

# FACTS

## Preventable. Treatable. Beatable. Stroke in the U.S.

### OVERVIEW

Stroke is the nation's No. 5 killer and a leading cause of both serious long-term disability.<sup>1, 2</sup> Each year, about 795,000 people suffer a stroke.<sup>2</sup> Approximately 610,000 of these individuals have never experienced a stroke before, and almost 185,000 have a recurrent attack.<sup>2</sup> On average, someone in the U.S. has a stroke every 40 seconds, and every 4 minutes someone dies from one.<sup>2</sup> Stroke was the primary cause of about one in every 20 deaths in 2014.<sup>3</sup>

As these facts illustrate, stroke is already a very serious problem – and as the baby boomers age, it is projected to get worse. There are currently 6.6 million American adults living with stroke, and the number is projected to increase by 3.4 million by 2030.<sup>2</sup> The costs of treating stroke in the U.S. for 2015 were \$66 billion and are expected to triple to \$143 billion by 2035.<sup>4</sup> Conservative estimates forecast that ischemic stroke alone will cost the U.S. an astounding \$2.2 trillion from 2005 to 2050.<sup>5</sup>

Certain segments of the population have a disproportionately high risk of stroke. African-Americans have almost twice the risk of stroke as whites, and African-Americans and Hispanics are more likely to die after a stroke compared to whites.<sup>2</sup> Gender is also a factor. Each year, nearly 55,000 more women than men have a stroke, and stroke remains the No. 4 killer of women.<sup>1, 2</sup> Although stroke is often thought of as a disease of adulthood, it is among the top 10 causes of death in children and young adults between the ages of 5 and 19.<sup>1</sup>

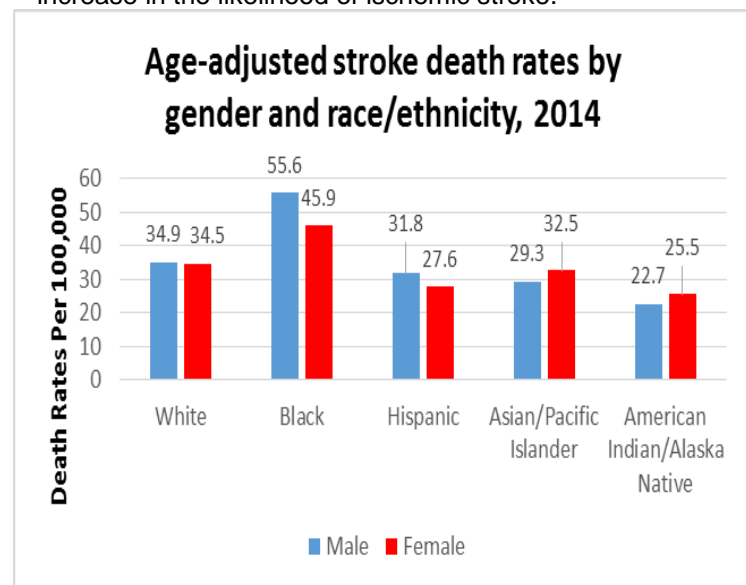
### PREVENTING STROKE

Known, changeable risk factors, such as smoking, high blood pressure, lack of physical activity, diabetes, nutrition and atrial fibrillation (a condition where the upper chambers of the heart contract in an uncoordinated fashion and blood clots may form) are linked to an increased incidence of stroke.<sup>2</sup>

Reducing or eliminating these risk factors decrease the risk of stroke.

- Current smokers have a 2 to 4 times increased risk of stroke compared with nonsmokers or those who have quit for more than 10 years.<sup>2</sup>

- Diabetics with blood pressure <120/80 mm Hg have a little over half the risk of stroke compared to diabetics with hypertension.<sup>6</sup>
- Physical inactivity is associated with an overall 20% increase in stroke risk.<sup>2</sup>
- A one-serving increase of sugar-sweetened beverage consumption is associated with a 19% increase in the likelihood of ischemic stroke.<sup>7</sup>



Sources: National Center for Health Statistics and National Heart, Lung, and Blood Institute., American Heart Association.

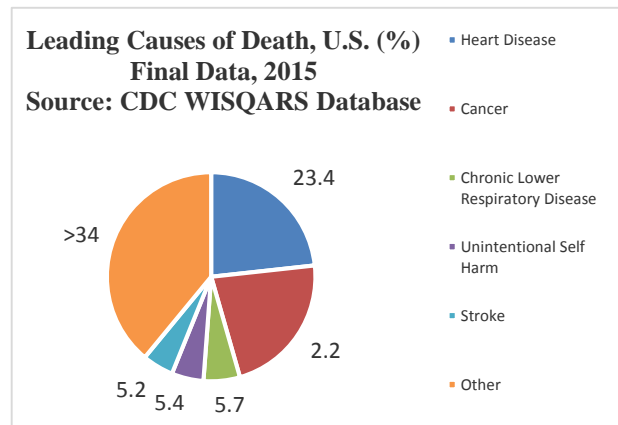
### TREATING & BEATING STROKE

A major advancement in the treatment of ischemic stroke was approved by the FDA in 1996—a clot-dissolving drug called tPA. tPA can significantly reduce the debilitating effects of stroke if administered as soon as possible within 4.5 hours of symptom onset. In a study of nearly 1 million admissions for stroke in hospitals participating in the Get With The Guidelines-Stroke (GWTG-Stroke) program, fewer than 5% of patients overall were eligible for tPA.<sup>8</sup>

There are many reasons why treatment rates are so low – many of which can be addressed through public policy – but a major barrier is that patients often do not recognize the symptoms of stroke and do not arrive at the hospital in a timely manner.

- Only 51% of those surveyed in 2009 said they would first call 9-1-1 if they thought someone was having a stroke.<sup>2</sup>

- Only about 20% of women are able to identify sudden severe headache, dizziness, and sudden loss of vision as warning signs for stroke.<sup>9</sup>
- African Americans are more likely than whites to have a first stroke, but fewer than half (47%) know at least five stroke warning signs.<sup>2</sup>
- Only slightly more than 25% of stroke patients arrive at the hospital within 3.5 hours of symptom onset.<sup>10</sup>



- Patients who receive tPA within 90 minutes of symptom onset are 25% less likely to die in hospital, 28% less likely to suffer intracranial hemorrhage, and 33% more likely to be discharged home.<sup>11</sup>
- The development of “stroke systems of care”, including the establishment of a primary stroke center, can significantly increase the proportion of patients who receive improved stroke care. Patients admitted to primary stroke centers were more likely to receive thrombolytic therapy and had lower 30-day mortality rates when compared with patients admitted to non-designated hospitals.<sup>12</sup>
- The use of tPA leads to a reduction of \$25,000 in lifetime costs per patient.<sup>13</sup>
- About 33% of Americans live more than an hour away from a primary stroke center.<sup>14</sup> Telemedicine has proven to be very effective in the evaluation and treatment of acute stroke, including significantly increasing the use of tPA, in rural and neurologically-underserved areas.<sup>15</sup>
- Only about 30% of stroke survivors receive outpatient rehabilitation, which is lower than would be expected, if clinical practice guidelines for all stroke patients had been followed.<sup>16</sup>

## THE AHA/ASA ADVOCATES

The American Stroke Association, a division of the American Heart Association, urges policymakers to support the following policy recommendations for preventing stroke and improving the quality of care that stroke patients receive:

- Protect investments in prevention;
- Support the development and implementation of stroke systems of care, including via the use of telemedicine, such as the Furthering Access to Stroke Telemedicine (FAST) Act (S.431/H.R. 1148), which would remove a reimbursement barrier to telestroke, specifically Medicare’s rural originating site requirement.<sup>17</sup>
- Increase the National Institutes of Health’s investment in stroke research, which currently constitutes only 1% of NIH’s budget.

<sup>1</sup> Centers for Disease Control and Prevention. Leading Causes of Deaths Reports, 1999 – 2014.

<sup>2</sup> Benjamin, EJ et al. Heart Disease and Stroke Statistics—2017 Update. A Report From the American Heart Association. *Circulation*. 2017;135:00–00.

<sup>3</sup> Kochanek KD, et al. 2016. Deaths: Final data for 2014. *National vital statistics reports*; vol 65 no 4. National Center for Health Statistics.

<sup>4</sup> Khavjou, O, et al. 2017. Projections of Cardiovascular Disease and Costs: 2015-2035. Unpublished RTI Report on behalf of the AHA.

<sup>5</sup> Brown, DL., et al. 2006. Projected costs of ischemic stroke in the United States. *Neurology* 67(8): 1390-1395.

<sup>6</sup> ACCORD Study Group. 2010. Effects of intensive blood-pressure control in type 2 diabetes mellitus. *N Engl J Med*;362:1575–1585.

<sup>7</sup> Bernstein AM, et al. 2012. Soda consumption and the risk of stroke in men and women. *Am J Clin Nutr*;95:1190–1199.

<sup>8</sup> Allen NB, et al. 2012. Regional Variation in Recommended Treatments for Ischemic Stroke and TIA: Get With the Guidelines-Stroke 2003–2010. *Stroke*. 43.7 (2012): 1858–1864.

<sup>9</sup> Mochari-Greenberger H, et al. 2014. National women’s knowledge of stroke warning signs, overall and by race/ethnic group. *Stroke*. 45:1180–1182.

<sup>10</sup> Tong D, et al. 2012. Times from symptom onset to hospital arrival in the Get With The Guidelines-Stroke Program 2002 to 2009: temporal trends and implications. *Stroke*.43:1912-1917.

<sup>11</sup> Saver, JL, et al. 2013. Time to treatment with intravenous tissue plasminogen activator and outcome from acute ischemic stroke. *JAMA* 309(23): 2480-2488.

<sup>12</sup> Xian Y et al. 2011. Association Between Stroke Center Hospitalization for Acute Ischemic Stroke and Mortality. *JAMA*;305(4):373-380.

<sup>13</sup> Boudreau, DM., et al. 2014. Cost-effectiveness of recombinant tissue-type plasminogen activator within 3 hours of acute ischemic stroke: current evidence. *Stroke* 45(10): 3032-3039.

<sup>14</sup> Adeyoye O, et al. Geographic Access to Acute Stroke Care in the United States. *Stroke*. 2014; 45.

<sup>15</sup> Schwamm, LB, et al. 2009. Review of the Evidence for the Use of Telemedicine within Stroke Systems of Care: A Scientific Statement from the American Heart Association. *Stroke*. Published online May 7, 2009.

<sup>16</sup> Centers for Disease Control and Prevention. 2007. Outpatient rehabilitation among stroke survivors: 21 States and the District of Columbia, *MMWR Morb Mortal Wkly Rep*;56:504–507.

<sup>17</sup> Furthering Access to Stroke Telemedicine Act, H.R.1148, 115<sup>th</sup> Congress, 2016.