,300
Pre-diabetes	284,400	259,200	43,000	40,700	3,400
Diagnosed diabetes	111,700	92,700	12,900	10,600	1,220
Undiagnosed diabetes	41,300	54,800	7,600	6,300	720
Total diabetes (diagnosed and undiagnosed)	153,000	147,500	20,500	16,900	1,940
<b>Complications:</b>					
Visual Impairment	22,700	16,600	2,300	1,900	220
Renal failure	285	380	40	21	5
Leg amputations	385	460	65	28	6
Annual deaths attributable to diabetes	1,550	2,110	210	90	24
Total annual cost	\$1.5 B	\$1.3 B	\$186 M	\$156 M	\$17 M
Annual medical costs	\$1.1 B	\$0.9 B	\$131 M	\$111 M	\$12 M
Annual nonmedical costs	\$0.4 B	\$0.4 B	\$55 M	\$45 M	\$5 M

These forecasts are based on available national diabetes data, including population projections extrapolated to the state, and the CD C's 2011 National Diabetes Fact Sheet and latest diabetes prevalence projections to 2050. They assume a steady, but conservative, reduction in the number of people with complications due to better awareness of the risks of diabetes, earlier screening and intervention, and more effective therapies.

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Research funded by Novo Nordisk Inc.

## Michigan's Diabetes Crisis among Seniors: Today and Future Trends

Diabetes is a serious and rapidly growing problem among Michigan's seniors. It is estimated that 27% of people 65 and older have diabetes and an additional 50% have pre-diabetes.<sup>6</sup> In 2010, there were 1,334,500 people in Michigan who were 65 and older<sup>24</sup> and 359,000 of them had diabetes.<sup>1</sup> Twenty-seven percent of these seniors were undiagnosed<sup>1</sup> and possibly beginning to suffer from the common complications of diabetes, including eye, kidney, lower extremity, and heart damage.<sup>3</sup>

In 2010, there were 53,300 seniors in Michigan who had visual impairment. Another 670 developed kidney failure, and 900 seniors had a leg amputation as a result of their diabetes.<sup>1</sup> Furthermore, people 65 and older with diabetes can die 4-11 years prematurely, depending upon sex and ethnicity.<sup>7</sup> The overall cost of diabetes among seniors in Michigan, including medical expenses and lost productivity, was about \$3.5 billion in 2010.<sup>1</sup>

Another 667,200 seniors in Michigan had pre-diabetes,<sup>1</sup> a condition in which the blood sugar level is higher than normal but not yet in the range for diabetes.<sup>4</sup> Many scientific studies have shown that relatively simple life-style changes such as modest weight loss and increases in regular physical activity can often prevent pre-diabetes from progressing to diabetes or significantly delay its onset by as much as 71%.<sup>14</sup>

Medicare now covers the cost of annual testing for those at risk for diabetes.<sup>11</sup> Over half of Medicare beneficiaries have undiagnosed diabetes or pre-diabetes (764,100 in 2010 in Michigan<sup>1</sup>). It is therefore important for health care professionals to make sure that patients aged 65 and older get tested annually, and receive effective early intervention if their blood sugar levels are abnormal.<sup>11</sup>

### Pre-Diabetes and Diabetes Trends<sup>1</sup> among Seniors in Michigan

<b>Michigan Seniors Diabetes Data and Forecasts</b>	<b>2010</b>	<b>2025</b>
<b>Population</b>	1,334,500	1,926,400
<b>Pre-diabetes</b>	667,200	963,200
<b>Diagnosed diabetes</b>	262,100	378,300
<b>Undiagnosed diabetes</b>	96,900	139,900
<b>Total with diabetes (diagnosed and undiagnosed)</b>	359,000	518,200
<b>Total with pre-diabetes or undiagnosed diabetes</b>	764,100	1,103,100
<b>Complications:</b>		
<b>Visual impairment</b>	53,300	73,400
<b>Renal failure</b>	670	805
<b>Leg amputations</b>	900	945
<b>Annual deaths attributable to diabetes</b>	3,630	4,100
<b>Total annual cost (2010 dollars)</b>	\$3.5 B	\$5.1 B
<b>Annual medical costs</b>	\$2.5 B	\$3.6 B
<b>Annual nonmedical costs</b>	\$1.0 B	\$1.5 B

We now understand more about delaying or even preventing the onset of diabetes as well as how to effectively treat it, both of which can result in a dramatic reduction in complications and premature death.<sup>12,13,14</sup> Reducing the future burden of diabetes in Michigan depends upon the promotion of targeted screening for asymptomatic adults to identify those with pre-diabetes and undiagnosed diabetes, improved access to quality medical care, and increased patient compliance with therapy.<sup>14,15,16</sup> However, halting the “twin epidemics” of diabetes and obesity will also require fundamental change in all segments of society, including greater access to opportunities for physical activity in our schools, workplaces, and communities and a significant shift in the American diet away from sugar, salt, refined carbohydrates, and saturated fats and toward more fruits and vegetables.<sup>15</sup> In short, we all play an important role in conquering diabetes.

These forecasts are based on available national diabetes data, including population projections extrapolated to the state, and the CDC’s 2011 National Diabetes Fact Sheet and latest diabetes prevalence projections to 2050. They assume a steady, but conservative, reduction in the number of people with complications due to better awareness of the risks of diabetes, earlier screening and intervention, and more effective therapies.

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## Michigan's Diabetes Crisis among African Americans: Today and Future Trends

Diabetes is a very serious and rapidly growing problem for African Americans. They have about an 80% greater risk for developing the disease during their lifetimes than non-Hispanic whites.<sup>17</sup> In 2010, more than 216,200 African Americans living in Michigan had diabetes.<sup>1</sup> Nearly 80,300 of them were undiagnosed<sup>1</sup> and possibly beginning to suffer from the common complications of diabetes, including eye, kidney, lower extremity, and heart damage.<sup>3</sup>

Type 2 diabetes is becoming a common disease for many adults, and it is even beginning to affect school-aged children. Forty percent of African American boys and 49% of girls will develop diabetes during their lifetimes<sup>7</sup> and therefore face the possibility of severe diabetes-related complications<sup>6</sup> and a life span that is reduced by 4 to 23 years.<sup>7</sup> African Americans have at least twice the risk of amputations, renal failure, and death due to their diabetes compared to non-Hispanic white Americans.<sup>18</sup> The overall cost of diabetes among African Americans in Michigan, including medical expenses and lost productivity, was \$1.9 billion in 2010.<sup>1</sup>

In 2010, another 379,800 African Americans in Michigan had pre-diabetes,<sup>1</sup> a condition in which the blood sugar level is higher than normal but not yet in the range for diabetes.<sup>4</sup> Many scientific studies have shown that relatively simple life-style changes, such as modest weight loss and increases in regular physical activity, can often prevent pre-diabetes from progressing to diabetes or significantly delay its onset by as much as 58%.<sup>14</sup> However, if they do not take action, individuals with pre-diabetes can often progress to diabetes within 10 years.<sup>4</sup> So if current trends continue, the number of African Americans with diabetes in Michigan is projected to increase to 342,700 by 2025.<sup>1</sup>

### Pre-Diabetes and Diabetes Trends<sup>1</sup> among African Americans in Michigan

Michigan African American Diabetes Data and Forecasts	2010	2025
Population	1,491,300	1,703,500
Pre-diabetes	379,800	433,900
Diagnosed diabetes	135,900	249,800
Undiagnosed diabetes	80,300	92,900
Total with diabetes (diagnosed and undiagnosed)	216,200	342,700
<b>Complications:</b>		
Visual impairment	24,300	42,500
Renal failure	550	840
Leg amputations	670	890
Annual deaths attributable to diabetes	3,090	4,340
Total annual cost (2010 dollars)	\$1.9 B	\$3.2 B
Annual medical costs	\$1.3 B	\$2.2 B
Annual nonmedical costs	\$0.6 B	\$1.0 B

We now understand more about delaying or even preventing the onset of diabetes as well as how to effectively treat it, both of which can result in a dramatic reduction in complications and premature death.<sup>12,13,14</sup> Reducing the future burden of diabetes in Michigan depends upon the promotion of targeted screening for asymptomatic adults to identify those with pre-diabetes and undiagnosed diabetes, improved access to quality medical care, and increased patient compliance with therapy.<sup>14,15,16</sup> However, halting the “twin epidemics” of diabetes and obesity will also require fundamental change in all segments of society, including greater access to opportunities for physical activity in our schools, workplaces, and communities and a significant shift in the American diet away from sugar, salt, refined carbohydrates, and saturated fats and toward more fruits and vegetables.<sup>15</sup> In short, we all play an important role in conquering diabetes.

These forecasts are based on available national diabetes data, including population projections extrapolated to the state, and the CDC's 2011 National Diabetes Fact Sheet and latest diabetes prevalence projections to 2050. They assume a steady, but conservative, reduction in the number of people with complications due to better awareness of the risks of diabetes, earlier screening and intervention, and more effective therapies.

**For endnote references and details on the Institute for Alternative Futures Diabetes 2025 Forecasting Model Methodology, visit [www.altfutures.org/diabetes2025](http://www.altfutures.org/diabetes2025).**

*Research funded by Novo Nordisk Inc.*

## Michigan's Diabetes Crisis among Asian Americans: Today and Future Trends

In 2010, over 24,200 Asian Americans living in Michigan had diabetes.<sup>1</sup> About 9,000 of them were undiagnosed<sup>1</sup> and possibly beginning to suffer from the common complications of diabetes, including eye, kidney, lower extremity, and heart damage.<sup>3</sup>

Type 2 diabetes is becoming a common disease for many adults, and it is even beginning to affect school-aged children. Asian Americans have about an 18% higher risk of diagnosed diabetes than non-Hispanic whites,<sup>6</sup> though some Asian ethnic groups have a somewhat lower risk.<sup>23</sup> Then again, Asians are 20% less likely to die from diabetes than non-Hispanic whites.<sup>23</sup> However, diabetes can be responsible for complications such as renal failure, lower extremity amputations, blindness, heart attacks, and strokes.<sup>6</sup> The overall cost of diabetes among Asian Americans in Michigan, including medical expenses and lost productivity, was \$224 million in 2010.<sup>1</sup>

In 2010, another 58,400 Asian Americans had pre-diabetes,<sup>1</sup> a condition in which the blood sugar level is higher than normal but not yet in the range for diabetes.<sup>4</sup> Many scientific studies have shown that relatively simple life-style changes, such as modest weight loss and increases in regular physical activity, can often prevent pre-diabetes from progressing to diabetes or significantly delay its onset by as much as 58%.<sup>14</sup> However, if they do not take action, individuals with pre-diabetes can often progress to diabetes within 10 years.<sup>4</sup> So if current trends continue, the number of Asian Americans with diabetes in Michigan is projected to increase to 43,900 by 2025.<sup>1</sup>

### Pre-Diabetes and Diabetes Trends<sup>1</sup> among Asian Americans in Michigan

Michigan Asian American Diabetes Data and Forecasts	2010	2025
Population	229,400	310,700
Pre-diabetes	58,400	79,100
Diagnosed diabetes	15,200	32,000
Undiagnosed diabetes	9,000	11,900
Total with diabetes (diagnosed and undiagnosed)	24,200	43,900
<b>Complications:</b>		
Visual impairment	2,770	5,530
Renal failure	30	50
Leg amputations	40	60
Annual deaths attributable to diabetes	135	210
Total annual cost (2010 dollars)	\$224 M	\$427 M
Annual medical costs	\$159 M	\$300 M
Annual nonmedical costs	\$65 M	\$127 M

We now understand more about delaying or even preventing the onset of diabetes as well as how to effectively treat it, which can result in a dramatic reduction in complications and premature death.<sup>12,13,14</sup> Reducing the future burden of diabetes in Michigan depends upon the promotion of targeted screening for asymptomatic adults to identify those with pre-diabetes and undiagnosed diabetes, improved access

to quality medical care, and increased patient compliance with therapy.<sup>14,15,16</sup> However, halting the “twin epidemics” of diabetes and obesity will also require fundamental change in all segments of society, including greater access to opportunities for physical activity in our schools, workplaces, and communities and a significant shift in the American diet away from sugar, salt, refined carbohydrates, and saturated fats and toward more fruits and vegetables.<sup>15</sup> In short, we all play an important role in conquering diabetes.

These forecasts are based on available national diabetes data, including population projections extrapolated to the state, and the CDC's 2011 National Diabetes Fact Sheet and latest diabetes prevalence projections to 2050. They assume a steady, but conservative, reduction in the number of people with complications due to better awareness of the risks of diabetes, earlier screening and intervention, and more effective therapies.

**For endnote references and details on the Institute for Alternative Futures Diabetes 2025 Forecasting Model Methodology, visit [www.altfutures.org/diabetes2025](http://www.altfutures.org/diabetes2025).**

*Research funded by Novo Nordisk Inc.*

## Michigan's Diabetes Crisis among Hispanic Americans: Today and Future Trends

Diabetes is a very serious and rapidly growing problem for Hispanic Americans. Hispanic American adults are 90% more likely to be diagnosed with diabetes by a physician than non-Hispanic whites.<sup>19</sup> In 2010, almost 50,600 Hispanic Americans living in Michigan had diabetes.<sup>1</sup> About 18,800 of them were undiagnosed<sup>1</sup> and possibly beginning to suffer from the common complications of diabetes, including eye, kidney, lower extremity, and heart damage.<sup>3</sup>

Type 2 diabetes is becoming a common disease for many adults, and it is even beginning to affect school-aged children. Mexican Americans have an 87% higher risk of diagnosed diabetes than non-Hispanic whites<sup>6</sup> with 45% of Mexican American boys and 52% of girls developing diabetes during their lifetimes.<sup>7</sup> Those of Cuban, Central, or South American origin have a much lower risk for diagnosed diabetes, about the same as non-Hispanic whites.<sup>6</sup> However, the situation is far more serious than many people realize. Mexican Americans suffer about 70% more kidney failures due to their diabetes than non-Hispanic whites, and they also have a 50% higher mortality rate.<sup>19</sup> The overall cost of diabetes among Hispanic Americans in Michigan, including medical expenses and lost productivity, was \$460 million in 2010.<sup>1</sup>

In 2010, another 106,200 Hispanic Americans had pre-diabetes,<sup>1</sup> a condition in which the blood sugar level is higher than normal but not yet in the range for diabetes.<sup>4</sup> Many scientific studies have shown that relatively simple life-style changes, such as modest weight loss and increases in regular physical activity, can often prevent pre-diabetes from progressing to diabetes or significantly delay its onset by as much as 58%.<sup>14</sup> However, if they do not take action, individuals with pre-diabetes can often progress to diabetes within 10 years.<sup>4</sup> So if current trends continue, the number of Hispanic Americans with diabetes in Michigan is projected to increase to 110,400 by 2025.<sup>1</sup>

### Pre-Diabetes and Diabetes Trends<sup>1</sup> among Hispanic Americans in Michigan

Michigan Hispanic American Diabetes Data and Forecasts	2010	2025
Population	417,100	632,100
Pre-diabetes	106,200	161,000
Diagnosed diabetes	31,800	80,500
Undiagnosed diabetes	18,800	29,900
Total with diabetes (diagnosed and undiagnosed)	50,600	110,400
<b>Complications:</b>		
Visual impairment	5,700	13,760
Renal failure	100	200
Leg amputations	155	285
Annual deaths attributable to diabetes	520	1,000
Total annual cost (2010 dollars)	\$460 M	\$1.1 B
Annual medical costs	\$325 M	\$0.7 B
Annual nonmedical costs	\$135 M	\$0.3 B

We now understand more about delaying or even preventing the onset of diabetes as well as how to effectively treat it, which can result in a dramatic reduction in complications and premature death.<sup>12,13,14</sup> Reducing the future burden of diabetes in Michigan depends upon the promotion of targeted screening for asymptomatic adults to identify those with pre-diabetes and undiagnosed diabetes, improved access to quality medical care, and increased patient compliance with therapy.<sup>14,15,16</sup> However, halting the “twin epidemics” of diabetes and obesity will also require fundamental change in all segments of society, including greater access to opportunities for physical activity in our schools, workplaces, and communities and a significant shift in the American diet away from sugar, salt, refined carbohydrates, and saturated fats and toward more fruits and vegetables.<sup>15</sup> In short, we all play an important role in conquering diabetes.

These forecasts are based on available national diabetes data, including population projections extrapolated to the state, and the CDC’s 2011 National Diabetes Fact Sheet and latest diabetes prevalence projections to 2050. They assume a steady, but conservative, reduction in the number of people with complications due to better awareness of the risks of diabetes, earlier screening and intervention, and more effective therapies.

**For endnote references and details on the Institute for Alternative Futures Diabetes 2025 Forecasting Model Methodology, visit [www.altfutures.org/diabetes2025](http://www.altfutures.org/diabetes2025).**

*Research funded by Novo Nordisk Inc.*

## Michigan’s Diabetes Crisis among Native Americans: Today and Future Trends

Diabetes is a very serious and rapidly growing problem for Native Americans. They have over twice the risk of developing diabetes as non-Hispanic whites.<sup>21</sup> In 2010, over 7,600 Native Americans living in Michigan had diabetes.<sup>1</sup> About 2,800 of them were undiagnosed<sup>1</sup> and possibly beginning to suffer from the common complications of diabetes, including eye, kidney, lower extremity, and heart damage.<sup>3</sup>

Type 2 diabetes is becoming a common disease for many adults, and it is even beginning to affect school-aged children. The situation is far more serious than many people realize. Native Americans are almost twice as likely as non-Hispanic whites to die from diabetes.<sup>21</sup> The overall cost of diabetes among Native Americans in Michigan, including medical expenses and lost productivity, was \$67 million in 2010.<sup>1</sup>

In 2010, another 13,300 Native Americans had pre-diabetes,<sup>1</sup> a condition in which the blood sugar level is higher than normal but not yet in the range for diabetes.<sup>4</sup> Many scientific studies have shown that relatively simple life-style changes, such as modest weight loss and increases in regular physical activity, can often prevent pre-diabetes from progressing to diabetes or significantly delay its onset by as much as 58%.<sup>14</sup> However, if they do not take action, individuals with pre-diabetes can often progress to diabetes within 10 years.<sup>4</sup> So if current trends continue, the number of Native Americans with diabetes in Michigan is projected to increase to 12,900 by 2025.<sup>1</sup>

### Pre-Diabetes and Diabetes Trends<sup>1</sup> among Native Americans in Michigan

Michigan Native American Diabetes Data and Forecasts	2010	2025
Population	52,100	64,300
Pre-diabetes	13,300	16,400
Diagnosed diabetes	4,800	9,400
Undiagnosed diabetes	2,800	3,500
Total with diabetes (diagnosed and undiagnosed)	7,600	12,900
<b>Complications:</b>		
Visual impairment	850	1,600
Renal failure	19	32
Leg amputations	23	33
Annual deaths attributable to diabetes	95	140
Total annual cost (2010 dollars)	\$67 M	\$122 M
Annual medical costs	\$47 M	\$85 M
Annual nonmedical costs	\$20 M	\$37 M

We now understand more about delaying or even preventing the onset of diabetes as well as how to effectively treat it, which can result in a dramatic reduction in complications and premature death.<sup>12,13,14</sup> Reducing the future burden of diabetes in Michigan depends upon the promotion of targeted screening for asymptomatic adults to identify those with pre-diabetes and undiagnosed diabetes, improved access

to quality medical care, and increased patient compliance with therapy.<sup>14,15,16</sup> However, halting the “twin epidemics” of diabetes and obesity will also require fundamental change in all segments of society, including greater access to opportunities for physical activity in our schools, workplaces, and communities and a significant shift in the American diet away from sugar, salt, refined carbohydrates, and saturated fats and toward more fruits and vegetables.<sup>15</sup> In short, we all play an important role in conquering diabetes.

These forecasts are based on available national diabetes data, including population projections extrapolated to the state, and the CDC’s 2011 National Diabetes Fact Sheet and latest diabetes prevalence projections to 2050. They assume a steady, but conservative, reduction in the number of people with complications due to better awareness of the risks of diabetes, earlier screening and intervention, and more effective therapies.

**For endnote references and details on the Institute for Alternative Futures Diabetes 2025 Forecasting Model Methodology, visit [www.altfutures.org/diabetes2025](http://www.altfutures.org/diabetes2025).**

*Research funded by Novo Nordisk Inc.*

# THE IMPACT OF DIABETES IN MICHIGAN



**The Diabetes Burden Report  
and the  
Michigan Diabetes Action Plan  
2011-2014**

*Diabetes has changed from a public health concern to a widespread epidemic. One in three children born in 2000 is at risk of developing diabetes during their lifetime.*

*Ann Albright, PhD, RD*

*CDC Congressional Testimony July 1, 2010<sup>1</sup>*

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Dear Michigan Citizens,

It is my pleasure to support the *Michigan Diabetes Action Plan 2011 – 2014* and the *Diabetes Burden Report*. The plan was developed by the Michigan Department of Community Health's Diabetes Prevention and Control Program (DPCP) in conjunction with the Diabetes Partners in Action Coalition (DPAC) and other partners across the state to provide direction for diabetes prevention and control efforts in Michigan. The importance of this plan is underscored by the fact that diabetes continues to be a major public health challenge in the United States and Michigan.

The *Diabetes Burden Report* was developed by the DPCP using the latest diabetes data in Michigan which shows that:

- Diabetes affects 25.8 million Americans (8.3% of the population) and an estimated 1.65 million Michigan citizens.
- Prediabetes, a condition in which individuals have blood glucose levels higher than normal but not high enough to be classified as diabetes, affects 79 million Americans, including 2 million citizens in Michigan.
- Diabetes costs the United States \$174 billion annually and over \$9 billion per year in Michigan.
- Diabetes disproportionately affects some groups of people more than others, such as certain racial/ethnic groups, physically inactive people, overweight people and those who have a familial predisposition to the disease.

To address the burden of diabetes with a unified course, the DPCP is pleased to release an updated Action Plan to reduce the increasing prevalence of diabetes through prevention of the progression from prediabetes to diabetes, and to reduce the preventable complications from diabetes.

I would like to extend my thanks to all who developed this Action Plan and ask that others see this plan as "a call to action" to get involved and become a partner of the DPCP. Partners include health care professionals and service providers in businesses, schools and education programs who may have clients or constituents who have diabetes or are at risk of diabetes. Together, we can work to improve the lives of people with diabetes in Michigan and decrease the burden of the disease.

Sincerely,



Jean Chabut, Deputy Director  
Public Health Administration  
Michigan Department of Community Health

# Executive Summary

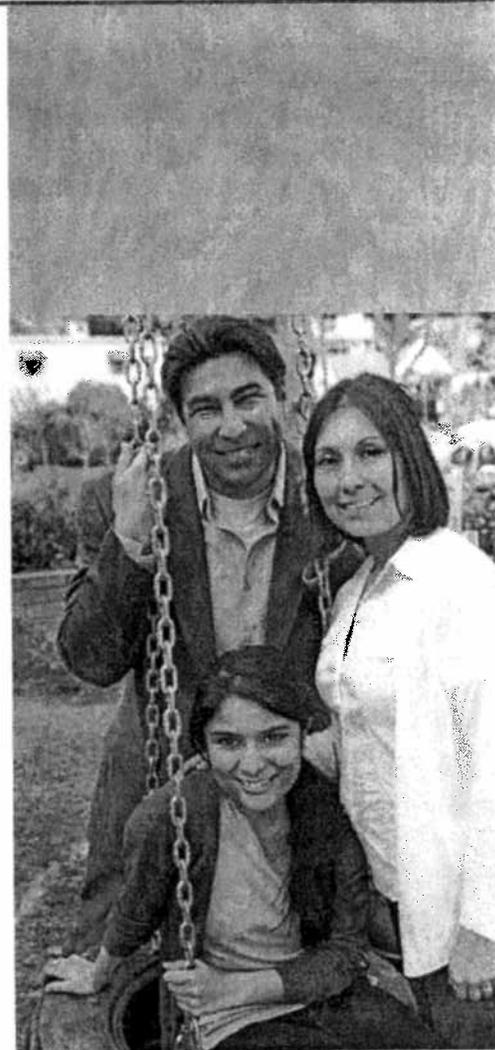
Diabetes is common, serious, costly — and controllable. The number of Americans with diabetes has more than tripled between 1980 and 2008. Diabetes is one of the leading causes of death and disability. Health care costs associated with diagnosed diabetes increased 32 percent from 2002 to 2007; however, there are promising evidence-based programs that reduce the severity of medical complications associated with diabetes and prevent or delay diabetes from developing in the first place.

One in 12 U.S. adults has been diagnosed with diabetes (closer to one in 11 in Michigan). At the current rate of growth, one in four U.S. adults will be diagnosed with diabetes by 2050. As much as 80 percent of the growth in diabetes can be attributed to the rise in obesity. Obesity, in turn, is influenced by factors such as increased consumption of calories and decreased opportunities for physical activity. Some races and ethnicities are disproportionately affected by diabetes. African Americans, Hispanics, American Indians, Asian and Pacific Islanders, and Arab Americans all have higher prevalence of type 2 diabetes compared to White, non-Hispanics.

Diabetes is the leading cause of kidney failure, blindness and lower-limb amputation. Diabetes is also a major cause of heart disease and stroke. Nationally, 6 in 10 people with diabetes have one or more diabetes-related medical complications. Overall, persons with diabetes are twice as likely to die as their peers of similar age who do not have the disease. The national economic burden of prediabetes and diabetes reached \$218 billion in 2007 (including an estimated \$9 billion in Michigan). If diabetes prevalence continues to grow at the same pace, the economic burden of diagnosed diabetes alone will double in size to \$336 billion by 2034. Half of the increased spending will come from Medicare.

Evidence-based programs are the key to reversing the growing trends seen in diabetes prevalence. The Diabetes Prevention Program, a landmark clinical trial, showed modest lifestyle changes (such as losing 5–7 percent of one's body weight and 150 minutes of physical activity per week) were significantly more effective in preventing the onset of type 2 diabetes as compared to oral diabetes medication. For those already diagnosed with diabetes, disease management through coordinated provider care has shown improvement in glycemic control and screening rates for complications. People who receive diabetes self-management education are more likely to do their daily care activities and to get all of their recommended medical care (A1C tests, eye exam, and foot exam).

The Michigan Diabetes Action Plan provides direction to diabetes prevention and control efforts in Michigan and utilizes the DPCP staff, resources, and partnerships effectively. This Action Plan is aligned with the mission of the DPCP: **to establish and implement prevention strategies to reduce the morbidity and mortality due to diabetes and its complications among Michigan residents. We seek to achieve this through capacity-building projects that ensure persons at risk for diabetes and diabetes-related complications are identified, entered into the health care system, and receive ongoing preventive care and education.**





The prevalence of diabetes in Michigan underscores the need for this Action Plan. An aging population and increase in races and ethnicities disproportionately affected by diabetes also are factors contributing to the growing trend in diabetes prevalence.

Three critical factors drive the development of this Action Plan: 1) a growing national and statewide diabetes epidemic, 2) evidence-based programs shown to improve health and 3) a challenging funding and economic climate.

How can this Action Plan impact diabetes in Michigan? By using data and input from key partners, it can focus priorities and program outcomes. Also, by having key stakeholders and partners reach consensus on three catalytic goals for Michigan, it can clearly indicate the direction for the DPCP for the next three years. These goals are:

- **Strategic Collaboration:** Strengthen the capacity of new partners to work together with DPAC toward common goals
- **Unified Message:** Develop and promote a simple, captivating message specific to diabetes in Michigan that can attract board interest addressing the issue.
- **Evidence-Based Programs:** Expand and promote successful self-management programs and prevention programs and support innovation to improve these programs' efficacy with more culturally diverse populations.

The Action Plan has broad goals and objectives for preventing, managing and monitoring diabetes in Michigan. Therefore, evaluation will be based on the objectives, outcomes and data sources identified within the plan. An ongoing evaluation process will measure the progress of this plan in addressing the three catalytic goals and how they impact the burden of diabetes in Michigan.

# What Is Diabetes?<sup>2</sup>

Diabetes is a disorder of metabolism — how the body uses digested food for growth and energy. Most of the food people eat is broken down into glucose, a form of sugar. Glucose is the main source of fuel for the body.

During digestion, the pancreas (a large gland behind the stomach) produces a hormone called insulin. Glucose passes from the digestive tract into the bloodstream, where it can be used by cells for growth and energy. However, insulin must be present for glucose to get into the cells.

When people eat, the pancreas automatically produces the right amount of insulin to move glucose from blood into the cells. In people with diabetes, however, the pancreas either produces little or no insulin, or the cells do not respond appropriately to the insulin that is produced. Glucose builds up in the blood, overflows into the urine, and passes out of the body in the urine. Thus, the body loses its main source of fuel through the kidneys even though the blood contains large amounts of glucose.

Over time, if the extra glucose is allowed to remain in the blood, it can harm nerves and blood vessels and lead to organ damage or other long-term complications. For this reason, diabetes is the primary cause of new cases of adult blindness, kidney failure, and non-traumatic lower-limb amputation. Diabetes is known to contribute to nerve damage, heart disease, stroke, high blood pressure, dental disease, pregnancy complications, and other life-threatening conditions.

## Types of Diabetes<sup>2,3</sup>

Three major types of diabetes have been identified: type 1 diabetes, type 2 diabetes and gestational diabetes.

**Type 1 diabetes**, which was previously known as insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes, is an autoimmune disease in which the immune system destroys the insulin-producing beta cells in the pancreas and, therefore, the ability of the pancreas to produce the insulin necessary for blood glucose regulation and use. Since their bodies cannot produce adequate insulin, individuals with type 1 diabetes must take replacement insulin by either injection or pump every day of their lives to survive.

Type 1 diabetes accounts for about 5–10 percent of all diagnosed diabetes cases in the United States. Although type 1 diabetes is most likely to develop in children and young adults, it can appear in individuals at any age. Risk factors for type 1 diabetes may include autoimmune, genetic and environmental factors (such as viruses). These factors are not easily modified, which means primary prevention efforts are non-beneficial.

**Type 2 diabetes**, which was previously known as non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes, occurs when the body fails to make enough insulin or cannot properly use insulin.

*\* In addition to the three major types of diabetes, a small number of cases result from specific genetic conditions (e.g., maturity-onset diabetes of youth), surgery, medications, infections, pancreatic disease, and other illnesses.*

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*Type 2 is the most common form of diabetes, accounting for about 90 - 95 percent of all diagnosed diabetes cases in the United States.*

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*Women with gestational diabetes have a 35 - 60 percent chance of developing type 2 diabetes within the next 10 - 20 years, although they may be able to reduce their risk of developing the disease by maintaining a healthy body weight and being physically active.*

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The onset of type 2 diabetes is usually gradual, with little or no initial symptoms. Many people with the disease are unaware they have it and are not receiving needed treatment and education. Type 2 diabetes usually begins as insulin resistance, a disorder in which the pancreas produces enough insulin, but the body's cells are not using the insulin properly. After several years, as the need for insulin rises, the pancreas gradually loses its ability to produce insulin.

Type 2 is the most common form of diabetes, accounting for about 90–95 percent of all diagnosed diabetes cases in the United States. Risk factors for type 2 diabetes include older age, obesity, family history of diabetes, personal history of gestational diabetes, impaired glucose metabolism, physical inactivity, some other health problems (such as high blood pressure), and certain racial or ethnic heritages. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Native Hawaiians or other Pacific Islanders are at particularly high risk for type 2 diabetes.

Nearly 80 percent of people with type 2 diabetes are overweight, and most cases of type 2 diabetes are diagnosed in people older than 40. However, the number of young people diagnosed with type 2 diabetes is increasing. Although nationally representative data do not currently exist, anecdotal data based on clinical reports and regional studies indicate type 2 diabetes is now being diagnosed more frequently in children and adolescents, particularly among American Indians, African Americans, Hispanic/Latino Americans and Asians/Pacific Islanders. Prevention or delay of type 2 diabetes with either lifestyle or metformin intervention has been effective in all racial and ethnic groups and has shown to persist for at least 10 years.

**Gestational diabetes** is a form of glucose intolerance diagnosed in some women during pregnancy, even though they have no known history of diabetes. Gestational diabetes is caused by the hormones of pregnancy or a shortage of insulin. If not controlled, gestational diabetes can cause the baby to grow especially large and could lead to problems with delivery for the mother and the baby.

Gestational diabetes often can be controlled through diet changes and regular physical activity, but some women with gestational diabetes also must take insulin shots. In general, gestational diabetes requires treatment only during pregnancy. Treatment helps normalize the mother's blood glucose levels and also prevents complications in the infant.

About 3–8 percent of pregnant women in the United States develop gestational diabetes, and some women may develop it late in their pregnancy. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans, and American Indians, and it is also more common among obese women and women with a family history of diabetes.

Although this form of diabetes usually disappears after the birth of the baby, 5–10 percent of women with gestational diabetes are diagnosed

with type 2 diabetes after pregnancy. Women with gestational diabetes have a 35–60 percent chance of developing type 2 diabetes within the next 10–20 years, although they may be able to reduce their risk of developing the disease by maintaining a healthy body weight and being physically active.

## Prediabetes

**Prediabetes**, a condition in which a person's blood glucose levels are higher than normal, but not yet high enough to be diagnosed as diabetes, has received increasing attention in recent years because the condition raises the risk of developing type 2 diabetes, heart disease and stroke.<sup>2</sup>

The U.S. Centers for Disease Control and Prevention estimates 35 percent of the U.S. adult population aged 20 years and older — an estimated 79 million American adults — were living with prediabetes in 2010, but only 7 percent of those people were aware they had prediabetes.<sup>3,4</sup> In Michigan, it is estimated\* in 2006, approximately two million adults aged 18 to 85 had prediabetes. Three-quarters of the two million adults were 40 years old or older.<sup>5</sup>

Prediabetes is considered an increasingly serious problem that must be addressed. Between 33–65 percent of those with prediabetes may go on to develop type 2 diabetes within 6 years, compared to less than 5 percent of those with normal blood glucose.<sup>6</sup> Although people with prediabetes often do not show symptoms, their impaired glucose status places them at greater risk for complications. Prediabetes, like type 2 diabetes, may lead to long-term damage to the body, particularly to the heart and circulatory system, as well as to the eyes.<sup>7,8</sup>

The risk factors for prediabetes are similar to those for type 2 diabetes (i.e., overweight, age, family history of diabetes, racial or ethnic background, personal history of gestational diabetes or high birth weight, and high blood pressure). However, adults with prediabetes were more likely to be male, older, and have lower educational attainment. Some risk factors can, in many cases, be modified successfully through the adoption of healthy lifestyle changes. Only about half of U.S. adults reported attempting to lose weight in the past year, eat more nutritious food, or increase their physical activity.<sup>4</sup>

Results of one landmark clinical trial, the Diabetes Prevention Program, showed that modest lifestyle changes, such as losing 7 percent body weight, and being physically active (defined as exercising moderately 150 minutes per week) was nearly twice as effective as oral diabetes medication in preventing the onset of type 2 diabetes (58 percent relative reduction versus 31 percent relative reduction, respectively). Indeed, follow-up Diabetes Prevention Program research indicates lifestyle changes continue to reduce cumulative diabetes incidence by 34 percent ten years after the initial intervention. Therefore, lifestyle modification should be the first choice for those hoping to prevent or delay the onset of diabetes.<sup>9</sup>

\* To derive this prediabetes prevalence rate for Michigan adults, the national prediabetes prevalence rate was applied to Michigan's population.

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*In Michigan, it is estimated in 2006, approximately two million adults aged 18 to 85 had prediabetes.*

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*Between 33-65 percent of those with prediabetes may go on to develop type 2 diabetes within 6 years, compared to less than 5 percent of those with normal blood glucose.*

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# Diabetes Prevalence

Currently, 1 in 12 U.S. adults has been diagnosed with diabetes.<sup>10</sup> National survey data shows the number of Americans with diabetes more than tripled between 1980 and 2008, rising from 5.6 million to 18.1 million.<sup>11</sup> The growth in U.S. diabetes prevalence began to accelerate noticeably in 1990 and more than doubled in the 15 years between 1993 and 2008. If diabetes continues to grow at the current rate with low mortality, projected diagnosed diabetes rates will increase from 21 million adults in 2010 to 87 million adults in 2050 — which translates to 1 in 4 U.S. adults in 2050.<sup>12</sup>

Michigan's growth in diabetes prevalence parallels national trends (Table 1):<sup>13,14</sup>

- Males have higher diabetes prevalence rates than females;
- Older age groups have higher prevalence rates than younger age groups (although prevalence peaks among 65 to 74 year olds);
- Among racial/ethnic groups, non-Hispanic whites have the lowest prevalence.

However, diabetes prevalence in Michigan has consistently been higher than the nation as a whole. **It is estimated 701,000 Michigan adults have been diagnosed with diabetes, and another 364,400 have undiagnosed diabetes.**<sup>15</sup> **This means over 1 million adults in Michigan have diabetes.**

While diabetes in children is still relatively rare, there are growing concerns in recent years that type 2 diabetes in youth is increasing. One in every 1,000 children aged 0-9 has diabetes, and three in every 1,000 children aged 10-19. Eight-five percent of diabetes cases in youth are type 1, and non-Hispanic Whites carry the highest burden. However, there is a forty-fold increase in the number of type 2 diabetes cases from young children (aged 0-9) to adolescents (10-19); compared to a three-fold increase in type 1 diabetes between the same age groups. Native American and African American adolescents carry the highest burden of type 2 diabetes.<sup>16</sup>

Table 1. Prevalence of Diagnosed Diabetes by Demographic Characteristics – Michigan, 2007-2009.

Demographic Characteristics		Prevalence (%)	95% Confidence Interval*
<b>Overall</b>		9.2	(8.8 - 9.6)
Age	18-44	2.8	(2.4 - 3.3)
	45-54	8.5	(7.7 - 9.4)
	55-64	17.0	(15.9 - 18.2)
	65-74	22.3	(20.8 - 23.8)
	75+	19.1	(17.7 - 20.5)
Gender	Male	9.8	(9.2 - 10.4)
	Female	8.6	(8.2 - 9.1)
Race/ Ethnicity	White, non-Hispanic	8.2	(7.8 - 8.6)
	Black, non-Hispanic	13.3	(12.0 - 14.7)
	Other, non-Hispanic	12.1	(10.1 - 14.4)
	Hispanic	10.1	(7.3 - 13.7)
Household Income	< \$20,000	15.0	(13.7 - 16.3)
	\$20,000 - \$34,999	12.7	(11.7 - 13.8)
	\$35,000 - \$49,999	8.4	(7.5 - 9.4)
	\$50,000 - \$74,999	8.0	(7.1 - 9.0)
	\$75,000+	5.0	(4.4 - 5.7)

\* While the best estimate is listed under prevalence, confidence intervals are the statistical range where the true population value may fall.

## Contributing Factors

The spiraling growth in diabetes prevalence is due to a number of contributing factors, most notably rising rates of obesity,\* physical inactivity and the population's increasingly poor diet and nutrition. Additional factors include the aging of the nation's population and growth in the racial and ethnic populations at highest risk for diabetes.<sup>12</sup> The growth in diabetes prevalence is not the result of more people with diabetes living longer, but rather is directly attributable to a rise in the number of new cases of diabetes diagnosed each year.<sup>17</sup>

**Obesity, Physical Inactivity, and Poor Dietary Choices:** A direct correlation can be drawn between the national rise in obesity and the nation's increasing rate of diabetes prevalence. In 1986, obesity in the U.S. population began to increase at a faster pace; four years later, the nation's diabetes rate also began to increase significantly.<sup>18</sup> Between 1976 and 2004, U.S. diabetes prevalence increased by 73 percent (from 5.1 percent to 8.8 percent). As much as four-fifths of the increase can be attributed to obesity prevalence which more than doubled (from 14 percent to 31 percent) during the same time.<sup>19</sup>

Nationally, more than two-thirds of adults and nearly one third of children and teens are either overweight or obese. Since 1980, the number of obese adults has doubled, and the rates of obesity among children ages 2–19 have more than tripled.<sup>20</sup> Whereas it was previously thought most overweight children would “grow into” their weight during puberty, there is now increasing evidence overweight children become overweight adults. Obese children already demonstrate markers for cardiovascular disease, such as insulin resistance, hypertension, hypercholesterolemia and metabolic syndrome.<sup>21</sup>

Except for Michigan, the 10 states with the highest adult obesity rates are in the South. Currently, Michigan is ranked as the tenth highest adult obesity rate in the nation (tied with North Carolina).<sup>20</sup> Thirty-six percent of Michigan adults are overweight and 31 percent of Michigan adults are obese.<sup>22</sup> Therefore, 67 percent of Michigan adults are either overweight or obese, and some counties are more heavily burdened than others (Figure 1).<sup>23</sup> Physical inactivity is another contributor to type 2 diabetes, independent of obesity.<sup>24</sup> The Centers for Disease Control and Prevention (CDC) recommend 30 minutes of moderate physical activity 5 or more days per week, or 20 minutes of vigorous physical activity 3 or more days per week. In 2009, roughly 50 percent of U.S. and Michigan adults met this recommendation for physical activity.<sup>10</sup> The good news is these numbers are growing. Michigan adults increased their physical activity levels from 46 percent in 2001 to 51 percent in 2009.<sup>22,25</sup>

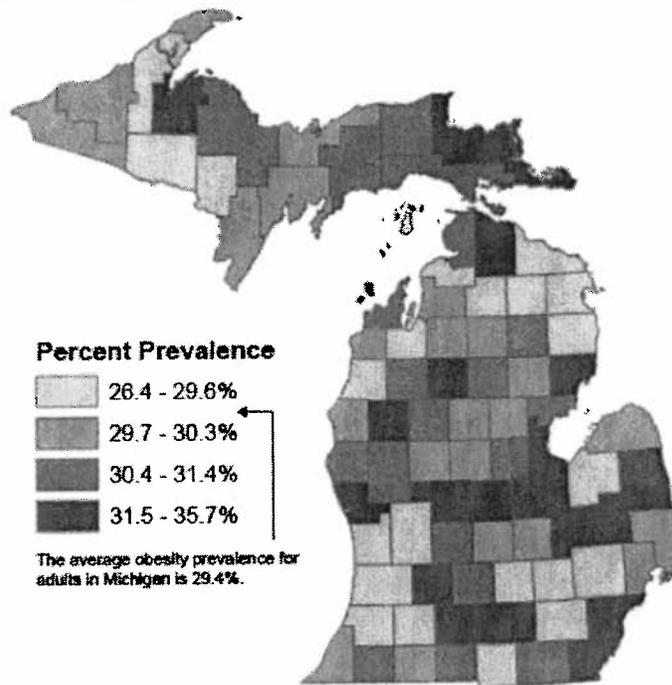
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*Thirty-six percent of Michigan adults are overweight and 31 percent of Michigan adults are obese.*

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\* Obesity and overweight in adults are determined by using weight and height values to calculate a “body mass index” (BMI), which for most people correlates with the amount of body fat. An adult who has a BMI of 30 or more is considered obese, an adult with a BMI of 25–29.9 is considered overweight, and an adult with a BMI of 20–24.9 is considered normal weight.

Figure 1. County-Level Estimates of Obesity Among Michigan Adults, 2008.



Nutrition also has a role in the development of type 2 diabetes, although that role is less clear. Poor diet can contribute to obesity; however, it is believed the essential vitamins, minerals and fiber in fruits and vegetables help to reduce the risk of many chronic diseases. The 2010 Dietary Guidelines recommend increasing your vegetable and fruit intake and eating a variety of vegetables, especially dark green, red, and orange vegetables and beans and peas. The suggested intake is about five cups of fruits and vegetables per day, which is consistent with past guidelines. In 2009, the diets of 24 percent of U.S. adults and 22 percent of Michigan adults met these recommendations.<sup>10</sup> In Michigan, consumption of fruits and vegetables actually declined from 24 percent in 1996 to 22 percent in 2009.<sup>22,25</sup>

**Environmental Factors:**<sup>20</sup> While it is clear people need to make healthy lifestyle choices, it is also clear people do not make choices in a vacuum. The prevalence of obesity, a key risk factor for diabetes, is influenced by environmental factors. In the United States, foods are inexpensive and widely available. In the past few decades, Americans have begun consuming more calories (including more foods high in sugar, fat and carbohydrates); drinking more soda and fruit juice and less milk; eating fewer fruits, vegetables and whole grains; and increasing both their portion sizes and the number of meals eaten out. At the same time, opportunities for physical activity may have decreased. For some minority Americans, poverty, lack of access to health care, differences in disease education and cultural attitudes present barriers to diabetes prevention and management.<sup>26</sup>

**Genomics:**<sup>27</sup> Diabetes can “run in families,” meaning heredity often makes someone more likely to develop diabetes. Researchers believe certain genes affecting immune response can play a role in the development of type 1 diabetes, while genes affecting insulin function can contribute to the development of type 2 diabetes. Populations at higher risk for type 2 diabetes are African Americans, Hispanic/Latino Americans, American Indians, Asian Americans and Pacific Islander Americans.

**Aging of the Overall Population:** The risk for diabetes increases as people age. The effect of an aging population on diabetes prevalence can be seen by comparing prevalence rates from both the crude and the age-adjusted data.\* For the past 20 years, the crude and age-adjusted prevalence of diagnosed diabetes have been similar.

\* Crude data are raw data that are not adjusted for age or another factor. Age-adjusted data are an artificial estimate that has been adjusted to minimize the effects of different age distributions and allow comparisons between different population groups. Age-adjusted data represent what the crude data would have been in the study population if that population had the same age distribution as the standard population.

This indicates changes in age distribution (e.g. the aging Baby Boomer population) play a less influential role in rising diabetes prevalence trends than do other factors, such as decreasing physical activity and increasing obesity.

## Health Disparities

In the past 20 years, Michigan's population has become more diverse, with a slight increase in non-White populations. As previously mentioned, non-White populations tend to have a higher risk for developing type 2 diabetes. However, the changing demographics in Michigan play a minor role in the diabetes burden in Michigan. The major causes for the increasing trend in diabetes prevalence can be attributed to risk factors cutting across both ethnic and racial categorizations.

It is important to build cultural competency among providers to help ensure people from all racial and ethnic groups can access providers who understand their language, as well as their cultural attitudes and preferences. Community health workers may be used to increase the availability of culturally appropriate education and support groups. Persons with disabilities may experience additional challenges, and special programs will be needed to address barriers to high-quality care (e.g., physical access, programs tailored to individuals with hearing or vision disabilities).

**Racial and Ethnic Populations:** While African Americans, Hispanic/Latino Americans, American Indians, Asian Americans, and Pacific Islander Americans have a slightly lower rate of type 1 diabetes, they are at a higher risk for type 2 diabetes than the rest of the population. In addition, gestational diabetes occurs more frequently in African Americans, Hispanic/Latino Americans, and American Indians than in other groups:<sup>27,28</sup>

- The prevalence of diabetes among American Indians is 2.8 times the rate for all races.
- Different studies found African Americans are from 1.4 to 2.2 times more likely to have diabetes than White persons.
- Hispanic Americans have a higher prevalence of diabetes than non-Hispanic people, with the highest rates for type 2 diabetes among Puerto Rican Americans (1.8 times) and Hispanic people living in the Southwest (1.7 times) and the lowest rate among Cuban Americans.
- Major groups within the Asian and Pacific Islander communities (Japanese Americans, Chinese Americans, Filipino Americans, Korean Americans, and Indian Americans) all have higher prevalence than those of Whites.

Although diabetes in children and adolescents is still relatively rare (<1%), reports of increasing frequency of both type 1 and type 2 diabetes in youth are among the most concerning aspects of the evolving diabetes epidemic. Type 1 diabetes is the most common form of diabetes in all racial/ethnic groups except in American Indian youth, where 71% of their youth diabetes burden is type 2 diabetes. Among adolescents and young adults (age 10–19 years):<sup>16</sup>

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*While African Americans, Hispanic/Latino Americans, American Indians, Asian Americans, and Pacific Islander Americans have a slightly lower rate of type 1 diabetes, they are at a higher risk for type 2 diabetes than the rest of the population.*

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- American Indians are 9.2 times more likely to have type 2 diabetes than Whites.
- African Americans have 5.5 times the rate of type 2 diabetes compared to Whites.
- Hispanic and Asian and Pacific Islanders have type 2 diabetes at 2.5 times the rate of Whites.

Michigan mirrors national trends in diabetes prevalence among racial/ethnic groups. African Americans, Hispanics and other races have significantly higher diabetes prevalence than White, non-Hispanics (Table 2).<sup>29</sup> Of particular note in the Michigan data is that while men tend to higher diabetes prevalence than women, African American and Hispanic women appear to carry a higher diabetes burden than their male counterparts.<sup>30</sup>

Michigan is the home of the largest Arab geographic concentration outside the Middle East, and the Arab American population represents the third largest minority group in Michigan. Self-reported diagnosed diabetes among Arab Americans appears to be similar to the prevalence seen in Whites.<sup>31</sup> However, the Arab American population has as much as 50 percent of their diabetes population with undiagnosed diabetes, compared to 33 percent of the general diabetes population.<sup>32</sup>

The Bemidji Area (which includes Michigan, Minnesota and Wisconsin) had the second highest death rate from diabetes for all American Indian and Alaskan Native Indian Health Services (IHS) administrative regions or service areas (1999–2001), and one of the highest diabetes prevalence rates compared to other IHS areas (2006).<sup>33</sup> Self-reported diagnosed diabetes among Michigan tribes range from 5 percent to 19 percent.<sup>34</sup> A majority of American Indians are no longer living on reservations but in metropolitan areas, and Southeast Michigan has the 10th largest American Indian population in the country with an estimated diabetes prevalence of 16 percent.<sup>35</sup>

Table 2. Prevalence of Diagnosed Diabetes by Race/Ethnicity – Michigan, 2009.

Demographic Characteristics		White, non-Hispanic		Black, non-Hispanic	
		%	(95% CI)	%	(95% CI)
Age	18-49	3.0	(2.4 - 3.9)	4.5	(3.0 - 6.6)
	50+	15.1	(14.0- 16.3)	27.0	(23.3 - 31.0)
Gender	Male	9.0	(8.0 - 10.1)	12.0	(9.1 - 15.7)
	Female	8.2	(7.3 - 9.1)	13.0	(10.8 - 15.6)
Education	High school or less	11.2	(9.9 - 12.6)	15.9	(12.8 - 19.7)
	Some college or more	7.1	(6.3 - 7.9)	10.0	(7.9 - 12.7)
Household Income	< \$35,000	13.4	(12.0 - 15.1)	17.0	(13.9 - 20.5)
	\$35,000+	5.9	(5.1 - 6.7)	7.9	(5.6 - 11.1)
Demographic Characteristics		Other, non-Hispanic		Hispanic	
		%	(95% CI)	%	(95% CI)
Age	18-49	4.0	(1.9 - 8.1)	8.4	(3.9 - 17.3)
	50+	24.7	(18.5 - 32.2)	26.7	(16.1 - 40.9)
Gender	Male	13.3	(8.7 - 19.8)	9.6	(4.3 - 20.2)
	Female	9.0	(5.8 - 13.8)	15.9	(8.9 - 27.0)
Education	High school or less	15.6	(9.6 - 24.2)	17.0	(9.1 - 29.5)
	Some college or more	8.6	(5.6 - 12.9)	8.3	(3.5 - 18.2)
Household Income	< \$35,000	13.6	(8.4 - 21.5)	10.4	(4.5 - 21.9)
	\$35,000+	9.8	(6.0 - 15.4)	11.6	(5.5 - 22.9)

**People with Disabilities:** While diabetes is not automatically considered a disability, accommodations should be made for the activities people with diabetes must do to manage blood glucose. The definition of disability used in the Michigan Behavioral Risk Factor Survey is a “limitation of activities due to physical, mental or emotional conditions and/or required use of special equipment due to a health condition.” Most people with diabetes do not feel disabled and would rather avoid the stigma that comes with such a label.

There is evidence diabetes is associated with markedly increased risks of disability. The associated factors include co-morbid chronic diseases common with diabetes complications, depressive symptoms, obesity, lack of regular exercise, and taking insulin.<sup>36</sup> Conversely, the impact of disability on the diabetes population is extensive. People with diabetes and disability have higher rates of unemployment, absenteeism, and use of health care services. The prevalence of impairments increases steadily with age, and is more common in women and minority ethnic groups.<sup>37</sup> In Michigan, 44 percent of people with diabetes reported at least one disability — twice that of the general population.<sup>13</sup>

**Urban versus Rural:**<sup>38</sup> Across the nation, diabetes is more prevalent in rural counties than in urban areas, and Michigan is no exception to this pattern (Figure 2).<sup>23</sup> Nationally, the prevalence of self-reported diabetes in adults is 17 percent higher in rural counties than in metropolitan areas, seen across all race/ethnicity groups except Hispanics.

Adults with diabetes in rural areas are slightly less likely to receive recommended eye exams and foot exams, or to have had diabetes self-management education compared to those in urban areas. In general, rural adults are more likely to lack health insurance, and more likely to report deferring care due to cost than urban adults. Additionally, rural residents tend to travel further to receive care.

**Access to Care and Insurance:** In recent decades, increasing numbers of Americans face the realities of living without health care insurance coverage\* in a society where medical care is increasingly more expensive.<sup>39</sup> In 2009, 40 million persons aged 18–64 had no health insurance.<sup>40</sup> In general, adults who lack health care coverage are both less likely to access health care services and more likely to delay getting care when needed; and contrary to popular belief, the uninsured do not use emergency room services any more than the insured.<sup>41,42</sup> While lack of health care coverage would be a major concern for nearly all adults, lack of coverage poses more immediate and substantial risks to the health of people with diabetes — individuals for whom accessing routinely scheduled, appropriate health care services is a critical key to controlling the onset of life-threatening complications.

Michigan had an estimated 1.15 million uninsured residents in 2008, and the likelihood of being uninsured appears to be higher in the more northern

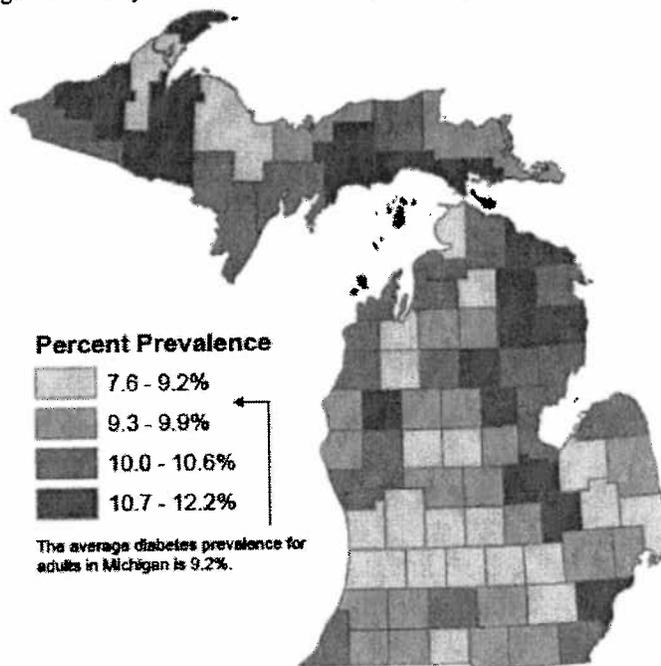
\* Health care insurance coverage is defined as including health insurance; prepaid plans, such as HMOs; or governmental plans, such as Medicare.

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*Lack of coverage poses more immediate and substantial risks to the health of people with diabetes — individuals for whom accessing routinely scheduled, appropriate health care services is a critical key to controlling the onset of life-threatening complications.*

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Figure 2. County-Level Estimates of Diagnosed Diabetes Among Michigan Adults, 2008.



counties (Figure 3).<sup>44</sup> Michigan was ranked 14th lowest in non-elderly uninsured rates (those 65 and older are typically insured by Medicare and other options).<sup>44</sup> Michigan's poor and working poor are disproportionately uninsured. Black and Hispanic residents in Michigan are almost twice as likely to be uninsured. Fortunately, non-elderly adults with diabetes in Michigan are more likely to have insurance than the general population (Figure 4).<sup>13</sup> However, over the past decade, the rate of uninsured among people with diabetes has increased faster than the general population.

Figure 3. County-Level Estimates of the Uninsured Among Michigan Adults Aged 18-64, 2007.

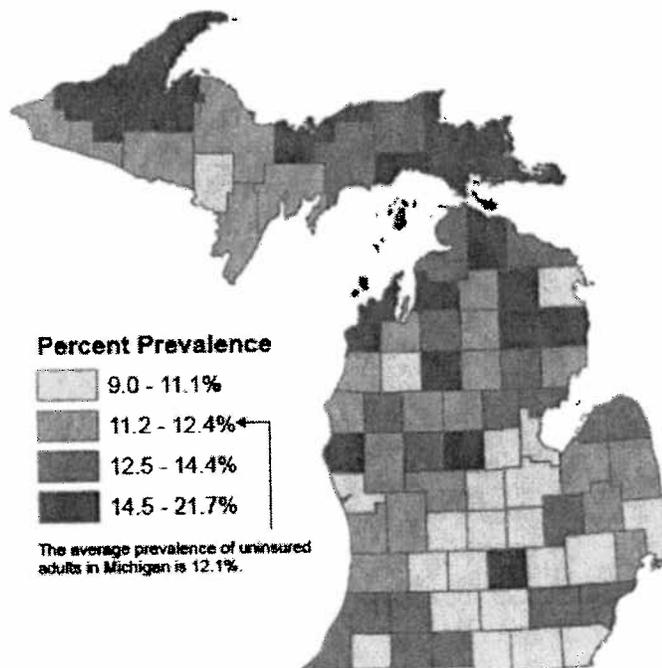
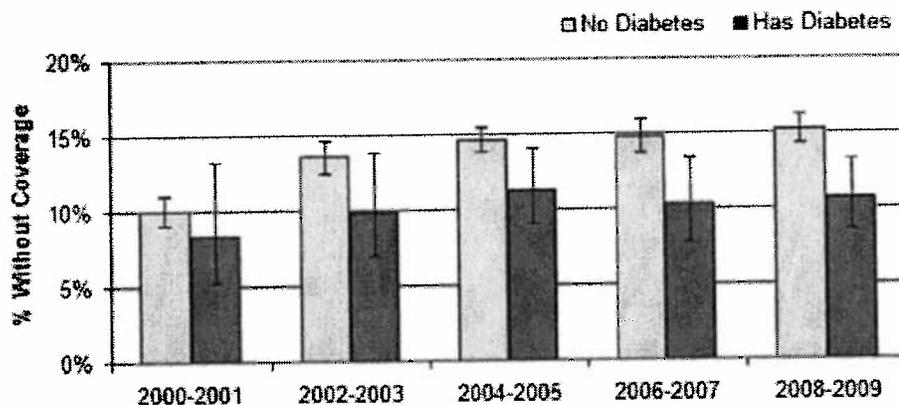


Figure 4. Adults Aged 18-64 Living without Health Care Coverage by Diabetes Status, Michigan 2002-2009.



Growing numbers of Michigan residents are *underinsured*, meaning their health care insurance coverage is not sufficient to meet their needs or they cannot afford the cost-sharing associated with covered benefits. Nationally, 38 percent of insured people report experiencing problems accessing medical services.<sup>45</sup> Underinsured adults are nearly as likely as uninsured adults to go without needed medical care and to incur medical debt.<sup>46</sup> Lower-income and sicker adults are most at risk of having inadequate health care insurance coverage.

**Health Care Reform:**<sup>47</sup> The Patient Protection and Affordable Care Act, the federal health care reform legislation, became law in March 2010. According to the American Diabetes Association, many important provisions of the law will impact people with diabetes, including rules about exclusions for pre-existing conditions, lifetime limits on benefits, and out-of-pocket expenses (i.e. medications and testing supplies). The law prohibits insurers from excluding children under age 19 with diabetes from being covered under their parents' insurance plans simply because of their diabetes. Also, young adults with diabetes will be able to stay on their parents' insurance plans until age 26.

When the law fully takes effect in 2014, insurance companies will no longer be allowed to deny coverage due to a pre-existing condition such as diabetes. Nor will insurance companies be able to charge higher premium rates because a person has diabetes.

The new law also addresses the prevention of diabetes. The National Diabetes Prevention Program will be established to expand the reach of community-based programs with a proven track record of preventing type 2 diabetes. Additionally, restaurants with over 20 locations will be required to display nutritional information on their menus.

# The Impact of Diabetes<sup>3</sup>

*Diabetes is recognized as one of the leading causes of death in the United States (7th), as well as within Michigan (6th).*

*About two-thirds of deaths among those with diabetes are attributed to heart disease or stroke.*

*Diabetes often causes vision-related complications, heart and blood vessel disease, stroke, high blood pressure, kidney disease, nerve damage, amputations, dental disease, and other complications.*

Diabetes is recognized as one of the leading causes of death in the United States (7th), as well as within Michigan (6th). However, this is likely an underestimate of the impact since diabetes is not listed on death certificates over 90 percent of the time for adults with known diabetes.<sup>48</sup>

Overall, persons with diabetes are twice as likely to die as their peers of similar age who do not have the disease. On average, a person with diabetes in Michigan will die 12 years sooner (Table 3).<sup>49</sup> The mortality disparity in Michigan is even greater in African Americans with diabetes, who may die 13–15 years sooner. About two-thirds of deaths among those with diabetes are attributed to heart disease or stroke.

Diabetes is the leading cause of kidney failure, blindness and lower-limb amputation. Diabetes is also a major cause of heart disease and stroke. Nationally, 6 in 10 people with diabetes have one or more diabetes-related medical complications.<sup>50</sup>

## Medical Complications

Diabetes is associated with long-term complications, which affect almost every part of the body. Diabetes often causes vision-related complications, heart and blood vessel disease, stroke, high blood pressure, kidney disease, nerve damage, amputations, dental disease, and other complications. Uncontrolled diabetes can complicate pregnancy, and birth defects are more common in babies born to women with poorly controlled diabetes, especially in the first trimester.

### Cardiovascular Complications<sup>51,52</sup>

- Approximately 35 percent of U.S. adults with diabetes aged 35 or older reported having a cardiovascular disease condition.
- In Michigan, 28 percent of people with diabetes aged 18 and older reported having cardiovascular disease.

### High Blood Pressure<sup>3,52</sup>

- Sixty-seven percent of U.S. adults with diabetes had blood pressure greater than or equal to 140/90mmHg, or used medications for hypertension.
- In Michigan, 68 percent of people with diabetes aged 18 and older reported having been told they have high blood pressure.

### Vision-Related Complications<sup>3,52</sup>

- 4.2 million U.S. adults with diabetes (29 percent) had diabetic retinopathy; including 655,000 cases that could lead to vision loss.
- In Michigan, 21 percent of people with diabetes aged 18 and older reported having been diagnosed with retinopathy.

### Kidney Disease<sup>53,54,55</sup>

- More than 35 percent of U.S. adults with diabetes aged 20 years or older have chronic kidney disease – a condition in which the kidneys are damaged and cannot filter waste from blood well, and can lead to kidney failure over time if not treated.

Table 3. Average Years of Potential Life Lost Due to Diabetes – Michigan, 2008.

Demographic Characteristics		Average Years of Potential Life Lost (YPLL)*
<b>Overall</b>		12.3
White, non-Hispanic	Male	12.1
	Female	11.4
Black, non-Hispanic	Male	15.0
	Female	13.2
Other, non-Hispanic	Male	10.0
	Female	12.7
Hispanic	Male	13.3
	Female	11.1

\* A higher average YPLL indicates that individuals are dying at younger ages.

- Diabetes is the cause for 44 percent of the 112,097 new U.S. cases of kidney failure.
- In Michigan, diabetes is the cause for 41 percent of the 3,901 new cases of kidney failure.

### Nervous System Disease<sup>3</sup>

- Approximately 60 to 70 percent of people with diabetes have mild to severe forms of nervous system damage that could result in impaired sensation or pain in the feet or hands, slowed digestion of food in the stomach, carpal tunnel syndrome, erectile dysfunction and/or other nerve problems.
- Severe forms of diabetic nerve disease are a major contributing cause of lower-extremity amputations.

### Amputations<sup>3,49</sup>

- Nationally, more than 60 percent of non-traumatic lower-limb amputations occur in individuals with diabetes.
- In Michigan, more than 70 percent (2,730 individuals) of non-traumatic lower-limb amputations were diabetes related.

### Oral Health<sup>3</sup>

- Among young U.S. adults, those with diabetes have about twice the risk of periodontal (gum) disease as those without diabetes.
- U.S. adults aged 45 or older with poorly controlled diabetes (A1C > 9%) were nearly three times more likely to have severe periodontitis than those without diabetes.

### Complications of Pregnancy<sup>3</sup>

- Poorly controlled diabetes before conception and during the first trimester of pregnancy can cause major birth defects in 5 percent to 10 percent of pregnancies and spontaneous abortions in 15 percent to 20 percent of pregnancies.
- Poorly controlled diabetes during the second and third trimesters of pregnancy can lead to excessively large babies, posing a risk to both mother and child.

### Sexual Dysfunction<sup>56</sup>

- Estimates of prevalence of erectile dysfunction in U.S. men with diabetes vary widely, ranging from 20 to 75 percent. Men who have diabetes are two to three times more likely to have erectile dysfunction than men who do not have diabetes.

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*Roughly one in every ten health care dollars in the United States is spent on diabetes.*

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*Investments in community-based disease prevention programs aimed to increase physical activity, improve nutrition and prevent tobacco use could yield significant savings.*

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- In U.S. women, 18 to 27 percent with type 1 diabetes and 42 percent with type 2 diabetes experience sexual dysfunction.

### **Mobility<sup>3</sup>**

- U.S. adults aged 60 or older are 2–3 times more likely to report an inability to walk one-quarter of a mile, climb stairs, or do housework compared with people without diabetes in the same age group.

### **Other Complications<sup>3</sup>**

- Uncontrolled diabetes often leads to biochemical imbalances that can cause acute life-threatening events, such as diabetic ketoacidosis and hyperosmolar (nonketotic) coma.
  - In Michigan, 6,542 diabetes-related admissions were the result of uncontrolled diabetes.<sup>49</sup>
- People with diabetes are more susceptible to many other serious illnesses. Once they acquire these illnesses, they often have worse prognoses than their peers without diabetes.

**Emotional Health:** Diabetes can also affect the overall emotional well being of an individual. To be successful at managing diabetes, individuals with diabetes must develop the necessary skills for managing stress, coping, and problem solving as they work to modify their lifestyle, monitor their blood glucose levels, and adapt their treatment regimen.

### **Depression<sup>3,57</sup>**

- U.S. adults with diabetes are twice as likely to have depression.
- Depression is associated with a 60 percent increased risk of developing type 2 diabetes.
- Among people with diabetes, depression is a stronger predictor of hospitalization and death than are physical and metabolic factors (e.g. medical complications, body mass index, or A1C level).

While poorly controlled diabetes can cause symptoms that look like depression, diabetes and depression do have a bidirectional relationship. People who have symptoms of depression are more apt to be overweight, eat more, exercise less, and smoke — all factors that can increase risk for type 2 diabetes. Conversely, depression in individuals with diabetes is associated with increases in diabetes symptoms and greater impairment of functioning, as well as poor adherence to medication regimens and diet, exercise, and smoking treatment plans. Research suggests there may be biochemical reasons for the bidirectional relationship as antidepressant medication appears to increase incidence of diabetes and insulin use appears to increase risk of depression when the other factors mentioned above are controlled for.<sup>58</sup>

## **Economic Costs**

Roughly one in every ten health care dollars in the United States is spent on diabetes. The burden of diabetes falls most heavily on people with diabetes and their families, who have higher out-of-pocket medical expenses and reduced earnings from indirect issues, such as lost work days. On average, a person with diagnosed diabetes has medical expenditures

approximately 2.3 times more than their non-diabetic peers. For most Americans, the diabetes burden represents a hidden “tax” in the form of higher health insurance premiums, and the reduced overall quality of life for their families and friends with diabetes.<sup>59</sup>

Comprehensive estimates of the societal cost of diabetes suggest the U.S. national economic burden of prediabetes and diabetes reached \$218 billion in 2007. This figure includes the higher medical costs and reduced productivity related to diagnosed diabetes (\$174 billion), as well as the higher medical costs related to undiagnosed diabetes (\$18 billion), prediabetes (\$25 billion) and gestational diabetes (\$636 million).<sup>60</sup> For each American, regardless of diabetes status, this represents a cost burden of \$700 annually in the “hidden tax.” Using this information, it is estimated prediabetes and diabetes cost Michigan residents \$9 billion in 2009 (Table 4).

However, this is just a snapshot of the economic burden in 2007. Cost continues to rise as diabetes prevalence continues to rise. If diabetes prevalence continues to grow at the same pace, the overall economic burden of diagnosed diabetes alone will double in size to \$336 billion by 2034. Half of this spending (\$171 billion) will come from Medicare.<sup>61</sup>

Investments in community-based disease prevention programs aimed to increase physical activity, improve nutrition and prevent tobacco use could yield significant savings. The nation could, in theory, save up to \$250 billion in health care costs (about 7.5 percent of estimated spending on diabetes and prediabetes services) over the next 10 years if an intensive intervention strategy was implemented for all at-risk individuals.<sup>62</sup> It is estimated Michigan could save \$545 million across all chronic diseases by investing just \$10 per person per year.<sup>63</sup>

Table 4. Estimated Costs of Diabetes in Michigan, 2009.

Type of Diabetes	Cost per Person	Cost to Michigan	Cost to Nation	Projected Cost to Nation (2014)
Diagnosed Diabetes	\$9,963	\$7 billion	\$174 billion	\$311 billion
Undiagnosed Diabetes	\$2,864	\$1 billion	\$18 billion	\$21 billion
Prediabetes	\$443	\$976 million	\$25 billion	\$49 billion
Gestational Diabetes	\$3,305	\$32 million	\$636 million	n/a

*Data indicate as much as one-third of all people with diabetes may be undiagnosed.*

Although diabetes can begin with few or no warning signs, as the disease progresses individuals may begin to experience one or more symptoms, including frequent urination, excessive thirst, unexplained weight loss, extreme hunger, sudden vision changes, tingling or numbness in hands or feet, feeling very tired much of the time, very dry skin, sores that are slow to heal and more infections than usual. In addition, individuals who undergo an abrupt onset of insulin-dependent diabetes (type 1 diabetes) also may feel nauseous, vomit, or have stomach pains.

Appropriate diabetes care and treatment depend upon timely and accurate diagnosis. However, diabetes frequently is not diagnosed until complications appear which, for the average person with diabetes, can be as much as 12 years after the disease begins. Data indicate as much as one-third of all people with diabetes may be undiagnosed.<sup>64</sup>

## Testing and Diagnosis<sup>65,66</sup>

The 2011 American Diabetes Association Clinical Practice Recommendations state testing should be considered in adults of any age who are overweight or obese and have one or more of the known risk factors for diabetes. Because age is a major risk factor for diabetes, testing of those without other risk factors should begin no later than age 45. If results are normal, testing should be repeated at least every 3 years.

Results that are above the normal levels can diagnose a person with prediabetes, diabetes, or gestational diabetes (Table 5). When test results indicate a person has diabetes, the diagnosis should be confirmed with a second test on a different day — preferably using the same testing method.

Descriptions of the diagnostic tests follow, with advantages and disadvantages of each:

The **Fasting Blood Glucose (FBG)** test measures blood sugar levels after a fasting period of eight hours or more, and is most reliable when done in the morning. This test can be used to diagnose prediabetes or diabetes. However, it will miss some cases that could be found with an Oral Glucose Tolerance Test.

The **Oral Glucose Tolerance Test (OGTT)** also requires a fasting period of eight hours or more. The person then drinks a precise amount of glucose dissolved in water. Blood sugar levels are measured before and two hours after drinking the solution. This test can be used to diagnose prediabetes or diabetes. Research has shown the OGTT is more sensitive than the FBG in detecting prediabetes. However, the drawback is that it is considered less convenient to administer.

The OGTT is also the primary test used to diagnose gestational diabetes. In pregnant women not already diagnosed with diabetes, screening for gestational diabetes should be done at 24–28 weeks of gestation. Blood sugar levels are measured three times over the course of two hours, and the cutoff limits for the test results are different than those for diabetes (Table 5).

If glucose levels are above normal at least twice during the test, the woman is diagnosed with gestational diabetes. Since it is possible for undiagnosed diabetes to be present when testing for gestational diabetes, it is recommended to screen for diabetes at the first prenatal for those with risk factors.

Table 5. Diagnostic Test Criteria for Prediabetes and Diabetes.

Type of Diagnostic Test	Test Result		
	Normal	Prediabetes	Diabetes
Hemoglobin A1C (A1C)	< 5.7%	5.7% - 6.4%	> 6.4%
Fasting Blood Glucose (FBG)	< 100 mg/dL	100 - 125 mg/dL	> 125 mg/dL
Oral Glucose Tolerance Test (OGTT)	< 140 mg/dL	140 - 199 mg/dL	> 199 mg/dL
	Normal	Gestational Diabetes	
OGTT - at fasting	< 92 mg/dL	≥ 92 mg/dL	
OGTT - at 1 hour	< 180 mg/dL	≥ 180 mg/dL	
OGTT - at 2 hours	< 153 mg/dL	≥ 153 mg/dL	

In 2010, the **Hemoglobin A1C test** was approved by an International Expert Committee and the American Diabetes Association to diagnose prediabetes and diabetes. The A1C blood test provides an average blood sugar for the previous two to three months. Unlike the other two testing methods, the A1C does not require a fasting period. Another advantage of A1C is lower variability of test results since A1C levels are less influenced by day to day stress and illness.

Hemoglobin A1C does have some potential weaknesses. The A1C test tends to cost more to administer than an FBG. Blood samples need to be analyzed at a diagnostic lab where instruments have been appropriately calibrated. The A1C test is also more somewhat likely than the FBG test to miss identifying undiagnosed diabetes. Additionally, some racial populations have naturally higher hemoglobin A1C levels when at normal glucose tolerance levels.<sup>67</sup> This could potentially lead to some misdiagnosis of diabetes where none exists.

## Care and Treatment<sup>68</sup>

Diabetes management can be complex for both the provider and the patient. For the provider, it can be difficult to track patients with a disease in order to conduct the recommended clinical care practices. For patients, healthy behaviors are difficult to maintain over long periods, and daily medication requirements and glucose monitoring can be complex and time consuming.

Recently, there has been considerable focus on evidence-based practices – or practices with documented effectiveness. The Task Force on Community Preventive Services has systematically reviewed the evidence related to the benefits and potential harms of diabetes care services. As a result, the Task Force strongly recommends the following effective interventions for people with diabetes:

1. Disease and case management in health care systems
2. Diabetes self-management education in the community

**Disease and Case Management:** Disease management is an organized and proactive approach to healthcare. The focus is on integrating care for the disease and preventing complications and co-morbid conditions across multiple aspects of healthcare delivery. In addition to their primary care physician, the patient may also benefit from the care provided by an endocrinologist (specialized diabetes management and monitoring), a certified diabetes educator (daily diabetes management skills), a podiatrist (foot health), an ophthalmologist or an optometrist (eye health), and a dentist. Coordinating services and sharing outcomes across providers may be improved through the use of case management.

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*In addition to their primary care physician, the patient may also benefit from the care provided by an endocrinologist (specialized diabetes management and monitoring), a certified diabetes educator (daily diabetes management skills), a podiatrist (foot health), an ophthalmologist or an optometrist (eye health), and a dentist.*

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Case management identifies patients at risk for excessive resource usage, suboptimal outcomes, or suboptimal coordination of services. One assigned professional, the case manager, works to improve the coordination and provision of care for a patient. Recent advances in electronic medical records (EMR) have improved comprehensive case management through provider monitoring of patient testing and referrals. In fact, having an EMR system and on-site lab services in the provider office are better predictors of positive outcomes for patients with diabetes than race/ethnicity or insurance status.<sup>69</sup>

Recommended diabetes management and preventive practices have proven effective in reducing risk of complications:

#### **Glucose Control<sup>3</sup>**

- Improved glycemic control benefits people with either type 1 or type 2 diabetes. In general, each percentage point drop in A1C blood test results (e.g. from 8 percent to 7 percent) can reduce the risk of microvascular complications (eye, kidney, and nerve disease) by 40 percent.
- In persons with type 1 diabetes, intensive insulin therapy has long-term beneficial effects on the risk of cardiovascular disease.

#### **Blood Pressure Control<sup>3</sup>**

- Blood pressure control reduces the risk of cardiovascular disease (heart disease or stroke) among persons with diabetes by 33–50 percent and the risk of microvascular complications (eye, kidney, and nerve disease) by 33 percent.
- For every 10 mmHg drop in systolic blood pressure, the risk for diabetes-related complications is reduced by 12 percent.

#### **Control of Blood Lipids<sup>3</sup>**

- Improved control of LDL cholesterol reduces cardiovascular complications by 20–50 percent.

#### **Preventive Care Practices<sup>3,70</sup>**

- Regular eye exams and timely treatment may prevent as much as 90 percent of diabetes-related blindness.
- Detecting and treating diabetic eye disease with laser therapy can reduce the development of severe vision loss by an estimated 50–60 percent.
- Comprehensive foot care programs can reduce amputation rates by 45–85 percent.
- Detecting and treating early diabetic kidney disease by lowering blood pressure can reduce kidney function decline by 30–70 percent.

#### **Smoking Cessation**

- Smoking has been shown to impair insulin sensitivity and glucose tolerance. An estimated 12 percent of all type 2 diabetes in the U.S. may be attributable to smoking.<sup>71</sup>
- The risk for cardiovascular disease among smokers with diabetes is up to 14 times higher than either smoking or diabetes alone.<sup>72</sup>

- Since either smoking or diabetes can narrow the blood vessels, both can further increase risk of complications such as eye disease, kidney disease and amputation.<sup>73</sup>
- Scientifically proven smoking cessation treatments, including counseling and medications, or a combination of both, can double a person's chances of quitting smoking.<sup>74</sup>
- Over 95 percent of Michigan smokers with diabetes have been told by their doctor they should quit; however, only 38 percent were referred to a smoking cessation program.<sup>13</sup>

#### **Immunizations<sup>52,75</sup>**

- People with diabetes are about three times more likely to die with flu or pneumonia.
- In Michigan, 45 percent of adults with diabetes 18–64 had a pneumococcal vaccination and 75 percent of adults 65 and older. One shot is usually enough to protect for a lifetime, but for adults over the age of 64 who received a shot over 5 years ago, revaccination is recommended.
- In Michigan, 54 percent of adults with diabetes 18–64 had a flu shot and 73 percent of adults 65 and older. It is recommended people with diabetes receive a flu vaccine annually.

**Diabetes Self-Management Education:<sup>76</sup>** Diabetes self-management education (DSME) assists people in management techniques to care for their diabetes, and is key to a person's success. At the center of the diabetes management team is the person with diabetes. A person with diabetes, or their caregiver, performs 99 percent of the tasks required for successful diabetes management. Empowering and educating the diabetes patient and caregiver on self-management is essential.<sup>77</sup>

DSME focuses on behavior change, particularly related to self-monitoring, healthy eating and leading an active life. Behavior change and goal setting by people with diabetes are necessary to improving blood glucose levels, quality of life and diabetes outcomes. Due to the importance of beneficial daily behaviors and self-management skills, health care providers should be diligent in assuring their patients with diabetes receive DSME.

Diabetes management guidelines from the American Diabetes Association (ADA) and the Michigan Quality Improvement Consortium (MQIC)\* recommend individualized, comprehensive DSME as a critical component of a successful diabetes care management program.<sup>78</sup> Diabetes education is associated with increased use of primary and preventive care, and decreased use of emergency and hospital care. DSME leads to appropriate care (Figure 5),<sup>13</sup> which leads to a reduction in complications. People who have diabetes education are more than twice as likely to get all recommended medical care (A1C tests, eye exam, and foot exam) in a single year.<sup>79</sup>

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*A person with diabetes, or their caregiver, performs 99 percent of the tasks required for successful diabetes management.*

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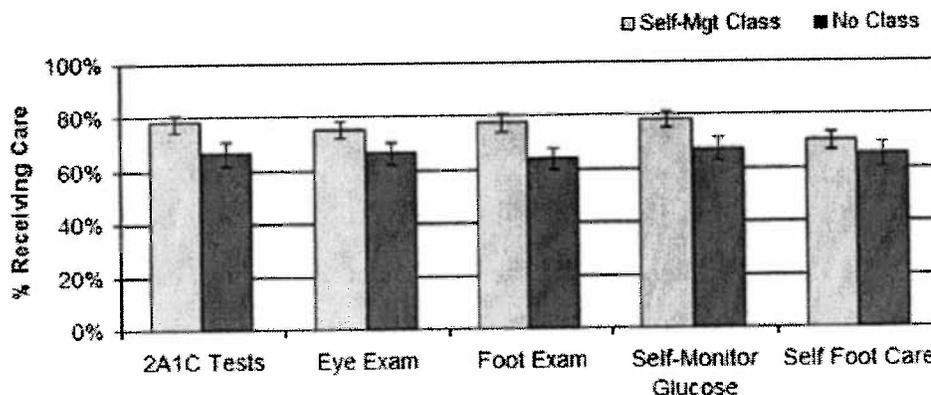
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*People who have diabetes education are more than twice as likely to get all of their recommended medical care (A1C tests, eye exam, and foot exam) in a single year.*

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\* MQIC is a collaborative effort whose participants include physicians and other personnel representing the Michigan HMOs, as well as the Michigan State Medical Society, the Michigan Osteopathic Association, the Michigan Association of Health Plans, the Michigan Peer Review Organization, and Blue Cross Blue Shield of Michigan.

Figure 5. Diabetes Care Rates Comparing People with Diabetes who Receive Diabetes Education to Those Who Have No Diabetes Education – Michigan, 2008-2009.



For successful management, persons with diabetes need adequate education and social support. Diabetes is an ever-changing disease that requires daily attention for a lifetime. People with diabetes require on-going information and support to continue the efforts needed to maintain control of the disease; hence the need for diabetes self-management support (DSMS) as one standard of care for DSME.<sup>80</sup> Evidence-based programs such as the Stanford Chronic Disease Self-Management Program, which is named Personal Action Toward Health (PATH) in Michigan, can guide people to develop a long-term focus on self-management, behavior changes and goal setting. Additionally, support groups may be effective as a source of emotional assistance. Support groups are often a means for people with diabetes to obtain new information, or to reinforce skills already learned, on properly managing the disease. Health care providers should encourage their clients with diabetes to seek out the type of on-going support each person finds most helpful.

## Summary

This report has demonstrated that diabetes is a common, serious and costly chronic disease that is a leading cause of death and disability in the United States. Yet, diabetes is both a **controllable** and **preventable** chronic disease. Although one in twelve U.S. adults has been diagnosed with diabetes, largely because of the rise in obesity, this trend can be reversed through the spread of evidence-based programs to prevent and manage the disease. These evidence-based programs empower individuals to take an active role in their health and include prevention programs that address lifestyle change, disease management through coordinated provider care and diabetes self-management education programs. By working as a team, people with diabetes, their health care providers, and their support system can lessen and perhaps even avoid diabetes complications by making positive lifestyle changes and following preventive care practices in a timely manner.



**THE IMPACT OF  
DIABETES IN MICHIGAN**

**Michigan Diabetes Action Plan 2011-2014**



# Introduction

## Purpose of Action Plan

The purpose of the three-year Diabetes Action Plan is to provide direction to diabetes prevention and control efforts in Michigan and to specifically utilize the Michigan Department of Community Health (MDCH) Diabetes Prevention and Control Program (subsequently referred to as DPCP) staff, resources, and partnerships effectively. It informs the work of agencies, organizations, and programs by providing current diabetes data and identifying best practice strategies towards specific goals. DPCP partners, including Diabetes Partners in Action Coalition, are key to implementation of the plan's goals and activities.

## Guiding Missions

This Action Plan is aligned with the mission of the DPCP: **To establish and implement prevention strategies to reduce the morbidity and mortality due to diabetes and its complications among Michigan residents. We seek to achieve this through capacity-building projects that ensure persons at risk for diabetes and diabetes-related complications are identified, entered into the health care system, and receive ongoing preventive care and education.**

The mission of MDCH and that of the Center's for Disease Control's Division of Diabetes Translation (DDT) also provided background for planning efforts. MDCH's mission is **to protect, preserve, and promote the health and safety of the people of Michigan with particular attention to providing for the needs of vulnerable and underserved populations.**

DDT's mission is **to reduce the preventable burden of diabetes through public health leadership, partnership, research, programs and policies that translate science into practice.** The strategic focus of DDT is to concentrate efforts where the greatest impact for populations with the greatest burden or risk can be achieved. Goals of DDT are:

- Prevent diabetes.
- Prevent complications, disabilities and burden associated with diabetes.
- Eliminate diabetes-related health disparities.
- Maximize organizational capability to achieve DDT goals.

## Need for the Action Plan

The Burden Report established that diabetes is common, serious, costly and controllable. Close to one in 11 Michigan adults have been diagnosed with diabetes and as much as 80 percent of the growth in diabetes can be attributed to obesity, its key risk factor. An aging population and increase in races and ethnicities disproportionately affected by diabetes also are factors contributing to the growing trend in diabetes prevalence.

Three critical factors drive the development of the Action Plan: 1) a growing national and statewide diabetes epidemic, 2) evidence-based programs that can improve health and 3) a challenging funding and economic climate. Therefore, to develop actions and strategies that can serve as a basis for a new three-year Diabetes Action Plan for Michigan, a key focus question for planning sessions was the following:

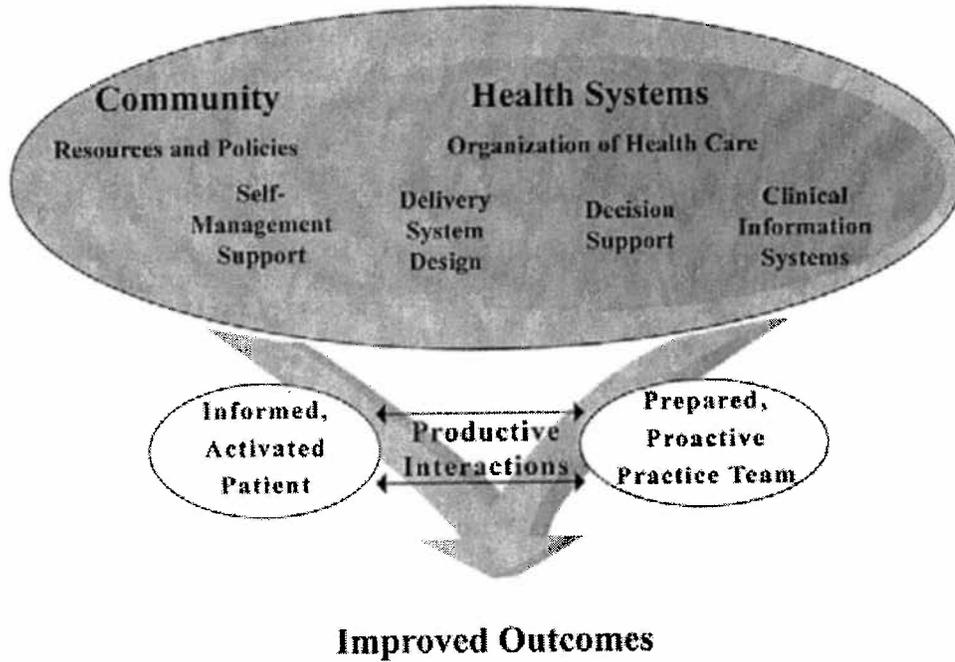
**Given the current resource challenges, over the next three years what do we need to do to remain effective in preventing, managing, and monitoring diabetes and reducing disparities in diabetes incidence?**

In planning, consideration was also given to how public health diabetes efforts have evolved to include and increase focus on primary prevention, prediabetes, social determinants of health (which include economic, community and social factors, such as housing, education, jobs, accessibility to healthy foods, etc.) built environments, and policy and environmental change to support healthy living.

Two models guided the planning process: 1) the Chronic Care Model has an emphasis on patient self-management, a prepared proactive practice team, delivery system design and community resources, and 2) the Social Ecological Model considers the inter-relationship between individual, relationship, community and societal factors affecting health.

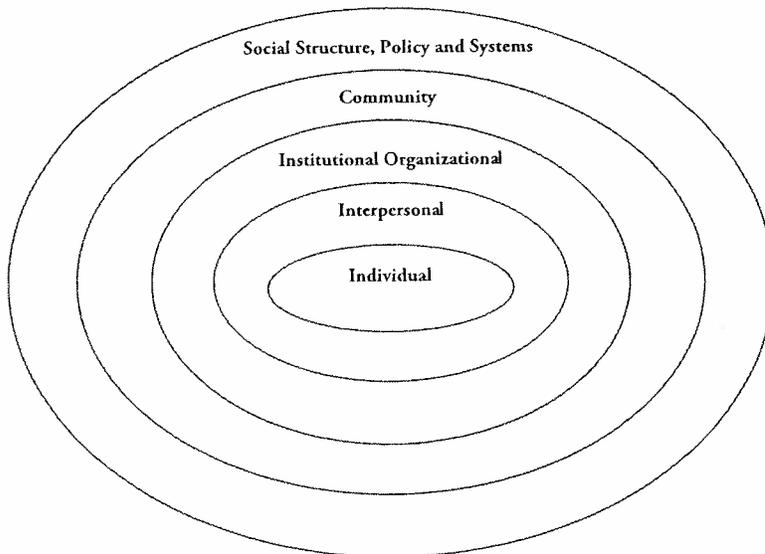
Figure 1

### The Chronic Care Model



Developed by The MacColl Institute  
© ACP-ASIM Journals and Books

Figure 2  
Social Ecological Model



Social Structure, Policy and Systems:  
Local, state, federal policies and laws that regulate or support healthy actions

Community:  
Social networks, norms, and standards (e.g., public agenda, media agenda)

Institutional Organizational:  
Rules, regulations, policies, and informal structures, worksites, schools and religious groups

Interpersonal:  
Interpersonal processes and primary groups (family, peers, social networks, associations) that provide social identity and role definition

Individual:  
Individual characteristics that influence behavior such as knowledge, attitudes, beliefs, and personality traits

Figure 2: A Social-Ecological Model for nutrition evaluation: spheres of influence. From McLeroy KR, Beau D, Sledder A, Glanz K.. An ecological perspective on health promotion programs Health Educ. 1988: 15351-377

## Development of the Plan

The DPCP has been leading strategic planning with multiple public health system partners for over 25 years. Recent history includes: 1) Michigan Diabetes Assessment (2002) involving over 50 statewide leaders and a panel for four experts, 2) Five-year Michigan Diabetes Strategic Plan in 2003 involving over 70 statewide leaders and 3) DPCP Strategic Planning Portfolio (2007) a complement to the Michigan Diabetes Strategic Plan. A two-year Action Plan was created in March 2009, to be followed by a three-year Action Plan in March 2011. In this time of great need and finite resources, it was decided to have two Action Plans as opposed to one longer time frame Strategic Plan because of the rapidly changing environment of public health.

## Planning Meetings

Through three meetings conducted in June, July and November 2010, a representative group of people, including DPCP staff, as well as representatives from its partner agencies around the state, met to develop broad goals and objectives for preventing, managing, and monitoring diabetes in Michigan.

Through the initial planning meetings, DPCP staff, the facilitator and participants agreed that the new Action Plan should: 1) align with DPCP programs, 2) include key stakeholders, 3) focus on limited goals, 4) utilize a streamlined planning process, 5) be both feasible and inspiring and 6) incorporate Diabetes Partners in Action Coalition (DPAC) goals and priorities as well as those of additional broad and diverse partnerships.

A June 2010 planning meeting conducted an open dialogue among participants, discussing questions under three headings:

- The needs of people with diabetes, prediabetes and at risk for diabetes.
- Resources to meet the needs
- Networking, coordination and partnerships

There was a structured exercise to answer the following focus question:

**Given the current resource challenges, over the next three years what do we need to do to remain effective in preventing, managing, and monitoring diabetes and reducing disparities in diabetes incidence?**

Written clusters of answers emerged from this exercise and these clusters were then translated into ten recommendations for action. These recommendations were reviewed and modified at a July 2010 follow-up session. Three of the recommendations were identified as “catalytic,” meaning that if they were successfully pursued, they would automatically advance the other recommendations as well. The three catalytic recommendations are:

- **Strategic Collaboration:** Strengthen the capacity of new partners to work together with DPAC toward common goals
- **Unified Message:** Develop and promote a simple, captivating message specific to diabetes in Michigan that can attract broad interest addressing the issue.
- **Evidence-Based Programs:** Expand and promote successful self-management programs and prevention programs and support innovation to improve these programs’ efficacy with more culturally diverse populations.

## Cross-Cutting Issues

There were several cross-cutting issues in all planning discussions, some of which relate to resource challenges. The recommendation was these issues be incorporated into each goal through addressing a plan objective or activity:

1. The spectrum of people whose needs are addressed in the plan should include people with diabetes, people with prediabetes and people at risk of diabetes.
2. The needs of the elderly and those with health disparities and disabilities must be recognized and addressed.
3. Professional education should assure medical providers attend to the needs of patients with diabetes or at risk of diabetes.
4. Access to care must be addressed, assuring that patients have access to primary care as well as to specific preventative resources and treatment specific to diabetes.
5. Local initiatives should address environmental and policy changes at the local level.
6. The plan must address efficiency through limiting the scope of objectives in the three-year plan so as to maximize available resources.

While the three-year plan is intended to illuminate broad areas of need, attention should also be paid to feasibility and the cost/benefits of various options for coordination, public awareness, and programming. In developing specific goals, objectives, and activities the planning team prioritized those steps that they believe will have the greatest impact using available resources.

## Workgroups

During the November 2010 meeting and while forming the catalytic recommendations, planning participants joined one of three workgroups:

- Strategic Collaboration
- Unified Messaging
- Evidence-Based Programs

The workgroups defined and developed each goal and corresponding activities and expected outcomes. It is important to emphasize that all partners could provide feedback on all three goals. As a unit, DPCP staff continued to refine each goal or the overall plan. Review was accomplished both in workgroups and electronically, using the following definitions:

- Goal = Broad statement of program intent, an inspiring long-term aim.
- Objective = Contributes to the accomplishment of the goal; must be SMART: specific, measurable, attainable, relevant and time-bound.
- Activity = Specific actions taken to reach the objectives
- Outcome = Measurable impacts occurring because goals and objectives were accomplished

We encourage all readers to explore the following action plan and to **contact us to identify ways you can participate in these efforts.** Working together, we can make a difference in the prevention and care of those with diabetes in Michigan.

## Goals, Objectives, and Activities and Outcomes

### GOAL #1

**Strong diabetes partnerships will exist to address the prevention and impact of diabetes in Michigan.**

#### Definitions:

Diabetes Partners in Action Coalition (DPAC) is a volunteer statewide diabetes coalition whose role is to promote and support a broad-based partnership of interested public, private organizations and individuals and provide a forum for collaboration (communication, coordination, and sharing of tools and resources) to prevent diabetes and reduce the burden of diabetes in Michigan.

This goal is important because:

- Effective strategic partners are needed to prevent diabetes and reduce its complications, including traditional and non-traditional partners (neighborhoods, service organizations, businesses etc).
- In times of limited resources, effective partnerships make a bigger impact, provide collective resources, and coordinate efforts around similar goals.
- Collaboration is essential to increase potential funding opportunities across the state.

### OBJECTIVES

Objective 1: Maintain and sustain DPAC from 2011-2014

#### Activities

- By May 2012, identify DPAC strengths and weaknesses through a gap analysis assessment and the Coalition Effectiveness Inventory (Butterfoss).<sup>81</sup>
- By 2013, develop and implement a plan to strengthen and maintain DPAC membership, with a focus on member recruitment, engagement, sustainability, and how the DPAC Leadership engages statewide partners.
- By 2014, measure strength of ties through self-reported member engagement on the annual DPAC Membership Survey.
- By 2014, expand membership to include new and needed partners in targeted underrepresented areas and areas identified from the Gap Analysis assessment.

#### Lead

- DPAC Board and the DPCP

#### Potential Partner:

- DPAC General Membership



Objective 2: By 2014, the DPCP will work with local, regional and state-wide diabetes programs to increase the overall capacity to prevent diabetes, its complications, and to eliminate diabetes related health disparities.

**Activities:**

- o Identify diabetes organizational and community partners.
- o Link local and regional diabetes coalitions and programs to:
  - o the statewide diabetes coalition (DPAC).
  - o other coalitions and organizations with common goals (such as obesity, chronic disease, wellness, etc).
  - o resources within the DPCP.
  - o other potential partners.
- o Develop and support new and existing diabetes initiatives in areas of greatest need.
- o Develop and evaluate strategies to leverage resources, coordinate interventions, and drive policy and environmental change.
- o Disseminate tools and resources and build capacity to implement interventions.
- o Develop and disseminate a partnership evaluation tool to identified diabetes organizations.

**Lead**

- o DPCP

**Potential Partners:**

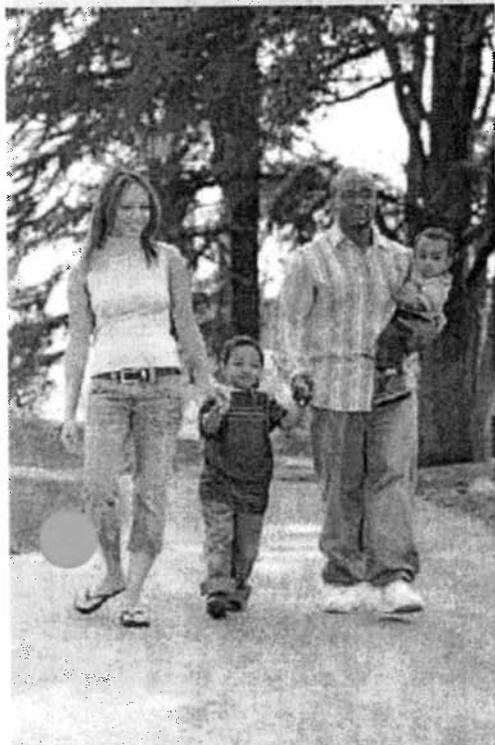
- o Area Agency on Aging
- o Asian Center of Michigan
- o Diabetes and Other Chronic Disease Community Coalitions
- o Diabetes Prevention and Control Program contractors
- o Diabetes Self Management Education (DSME) Programs
- o Inter-Tribal Council of Michigan, individual tribes, and urban Native American programs
- o National Kidney Foundation of Michigan
- o Northern Michigan Diabetes Initiative
- o Upper Peninsula Diabetes Outreach Network (UPDON)
- o Additional chronic disease and wellness state and community coalitions
- o Other diabetes programs in Michigan

**OUTCOMES:**

By achieving this goal, the following changes will be evident:

- Evaluation of current DPAC and other diabetes partnerships.
- DPAC will have a larger, effective coalition and will include a 5% increase in targeted underrepresented areas.
- Established community and regional diabetes coalitions across Michigan will have a link to other local, regional, and statewide resources.
- Increased community capacity to address diabetes prevention and management efforts. This includes established linkages to other programs, additional strategies, resources, and tools.





## GOAL #2

**A captivating diabetes message is utilized across Michigan by all partners for consistency and uniformity.**

This goal is important because:

- Focus collective work being done in the area of diabetes prevention and control in Michigan.
- Have a defined diabetes “product.”
- Currently, there are too many messages. This is confusing and nothing is “catchy.”
- Need to get the public’s attention on importance and severity of diabetes.
- Diabetes prevalence and obesity rates keep rising, despite the information that is available to the public and providers.
- People may not be paying attention or may not relate to the current messages.

### OBJECTIVES

Objective 1: By 2012, develop and implement a standardized, overarching billboard message that is short, consistent with all strategic plan goals, and from which other prevention and management messages may flow.

#### Activities

- Inventory current diabetes messages.
- Create and/or select a core message with variations to address prevention and management.
- Leverage resources through partners for message development and dissemination.
- Utilize focus groups to test message.
- Identify mechanisms to disseminate the message.
- Create buy-in and engagement to disseminate.
- Utilize saturation strategies to execute and disseminate the message through multiple media venues, including self-management education programs.

Objective 2: By 2012, develop, implement, and evaluate a diabetes communications plan that will be used to promote the new message.

#### Activities

- Decide plan components, including objectives, activities, and responsible parties.
- Document number of partners who have incorporated, used, and disseminated the message.
- Track number of times the message is used in media outlets/businesses/organizations.
- Link to toll free phone line or social media opportunities such as websites, You Tube, Twitter and Facebook.

## Lead

- o DPAC Communications Workgroup and the DPCP

## Potential Partners:

- o American Diabetes Association
- o Association of American Diabetes Educators (AADE) Michigan Chapter
- o Diabetes and other chronic disease community coalitions
- o Diabetes Self Management Education Programs
- o DPAC General Membership
- o National Diabetes Education Program (NDEP)
- o National Kidney Foundation of Michigan
- o Additional diabetes programs in Michigan (e.g., Northern Michigan Diabetes Initiative, UPDON, etc.)
- o Other organizations interested in diabetes (e.g. business, media)

## OUTCOMES:

By achieving this goal, the following changes will be evident:

- Increase in number of people with diabetes who complete Diabetes Self Management Education Programs, PATH or Diabetes PATH.
- Michigan public and providers identify our program by this message, as measured by:
  - o Legislators reached (Advocacy Day)
  - o Utilization of [dpacmi.org](http://dpacmi.org)
  - o How many partners used the message in promotional materials, including on their websites
  - o The number of consumers who will identify the message on diabetes PATH evaluation forms





### GOAL #3

**Identify, promote, support and evaluate the implementation of promising practices and evidence-based diabetes programs in Michigan.**

#### Definitions:

**Evidence-Based Practice:** The conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research. (Sackett, 1996)<sup>82</sup>

**Promising Practices:** A promising practice (or model practice) is an innovative, initiative program that can be evaluated...and must demonstrate exemplary and replicable qualities. (National Association of County and City Health Officials, NACCHO)<sup>83</sup>

This goal is important because:

- Evidence-based programs have been empirically shown to work, and have reasonable and inspiring impact.
- Credibility is key and smart.
- People with diabetes need support and tools to better manage their condition and to build a healthy lifestyle.
- These programs have the potential to directly impact the lives of those with diabetes, prediabetes, and those at risk, especially within populations commonly experiencing health disparities.

### OBJECTIVES

**Objective 1:** By March 2012, inventory promising practices and evidence-based programs.

#### Activities

- Implement and analyze survey to partners (organizations, providers, health plans) to document existing diabetes prevention and management programs in use.
- Review national programs identified as promising practice or evidence-based not being used in Michigan, and add to assessment document.
- Define resources needed to implement identified programs.
- Complete report with identified priority programs and recommendations.

#### Leads

- DPAC and DPCP

#### Potential Partners

- Beacon Project
- Diabetes and Other Chronic Disease Community Coalitions
- DPAC—DaRE Workgroup
- Intertribal Council of Michigan
- Michigan Association of Health Plans
- Michigan Diabetes Research and Training Center
- Michigan Office of Services to the Aging
- National Kidney Foundation of Michigan
- UPDON

Objective 2: By 2014, 55% of Michigan adults at risk of developing diabetes take action to lower their risk (lose weight, increase exercise, or improve nutrition).

#### Activities

- o Identify communities with need and capacity to implement diabetes prevention programs, and establish new prevention programming.
- o Recruit broad based partners to commit to implementing diabetes prevention programs.
- o Secure diabetes prevention program training throughout the state
- o Assist organizations in applying for the National Diabetes Prevention Program recognition status.
- o Promote free Medicare screening for prediabetes and diabetes.
- o Document reach and impact of prevention programs in Michigan.
- o Promote creation of a diabetes prevention learning community.

#### Leads

- o DPCP, DPAC, Diabetes and Other Chronic Disease Community Coalitions

#### Potential Partners

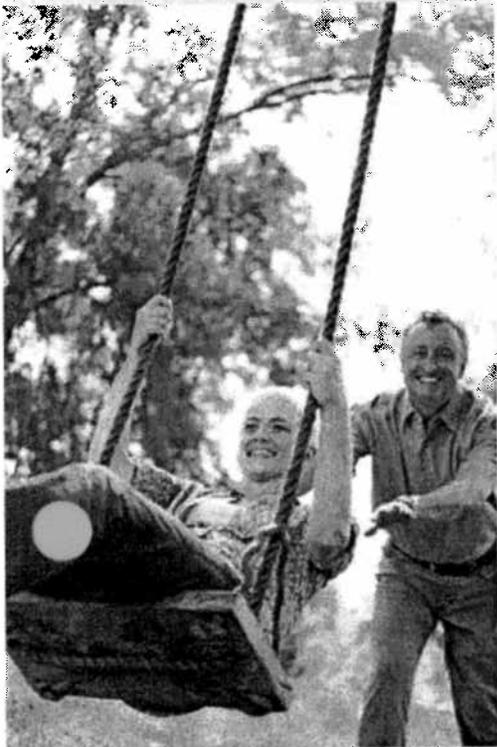
- o Diabetes and Other Chronic Disease Community Coalitions
- o DPAC—Prevention Workgroup
- o DSME Programs
- o Intertribal Council of Michigan
- o Michigan Office of Services to the Aging
- o National Kidney Foundation of Michigan
- o Northern Michigan Diabetes Initiative
- o Partnering YMCA Branches
- o REACH
- o UPDON
- o West Michigan Diabetes and Cardiovascular Health Partnership
- o WMU IDEAS Program

Objective 3: By 2014, 60% of adults with diabetes in Michigan report receiving diabetes self-management education.

#### Activities

- o Promote diabetes self-management education among people with diabetes, especially the newly diagnosed.
- o Expand the types of settings where diabetes self-management education is available (e.g. primary care offices).
- o Identify communities with need and capacity and establish new diabetes self-management education programs.
- o Assure that National Standards for diabetes self-management education are met by certified programs.
- o Assist tribal health centers in applying for recognition status at ADA, AADE or MDCH for Medicare and Medicaid reimbursement.
- o Promote continuing support programs for people who have completed diabetes self-management education.
- o Document reach and impact of diabetes self-management education in Michigan.
- o Assist diabetes educators in maintaining networking and continuing education.





### **Leads**

- DPAC and DPCP

### **Potential Partners**

- Diabetes and Other Chronic Disease Community Coalitions
- DSME Programs
- Intertribal Council
- Michigan Association of Senior Centers
- Michigan Office of Services to the Aging
- Michigan Partners on the PATH
- National Council on Aging
- National Kidney Foundation of Michigan
- Northern Michigan Diabetes Initiative
- UPDON

### **OUTCOMES**

By achieving this goal, the following changes will be evident:

- Michigan adults reporting action in prevention or self-management (as identified in Objectives 2 and 3) will increase 5%.
- Demographics reached by prevention or self-management programs reflect the structure of disparate populations.
- Statewide rates of diabetes incidence/prevalence will decrease.
- Statewide rates of obesity for all people will decrease.
- Rates of people with diabetes receiving all three preventive care practices — foot exam, eye exam and A1C tests — will increase.
- Rates of diabetes complications will decrease.
- Prevention and self-management programs are available in all Michigan communities and to all Michigan citizens.
- Prevention and self-management programs are available in community settings as well as healthcare settings.
- Decreases are seen in healthcare costs related to diabetes.
- Policy and environmental changes help support healthy behaviors.

## Charting the Progress

The Action Plan has broad goals and objectives for preventing, managing and monitoring diabetes in Michigan. Therefore, progress toward meeting the stated goals of this Action Plan will be measured on two levels: 1) outcome evaluation, which will address whether objectives, outcomes and activities of the plan have been achieved, and 2) process evaluation which will describe the DPCP's and partners' perceptions of how the planning process contributed to the outcomes.

The DPCP routinely collects data to monitor performance and guide process refinement for its programs, including such data sources as the Behavioral Risk Factor Survey. The DPCP also uses CDC diabetes indicators to define state burden and identify disparities. All evaluation processes conducted will be integrated with the tracking and management information system required by CDC.

Partners and DPCP staff will inform the evaluation process similarly to how they have contributed to the planning process. Their role will be important in providing success stories, feedback for the process evaluation and assistance in identifying indicators to measure program progress and accomplishments.

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The DPCP would like to acknowledge the following individuals who contributed to the development of the Michigan Diabetes Action Plan FY 2011-2014. Their time and expertise is much appreciated.

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## Call to Action

The present findings demonstrate that the burden of diabetes and its complications on the individual and on the health care system are significant. Much of this cost is preventable through improved diet and exercise, prevention initiatives to reduce the prevalence of diabetes and its co-morbidities, and improved care for people with diabetes to reduce the need for costly complications.

— *American Diabetes Association*<sup>84</sup>

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