Heart Disease and Stroke in Michigan: 2011 Surveillance Update, Part II

May 3, 2011
Outline

• Background of Methods Used
• Comparison of CVD Mortality in Michigan to U.S. and Healthy People Objectives
• County-level Mortality, Years of Potential Life Lost and Risk Factor Maps
• County Health Rankings
Introduction

• This report is the second part of the Heart Disease and Stroke in Michigan: 2010 Surveillance Update

• The focus is on burden at the county-level for each of the five major diseases of the heart and blood vessels

• Special attention is given to the contiguous five-county region in the state with the greatest age-adjusted cardiovascular disease-related burden
Diseases and their corresponding ICD codes discussed in the report
Methods

**Age-adjusted Rates**: Populations often differ in their distribution of age, which may in turn affect the overall rate of events in that population. Therefore, when comparing rates of events in populations of different age distributions, it is important to account for those differences. *2000 US standard population* was used to age-adjust.

**Prevalence**: the proportion of individuals in a population who have the disease at a point in time or during a given time period. It is often used to describe the health burden on a given population. Prevalence is computed by dividing the number of existing cases at a particular point or period in time by the total population from which the cases came. It is often multiplied by 100 and expressed as a percent.

**Years of Potential Life Lost**: an estimate of the average time an individual would have lived if they had not died prematurely.

**Data Mapping**: *ArcGIS Map* was used to create the maps seen in the report.
Comparison
of CVD in Michigan and U.S.
Age-adjusted Mortality Rates for Cardiovascular Disease for Michigan and United States, 2000-2009

Source: MDCH Vital Statistics

Age-adjusted to the 2000 U.S. standard population
Age-adjusted Mortality Rates for Coronary Heart Disease for Michigan and United States compared to Healthy People 2010 and 2020, 2000-2009

Source: MDCH Vital Statistics
Age-adjusted to the 2000 U.S. standard population
Age-adjusted Stroke Mortality Rates for Michigan and United States compared to Healthy People 2010 and 2020, 2000-2009

HP 2020: 33.8 (red line)
HP 2010: 50 (per 100,000)
2007 Michigan: 42.5
2007 United States: 41.6

Source: MDCH Vital Statistics
Age-adjusted to the 2000 U.S. standard population
Geography of CVD Mortality in Michigan
Michigan Heart Disease and Stroke Surveillance Update: Part 2

County Location Map

LHD Location Map

Source: U.S. Census Bureau, 2000 Census
Population Density Map

Source: U.S. Census Bureau, 2000 Census
Public Health CVD Funded Programs:
2010

Programs Include:
- Building Healthy communities
- Healthy School and Childcare Initiatives
- Faith-Based Initiatives
- Stroke Registry and Quality Improvement Programs
- Heart Disease Quality Improvement Projects
- High Blood Pressure Initiatives
Age-adjusted Coronary Heart Disease Mortality Rates by County

*Data displayed in two year increments
2001-2002

Coronary Heart Disease
Rate per 100,000 pop.
- 49 - 128
- 129 - 162
- 163 - 190
- 191 - 311

Cluster - high CVD rates historically

Henry Miller and Adrienne Nickles; March 10, 2011
Source: 2001-2002 Death Files
Vital Records and Health Data Development Section
Michigan Department of Community Health
2003-2004

Map of Michigan showing coronary heart disease rates per 100,000 population. The map indicates clusters of high CVD rates historically.

Coronary Heart Disease
Rate per 100,000 pop.
- 53 - 128
- 129 - 162
- 163 - 190
- 191 - 247

Henry Miller and Adrienne Nickles; April 20, 2011
Source: 2003-2004 Death Files
Vital Records and Health Data Development Section
Michigan Department of Community Health
2005-2006

Coronary Heart Disease
Rate per 100,000 pop.
- 40 - 128
- 129 - 162
- 163 - 190
- 191 - 232

Henry Miller and Adrienne Nickles; March 10, 2011
Source: 2005-2006 Death Files
Vital Records and Health Data Development Section
Michigan Department of Community Health
Maps Displaying Age-adjusted Mortality Rates by County
Cardiovascular Disease
Mortality Rates
2002-2006

State Rate: 307.9 (per 100,000)
National Rate: 296.4* (per 100,000)

* Using 2002-2005 aggregate data

Source: Michigan Resident Inpatients Data Files, Division for Vital Records and Health Statistics, MDCH
Age-adjusted to the 2000 U.S. standard population
Cardiovascular Disease Mortality Rates 2004-2008

State Average: 294.0 (per 100,000)
National Average*: 275.6 (per 100,000)

* Using 2003-2007 aggregate data

Source: Michigan Resident Inpatients Data Files, Division for Vital Records and Health Statistics, MDCH
Age-adjusted to the 2000 U.S. standard population
Heart Disease Mortality Rates 2002-2006

State Average: 238.3 (per 100,000)
National Average: 225.0* (per 100,000)

* Using 2002-2005 aggregate data

Source: Michigan Resident Inpatients Data Files, Division for Vital Records and Health Statistics, MDCH
Age-adjusted to the 2000 U.S. standard population
Heart Disease Mortality Rates 2004-2008

State Average: 229.0 (per 100,000)
National Average*: 209.9 (per 100,000)

* Using 2003-2007 aggregate data

Source: Michigan Resident Inpatients Data Files, Division for Vital Records and Health Statistics, MDCH
Age-adjusted to the 2000 U.S. standard population
Coronary Heart Disease Mortality Rates 2002-2006

State Average: 168.9 (per 100,000)
National Average: 156.8* (per 100,000)

* Using 2002-2005 aggregate data

Source: Michigan Resident Inpatients Data Files, Division for Vital Records and Health Statistics, MDCH
Age-adjusted to the 2000 U.S. standard population
Coronary Heart Disease Mortality Rates 2004-2008

State Average: 158.1 (per 100,000)
National Average*: 143.3 (per 100,000)

* Using 2003-2007 aggregate data

Source: Michigan Resident Inpatients Data Files, Division for Vital Records and Health Statistics, MDCH
Age-adjusted to the 2000 U.S. standard population
Heart Failure Mortality Rates 2002-2006

State Average: 22.7 (per 100,000)
National Average: 19.2* (per 100,000)

* Using 2002-2005 aggregate data

Source: Michigan Resident Inpatients Data Files, Division for Vital Records and Health Statistics, MDCH
Age-adjusted to the 2000 U.S. standard population
Heart Failure Mortality Rates 2004-2008

State Average: 23.2 (per 100,000)
National Average*: 18.7 (per 100,000)

* Using 2003-2007 aggregate data

Source: Michigan Resident Inpatients Data Files, Division for Vital Records and Health Statistics, MDCH
Age-adjusted to the 2000 U.S. standard population
Stroke Mortality Rates 2002-2006

State Average: 49.3 (per 100,000)
National Average: 51.5* (per 100,000)

* Using 2002-2005 aggregate data

Source: Michigan Resident Inpatients Data Files, Division for Vital Records and Health Statistics, MDCH
Age-adjusted to the 2000 U.S. standard population
Stroke Mortality Rates 2004-2008

State Average: 45.6 (per 100,000)
National Average*: 47.0 (per 100,000)

* Using 2003-2007 aggregate data

Source: Michigan Resident Inpatients Data Files, Division for Vital Records and Health Statistics, MDCH
Age-adjusted to the 2000 U.S. standard population
Years of Potential Life Lost (YPLL)

- a measure of mortality that gives more weight to deaths among younger individuals
- an estimate of the average years a person would have lived if they had not died prematurely, using an assumed life expectancy as a reference in the calculation
Years of Potential Life Lost (YPLL): Heart Disease (65 and 75 years of age)
Years of Potential Life Lost (YPLL): **Stroke**
(65 and 75 years of age)
Risk Factors of CVD in Michigan
Cardiovascular Disease Risk Factors

- Smoking
- High Blood Pressure
- High Blood Cholesterol
- Diabetes
- Physical Inactivity
- Dietary Behavior
- Overweight and Obesity
- Risk Factor Clustering
# Prevalence of CVD Risk Factors, Michigan Adults 1990-2009
Compared to 2009 National Prevalence

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Smoking</td>
<td>29.2</td>
<td>26.1</td>
<td>21.9</td>
<td>19.8</td>
<td>17.9</td>
<td>18</td>
</tr>
<tr>
<td>Blood Pressure: Ever Told High</td>
<td>23.3</td>
<td>27.1</td>
<td>27.8</td>
<td>30.4</td>
<td>28.6</td>
<td>22</td>
</tr>
<tr>
<td>Cholesterol: Ever Told High</td>
<td>27</td>
<td>33.0</td>
<td>38.9</td>
<td>38.9</td>
<td>37.4</td>
<td>18 tied</td>
</tr>
<tr>
<td>Overweight (BMI&gt;25)</td>
<td>47.4</td>
<td>60.4</td>
<td>63.1</td>
<td>66.6</td>
<td>63.2</td>
<td>17</td>
</tr>
<tr>
<td>Obese (BMI&gt;30)</td>
<td>14.1</td>
<td>24.7</td>
<td>26.5</td>
<td>30.9</td>
<td>27.1</td>
<td>10</td>
</tr>
<tr>
<td>Fruits &amp; Vegetables: &lt;5 servings/day</td>
<td>NA</td>
<td>NA</td>
<td>77.2</td>
<td>77.8</td>
<td>76.5</td>
<td>20</td>
</tr>
<tr>
<td>No Leisure Time Physical Activity</td>
<td>NA</td>
<td>23.5</td>
<td>22.6</td>
<td>24.1</td>
<td>23.9</td>
<td>28</td>
</tr>
<tr>
<td>Diabetes</td>
<td>4.9</td>
<td>7.2</td>
<td>8.1</td>
<td>9.4</td>
<td>8.24</td>
<td>15</td>
</tr>
</tbody>
</table>

Local Health Department data can be found at [www.michigan.gov/brfs](http://www.michigan.gov/brfs)

Source: CDC BRFSS
Only 5% of Michigan adults engage in these four key healthy lifestyles*

- Regular leisure-time physical activity
- No Smoking
- Healthy weight
- 5 or more fruits & veggies each day

* BRFS, MI, 2009  Actual 4.6%
Current Smoking by Local Health Department (LHD)*

* BRFS 2007-2009

Percent who smoke
- 10.4 - 16.6
- 16.7 - 21.6
- 21.7 - 26.7
- 26.8 - 31.9
High Blood Pressure by LHD*

* BRFS
2007-2009
High Blood Cholesterol by LHD*

* BRFS
2007-2009
Obesity by LHD*

* BRFS 2007-2009

BMI ≥ 30 classified as Obese
No Leisure Time Physical Activity by LHD*

* BRFS 2007-2009
Fruit & Vegetable Intake by LHD*

* BRFS
2007-2009
No Healthcare Coverage by LHD*

* BRFS
2007-2009
No Healthcare Access Due to Cost*

* BRFS 2007-2009

The proportion who reported that in the past 12 months there was a time when they needed to see a doctor but could not due to the cost.
County Health Rankings
The County Health Rankings

The County Health Rankings are being developed by the University of Wisconsin Population Health Institute through a grant from the Robert Wood Johnson Foundation and will be released in February 2013. This website will serve as a focal point for information about the County Health Rankings, a project developed to:

- Increase awareness of the many factors—clinical care access and quality, health-promoting behaviors, social and economic factors, and the physical environment—that contribute to the health of communities
- Foster engagement among public and private decision makers to improve community health and
- Develop incentives to encourage coordination across sectors for community health improvement.

The project builds on the University of Wisconsin Population Health Institute’s experience in producing the Wisconsin County Health Rankings annually since 2003.

The Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation focuses on the pressing health and health care issues facing our country. As the nation’s largest philanthropy devoted exclusively to improving the health and health care of all Americans, we work with a diverse group of organizations and individuals to identify solutions and achieve comprehensive, meaningful and timely change. For more than 35 years we’ve brought experience, commitment and a rigorous, balanced approach to the problems that affect the health and health care of those we serve. When it comes to helping Americans lead healthier lives and get the care they need, we expect to make a difference in your lifetime. For more information visit RWJF.org.
County Health Rankings: Michigan

Health Outcomes Ranking
(1 being healthiest)

- Rank 1-20
- Rank 21-41
- Rank 42-62
- Rank 63-82
- Not Ranked

Source: [www.countryhealthrankings.org](http://www.countryhealthrankings.org) (2011)
County Health Rankings: Michigan

Risk Factors Ranking
(1 being healthiest)

- Rank 1-20
- Rank 21-41
- Rank 42-62
- Rank 63-82
- Not Ranked

Source: [www.countryhealthrankings.org](http://www.countryhealthrankings.org) (2011)
### Health Rankings: 5 Counties

<table>
<thead>
<tr>
<th></th>
<th>Health Outcomes*</th>
<th>Risk Factors*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arenac</td>
<td>63</td>
<td>65</td>
</tr>
<tr>
<td>Bay</td>
<td>46</td>
<td>49</td>
</tr>
<tr>
<td>Clare</td>
<td>82</td>
<td>76</td>
</tr>
<tr>
<td>Gladwin</td>
<td>76</td>
<td>80</td>
</tr>
<tr>
<td>Ogemaw</td>
<td>66</td>
<td>64</td>
</tr>
</tbody>
</table>

* Out of 82 counties with 82 being highest.  Source: [www.countryhealthrankings.org](http://www.countryhealthrankings.org) (2011)
Summary of Findings:

• The burden of overall CVD and HD mortality is higher in Michigan when compared to the national mortality trend, yet the rates have been consistently decreasing.

• Healthy People 2010 goals for coronary heart disease and stroke mortality rates have been reached and surpassed and are headed towards reaching the new Healthy People 2020 goals.

• Part 1 of this series showed that Blacks continue to have higher rates in Michigan and higher than the national Black rate.

Summary of Findings From 5 County Study:

• County-level mortality maps indicate a persistent CVD, HD, CHD, and HF burden in a contiguous five county area consisting of Arenac, Bay, Clare, Gladwin and Ogemaw.

• County Health Rankings lists those five counties in the higher group with some of the worst in the state for health outcomes and risk factors.
Next Steps

• Surveillance and reporting of the mortality, morbidity and associated risk factors for CVD will continue. Reports and presentations will be available online at www.michigan.gov/cvh.

• Planning continues to explore, report and discuss the 5 County cluster.

• A background summary document, power point and discussion questions have been developed to present to regional local leaders and decision makers.

• MDCH and other leaders and experts have been solicited to guide the five county area study.

• Michigan Public Health Institute Center for Data Management and Translational Research (MPHI-CDMTR) was contracted to assist in the development of a report concerning this study, discussion sessions and evaluation.
Michigan Quality Improvement Consortium (MQIC)
### MQIC 2010 Performance Report*

**Selected CVD Measures**

<table>
<thead>
<tr>
<th>(Community Rates)</th>
<th>LDL-C level &lt;100 mg.dl</th>
<th>Statins for CVD Pts</th>
<th>% Diagnosed HBP</th>
<th>HBP Controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HEDIS 2010</td>
<td>Non-HEDIS 2009</td>
<td>Non-HEDIS 2009</td>
<td>HEDIS 2010</td>
</tr>
<tr>
<td>Commercial</td>
<td>62.35%</td>
<td>77.47%</td>
<td>14.9%</td>
<td>69.7%</td>
</tr>
<tr>
<td>Medicaid</td>
<td>42.36%</td>
<td>71.51%</td>
<td>10.88%</td>
<td>58.7%</td>
</tr>
<tr>
<td>Medicare</td>
<td>65.34%</td>
<td>81.89%</td>
<td>46.4%</td>
<td>69.35%</td>
</tr>
<tr>
<td>Ntl HEDIS</td>
<td>Commercial: 59.2%</td>
<td>NA</td>
<td>NA</td>
<td>Commercial: 64.1%</td>
</tr>
<tr>
<td></td>
<td>Medicaid: 41.2%</td>
<td></td>
<td></td>
<td>Medicaid: 55.3%</td>
</tr>
<tr>
<td></td>
<td>Medicare: 55.7%</td>
<td></td>
<td></td>
<td>Medicare: 59.8%</td>
</tr>
<tr>
<td>MQIC Best Practice</td>
<td>Commercial: 69.74%</td>
<td>Commercial 81.69%</td>
<td>Commercial: 11.38%</td>
<td>Commercial: 73.06%</td>
</tr>
<tr>
<td></td>
<td>Medicaid: 48.46%</td>
<td>Medicaid 88.89%</td>
<td>Medicaid 4.01%</td>
<td>Medicaid: 67.88%</td>
</tr>
<tr>
<td></td>
<td>Medicare: 73.39%</td>
<td>Medicare 84..38%</td>
<td>Medicare: 31.48%</td>
<td>Medicare: 74.09%</td>
</tr>
</tbody>
</table>

---

HEDIS = Healthcare Effectiveness Data Information Set ([www.ncqa.org](http://www.ncqa.org))
Questions?

• Contact:
  – Adrienne Nickles
  nicklesa@michigan.gov

The Michigan Heart Disease and Stroke Surveillance Updates Part I and II can be found here:

http://www.michigan.gov/documents/mdch/CVD_ImpactReport_Updatefor_MCA_Final_10_19_10_336718_7.pdf or you can go to the Section website and look on the “What’s New page.”
Resources

- MDCH, Cardiovascular Health, Nutrition and Physical Activity Section
  www.michigan.gov/cvh

- American Heart Association 2011 Statistical Update
  http://my.americanheart.org/professional/General/Heart-Disease-and-Stroke-2011-Statistical-Update_UCM_424014_Article.jsp

- Michigan Community Health Information from Vital Statistics
  http://www.mdch.state.mi.us/pha/osr/chi/index.asp

- Risk Factor Data by Community
  www.michigan.gov/brfs

- County Health Rankings
  www.Countyhealthrankings.org