

# FACTS

## Breaking Our Hearts: Still America's No.1 Killer

### NIH Funding for Heart and Stroke Research

#### OVERVIEW

Nearly 84 million U.S. adults suffer from cardiovascular diseases (CVD).<sup>1</sup> These life-threatening conditions include coronary heart disease, heart failure, stroke, and high blood pressure. CVD was the cause of nearly 33% of all U.S. deaths and an underlying or contributing cause for about 55% of deaths in 2009.<sup>1</sup> More than 2,100 people die of CVD each day—one death every 40 seconds.<sup>1</sup> However, due in large part to NIH-funded research, death rates from heart disease and stroke have dropped by 60% and 70% respectively, since 1940.<sup>2</sup>

Despite the significant return on investment, the National Institutes of Health (NIH) invests a disproportionate and meager 4% of its budget on heart research, a mere 1% on stroke research, and only 2% on other CVD research [see chart]. This funding level is not commensurate with scientific opportunities, the number of people afflicted with CVD and the physical and economic toll exacted upon our Nation.

#### AS BABY BOOMERS AGE, CVD WILL COST MORE LIVES AND MONEY

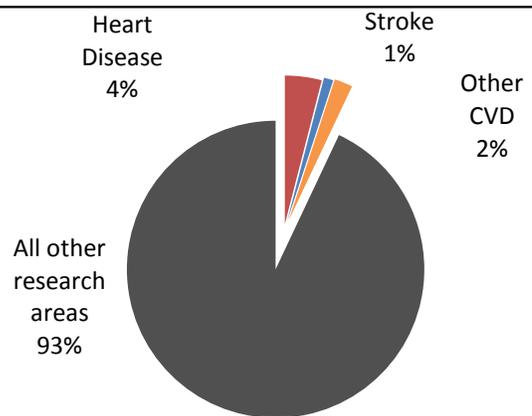
Heart disease and stroke are the No. 1 and 4 causes of death respectively in the U.S today.<sup>1</sup> Lifetime CVD risk at age 45 is 2-in-3 for men and more than 1-in-2 for women.<sup>1</sup>

- More than 40% of the US adult population is projected to have some form of CVD by 2030, with direct and indirect costs exceeding \$1 trillion annually.<sup>3</sup>
- Direct costs of stroke will escalate by 238% between 2010 and 2030. Prevalence of stroke is expected to increase by 25% over this time.<sup>3</sup>

#### CVD FUNDING COMPARED TO BURDEN

The estimated total cumulative NIH investment in cardiovascular research over the past 30 years has been about \$4 per-American each year.<sup>4</sup>

Heart, Stroke, and Other CVD Research Funding as a Percent of Total NIH Funding – FY 2011



#### NIH HEART AND STROKE RESEARCH CAN REDUCE HEALTHCARE COSTS

Advances in CVD care can help reduce costs.

- Technological improvements in treating heart attacks are worth the cost. For every \$1 spent, the return on investment has been \$7.<sup>5</sup>
- Diuretics, a traditional, less expensive medication, tested as well as newer medicines in treating high blood pressure and preventing some forms of heart disease in the largest hypertension clinical trial (ALLHAT).<sup>6</sup>
- NIH research has shown that ordinary aspirin, with or without other anti-platelet drugs, can reduce the risk of recurrent stroke.<sup>7</sup>
- Tissue plasminogen activator (tPA) is the only FDA-approved acute treatment for the most common type of stroke (ischemic stroke). Patients treated with tPA within 3 hours of onset of stroke symptoms are 30% more likely to have minimal or no disability at a 3-month follow-up.<sup>8</sup> A study estimates the original National Institute of Neurological Disorders and Stroke-funded tPA trial resulted in a 10-year net benefit of \$6.47 billion.<sup>9</sup>
- NINDS's Stroke Prevention in Atrial Fibrillation (AF) Trial 1 showed treatment with aspirin or warfarin could reduce stroke in AF victims by 80%, resulting in a 10-year net benefit of

\$1.27 billion, with a savings of 35,000 quality-adjusted life years.<sup>8</sup>

- Eliminating deaths from heart disease would generate about \$48 trillion in economic value from increased life expectancy.<sup>10</sup>

## **NIH HEART AND STROKE RESEARCH HAS REVOLUTIONIZED PATIENT CARE**

Some of the major advances in heart disease and stroke treatments include the following:

- A revolutionary clot-busting drug which reduces disability from heart attack or stroke by dissolving the blood clots that cause the attacks.
- Identification of 29 genetic variants that influence blood pressure, providing new clues on blood pressure control.<sup>6</sup>
- The use of drugs to lower cholesterol has reduced the average cholesterol level in the U.S. to the ideal range for the first time in 50 years.<sup>11</sup>
- Pacemakers, implantable cardiac defibrillators, automated external defibrillators (AEDs), and minimally invasive surgical techniques have significantly improved health care outcomes. Small, wire-mesh stents can widen narrowed arteries in the heart or neck.
- FDA approved the first totally implanted permanent artificial heart for patients with advanced heart failure.
- Constraint-induced Movement Therapy—a rehabilitative method forcing use of a partially paralyzed arm—can help stroke survivors regain arm function.

## **NEED STABLE & SUSTAINED FUNDING TO STIMULATE RESEARCH**

Although much has been accomplished, cardiovascular disease is not “cured.” As the population ages, the demand will increase for more and better ways to allow Americans to live healthy and productive lives before and with CVD. Some promising new research opportunities include:

- Determining whether maintaining a lower blood pressure than currently recommended will further reduce the risk of heart disease, stroke and cognitive decline. (SPRINT)
- Creating working groups to collaborate with Jackson Heart Study researchers to analyze data in five topics of concern for African Americans, including high blood pressure, diabetes and obesity, physical activity and nutrition, heart failure and chronic kidney disease.<sup>12</sup> The Jackson Heart Study is examining CVD and its risk factors in large cohort of African Americans.
- Developing biomarkers to show which patients need defibrillators to treat erratic heart rhythms.
- Using genetics to intervene before heart disease starts, speed drug development to reduce the risk of heart attack, and to develop personalized strategies to treat, slow or prevent heart failure.

- Using brain imaging as a mechanism to determine if tPA benefits stroke victims after the three-hour treatment window.

## **THE ASSOCIATION ADVOCATES**

The American Heart Association joins the medical research community in working to protect, preserve, and restore funding for the NIH. Moreover, we are working to support and promote funding for NIH heart and stroke research. This will capitalize on the investment in NIH to improve Americans’ health, spur economic growth and innovation, and preserve U.S. leadership in pharmaceuticals and biotechnology.

<sup>1</sup> Go AS, Mozaffarian D, Roger VL, et. al. Heart disease and stroke statistics—2013 update: a report from the American Heart Association. *Circulation*. 2013;127:e6-e245

<sup>2</sup> U.S. Department of Health and Human Services, National Institutes of Health. NIH: Turning Discovery into Health. NIH Publication No. 11-7634. Available online at: [http://www.nih.gov/about/discovery/viewbook\\_2011.pdf](http://www.nih.gov/about/discovery/viewbook_2011.pdf). Accessed January 17, 2012.

<sup>3</sup> Heidenreich PA, Trogon JG, Khavjou OA, et al. Forecasting the future of cardiovascular disease in the United States. *Circulation* 2011; DOI:10.1161/CIR.0b013e31820a55f5. (e-published ahead of print Jan. 24, 2011)

<sup>4</sup> Zerhouni, EA. FY 2007 Director’s Budget Request Statement to the Senate Subcommittee on Labor-HHS-Education, U.S. Dept. of HHS, NIH.

<sup>5</sup> Cutler DM, McClellan M. Is technological change in medicine worth it? *Health Affairs*. 2001; 20:11–29.

<sup>6</sup> National Heart, Lung and Blood Institute (NHLBI). Fact Book: Fiscal Year 2011. February 2012. Available online at:

<http://www.nhlbi.nih.gov/about/factbook/FactBook2011.pdf>

<sup>7</sup> Sacco RL, Adams R, Albers G, et. al. Guidelines for the prevention of stroke in patients with ischemic stroke or transient ischemic attack: a statement for healthcare professionals from the AHA/ASA Council on Stroke: co-sponsored by the Council on Cardiovascular Radiology & Intervention: the AAN affirms the value of this guideline. *Circulation* 2006;113:e409-e449.

<sup>8</sup> NINDS rt-PA Stroke Study Group. Tissue Plasminogen Activator for Acute Ischemic Stroke. *New Engl J Med* 1995. 333:1581-1587.

<sup>9</sup> Johnston SC, Rootenberg JD, Katrak S, et. al. Effect of a US NIH programme of clinical trials on public health and costs. *The Lancet* 2006;367:1319-1327.

<sup>10</sup> . R. Murphy, K.M. Topel, *The Economic Value of Medical Research*. Chicago: University of Chicago Press, 1999.

<sup>11</sup> Schober SE, Carroll MD, Lacher DA, Hirsch R. High serum total cholesterol – an indicator for monitoring cholesterol lowering efforts: U.S. adults, 2005-2006. NCHS data brief no. 2. Available at <http://www.cdc.gov/nchs/data/databriefs/db02.pdf> Accessed December 2007.

<sup>12</sup> National Heart, Lung, and Blood Institute (NHLBI). “Funding Opportunity Announcement: Targeted Analysis of Jackson Heart Study (ROI)”. RFA-HL-13-007. Nov. 3, 2011. Available online at: <http://grants.nih.gov/grants/guide/rfa-files/RFA-HL-13-007.html>