

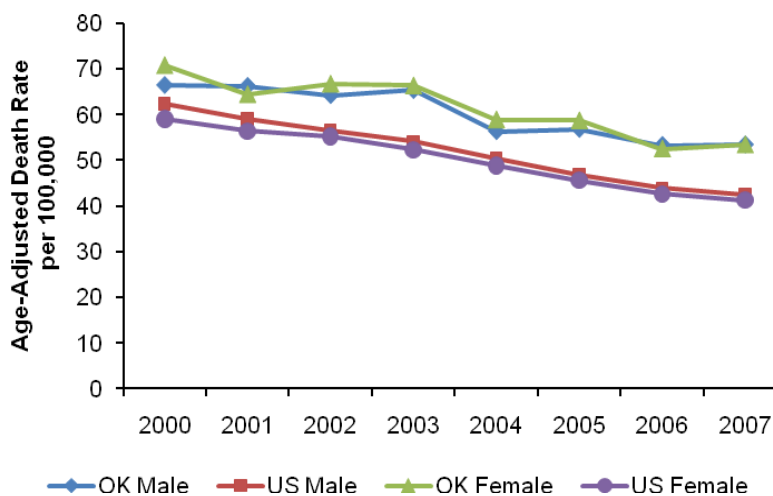
# Stroke in Oklahoma

## Burden of Disease

- In 2007, stroke was the fifth leading cause of death in Oklahoma, resulting in 2,122 deaths.<sup>1</sup>
- In 2007, Oklahoma was tied with Tennessee for having the third highest stroke death rate in the nation.<sup>2</sup>
- The stroke death rate has decreased by 36% since 1990 in the U.S. but by only 24% in Oklahoma.<sup>2</sup>
- In Oklahoma, the stroke death rate among non-Hispanic blacks was 39% higher than the rate among non-Hispanic whites in 2007.<sup>1</sup>
- There were 8,479 Oklahoma hospital discharges with stroke as the principle diagnosis in 2009.<sup>3</sup>
- The prevalence of history of stroke among Oklahoma adults was 4.2% in 2010.<sup>4</sup>

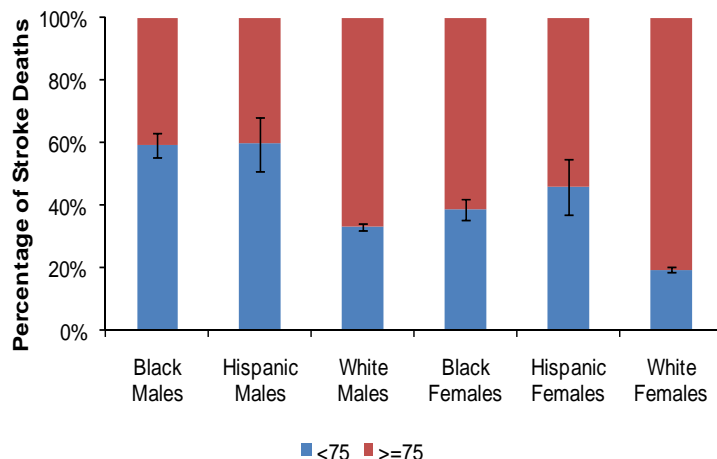
Figure 1 shows that Oklahoma male and female death rates have remained higher than the corresponding U.S. rates from 2000 to 2007. In 2007, the stroke death rates among Oklahoma males and females were 26% and 29% higher than the U.S. rates, respectively. Figure 2 shows that the percentage of stroke deaths occurring in those under the age of 75 is significantly higher among black and Hispanic males and females compared to their white counterparts.

**Figure 1. Age-Adjusted Stroke Death Rates by Gender**



ICD-10 codes I60-I69  
Data Source: Compressed Mortality File, CDC Wonder

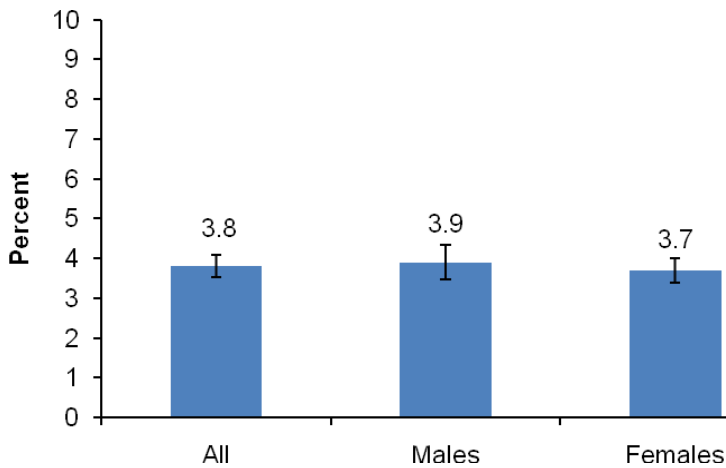
**Figure 2. Percentage of Total Stroke Deaths by Age Group, Oklahoma 1999-2007**



ICD-10 codes I60-I69  
Data Source: Compressed Mortality File, CDC Wonder

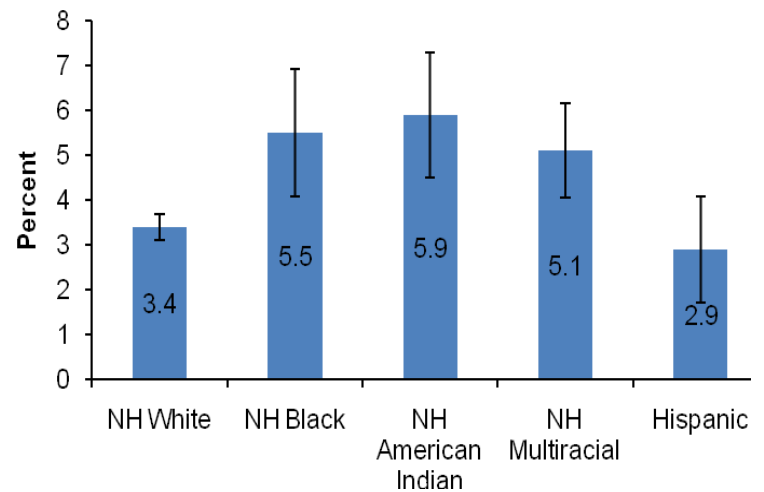
Figure 3 shows that the age-adjusted percentage of history of a stroke is nearly 4% and the percentages for males and females are similar. Figure 4 shows that the age-adjusted percentages of stroke among non-Hispanic black, American Indian, and multiracial Oklahoma adults are significantly higher than the percentage among white adults.

**Figure 3. Age-Adjusted Percentages and 95% Confidence Intervals of History of Stroke by Gender, Oklahoma 2008-2010**



Data Source: Oklahoma Behavioral Risk Factor Surveillance System

**Figure 4. Age-Adjusted Percentages and 95% Confidence Intervals of History of Stroke by Race/Ethnicity, Oklahoma 2008-2010**



NH=Non-Hispanic

Data Source: Oklahoma Behavioral Risk Factor Surveillance System

### Modifiable Risk Factors for Stroke

- 34.4% of Oklahoma adults reported being told that they had high blood pressure and 40.3% reported being told that they had high cholesterol by a health care professional.<sup>5</sup>
- 10.4% of Oklahoma adults had been diagnosed with diabetes.<sup>4</sup>
- 23.7% of Oklahoma adults were current smokers.<sup>4</sup>
- 31.3% of Oklahoma adults were obese (BMI  $\geq 30$ ).<sup>4</sup>
- 52.9% of Oklahoma adults did not meet physical activity recommendations (30+ minutes of moderate physical activity five or more days per week or vigorous physical activity for 20+ minutes three or more days per week).<sup>5</sup>
- 85.4% of Oklahoma adults consumed fewer than five fruits and vegetables per day.<sup>5</sup>

## Stroke Signs and Symptoms Recognition

Stroke signs and symptoms recognition ranged from 56.0% for severe headache with no known cause to 93.9% for sudden numbness or weakness of face, arm, or leg, especially on one side. Approximately 1 in 5 Oklahoma adults correctly identified all five stroke signs and symptoms and correctly identified sudden chest pain as not a symptom of a stroke. There were no significant differences in recognition of any of the stroke signs and symptoms by gender. However, a significantly higher percentage of females than males recognized all five stroke signs and symptoms when recognition of the incorrect symptom (sudden chest pain) was not taken into account.

### Percentages and 95% Confidence Intervals for Adults who Correctly Identified Stroke Signs and Symptoms, Oklahoma 2009

	All	Males	Females
<b>Sudden confusion or trouble speaking</b>	90.6% (89.3-91.9)	89.8% (87.7-91.4)	91.3% (89.8-92.8)
<b>Sudden numbness or weakness of face, arm, or leg, especially on one side</b>	93.9% (92.9-94.9)	93.3% (91.7-95.0)	94.5% (93.3-95.7)
<b>Sudden trouble seeing in one or both eyes</b>	70.0% (68.1-72.0)	69.7% (66.5-73.0)	70.3% (68.1-72.5)
<b>Sudden trouble walking, dizziness, or loss of balance</b>	84.9% (83.4-86.4)	85.5% (83.0-87.9)	84.4% (82.6-86.1)
<b>Severe headache with no known cause</b>	56.0% (53.9-58.2)	52.3% (48.7-55.8)	47.7% (44.2-51.3)
<b>All five symptoms identified</b>	43.8% (41.7-45.8)	40.1% (36.7-43.5)	47.2% (44.8-49.6)
<b>All five correct symptoms and one incorrect symptom identified*</b>	20.4% (18.8-22.1)	18.7% (16.0-21.3)	22.1% (20.1-24.1)

Data Source: Oklahoma Behavioral Risk Factor Surveillance System  
\*Incorrect symptom was *sudden chest pain or discomfort*.

## What is Being Done to Address the Problem

The following are examples of strategies being implemented to address the burden of stroke in Oklahoma:

- Expanding the number of state-certified primary stroke centers.
- Implementing a statewide telestroke system of care.
- Educating medical professionals on the standards of care for identifying and treating stroke.
- Providing opportunities for Oklahoma stroke coordinators to share information and resources related to stroke program development and proficiency through the Oklahoma Stroke Coordinators' Consortium.
- Developing a train the trainer curriculum to educate survivors, caregivers, and the public about stroke signs and symptoms and risk factors.

1. Oklahoma Vital Statistics (ICD-10 codes I60-I69)
2. Centers for Disease Control and Prevention, National Center for Health Statistics CDC WONDER On-line Database (ICD-10 codes I60-I69)
3. Oklahoma State Department of Health, Center for Health Statistics, Health Care Information, Oklahoma Inpatient Discharge Data 2009 (ICD-9-CM codes 430, 431, 433.01, 433.10, 433.11, 433.21, 433.31, 433.81, 433.91, 434.00, 434.01, 434.11, 434.91, 436)
4. Oklahoma Behavioral Risk Factor Surveillance System (BRFSS) Data 2010
5. Oklahoma Behavioral Risk Factor Surveillance System (BRFSS) Data 2009



October 2011