

Preventable Deaths in Montana: Heart Disease and Stroke Deaths by County

Background

Cardiovascular disease (CVD), which includes heart disease and stroke, is a leading cause of death both in Montana and the US. During the last few decades, a strong body of evidence emerged to indicate that CVD is highly preventable. A recent analysis of death records published by the Centers for Disease Control and Prevention (CDC) estimated that over 108,000 deaths due to CVD could be prevented annually in the US in individuals under 80 years old.¹ Closer to home, the report indicated that over 200 deaths could be prevented each year in Montana.

Since the late 1970s, there has been a steady decline in CVD mortality.² Innovations in diagnostic tests as well as the ability to treat both chronic and acute CVD via surgical procedures and drug therapies have played a role in the decline of CVD. Identifying and treating risk factors that contribute to the development of CVD have been major advancements over the past four decades. Modifiable risk factors include blood pressure, blood lipids, smoking, diabetes, obesity and physical activity levels. Considerable effort was spent on strategies to control these risk factors through prescription drugs and lifestyle approaches. Several new classes of blood pressure medications as well as the emergence of statins to treat high cholesterol have had a dramatic impact on CVD. However, medication adherence is still an issue as many who have hypertension are not controlled.

Lifestyle choices impact the majority of CVD risk factors. The percentage of the population classified as overweight and obese increased significantly over the past 30 years. This contributes greatly to the development of diabetes, high blood pressure and high cholesterol, which are strong risk factors for CVD. Public health efforts to expose the negative impact of tobacco products have led to a steady decline in smoking rates, benefiting not only former smokers but those exposed to secondhand smoke. While smoking has decreased considerably, about 1 in 5 adults still smoke and countless numbers are exposed to secondhand smoke. Despite these advances in prevention and treatment, there is still plenty of work to do as CVD accounts for 1 in every 3-4 deaths.

This report assesses Montana death records to describe the rate of death due to CVD at the county level. Comparing these rates across the state allows communities to identify potentially preventable deaths in their area and take steps to reduce the burden of CVD for their population.

Methods

Ten years of Montana death certificate data (from 2003 to 2012) were compiled to obtain sufficient data for county-specific heart disease and stroke death rates. Very rural counties were grouped with neighboring counties to ensure there was sufficient data in each area to produce stable rates (>20 events). County groupings were kept as small as possible. Only deaths of Montana residents under the

age of 80 years were included in this analysis. Deaths before the age of 80 years were considered premature to be consistent with the average life expectancy for the total US population.³ Deaths with an underlying cause of death coded as ICD-10 codes I00 to I09, I11, I13, I20 to I51, and I60 to I69 were considered due to heart disease and stroke.⁴ All rates were age-adjusted to the 2000 US standard population.⁵ A benchmark was set by taking the average of the three lowest rates among counties and county groupings. This benchmark can serve as an attainable goal for other counties in Montana.

Results

On average, 1,007 Montanans under the age of 80 die of heart disease and stroke each year (age-adjusted rate of 84.8 [83.0 – 86.6] per 100,000 people). The three lowest rates of heart disease and stroke deaths in Montana were in Madison, Gallatin, and Carbon counties (Table 1). This set the benchmark for heart disease and stroke death rate at 70.6 deaths per 100,000 people. Fifteen counties or county groupings had rates that were significantly higher than the state rate (shaded in dark gray). Four of these counties (Roosevelt, Glacier, Big Horn, and Silver Bow) had 70% to 140% higher rates than the state overall (shaded in black).

Table 1. Age-adjusted heart disease and stroke death rate per 100,000 people among Montanans aged 0 to 79 years, 2003-2012

County or County Grouping	Rate per 100,000 people	95% Confidence Interval	
Roosevelt	202.6	174.0	235.0
Glacier	145.8	124.5	169.9
Big Horn	145.4	123.3	170.7
Silver Bow	144.9	133.2	157.6
Deer Lodge	115.8	97.4	137.8
Hill	114.7	98.6	133.2
Lincoln	113.1	100.9	127.0
Dawson, Prairie, and Wibaux	112.5	95.8	132.3
Garfield, Rosebud, and Treasure	107.4	88.8	129.4
Blaine and Phillips	107.1	89.2	128.6
Central MT Health District	101.5	90.3	114.2
Granite and Powell	100.6	83.8	120.9
Mineral	100.0	77.3	131.4
Cascade	99.4	92.9	106.3
Flathead	98.6	92.3	105.3
Custer, Powder River, Carter, and Fallon	97.6	84.8	112.3
Meagher, Jefferson, and Broadwater	97.1	84.2	112.1
Richland	96.4	78.8	117.4
Lewis & Clark	94.2	86.6	102.2
Daniels and Sheridan	94.0	74.0	121.2
Yellowstone	93.9	89.0	99.1
Valley and McCone	93.5	77.3	113.7

County or County Grouping	Rate per 100,000 people	95% Confidence Interval	
Sanders	93.1	78.4	111.0
Toole and Liberty	92.6	73.5	116.3
Beaverhead	88.6	71.6	109.5
Lake	88.5	78.7	99.6
Chouteau	86.7	65.6	114.8
Pondera and Teton	83.6	69.7	100.2
Stillwater and Sweet Grass	79.7	66.2	96.3
Ravalli	78.3	70.6	86.8
Park	77.8	65.6	92.4
Missoula	77.7	72.0	83.8
Madison	74.9	59.4	95.2
Gallatin	69.1	62.6	76.2
Carbon	67.6	53.8	85.5

Steps for Prevention

Healthcare initiatives

The Montana Department of Public Health and Human Services works to decrease preventable deaths related to CVD. Partnering with clinics and hospitals, the Montana Cardiovascular Health (CVH) Program has funded numerous statewide blood pressure and cholesterol projects emphasizing the use of clinic-based systems and protocols to better manage chronic diseases and the importance of following up on high blood pressure levels. In addition, clinics have focused on team-based care, promoting self-measured blood pressure monitoring with clinical support, and quality improvement. The CVH Program also has sponsored numerous workshops to ensure accuracy of blood pressure measurement in a primary care setting.

The CVH Program has also worked collaboratively with the Montana Tobacco Use Prevention Program on smoking cessation strategies. The CVH Program coordinates a multi-center cardiac rehabilitation data registry, which tracks smoking rates and referrals to cessation programs of patients attending outpatient cardiac rehab. With the help of the tobacco program-sponsored Quit Line, smoking rates in this cardiac rehab population have decreased to about 2%, which is considerably less than the state rate of 20%.

Community-based projects

The CVH Program partners with the Montana Diabetes Program on projects to control and prevent high blood pressure and diabetes. The Diabetes Prevention Program (DPP) is an evidence-based program with the goal to prevent and reduce the prevalence of type 2 diabetes and cardiovascular disease among high-risk Montanans. The program is a group-based, intensive lifestyle intervention that focuses on healthy behavior change, healthy eating strategies, and ways to become more active. There are currently 18 DPP sites across Montana (<http://www.mtprevention.org/>), and over 5,000 Montanans have completed the program and decreased their risk of developing diabetes and CVD.

In addition, the CVH Program has partnered with community pharmacies to emphasize the importance of medication adherence for patients who use blood pressure lowering medication. In the first two years of the project, 19 community pharmacies have helped ensure their patients are taking their blood pressure medication as prescribed. Project participants receive blood pressure resources and counseling from a pharmacist.

The CVH Program also has worked with Community Health Representatives on two American Indian Reservations to establish protocols on blood pressure- and diabetes-related medication adherence and referrals to healthcare providers. The Community Health Representative Programs are encouraged to initiate blood pressure cuff loaner programs. This project helps Montana's tribal members manage their chronic conditions and enhances the link between the community-based programs and tribal health.

For many years, the Cardiovascular Health Program has sponsored media campaigns in Montana's larger counties, the counties where telestroke systems are installed, and on the American Indian Reservations. The campaign messages raise awareness of stroke and heart attack symptom recognition and the importance of calling 9-1-1 in the event of a stroke or heart attack. Evaluations of the campaigns have shown that they are effective in increasing Montanans' awareness of signs and symptoms and can enhance intent to call 9-1-1.

Montana local public health and healthcare providers can help play a role in preventing CVD by:

- referring patients who have two or more risk factors for developing diabetes or CVD to DPP
- emphasizing medication adherence and lifestyle behavior change for those with hypertension, high cholesterol or diabetes
- referring smokers to the Montana Quit Line (1-800-QUIT-NOW or 1-800-784-8669)
- using their electronic health record to more effectively manage patients with high blood pressure, high cholesterol, and diabetes
- participating in state health department-funded programs to improve hypertension control

Montanans can personally reduce their risk of CVD by:

- not smoking
- maintaining a healthy weight
- staying physically active and following a heart-healthy diet
- working with their physician to manage their hypertension, diabetes or high cholesterol levels
- recognizing the signs of a heart attack or stroke and calling 9-1-1 to seek treatment

For more information, please visit <http://montanacardiovascular.mt.gov>.

Citations

- 1) Paula W. Yoon, ScD, et al., (2014). *Potentially Preventable Deaths from the Five Leading Causes of Death – United States, 2008-2010*. Morbidity and Mortality Weekly Report 63(17);369-374.

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- 4) World Health Organization. *International Statistical Classification of Diseases and Related Health Problems 10th Revision*. Retrieved from
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