Outline

• Cardiovascular Disease Overview
• Cardiovascular Disease Risk Factors
• Comparison of CVD in Michigan and U.S.
• Racial Disparities in Michigan
• Geography in Michigan
Introduction

• One out of every three deaths in Michigan is due to CVD
• $503.2 billion will be spent on CVD in the United States in 2010
• $16.8 billion will be spent on CVD in Michigan in 2010*
• Heart disease is the number 1 cause of death
• Stroke is now the number 4 cause of death in Michigan

*Cost estimated from report using MI % of U.S. pop [3.34%].
Diseases and their corresponding ICD codes discussed in the report
Medical Resources in Michigan
Medical Control Authorities

- 65 Medical Control Authorities in Michigan
- Michigan is 1 of 3 states without a funded Trauma System
Heart Disease and Stroke in Michigan: 2010 Surveillance Update

The Joint Commissions
Primary Stroke Center
Hospitals and Medical Center
2010

34 Hospitals
3 Medical Centers

Source: The Joint Commission, 2010

Michigan Department of Community Health
Jennifer M. Granholm, Governor
Janet Olszewski, Director
Chronic Disease and Injury Control Division GIS Team

Henry Miller, March 15, 2010
Michigan Stroke Network, 2008 Map

Heart Disease and Stroke in Michigan: 2010 Surveillance Update

Michigan Stroke Registry Quality Improvement Program (MiSRQIP) 2010

1. Bay Regional Medical Center
2. Beaumont Hospital-Royal Oak
3. Charlevoix Area Hospital
4. Cheboygan Memorial Hospital
5. Covenant Medical Center Inc.
6. Detroit Receiving Hospital & University Health Center
7. Genesys Regional Medical Center
8. Gerber Memorial Health Services
9. Grand View Health System
10. Henry Ford Health System
11. Hurley Medical Center
12. Huron Medical Center
13. Ingham Regional Medical Center
14. Lapeer Regional Medical Center
15. Marquette General Health System
16. McLaren Regional Medical Center
17. Mercy Health Partners-Hockey Campus
18. Metro Health Hospital
19. Munson Medical Center
20. Northern Michigan Regional Hospital
21. Oakwood Hospital & Medical Center
22. OSF St. Francis Hospital
23. OSF Regional Medical Center
24. Portage Health Systems
25. ProMedica North Region-Bixby Campus
26. ProMedica North Region-Ham clic Campus
27. Sinai-Grace Hospital
28. Sparrow Hospital-Main Campus
29. Spectrum Health United Memorial Kelsey
30. Spectrum Health United Memorial United Hospital
31. St. Joseph Mercy Hospital
32. St. Joseph Mercy Livingston Hospital
33. St. Joseph Mercy Saline Hospital
34. St. Mary's of Michigan
35. University of Michigan Hospitals & Health Centers
36. War Memorial Hospital

Comparison of CVD in Michigan and U.S.
Leading Causes of Death in Michigan and the United States

**Michigan, 2008**
- Heart Disease: 24,369
- Cancer: 20,159
- Chronic Lower Respiratory Disease: 5,161
- Stroke: 4,650
- Unintentional Injuries: 3,679
- Diabetes: 2,749
- Alzheimer's Disease: 2,734
- Pneumonia/Influenza: 1,875

**United States, 2007**
- Heart Disease: 616,067
- Cancer: 562,875
- Stroke: 135,952
- Chronic Lower Respiratory Disease (CLRD): 127,924
- Unintentional Injuries: 123,706
- Alzheimer's Disease: 74,632
- Diabetes: 71,382
- Pneumonia/Influenza: 52,717

Source: MDCH Division of Vital Records and Health Statistics, 2008
National Center of Health Statistics, Centers for Disease Control and Prevention, 2007
Age-Adjusted Mortality Rates for Cardiovascular Disease for Michigan and United States, 2000-2008

Source: MDCH Vital Statistics

Age-adjusted to the 2000 U.S. standard population
Age-Adjusted Mortality Rates for Michigan and United States compared to Healthy People 2010, 2000-2008

Coronary Heart Disease

- HP 2010: 162 (per 100,000)
- 2008 Michigan: 147.2
- 2006 United States: 135

Stroke

- HP 2010: 50 (per 100,000)
- 2008 Michigan: 41.9
- 2007 United States: 41.6

Source: MDCH Vital Statistics

Age-adjusted to the 2000 U.S. standard population
Racial Disparities of CVD in Michigan
Age-Adjusted Mortality Rates by Race and Gender for Cardiovascular Disease for Michigan, 2000-2008

Source: MDCH Vital Statistics

Age-adjusted to the 2000 U.S. standard population
Age-Adjusted Mortality Rates by Race and Gender for Heart Failure for Michigan, 2000-2008

Source: MDCH Vital Statistics

Age-adjusted to the 2000 U.S. standard population
Heart Disease and Stroke in Michigan: 2010 Surveillance Update

Age-Adjusted Hospitalization Rates by Race and Gender for Michigan, 2000-2008

Cardiovascular Disease

- 2008 Black Males: 323.9 (per 10,000)
- 2008 White Females: 134.7

Heart Failure

- 2008 Black Males: 86.9 (per 10,000)
- 2008 White Females: 24.9

Source: Michigan Resident Inpatient Files, Division for Vital Records and Health Statistics, MDCH

Age-adjusted to the 2000 U.S. standard population
Age-Adjusted Hospitalization Rates by Race and Gender for Coronary Heart Disease for Michigan, 2000-2008

Source: Michigan Resident Inpatient Files, Division for Vital Records and Health Statistics, MDCH

Age-adjusted to the 2000 U.S. standard population
Heart Disease and Stroke in Michigan: 2010 Surveillance Update

Geography

Of CVD in Michigan
Population Density Map

Population per Square Mile
- 0 - 49
- 50 - 99
- 100 - 999
- 1,000 - 4,999
- >5,000

Source: U.S. Census Bureau, 2000 Census
Unemployment Rates by County
September 2010

All but 4 counties have unemployment rates over 10%

Unemployment Percent

- 6.0 - 9.9
- 10.0 - 13.0
- 13.1 - 16.0
- 16.1 - 24.0

(not seasonally adjusted)

Source: U.S. Bureau of Labor Statistics

Michigan Department of Community Health

Henry L Miller
September 14, 2010
Cardiovascular Disease Hospitalization Rates 2002-2006

State Average: 203.3 (per 10,000)
Arenac: 292.4
Bay: 266.2
Clare: 261.7
Gladwin: 263.2
Ogemaw: 250.0

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 Hospitalization Rates 2004-2008

State Average: 196.7 (per 10,000)
Arenc: 291.5
Bay: 257.7
Clare: 256.1
Gladwin: 236.1
Ogemaw: 257.3

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 and Stroke in Michigan: 2010 Surveillance Update

Five-year hospitalization total cases
For CVD patients
by county of residence
2004 to 2008

Proportional Display by County
Lowest number - Keweenaw: 155
Median number - Ionia: 4,963
Highest number - Wayne: 237,882
Five year total cases: 1,025,231
Annual mean cases: 205,046

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

State Average: 157.6 (per 10,000)

- Arenac: 246.4
- Bay: 223.4
- Clare: 217.7
- Gladwin: 221.0
- Ogemaw: 210.1

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 Hospitalization Rates 2004-2008

State Average: 150.8 (per 10,000)

Arenac: 244.8
Bay: 214.3
Clare: 212.1
Gladwin: 197.1
Ogemaw: 216.5

Age-Adjusted Hospitalization Rate per 10,000 population
(breaks match 2002-6 map)

- Cluster - high CVD rates historically
- 63 - 125
- 130 - 158
- 159 - 191
- 192 - 245

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 Hospitalization Rates 2002-2006

State Average: 74.5 (per 10,000)

Arenac: 139.3
Bay: 120.5
Clare: 124.9
Gladwin: 121.0
Ogemaw: 117.6

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 Hospitalization Rates 2004-2008

State Average: 66.5 (per 10,000)
Arenac: 130.7
Bay: 109.7
Clare: 114.6
Gladwin: 102
Ogemaw: 112.8

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 Hospitalization Rates 2002-2006

State Average: 38.0 (per 10,000)
Arenac: 53.8
Bay: 46.6
Clare: 45.6
Gladwin: 53.7
Ogemaw: 46.2

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 Hospitalization Rates 2004-2008

State Average: 41 (per 10,000)
Arenac: 55.2*
Bay: 47
Clare: 47.2
Gladwin: 48.3
Ogemaw: 52.3

*Tied for highest hospitalization rate with Wayne County

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

State Average: 27.1 (per 10,000)
Arenac: 26.6
Bay: 25.9
Clare: 26.6
Gladwin: 26.8
Ogemaw: 21.9
Monroe: 33.2
Wayne: 33.6

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

State Average: 23.4 (per 10,000)
Arenac: 28.0
Bay: 25.6
Clare: 25.5
Gladwin: 24.8
Ogemaw: 24.1
Monroe: 31.7
Wayne: 32.4
Luce: 36.4

Source: Michigan Resident Inpatients Data Files, Division for Vital Records and Health Statistics, MDCH
Age-adjusted to the 2000 U.S. standard population
Risk Factors of CVD in Michigan
## Prevalence of CVD Risk Factors, Michigan Adults 1990-2009
Compared to 2009 National Prevalence

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

Source: CDC BRFSS

<table>
<thead>
<tr>
<th>Year</th>
<th>Overweight (%)</th>
<th>Obese (%)</th>
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</thead>
<tbody>
<tr>
<td>Michigan</td>
<td>35.2</td>
<td>30.3</td>
</tr>
<tr>
<td>United States</td>
<td>36.1</td>
<td>27.1</td>
</tr>
</tbody>
</table>

Source: Michigan BRFS and CDC BRFSS
Summary
Summary of Findings

• Stroke is now the fourth leading cause of death in Michigan, surpassed by Chronic Lower Respiratory Disease

• The burden of CVD is higher in Michigan (289.8 deaths per 100,000) than the U.S. (261.2 deaths per 100,000)

• Black males have the highest hospitalization rates for all diseases and the highest mortality rate for all but heart failure

• Although smoking continues to decrease, all other major risk factors continue to increase, especially obesity and diabetes

• Five-county contiguous area continues to be high for hospitalization rates for CVD, heart disease, coronary heart disease and heart failure

• Michigan met the HP 2010 objectives for coronary heart disease and stroke in 2008.
Annual CVD Fact Sheet
at www.michigan.gov/cvh

2010 Michigan CVD Fact Sheet

Cardiovascular Disease (CVD) - Heart Disease, Stroke & Other Categories

♥ CVD is the number one cause of death in Michigan and has been nationally since 1919. (1,2)
♥ In 2008, heart disease and stroke killed 29,019 Michiganders. (1)
♥ Michigan ranks 10th worst of the fifty U.S. states for CVD age-adjusted mortality (291.7 per 100,000), based on 2006 death rates. (2)
♥ One out of every three deaths in Michigan is due to CVD. (1)
♥ The Michigan CVD economic burden (direct & indirect costs) for 2010 is estimated at $16.8 billion. (2)
♥ More than one in three American adults have some form of CVD and growth in the number of people over 65 years of age, increasing obesity and diabetes will increase the prevalence of CVD. (2)
♥ 74.5 million American adults have high blood pressure; 17.6 million have coronary heart disease; 5.8 million have congestive heart failure; about 6.4 million have had a stroke. (2)
♥ The Michigan Behavioral Risk Factor Surveillance System (MI BRFSS) has consistently shown that CVD risk factors are often more common among those with a lower socio-economic status. (3)

Heart Disease

♥ Most CVD deaths are due to heart disease. Heart disease has been the leading cause of death for decades and killed 24,369 Michiganders in 2008. On average, someone dies about every 20 minutes of heart disease in Michigan. (1)
Resources

• American Heart Association 2010 Statistical Update

• 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

• Michigan Community Health 2010 Cardiovascular Disease Fact Sheet