



# Stroke in Iowa

## What is stroke?

Stroke is the sixth highest cause of death in Iowa; heart disease, cancer, chronic lower respiratory disease, Alzheimer’s disease, and unintentional injuries have higher rates (2016 Iowa Vital Statistics). A stroke occurs when a blood vessel that carries oxygen and nutrients to the brain is either blocked by a clot or bursts. When that happens, part of the brain cannot receive the oxygenated blood needed, so it starts to die. Types of stroke:

- **Ischemic stroke** occurs as a result of an obstruction within a blood vessel supplying blood to the brain.
- **Hemorrhagic stroke** occurs when a weakened blood vessel ruptures.
- **TIA (Transient Ischemic Attack)** often called a “mini stroke.” These warning strokes should be taken very seriously. TIA is caused by a temporary clot.

[http://www.strokeassociation.org/STROKEORG/AboutStroke/About-Stroke\\_UCM\\_308529\\_SubHomePage.jsp](http://www.strokeassociation.org/STROKEORG/AboutStroke/About-Stroke_UCM_308529_SubHomePage.jsp)

The 2016 Iowa national ranking for stroke mortality is 10<sup>th</sup> out of 51 states and DC (higher rank numbers represent higher deaths).

## Significant Findings from Mortality Data

In the past decade, the Iowa stroke death rate has been reduced by 26%. The goal for the next 10 years is to reduce the stroke death rate by 20%. Future focus should also be controlling risk factors and improving the quality of life for survivors.

## Quick Facts

### Mortality

- Stroke caused 1,379 Iowa deaths in 2016 – that represents 4.7% of all deaths statewide.
- Stroke kills more young men than women: 16% of men (83/520) vs. 7% of women (64/859) who died of stroke were younger than age 65<sup>1</sup>.
- Since 2010, Iowa stroke death rates have been slightly lower than the national average. Since 2012, Iowa has met the national Healthy People 2020 stroke mortality goal.

### Prevalence

- About 60,000 Iowans over 18 years of age reported having a stroke sometime in the past – 3.1% of the adult population<sup>2</sup>.

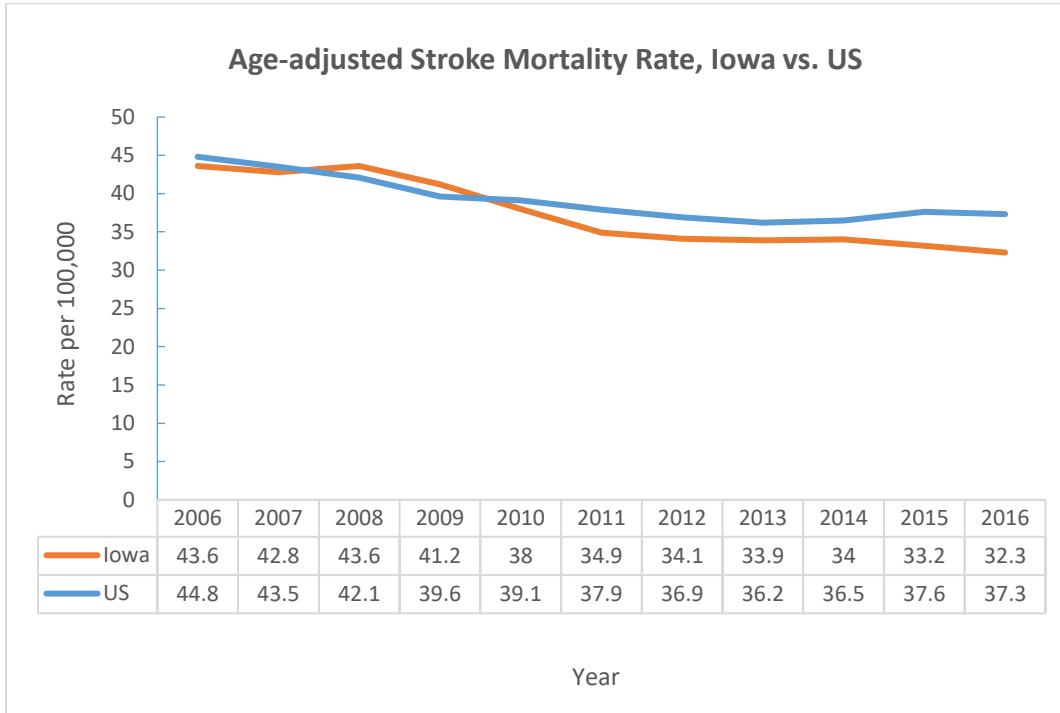
### Trends

- Between 2006 and 2016, the Iowa stroke death rate<sup>3</sup> decreased by 26% -- from 43.6 deaths/100,000 population to 32.3 deaths/100,000 (age adjusted).
- Since 2008, stroke mortality has dropped from the third leading cause of death in Iowa to sixth<sup>1</sup> in 2016.
- Ischemic strokes made up 64% of all Iowa stroke deaths in 2016. Hemorrhagic strokes made up 26%. The mortality rate for ischemic stroke has decreased by 53% from 1999 to 2016. Hemorrhagic stroke mortality has decreased by 17% in the same period<sup>3</sup>.
- Like mortality data, hospitalization rates<sup>4</sup> for stroke have declined over time; however, the average inpatient charges have increased.

### Cost

- Approximately 80% of stroke hospitalizations (principal diagnosis only) in 2016 were covered by government funds (i.e., Medicare and Medicaid)<sup>4</sup>.

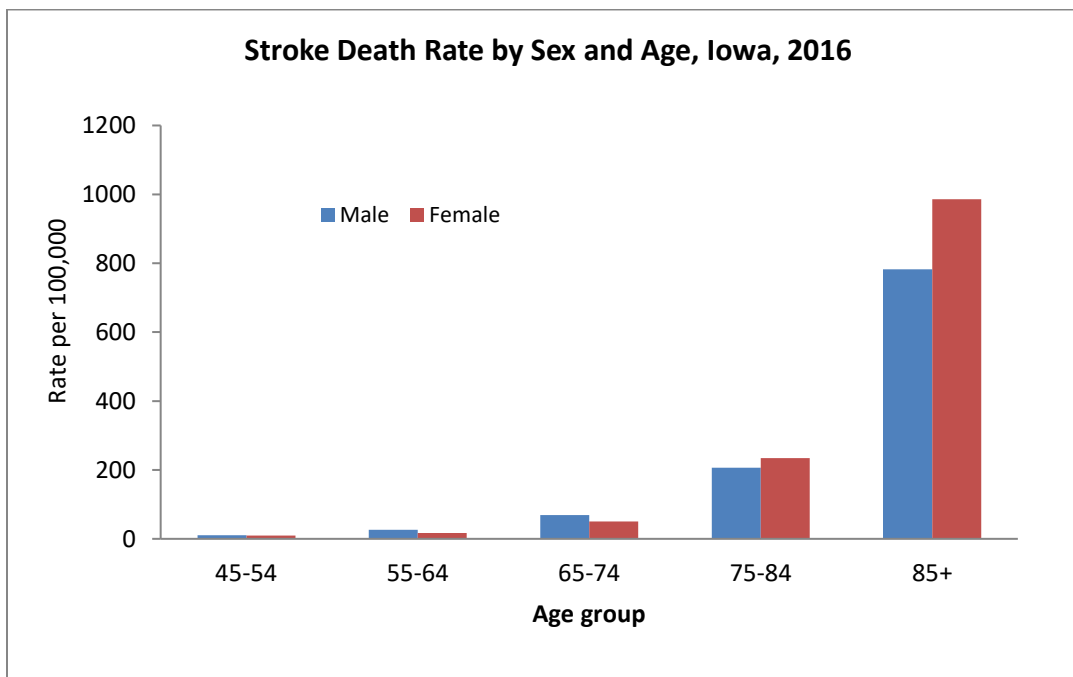
## Iowa Stroke Death Rate is lower than the National Average



The stroke death rate in Iowa decreased by 26% between 2006 and 2016 (from 43.6 to 32.3 deaths/100,000).

The Iowa stroke death rates have been lower than national rates since 2010. Since 2012, the national *Healthy People 2020* goal of 34.8/100,000 has been achieved.

Data source: <http://wonder.cdc.gov/>

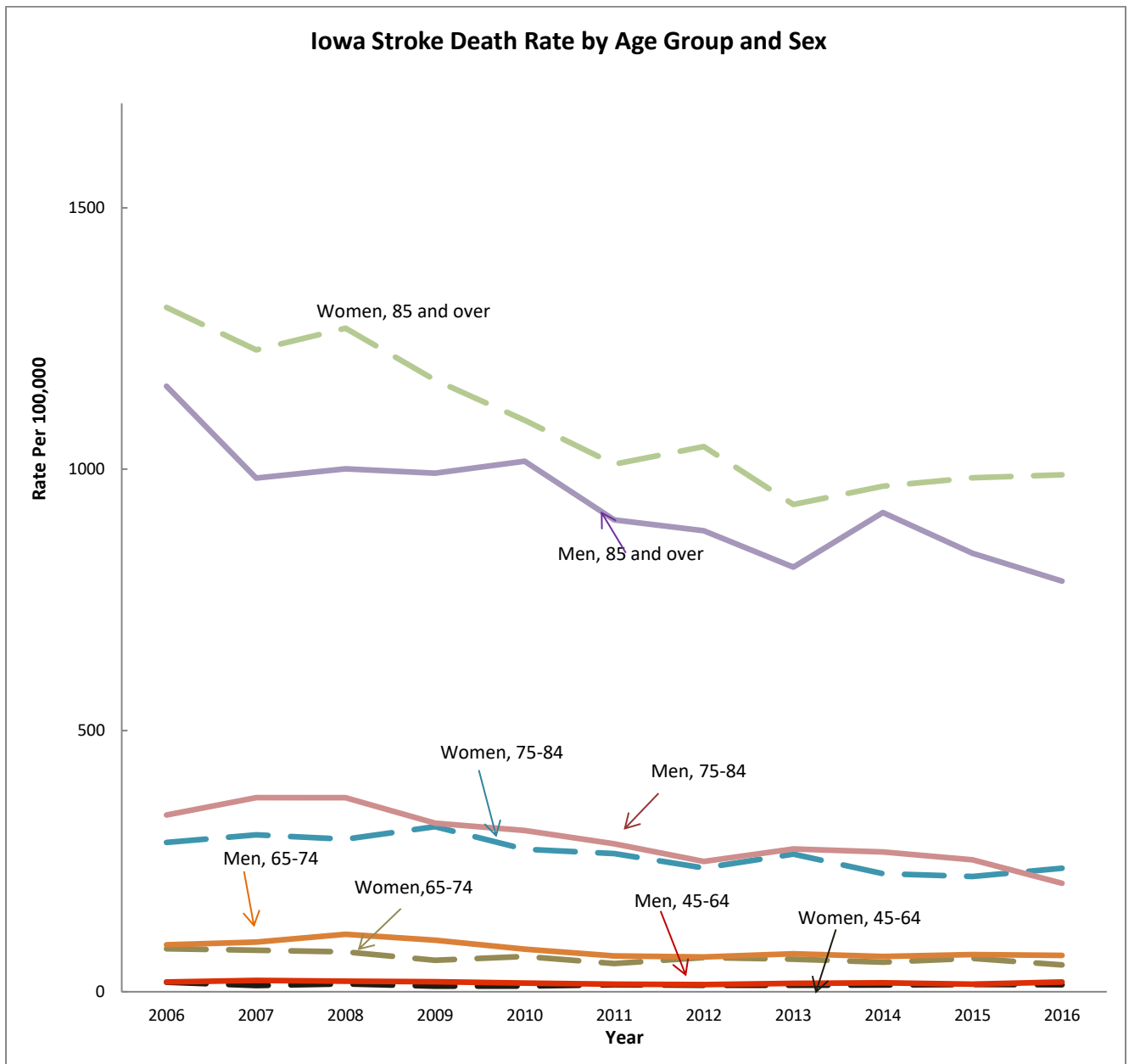


More men than women died of stroke in the age groups younger than 74 years.

Over the age of 75, more women than men died of stroke<sup>1</sup>.

## Stroke Kills More Young Men than Young Women

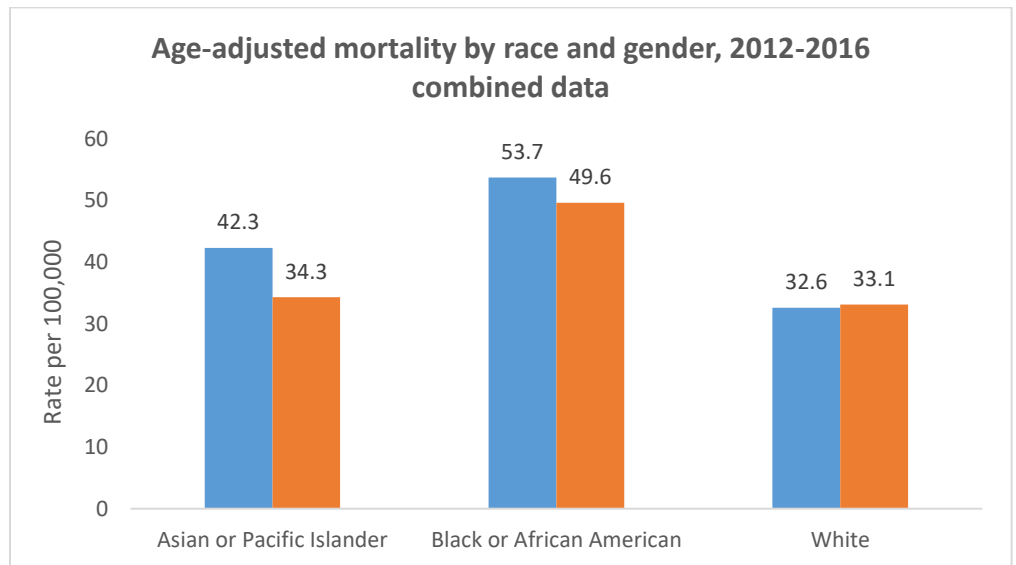
Across all 10 years (except 2016), men in all age groups younger than 85 years had a higher stroke death rate than women. In 2016, the death rate for women in 75-84 years were higher than that of men.



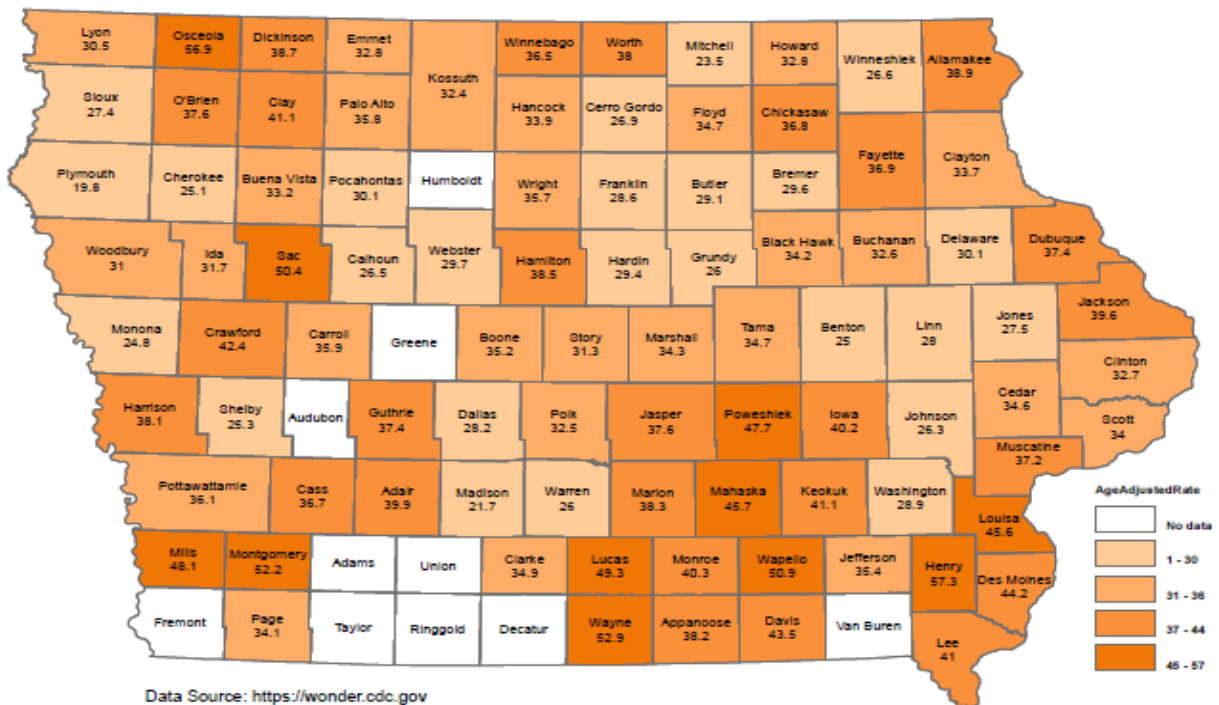
Data source: <http://wonder.cdc.gov>

# Stroke Disparities

Black/African American and Asian/Pacific Islander Iowans had a higher stroke death rate than White Iowans. African American men had the highest stroke death rate (53.7/100,000), followed by African American women (49.6/100,000). <http://wonder.cdc.gov/>



Age-adjusted mortality rate for Stroke by county (2012-2016 combined)

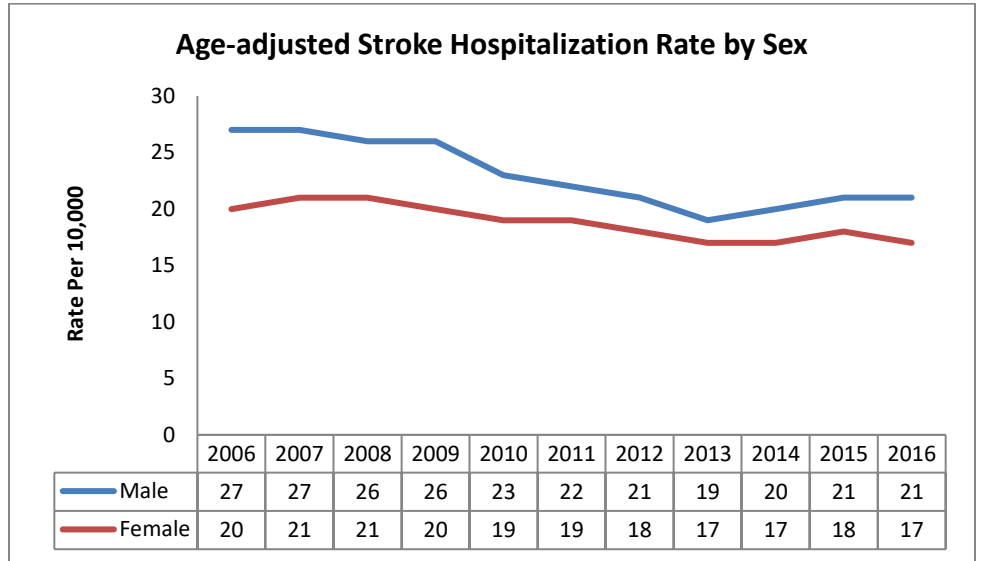


Stroke mortality rates in 45 counties (2012-2016 average) were lower than the national Healthy People 2020 goal (34.8/100,000). More counties in southeast Iowa had higher stroke death rates.

# Stroke Hospitalization and Inpatient Costs

In the past decade, stroke hospitalizations have decreased in Iowa. Men had a higher hospitalization rate than women and this gender gap is decreasing.

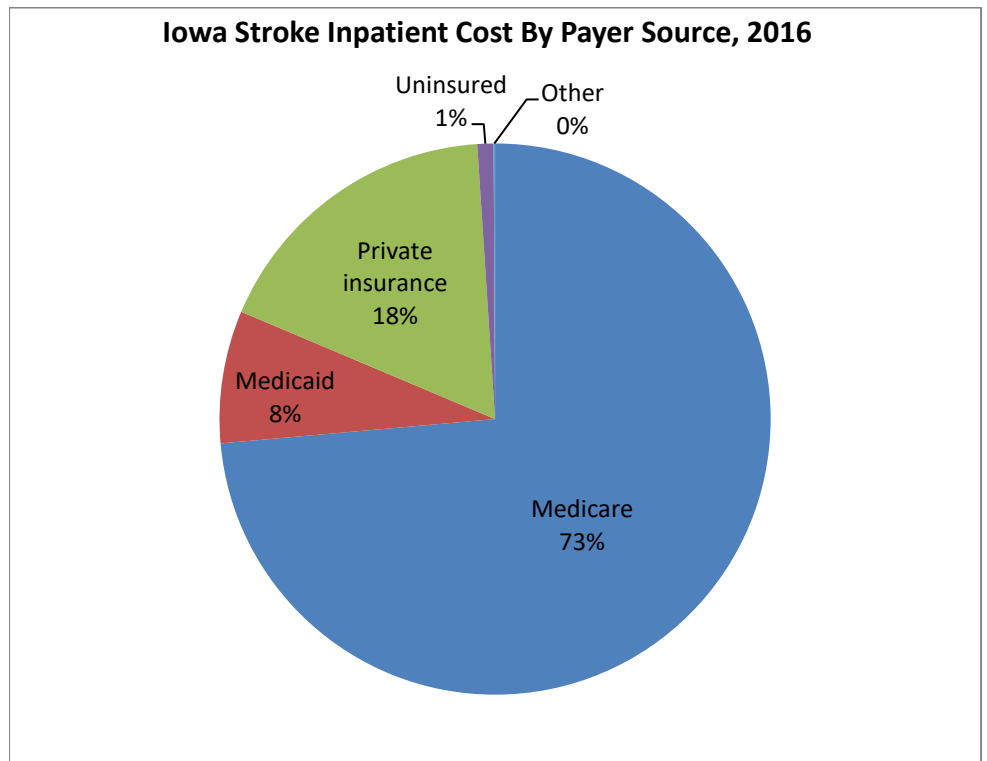
Source: Rates were calculated from Iowa Inpatient Discharge data collected by the Iowa Hospital Association (IHA). ICD10 codes for Stroke: I60-69



While the overall stroke hospitalization rate decreased, average inpatient charges increased; \$35,031 in 2015 to \$39,287 in 2016 – a 12% increase.

In 2016, the total inpatient hospital charges for stroke (principal diagnosis only) were approximately \$281 million, of which public funding, including Medicare and Medicaid, accounted for over 80%.

Source: Iowa Inpatient Discharge data collected by the Iowa Hospital Association (IHA)

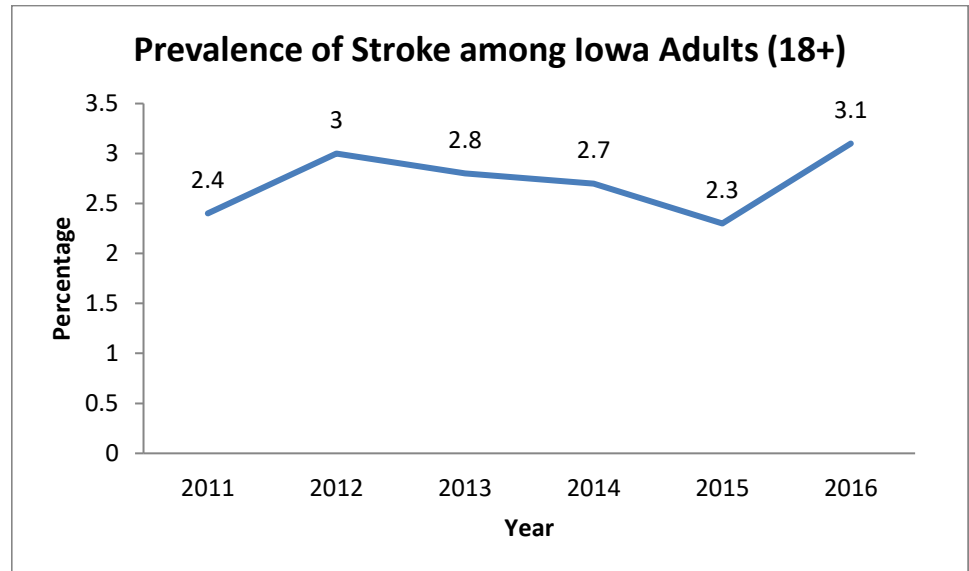


# Stroke Prevalence

Stroke prevalence data is collected through the Behavioral Risk Factor Surveillance System (BRFSS).

In 2016, 3.1% of Iowans reported being told they had a stroke. This represents 60,000 Iowan adults aged 18 years and older.

Due to methodology change in 2011, the prevalence prior to 2011 is not shown.

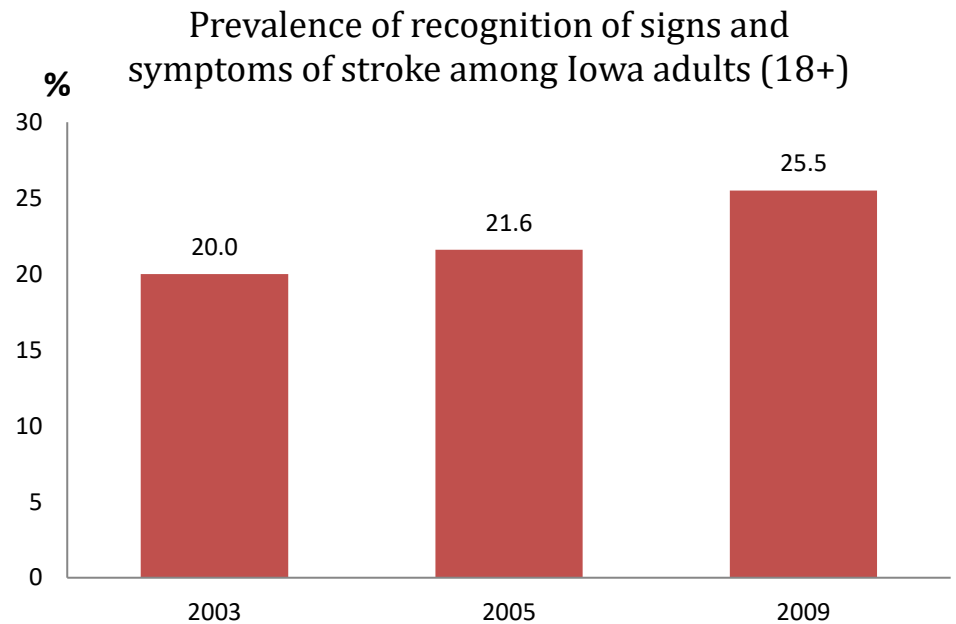


Sources: Iowa BRFSS, Iowa Department of Public Health: <http://www.idph.iowa.gov/brfss>. Self-reported question on 'have you even been told by a doctor or other health professional that you had a stroke?'

## Stroke Symptom Awareness from 2009 BRFSS Respondents --

- 93.3% knew that sudden confusion or trouble speaking was a symptom;
- 94.8% knew that sudden numbness of the face, arm, or leg, especially on one side was a symptom;
- 74.5% knew that sudden trouble seeing in one or both eyes was a symptom;
- 89.5% knew that sudden trouble walking, dizziness, or loss of balance was a symptom;
- 64.4% knew that severe headache with no known cause was a symptom of a stroke; and
- Only 25.5% correctly knew all six symptoms of a stroke, which increased since 2003 (see chart)

<http://www.idph.iowa.gov/Portals/1/Files/BRFSS/2009BRFSSAnnual.pdf>



Sources: The year 2003 and 2005 are from <http://www.cdc.gov/dhdsp/>. The year 2009 is from Iowa BRFSS, Iowa Department of Public Health: <http://www.idph.iowa.gov/brfss>. Rates are age-adjusted based on correct responses to all of the six questions on the left. The questions were included only the three years as indicated above in Iowa BRFSS survey.



# Making Use of this Information

## Prevention and Control Strategies

Since 2008, the Iowa Department of Public Health (IDPH), through various federal grants, has worked closely with its partners and the Iowa Stroke Task Force to improve the ability of Iowa's Emergency Medical Services (EMS) personnel to triage and transport stroke patients to the hospital with the highest level of stroke care available within a 30-minute travel time.

From 2009-2015, the IDPH received federal funding, first to design and pilot, and then to continue a state stroke registry. The registry is a collaboration with the University of Iowa, College of Public Health. The stroke registry serves as a database to collect, compile and analyze state stroke data. It promoted continual quality improvement of stroke systems of care by linking voluntary EMS records with those of hospitals and eventually stroke rehabilitation and death records.

IDPH funding from the CDC Coverdell Stroke Registry grant program ended in June 2015. The Iowa Stroke Task Force, the University of Iowa, along with other partners, lead continued efforts to maintain the registry and actions to decrease the impact of stroke in Iowa.

IDPH continues its work through its current CDC grant program, *State Public Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health*, which will continue through 2018. This source provides funding for contracts and projects in clinical health systems and community organizations throughout the state of Iowa that will lead to quality improvement in the areas of hypertension control and diabetes A1c level management. These efforts will assist in the further reduction of stroke and heart disease in Iowa's population.

## What are the implications of these findings?

- More Iowans need to be aware of stroke signs and symptoms and the need to call 9-1-1 immediately.
- Strategies for targeting Iowans, especially younger males, need development including education on healthy lifestyles and controlling stroke risk factors.
- Iowa needs to continue developing strategies for the development of a stroke system of care. The system of care will provide timely and evidence-based care for all stroke victims.

## Healthy People 2020 Goal

### Reduce stroke deaths to 34.8/100,000

Since 2012, the Iowa stroke death rate has reached or exceeded the national Healthy People 2020 objective of 34.8/100,000.

## References:

1. Vital Statistics of Iowa: <http://idph.iowa.gov/health-statistics/data>
2. Iowa BRFSS Annual Report: <http://www.idph.iowa.gov/brfss>
3. CDC WONDER: <http://wonder.cdc.gov/>
4. State Statistics on Hospitalization: Iowa Inpatient Databases collected by the Iowa Hospital Association.