



# Stroke in Iowa

## What is stroke?

Stroke is the 4<sup>th</sup> highest cause of death in Iowa, behind diseases of the heart, cancer and chronic lower respiratory disease (2013 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 get the blood (and oxygen) it needs, 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>)

**The Iowa national ranking for stroke mortality was 17<sup>th</sup> out of 51 states and DC in 2013 (The higher the rank number represents a higher death rate).**

## Significant Findings from Mortality Data:

In the past decade, the Iowa stroke death rate has been reduced by **38%**. The new goal for the next ten years is to reduce the stroke death rate by another **20%**. Future focus should also be placed on controlling risk factors and improving the quality of life for survivors.

## Quick Facts

### Mortality

- Stroke caused **1,391** (536 male and 855 female) Iowa deaths in 2013 – that’s about one stroke death every five hours and represents **5%** of all deaths in the state.
- Stroke kills more young men than women (**13%** of men (68/536) vs. **7%** of women (60/855) who died of stroke were younger than age 65). (2013 Iowa Vital Statistics)
- Since 2010, Iowa stroke death rates have been slightly lower than the national average. Iowa has met the national Healthy People 2020 stroke mortality goal since 2012.

### Prevalence

- About **65,000** adult Iowans reported having a stroke sometime in the past – **2.8 %** of the adult population. (Health in Iowa Annual Report from the 2014 BRFSS)

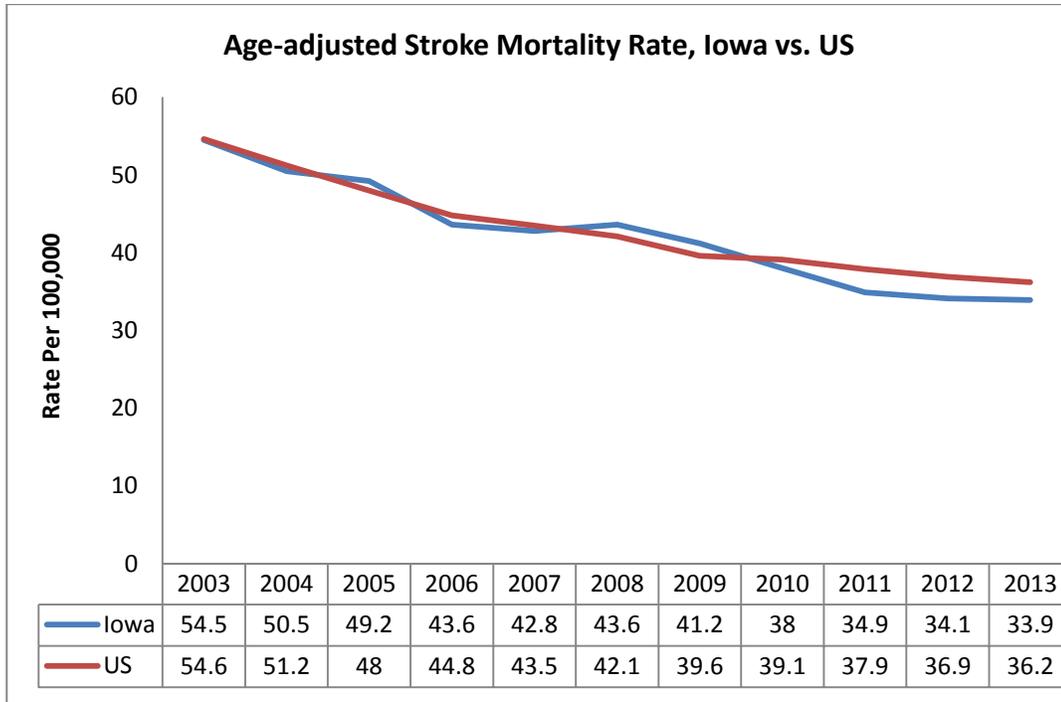
### Trends

- The Iowa stroke death rate decreased by **38 %** between 2003 and 2013 -- from 55 deaths/ 100,000 population to 34 deaths/100,000 (age adjusted).
- Since 2008, stroke mortality dropped from the **3<sup>rd</sup>** leading cause of death in Iowa to **4<sup>th</sup>**.
- Ischemic strokes were **64%** (890/1391) of all Iowa stroke deaths in 2013. Hemorrhagic strokes were **24%** (332/1391).
  - The mortality rate for ischemic stroke has decreased by **54%** from 1999 to 2013.
  - Hemorrhagic stroke mortality has decreased by **23%** in that same time period.
- According to hospital discharge data, **hospitalization rates for stroke have dropped by 15%** since 2000.

### Cost

- While the hospitalization rate was decreasing, the average inpatient charges increased by **11%** from \$26,912 in 2003 to \$29,926 in 2013.

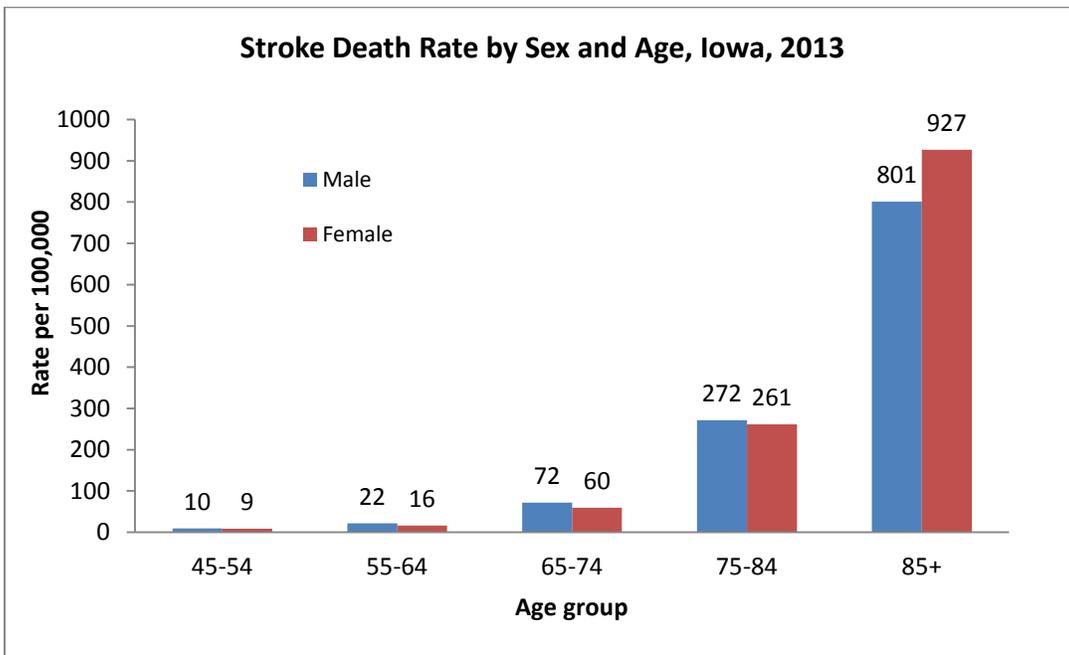
# Iowa's Stroke Death Rate is lower than the National Average



The stroke death rate in Iowa decreased by 38% between 2003 and 2013 (from 54.5 to 33.9 deaths/100,000).

The Iowa stroke death rate has been lower than the national average since 2010 and was below the national Healthy People 2020 goal of 34.8/100,000 in 2012 and 2013.

Data downloaded from CDC Wonder website: <http://wonder.cdc.gov/mcd-icd10.html>

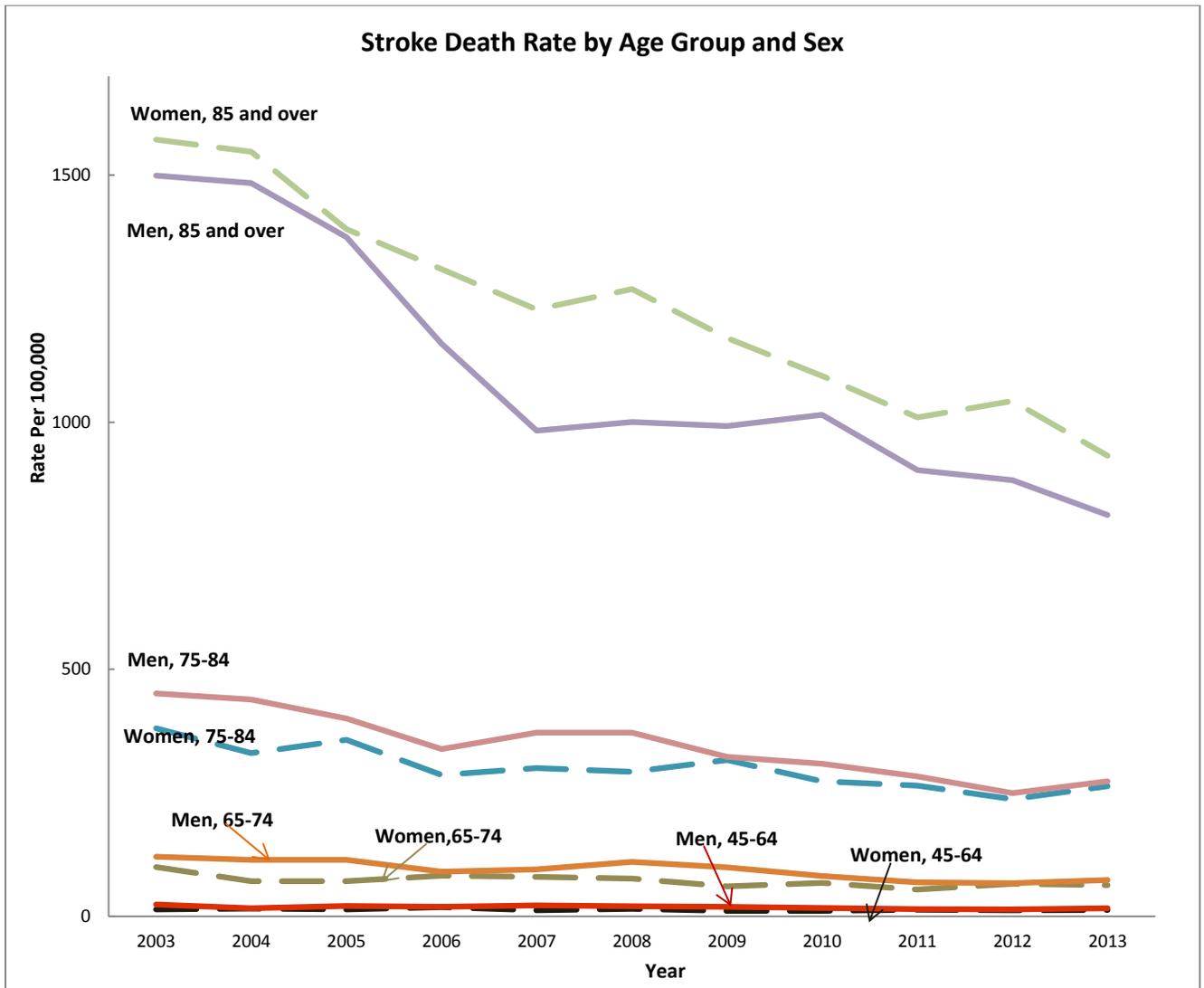


More men than women died of stroke in the age groups <75 each year.

Over the age of 85, more women died of stroke than men.

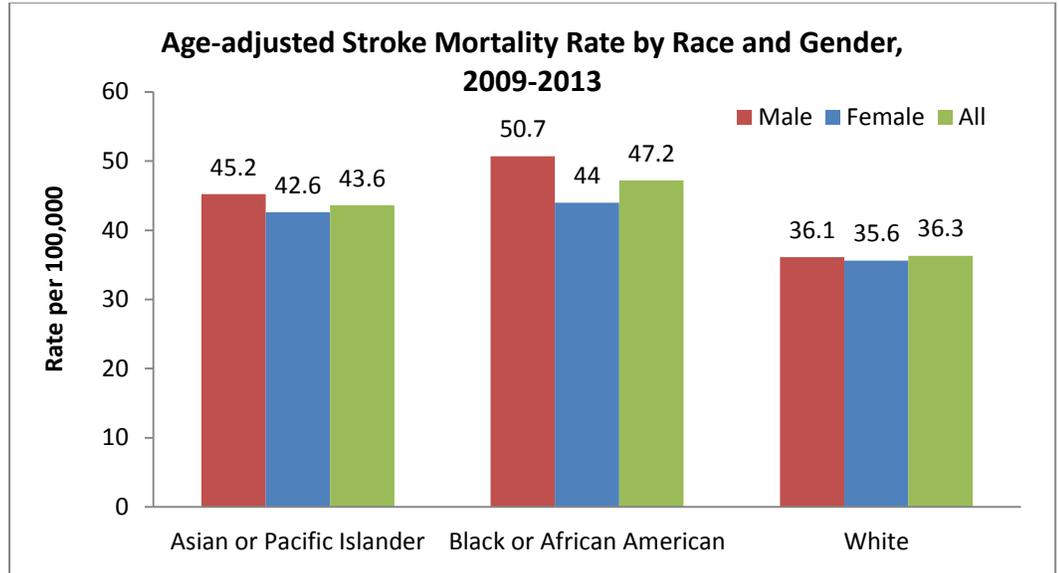
## Stroke Kills More Young Men than Young Women

Before age 85, men had a higher stroke death rate in any age group and in any given year than women. However, gender gaps between males and female aged 45-64, and 75-84 are getting smaller in recent years.

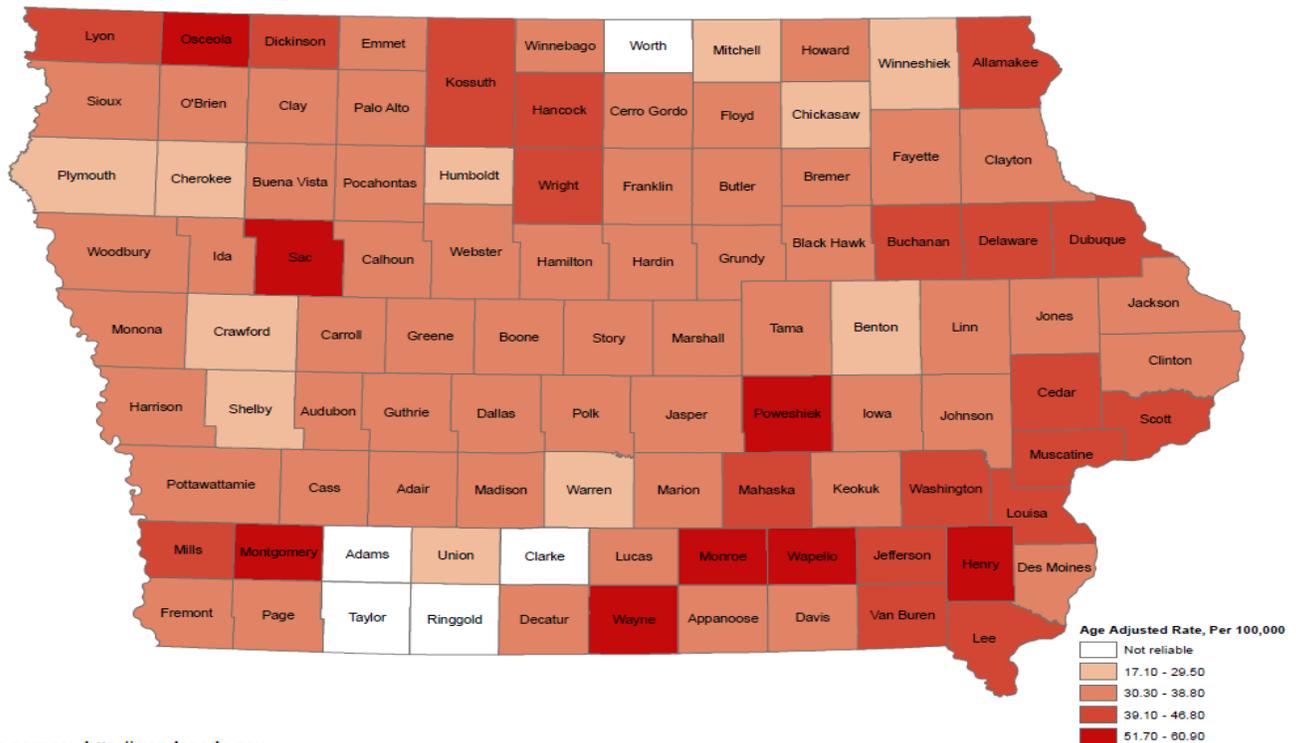


# Stroke Disparities

Black or African American and Asian or Pacific Islander Iowans had a higher stroke death rate than White Iowans. Black or African American men had the highest stroke death rate (51/100,000), followed by Asian men (45/100,000).



Age Adjusted Mortality Rate for Stroke by County, Iowa, 2009-2013



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

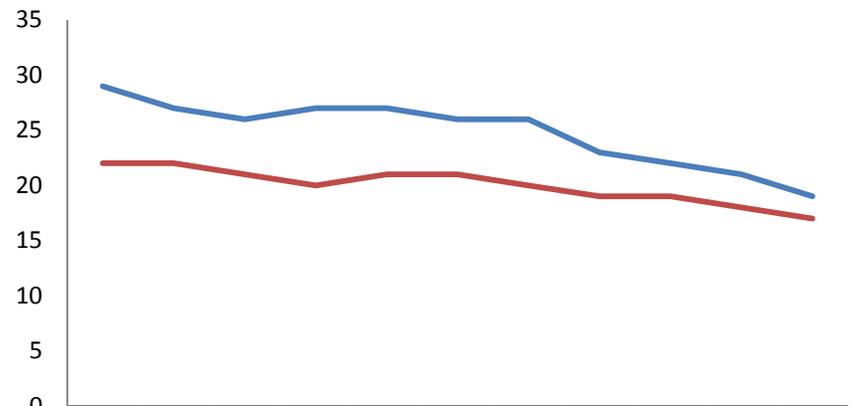
Stroke death rates in 41 counties (2009-2013 average) were lower than the national Healthy People 2020 goal (34.8/100,000). More counties in the southeast part of the state had higher stroke death rates.

Stroke hospitalizations showed a decreasing trend over time in Iowa. Men had a higher stroke hospitalization rate than women and this gender gap is getting smaller.

Source: The years before 2009 are from the previous IDPH stroke reports. Rates after 2009 were calculated from Iowa Inpatient Discharge data collected by the Iowa Hospital Association (IHA).

Age-adjusted Stroke Hospitalization Rate by Sex

Rate Per 10,000



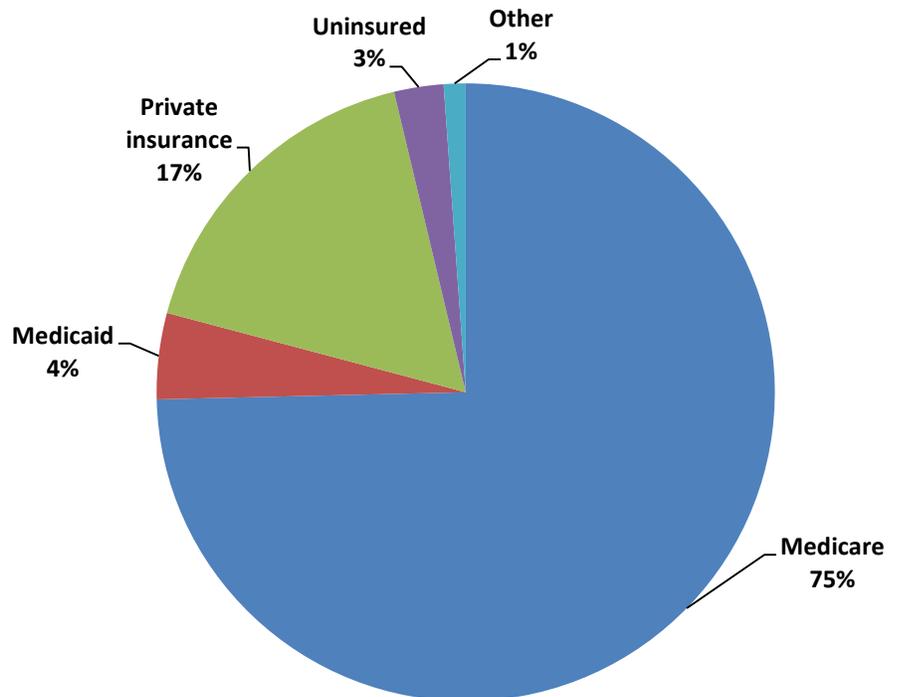
Male	29	27	26	27	27	26	26	23	22	21	19
Female	22	22	21	20	21	21	20	19	19	18	17

While the hospitalization rate was decreasing, the average inpatient charges were increasing; from \$26,912 in 2003 to \$29,926 in 2013; an 11% increase.

In 2013, the total inpatient hospital charges for stroke (principal diagnosis only) were approximately \$203 million, of which public funding, including Medicare and Medicaid, accounted for 79%.

Source: Agency for Healthcare Research and Quality (AHRQ), based on data collected by the IHA.

Iowa Stroke Inpatient Charges By Payer Source, 2013

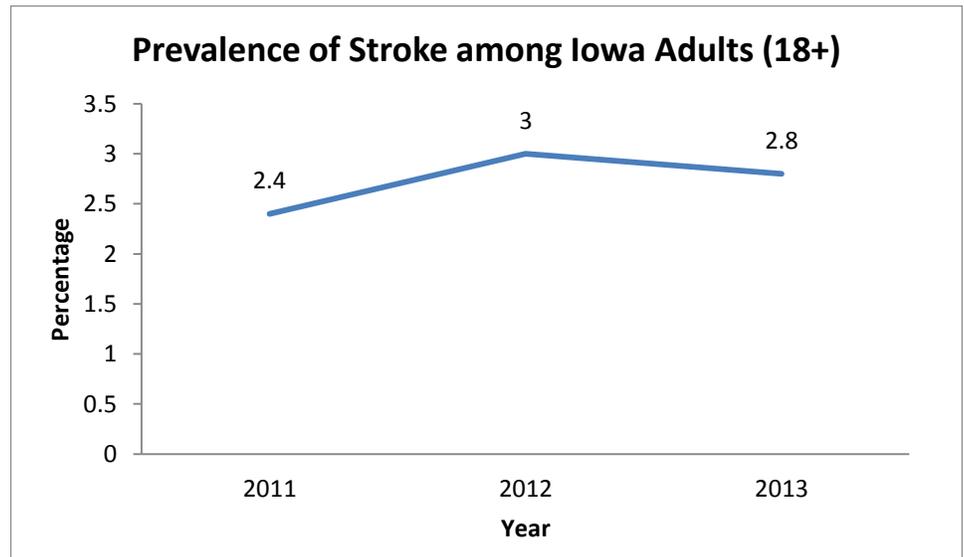


# Stroke Prevalence

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

In 2013, 2.8% of Iowans reported that they had been told they had a stroke, which represented 65,000 adults, ages 18 years and older.

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

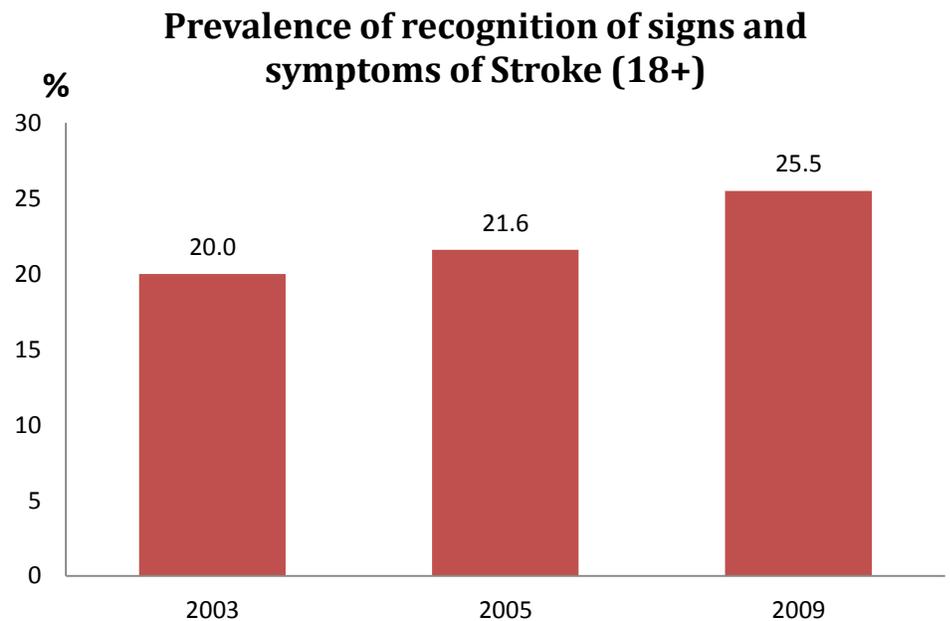


Sources: Iowa BRFSS, Iowa Department of Public Health. Self-reported question on 'have you even been told by a doctor or other health professional that you had a stroke?'

## 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 out of one or both eyes was a symptom,
- 89.5% knew that sudden trouble walking, dizziness, or loss of balance was a symptom,
- Only 64.4% knew that severe head ache with no known cause was a symptom of a stroke, and
- Only 25.5% correctly knew all six symptoms of a stroke, which was a slight increase since 2003 (see chart).

<http://www.idph.state.ia.us/brfss/common/pdf/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. 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 the 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 partners, the Iowa Stroke Task Force and the Iowa Cardiovascular and Stroke Task Force (this entity ceased to exist in 2014) to improve the quality of Iowa's stroke triage system. This work has allowed 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 30 minutes travel time.

In 2009-2015, the IDPH received federal funding, first to design and pilot, and then to continue a state stroke registry in collaboration with the University of Iowa, College of Public Health. The stroke registry serves as data base that collects, compiles, and analyzes state stroke data. It promotes continual quality improvement of stroke systems of care by linking voluntary Emergency Management Services (EMS) records with those of hospitals and eventually stroke rehabilitation and death records. This, in turn, reduces overall stroke mortality and minimizes disabilities so that individuals can return to independent and productive lives.

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 the signs and symptoms of stroke and the need for calling 9-1-1 immediately.
- Iowa needs to develop strategies for targeting younger males with education on maintaining healthy life styles and controlling risk factors for stroke.
- Iowa needs to continue its work towards developing a stroke system of care which 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 the new

## References:

1. 2013 Vital Statistics of Iowa:  
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3. Health in Iowa Annual Report from the 2009 to 2013 BRFSS:  
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