Women's Heart Alliance
The Facts on Women and Cardiovascular Disease (CVD)

Burden of CVD and CVD Risk Factors

- Heart disease is the No. 1 killer of women in the U.S., killing more women than all cancers combined.[1]
- Cardiovascular disease (CVD) claims over 400,000 women's lives each year.[2] That's one death nearly every 80 seconds.
- 1 in 38 women die of breast cancer.[3] About 1 in 5 women die of CVD.[4]
- A recent study by the National Center for Health Statistics indicates that, over the past three years, life expectancy for Americans is declining — with heart disease (HD) topping the 10 leading causes of death. Non-Hispanic black women are among the demographic sub-groups with a rising death rate.[5]
- According to the CDC Foundation, by 2030, CVD is projected to cost the United States more than $818 billion in annual health care costs and more than $275 billion in lost productivity.[6]
- By 2035, more than 4 in 10 Americans (~45%) are projected to have CVD, with total annual costs expected to reach more than $1 trillion.[7]
- Compared with other risk factors, high blood pressure is the leading contributor to deaths from CVD and ischemic heart disease in women.[8]
- National Health Interview Survey data from January to March 2018 show that only 48% of women ages 25-64 meet the current guidelines for weekly aerobic physical activity. In all age groups, women are less likely than men to meet the guidelines.[9]
- Data from the National Health Interview Survey 2018 show that cigarette smoking overall declined between 2014 and March 2018. In March 2018, 12% of women smoked cigarettes.[10]

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[1] Xu J, Murphy SL, Kochanek KD, Bastian B and Arias E, "Deaths: Final Data for 2016," National Vital Statistics Reports, Hyattsville, MD: CDC, National Center for Health Statistics. 2018;67(5). Available from: https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_05.pdf.

[2] Benjamin EJ, Virani SS, Callaway CW, Chamberlain AM, Change AR, Cheng S, et al.; on behalf of the American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2018 update: a report from the American Heart Association. Circulation. 2018;137:e248. Available from: https://www.ahajournals.org/doi/pdf/10.1161/CIR.0000000000000558.

[3] American Cancer Society, How Common Is Breast Cancer?, January 4, 2018. Available from: https://www.cancer.org/cancer/breast-cancer/about/how-common-is-breast-cancer.html.

[4] Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2017 on CDC WONDER Online Database, released December 2018. Data are from the Multiple Cause of Death Files, 1999-2017, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program.

[5] Kochanek KD, Murphy SL, Xu JQ, Arias E. Mortality in the United States, 2016. NCHS Data Brief, no 293. Hyattsville, MD: National Center for Health Statistics. 2017. Available from: https://www.cdc.gov/nchs/products/databriefs/db328.htm .

[6] Business Pulse [Internet]. Atlanta: CDC Foundation; c2018 [cited 16 Oct 2018]. Available from: https://www.cdcfoundation.org/businesspulse/heart-health-infographic.

[7] Khavjou O, Phelps D, Leib A. (2016). Projections of Cardiovascular Disease and Costs: 2015-2035. Technical Report on behalf of the American Heart Association. Available from: https://healthmetrics.heart.org/wp-content/uploads/2017/10/Projections-of-Cardiovascular-Disease.pdf.

[8] Danaei G, Ding EL, Mozaffarian D, Taylor B, Rehm J, Murray CJ, Ezzati M. The preventable causes of death in the United States: comparative risk assessment of dietary, lifestyle, and metabolic risk factors [published correction appears in PLoS Med. 2011;8. Doi: 10 .1371/annotation/0ef47acd-9dcc-4296-a897-872d182cde57]. *PLoS Med.* 2009;6e1000058.

[9] National Health Interview Survey, January—March 2018, Figure 7.2. Atlanta: CDC/NCHS; 2018. Available from: https://www.cdc.gov/nchs/nhis/releases/released201809.htm.

[10] National Health Interview Survey, January—March 2018, Figure 8.2. Atlanta: CDC/NCHS; 2018.

- Data from the Surgeon General Report 2018 show that e-cigarette use has increased considerably in the recent years, growing 900% among high school students from 2011 to 2015.[11]
- Data presented at the 2019 American College of Cardiology's 68th Annual Scientific Session show that e-cigarette users are 55% more likely to have a heart attack.[12]
- Data from the 2015-2016 National Health and Nutrition Survey (NHANES) show that more than a quarter (26.9%) of women are overweight and 4 in 10 (41.1%) are obese.[13] The same data indicate that 9.7% of women are severely obese.[14]
- Data from NHANES 2011 to 2012 show that only 20.5% of women 20 and older, and only 41% of girls 12-19 met at least five of the seven criteria for ideal cardiovascular health (AHA's 2020 goals). Compared to whites, fewer black and Hispanic adults and children met five of the seven criteria.[15]
- NHANES data also shows a downward trend in coronary heart disease (CHD) (a type of CVD) among women 40 and older, from 8.5% prevalence in 2001-2002 to 5.4% in 2011-2014.[16]

Sex Issues and Disparities In CVD

- Although slightly more men (426,063) than women (409,884) died from major cardiovascular diseases in 2016 (the most recent year for which data are available),[17] women fare far worse than men in a number of ways. For example:
    - Women are 50% more likely to be given a wrong diagnosis after a heart attack.[18]
    - Men were 1.23 times more likely to receive bystander CPR in public settings than women, and they had 23 percent higher odds of survival compared to women.[19]
    - Women are at greater risk of dying in the year following a heart attack than are men. Indeed, 1 in 4 women will die within one year following a heart attack, compared to 1 in 5 men.[20]

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[11] US Department of Health and Human Services. E-cigarette Use Among Youth and Young Adults: A Report of the Surgeon General. Atlanta, GA: US Department of Health and Human Services, CDC; 2016.

[12] Vindhyal MR, Ndunda P, Munguti C, Vindhyal S, Okut H. Impact on Cardiovascular outcomes among e-cigarette users: a review from National Health Interview Surveys. Presented at: 68th American College of Cardiology Scientific Session and Exposition; March 18, 2019; New Orleans; LA. Abstract no. A-19151.

[13] Fryar CD, Carroll MD and Ogden CL, "Prevalence of Overweight, Obesity, and Severe Obesity Among Adults Aged 20 and Over: United States, 1960-1962 Through 2015-2016," National Health and Nutrition Examination Survey, Atlanta, GA: CDC, National Center for Health Statistics. 2018. Available from: https://www.cdc.gov/nchs/data/hestat/obesity_adult_15_16/obesity_adult_15_16.pdf.

[14] Ibid.

[15] Benjamin EJ, Virani SS, Callaway CW, Chamberlain AM, Change AR, Cheng S, et al.; on behalf of the American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2018 update: a report from the American Heart Association. Circulation. 2018;137:e93.

[16] Benjamin EJ, Virani SS, Callaway CW, Chamberlain AM, Change AR, Cheng S, et al.; on behalf of the American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2018 update: a report from the American Heart Association. Circulation. 2018;137.

[17] Xu J, Murphy SL, Kochanek KD, Bastian B and Arias E, "Deaths: Final Data for 2016," National Vital Statistics Reports, Hyattsville, MD: CDC, National Center for Health Statistics. 2018;67(5).

[18] Wu J, Gale CP, Hall M, Dondo TB, Metcalfe E, Oliver G, Batin PD, Hemingway H, Timmis A, West RM. Impact of initial hospital diagnosis on mortality for acute myocardial infarction: A national cohort study. *Eur Heart J Acut Cardiovasc Care*. 2016;in press. Available from: http://acc.sagepub.com/content/early/2016/08/29/2048872616661693.

[19] "Men more likely to receive bystander CPR in public than women," American Heart Association Press Release. Available from: https://newsroom.heart.org/news/men-more-likely-to-receive-bystander-cpr-in-public-than-women

[20] Mehta LS, Beckie TM, DeVon HA, Grines CL, Krumholz HM, Johnson MN, et al. Acute Myocardial Infarction in Women: a scientific statement from the American Heart Association. *Circulation*. 2016;133:00-00. Available from: https://www.ahajournals.org/doi/abs/10.1161/CIR.0000000000000351.

  - Women are more likely than men to die while waiting for a heart transplant.[21]
- In nearly half of all heart attacks among women, typical male symptoms are not present.[22]
- Women's hearts are physiologically different from men's hearts in important ways. They are two-thirds the size of men's and most often have smaller arteries, and faster heart rates.[23,24]
- Women's symptoms of heart attack often are different and subtler than men's; women's first signs of a heart attack may be nausea, back and jaw pain, or shortness of breath with or without chest discomfort, instead of more dramatic crushing chest pain.[25,26]
- Sixty-four percent of deaths from CHD among women could be avoided by maintaining normal blood pressure and total cholesterol levels and not smoking.[27]
- A 2015 study in U.S. and Spanish hospitals found that women with even one CVD risk factor were 11% less likely than men to be told by their health care provider that they were at risk prior to a heart attack; and they were 16% less likely to have talked to their provide about reducing their risk.[28]
- Certain conditions specific to or more common among women appear to increase risk of CVD. These conditions include preeclampsia (a sudden, dangerous rise in blood pressure during pregnancy), gestational diabetes and hypertension, polycystic ovarian syndrome, preterm delivery, and autoimmune diseases such as lupus and rheumatoid arthritis.[29]

CVD and Pregnancy

- Despite global efforts to reduce maternal deaths, the maternal mortality rate in the U.S. more than doubled between 1987 and 2014, and is higher than in any other developed country in the world.[30, 31] During 2011-2014, the latest three-year period analyzed by the

[21] Hickey KT, Doering LV, Chen B, Carter EV, Sciacca RR, Pickham D, et al. Clinical and gender differences in heart transplant recipients in the NEW HEART study. *Eur J Cardiovasc Nurs.* 2017;16(30:222-229. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5526208/.
[22] Mehta LS, Beckie TM, DeVon HA, Grines CL, Krumholz HM, Johnson MN, et al. Acute Myocardial Infarction in Women: a scientific statement from the American Heart Association. *Circulation.* 2016;133:00-00.
[23] Legato, MJ. Gender and the heart: sex-specific differences in normal anatomy and physiology. J Gend Specif Med. 2000 Oct;3(7):15-8. Available from: https://www.researchgate.net/publication/12079451_Gender_and_the_heart_sex-specific_differences_in_normal_anatomy_and_phisology.
[24] Miller VM. Why are sex and gender important to basic physiology and translational and individualized medicine? Sex and Gender Differences in Cardiovascular Physiology–Back to the Basics. Am J Physiol Heart Circ Physiol. 2014 Mar 15;306(6):H781-H788. Published online 2014 Jan 10. DOI: 10.1152/ajpheart.00994.2013. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3949049/.
[25] Gulati M, Shaw LJ, and Bairey Marz CN. Myocardial ischemia in women: lessons from the NHLBI WISE study. Clinical Cardiology. 2012 Mar;35(3):141-8. Available from: https://www.ncbi.nlm.nih.gov/pubmed/22389117.
[26] Heart Attack Symptoms in Women [Internet]. Dallas: AHA; c2015 [Updated July 2015; cited 19 Oct 2018]. Available from: http://www.heart.org/en/health-topics/heart-attack/warning-signs-of-a-heart-attack/heart-attack-symptoms-in-women.
[27] Benjamin EJ, Virani SS, Callaway CW, Chamberlain AM, Change AR, Cheng S, et al.; on behalf of the American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2018 update: a report from the American Heart Association. Circulation. 2018;137:e250.
[28] Leifheit-Limson EC, D'Onofrio G, Daneshvar M, Geda M, Bueno H, Spertus JA, et al. Sex Differences in Cardiac Risk Factors, Perceived Risk, and Health Care Provider Discussion of Risk and Risk Modification Among Young Patients With Acute Myocardial Infarction. J. Am Coll Cardiol. 2015;66(18):1949-1957. Available from: http://www.onlinejacc.org/content/66/18/1949.
[29] Brown HL, Warner JJ, Gianos E, Gulati M, Hill AJ, Hollier LM, et al.; on behalf of the American Heart Association and the American College of Obstetricians and Gynecologists. Promoting Risk Identification and Reduction of Cardiovascular Disease in Women Through Collaboration With Obstetricians and Gynecologists: A Presidential Advisory From the American Heart Association and the American College of Obstetricians and Gynecologists. *Circulation.* 2018;137:e843-e852. Available from: https://www.ahajournals.org/doi/abs/10.1161/CIR.0000000000000582.
[30] Pregnancy Mortality Surveillance System [Internet]. Atlanta: CDC; c2018. [Updated: 7 Aug 2018; cited 23 Oct 2018]. Available from: https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pregnancy-mortality-surveillance-system.htm.
[31] Young A. Deadly Deliveries: Hospitals know how to protect mothers. They just aren't doing it. *USA Today*. 27 Jul 2018. Available from: https://www.usatoday.com/in-depth/news/investigations/deadly-deliveries/2018/07/26/maternal-mortality-rates-preeclampsia-postpartum-hemorrhage-safety/546889002/.

CDC, 2,726 women died within a year of the end of a pregnancy due to pregnancy-related causes. [32] Cardiovascular diseases caused 15.2% of those deaths.[33]

- Five pregnancy outcomes are associated with increased future cardiovascular risk[34, 35]:
    1. Preeclampsia (a sudden, dangerous rise in blood pressure during pregnancy)
    2. Gestational diabetes
    3. Gestational hypertension
    4. Preterm delivery
    5. Low-for-estimated-gestational-age infant birth weight[36, 37, 38, 39, 40]
- Pregnancy can serve as a "stress test" for women, and its adverse outcomes can be used to highlight increased risk for CVD.[41] Compared to those whose blood pressure remains at healthy levels during pregnancy, women with a history of hypertension during pregnancy are twice as likely to develop CVD. Their risk for chronic hypertension is highest within five years of their first birth.[42]

Burden of Disease and Risk Factors in Young Women

- Obesity, diabetes, high blood pressure, stress, lack of exercise and other factors put young women at risk of dying from heart disease. Recent data show that CVD rates and the prevalence of CVD risk factors are increasing among young women.[43, 44, 45, 46]

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[32] Pregnancy Mortality Surveillance System [Internet]. Atlanta: CDC; c2018. [Updated: 7 Aug 2018; cited 23 Oct 2018].
[33] Pregnancy Mortality Surveillance System [Internet]. Atlanta: CDC; c2018. [Updated: 7 Aug 2018; cited 23 Oct 2018].
[34] Brown HL, Warner JJ, Gianos E, Gulati M, Hill AJ, Hollier LM, et al.; on behalf of the American Heart Association and the American College of Obstetricians and Gynecologists. Promoting Risk Identification and Reduction of Cardiovascular Disease in Women Through Collaboration With Obstetricians and Gynecologists: A Presidential Advisory From the American Heart Association and the American College of Obstetricians and Gynecologists. *Circulation.* 2018;137:e843-e852.
[35] Mosca L, Benjamin EJ, Berra K, Bensanson JL, Dolor RJ, Lloyd-Johns DM, et al.; Effectiveness-based guidelines for the prevention of cardiovascular disease in women–2011 update: a guideline from the American Heart Association. Circulation. 2011;123:1243–1262. Available from: https://www.ahajournals.org/doi/10.1161/cir.0b013e31820faaf8.
[36] Ahmed R, Dunford J, Mehran R, Robson S, Kunadian V. Pre-eclampsia and future cardiovascular risk among women: a review. J Am Coll Cardiol. 2014 May 13;63(18):1815–22. Available from: https://www.sciencedirect.com/science/article/pii/S0735109714011541?via%3Dihub.
[37] Bellamy L, Casas JP, Hingorani AD, Williams DJ. Pre-eclampsia and risk of cardiovascular disease and cancer in later life: systematic review and meta-analysis. BMJ. 2007;335;974. Available from: https://www.bmj.com/content/335/7627/974.
[38] Fraser A, Nelson SM, Macdonald-Wallis C, Cherry L, Butler E, Sattar N, et al. Associations of pregnancy complications with calculated cardiovascular disease risk and cardiovascular risk factors in middle age: the Avon Longitudinal Study of Parents and Children. Circulation. 2012;125:1367-1380. Available from: https://www.ahajournals.org/doi/full/10.1161/CIRCULATIONAHA.111.044784.
[39] Wenger NK. Recognizing pregnancy-associated cardiovascular risk factors. Am J Cardiol. 2014 Jan 15;113(2):406-9. Available from: https://www.ajconline.org/article/S0002-9149(13)01973-5/fulltext.
[40] Wu P, Gulati M, Kwok CS, Wong CW, Narain A, O'Brien S, et al. Preterm delivery and future risk of maternal cardiovascular disease: a systematic review and meta-analysis. J Am Heart Assoc. 2018;7;e007809. Available from: https://www.ahajournals.org/doi/pdf/10.1161/JAHA.117.007809.
[41] Brown HL, Warner JJ, Gianos E, Gulati M, Hill AJ, Hollier LM, et al.; on behalf of the American Heart Association and the American College of Obstetricians and Gynecologists. Promoting Risk Identification and Reduction of Cardiovascular Disease in Women Through Collaboration With Obstetricians and Gynecologists: A Presidential Advisory From the American Heart Association and the American College of Obstetricians and Gynecologists. *Circulation.* 2018;137:e843-e852.
[42] Stuart JJ, Tanz LJ, Missmer SA, Rimm EB, Spiegelman D, James-Todd TM, et al. Hypertensive Disorders of Pregnancy and Maternal Cardiovascular Disease Risk Factor Development: An Observational Cohort Study. Ann Intern Med. 21 Aug 2018;169:224-232. Available from: http://annals.org/aim/article-abstract/2686987/hypertensive-disorders-pregnancy-maternal-cardiovascular-disease-risk-factor-development-observational.
[43] Lee JM, Pilli S, Gebremariam A, et al. Getting heavier, younger: trajectories of obesity over the life course. International Journal of Obesity. 2010;34:614-623. Available from: https://www.nature.com/articles/ijo2009235.
[44] Flegal KM, Kruszon-Moran D, Carroll MD, Fryar CD, Ogden CL. Trends in Obesity Among Adults in the United States, 2005-2014. JAMA. 2016;315(21):2284-2291. Available from: https://jamanetwork.com/journals/jama/fullarticle/2526639.
[45] Geiss LS, Wang J, Cheng YJ, Thompson TJ, Barker L, Li Y, et al. Prevalence and Incidence Trends for Diagnosed Diabetes Among Adults Aged 20 to 79 Years, United States, 1980-2012. JAMA. 2014;312(12):1218-1226. Available from: https://jamanetwork.com/journals/jama/fullarticle/1906616.
[46] Pope CA III, Burnett RT, Krewski D, Jerrett M, Shi Y, Calle EE, et al. Cardiovascular mortality and exposure to airborne fine particulate matter and cigarette smoke: shape of the exposure response relationship. Circulation. 2009;120:942-948. Available from:

- Women today are becoming obese at younger ages. Almost 18% of girls ages 2 to 19 were reported to be obese in 2016, a 4% increase from 2013-14. For youth overall, 13.9% were obese in 2000 compared to 18.5% in 2016. Of women ages 20 and older, 41% were obese in 2016.[47]
- Since 1990, the number of adults in the U.S. living with diabetes has tripled, though the pace of growth in diabetes rates has slowed considerably in recent years.[48, 49] But in young adults ages 20 to 44, prevalence is continuing to increase more steeply than for their older counterparts.[50]
- Cigarette smoking rates have declined across all ages in the U.S. since 2002.[51] But "casual" or "light" smoking (people who smoke anywhere from less than 1 pack a day to less than 39 cigarettes per week) is on the rise in young women.[52, 53] Smoking just 20 cigarettes per day for a long period of time increases cardiovascular risk more than smoking 50 cigarettes a day for a short period of time.[54]
- Women in their 20s with high levels of LDL cholesterol (190mg/dL or higher) are 7.8 times more likely to have a nonfatal heart attack or die of coronary heart disease than those with lower levels.[55]
- Between 2006 and 2016, heart disease rates among midlife women remained relatively unchanged, while they declined among similarly aged men.[56]

Racial, Ethnic, and Geographic Issues and Disparities in CVD

- Across each NHANES survey cycle from 2005 to 2014, African American and Hispanic women were at even higher risks of cardiovascular disease than their white counterparts.

https://www.ahajournals.org/doi/abs/10.1161/CIRCULATIONAHA.109.857888?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%3dpubmed.

[47] The State of Obesity: Better Policies for a Healthier America [Internet]. c2004-2018 [cited 23 Oct 2018]. Available from: https://stateofobesity.org/obesity-rates-trends-overview/.

[48] Rowley WR, Bezold C, Arikan Y, Byrne E, Krohe S. Diabetes 2030: Insights from Yesterday, Today, and Future Trends. *Popul Health Manag*. 2017;20(1):6-12. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5278808/.

[49] New CDC report: More than 100 million Americans have diabetes or prediabetes. Atlanta: CDC, c2017 [cited 23 Oct 2018]. Available from: https://www.cdc.gov/media/releases/2017/p0718-diabetes-report.html.

[50] Geiss LS, Wang J, Cheng YJ, Thompson TJ, Barker L, Li Y, et al. Prevalence and Incidence Trends for Diagnosed Diabetes Among Adults Aged 20 to 79 Years, United States, 1980-2012. JAMA. 2014;312(12):1218-1226.

[51] Substance Abuse and Mental Health Services Administration. 2017. Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health (HHS Publication No. SMA 17-5044, NSDUH Series H-52). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Available from: https://www.samhsa.gov/data/sites/default/files/NSDUH-FFR1-2016/NSDUH-FFR1-2016.pdf.

[52] Schane RE, Ling PM, Glantz SA. Health effects of light and intermittent smoking: a review. *Circulation*. 2010;121(13):1518-22. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2865193/.

[53] Li X, Holahan CK, Holahan CJ. Sociodemographic and Psychological Characteristics of Very Light Smoking Among Women in Emerging Adulthood, National Survey of Drug Use and Health, 2011. Prev Chronic Dis 2015;12:140547. Available from: https://www.cdc.gov/pcd/issues/2015/14_0547.htm.

[54] Lubin JH, Couper D, Lutsey PL, Woodward M, Yatsuya H, Huxley RR. Risk of Cardiovascular Disease from Cumulative Cigarette Use and the Impact of Smoking Intensity. *Epidemiology*. 2016;27(3):395-404. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5482174/.

[55] Perak AM, Ning H, de Ferranti SD, Gooding HC, Wilkins JT, and Lloyd-Jones DM. Long-Term Risk of Atherosclerotic Cardiovascular Disease in US Adults With the Familial Hypercholesterolemia Phenotype. Circulation. 2016;134:9-19. Available from: https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.116.022335.

[56] National Center for Health Statistics. Health, United States, 2017: With special feature on mortality. Hyattsville, MD. 2018. Available from: https://www.cdc.gov/nchs/data/hus/hus17.pdf.

Despite have a higher body mass and/or CVD risk, black and Hispanic women were less likely to attempt weight loss or report physical activity than white women.[57]

- The rate of prevalence of hypertension in African Americans in the United States is among the highest in the world. And more black women than black men have high blood pressure.[58]
- Among African American women older than 20, nearly half (47.7%) have CVD, compared to about one-third of Hispanic (33.3%) and white (35.1%) women.[59]
- Between 2011 and 2014, the age-adjusted prevalence of hypertension among non-Hispanic black women was 46.3%, compared to 32.3% among non-Hispanic white women, 30.7% among Hispanic women and 25.7% among Asian women.[60]
- In a 2013 cohort study of nearly 70,000 blacks and whites in 12 southeastern states, 64% of black women had high blood pressure, compared to 52% of white women and 51% of black and white men. Compared to whites, blacks were twice as likely to have uncontrolled blood pressure. Additionally, 28% of black women were not aware they had high blood pressure, compared to 17% of white women.[61]
- According to recent NHANES data from 2015-2016, among those with high blood pressure, the prevalence of controlled hypertension was lower among non-Hispanic blacks (44.6%), Hispanics (45.0%) and non-Hispanic Asians (37.4%), compared to non-Hispanic whites (50.8%). Overall, the data show no improvement in blood pressure control rates in the U.S. since 2010.[62]

Access to Care, Quality of Care, and Missed Opportunities

- In 2016, more women than men ages 18 or older reported meeting with a health care provider at least once during the past 12 months. However, women of different races were more or less likely to see a health professional. Of Hispanic women, 18.5% did not visit a doctor or other health professional in the past 12 months compared with 11.9% of non-Hispanic black women and 9.9% of non-Hispanic white women.[63]

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[57] Morris AA, Ko Y, Hutcheson SH, Quyyumi A. Race/Ethnic and Sex Differences in the Association of Atherosclerotic Cardiovascular Disease Risk and Healthy Lifestyle Behaviors. Journal of the American Heart Association. 2018;7:e008250. Available from: https://www.ahajournals.org/doi/pdf/10.1161/JAHA.117.008250.

[58] Benjamin EJ, Virani SS, Callaway CW, Chamberlain AM, Change AR, Cheng S, et al.; on behalf of the American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2018 update: a report from the American Heart Association. Circulation. 2018;137:e182.

[59] Benjamin EJ, Virani SS, Callaway CW, Chamberlain AM, Change AR, Cheng S, et al.; on behalf of the American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2018 update: a report from the American Heart Association. Circulation. 2018;137:e252.

[60] Benjamin EJ, Virani SS, Callaway CW, Chamberlain AM, Change AR, Cheng S, et al.; on behalf of the American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2018 update: a report from the American Heart Association. Circulation. 2018;137:e182.

[61] Sampson UKA, Edwards TL, Jahangir E, Munro H, Wariboko M, Wassef MG, et al. Factors Associated With the Prevalence of Hypertension in the Southeastern United States: Insights From 69,211 Blacks and Whites in the Southern Community Cohort Study. Circ Cardiovasc Qual Outcomes. 2014 Jan;7(1):33-54. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3962825/.

[62] Bloch MJ. Recent data from National Health and Nutrition Examination Survey (NHANES) demonstrates no improvement in U.S. blood pressure control rates. Journal of American Society of Hypertension. 2018;12(1):3-4. Available from: https://www.ashjournal.com/article/S1933-1711(17)30406-0/fulltext.

[63] Blackwell DL, Villarroel MA. Tables of Summary Health Statistics for U.S. Adults: 2016 National Health Interview Survey. National Center for Health Statistics. 2018. Available from: https://ftp.cdc.gov/pub/Health_Statistics/NCHS/NHIS/SHS/2016_SHS_Table_A-17.pdf.

- Between 2013 and 2016, the first three years of the Affordable Care Act's major Medicaid and private insurance coverage expansions, the proportion of uninsured women ages 15-44 dropped by 41%.[64]
- The 2012 American Heart Association (AHA) National Survey found most women (72-87%, depending on ethnicity) agree with the statement, "I trust my health care provider so much that I always try to follow his/her advice."[65]
    - The data on use of health care services and trust in health providers show there are opportunities to inform and counsel women about their heart disease risk and how to reduce it. Yet, in 2012, the same survey found only 21% of women surveyed online said their doctor had ever discussed their risk for heart disease when discussing their health. Among Hispanics, only 12% reported having such discussions with their doctor.[66]
    - Only 6% of women ages 25-34 surveyed online reported that their doctor had ever discussed their risk of heart disease.[67]
- Many health professionals are stuck in the stigmatization of cardiovascular disease for women. In a Journal of the American College of Cardiology study, only 42% of 200 primary care physicians and 40% of 100 cardiologists surveyed, felt well prepared to assess CVD risk in women.[68]
- Female and black stroke patients are less likely than others to receive preventive care for subsequent strokes. Data from a 2008 study of patients hospitalized for stroke showed that 66% of women
- and 77% of black patients received incomplete evaluations, compared with 54% of men and 54% of whites. Also, women were more likely than men to receive incomplete discharge regimens (anticoagulants and other stroke prevention medications and outpatient follow-up).[69]
- A study of adults at high risk of CVD showed that blacks are less likely than whites to use statins (38% v. 50%, respectively) or aspirin (29% v. 44%) to prevent CVD. This may contribute to the racial disparities in CVD outcomes.[70]

Knowledge and Awareness

- A 2014 Women's Heart Alliance national survey of 1,011 U.S. women ages 25-60 showed that only 27% of respondents could name a woman in their lives with heart disease and only

[64] Dramatic Gains in Insurance Coverage for Women of Reproductive Age Are Now in Jeopardy. Guttmacher Institute; 2018 Jan. Available from: https://www.guttmacher.org/article/2018/01/dramatic-gains-insurance-coverage-women-reproductive-age-are-now-jeopardy.
[65] Mosca L, Hammond G, Mochari-Greenberger H, Towfighi A, Albert MA; on behalf of the American Heart Association Cardiovascular Disease and Stroke in Women and Special Populations Committee of the Council on Clinical Cardiology, Council on Cardiovascular Nursing, Council on High Blood Pressure Research, and Council on Nutrition, Physical Activity and Metabolism. Fifteen-year trends in awareness of heart disease in women: results of a 2012 American Heart Association national survey. Circulation. 2013;127:1254-1263. Available from: https://www.ahajournals.org/doi/pdf/10.1161/CIR.0b013e318287cf2f.
[66] Ibid.
[67] Ibid.
[68] Bairey Merz CN, Andersen H, Sprague E, Burns A, Keida M, Walsh MN, et al. Knowledge, Attitudes, and Beliefs Regarding Cardiovascular Disease in Women: The Women's Heart Alliance. J AM Coll Cardiol 2017;70:123-32. Available from: http://www.onlinejacc.org/content/70/8/1106.
[69] Tuhrim S, Cooperman A, Rojas M, Brust JC, Koppel B, Martin K, et al. The association of race and sex with the underuse of stroke prevention measures. J Stroke Cerebrovasc Dis. 2008;17(4):226-34. Available from: https://www.ncbi.nlm.nih.gov/pubmed/18589344.
[70] Qato DM, Lindau ST, Conti RM, Schumm LP, Alexander GC. Racial and ethnic disparities in cardiovascular medication use among older adults in the United States. Pharmacoepidemiol Drug Saf. 2010 Aug; 19(8):834-842. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3586253/.

11% could name a woman who has died from it. Three-quarters (75%) of women who said they know another woman with heart disease reported concern about their own risk and 58% reported asking their doctor about heart health.[71, 72]

- In another national survey in 2012, only 56% of women surveyed were aware that CVD is their leading cause of death.[73]
- According to a 2016-2017 AHA Survey, about one-third of respondents couldn't recognize at least one warning sign for a stroke, and close to half weren't familiar with the F.A.S.T. acronym designed to help people quickly identify a stroke and get emergency help. (Face dropping. Arm weakness. Speech difficulty. Time to call 911.)[74]
- Seventy-six percent of women ages 25-60 in a 2014 WHA National Survey said they rarely talk about heart disease among family and friends.[75]
- When asked what they would do first if experiencing heart attack symptoms, more women in 2012 (56%) compared to 2009 (53%) said they would call 9-1-1.[76]

Investment in, Spending and Research on Women's CVD

- Per capita spending on circulatory system diseases in the U.S. increased to $747 per year in 2013, up from $544 per capita in 2000.[77] Overall in 2013, people with a diagnosis spend more per capita on health in general than those without a diagnosis.[78]
- Spending on circulatory diseases grew 8% from 2000-2013, down from 8.5% growth from 2000-2012. It ranks fourth (at 8%) of the overall medical services spending growth.[79]
- Over the past few decades, women's participation in clinical trials for some CVD areas have improved, but not all. According to a recent study of participating women in clinical trials supporting FDA CVD drug approvals, women were well represented in hypertension and atrial fibrillation, but were overrepresented in pulmonary arterial hypertension studies.

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[71] Bairey Merz CN, Andersen H, Sprague E, Burns A, Keida M, Walsh MN, et al. Knowledge, Attitudes, and Beliefs Regarding Cardiovascular Disease in Women: The Women's Heart Alliance. J AM Coll Cardiol Jul 2017;70(2):123-132. Available from: http://www.onlinejacc.org/content/70/2/123.

[72] Bairey Merz CN, Andersen HS, Shufelt CL. Gender, Cardiovascular Disease, and the Sexism of Obesity. J Am Coll Cardiol 2015;66(18):1958-1960. Available from: http://www.onlinejacc.org/content/66/18/1958.

[73] Mosca L, Hammond G, Mochari-Greenberger H, Towfighi A, Albert MA; on behalf of the American Heart Association Cardiovascular Disease and Stroke in Women and Special Populations Committee of the Council on Clinical Cardiology, Council on Cardiovascular Nursing, Council on High Blood Pressure Research, and Council on Nutrition, Physical Activity and Metabolism. Fifteen-year trends in awareness of heart disease in women: results of a 2012 American Heart Association national survey. Circulation. 2013;127:1254-1263.

[74] Innovation at Heart: Accelerating Progress to Save Lives 2016-17 American Heart Association Annual Report. Available from: http://www.heart.org/idc/groups/heart-public/@wcm/@cmc/documents/downloadable/ucm_490853.pdf.

[75] Bairey Merz CN, Andersen H, Sprague E, Burns A, Keida M, Walsh MN, et al. Knowledge, Attitudes, and Beliefs Regarding Cardiovascular Disease in Women: The Women's Heart Alliance. J AM Coll Cardiol Jul 2017;70(2):123-132.

[76] Mosca L, Hammond G, Mochari-Greenberger H, Towfighi A, Albert MA; on behalf of the American Heart Association Cardiovascular Disease and Stroke in Women and Special Populations Committee of the Council on Clinical Cardiology, Council on Cardiovascular Nursing, Council on High Blood Pressure Research, and Council on Nutrition, Physical Activity and Metabolism. Fifteen-year trends in awareness of heart disease in women: results of a 2012 American Heart Association national survey. Circulation. 2013;127:1254-1263.

[77] Per capita expenditures on the treatment of circulatory diseases, US $, 2000-2013. Kaiser Family Foundation analysis of Bureau of Economic Analysis Health Care Satellite Account (Blended Account). Feb 2017. Available from: https://www.healthsystemtracker.org/chart-collection/know-cardiovascular-disease-spending-outcomes-united-states/#item-per-capita-basis-spending-increased-747-per-year-treat-circulatory-system-diseases.

[78] Per capita health spending based on diagnosis status, 2013. Kaiser Family Foundation analysis of Medical Expenditure Panel Survey, Agency for Healthcare Research and Quality, U.S. Department of Health and Human Services. Feb 2017. Available from: https://www.healthsystemtracker.org/chart-collection/know-cardiovascular-disease-spending-outcomes-united-states/#item-spending-by-diagnosis.

[79] Contribution to medical services expenditure growth, by disease, 2000-2013. Kaiser Family Foundation analysis of Bureau of Economic Analysis Health Care Satellite Account (Blended Account). Feb 2017. Available from: https://www.healthsystemtracker.org/chart-collection/know-cardiovascular-disease-spending-outcomes-united-states/#item-circulatory-system-diseases-leading-driver-medical-services-spending-growth-2000-2013.

Representation of women was low in heart failure, coronary artery disease and acute coronary syndrome trials.[80]

- In FY 2017, the National Institutes of Health spent $4,769 million on women's health, compared to $999 million on women's cancer research (breast, ovarian, cervical, and uterine).[81]
- A 2018 study looking at 36 cardiovascular drug approvals between January 1, 2005 and September 15, 2015, concluded that 34% of participants overall were women. Women's participation varied by trial with the lowest enrollment at 24% and the highest enrollment at 77%.[82]
- WISEWOMAN, the Center for Disease Control's flagship program, which offers chronic disease risk factor screening and support to low-income women, has expanded to 24 awardees in 21 state health departments and 3 tribal organizations.[83]

[80] Scott PE, Unger EF, Jenkins MR, Southworth MR, McDowell TY, Geller RJ, et al. Participation of Women in Clinical Trials Supporting FDA Approval of Cardiovascular Drugs. Journal of the American College of Cardiology. May 2018;71(18):1960-1969. Available from: http://www.onlinejacc.org/content/71/18/1960.

[81] Estimates of Funding for Various Research, Condition, and Disease Categories (RCDC) [Internet]. Bethesda (MD): National Institutes of Health; c2015 [updated: 30 Jun 2018, cited: 29 Oct 2018]. Available from: https://report.nih.gov/categorical_spending.aspx#legend11.

[82] Scott PE, Unger EF, Jenkins MR, Southworth MR, McDowell TY, Geller RJ, et al. Participation of Women in Clinical Trials Supporting FDA Approval of Cardiovascular Drugs. Journal of the American College of Cardiology. May 2018;71(18):1960-1969.

[83] WISEWOMAN Across the Nation [Internet]. Atlanta: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention; c2014 [updated: 2 Oct 2018; cited 29 Oct 2018]. Available from: https://www.cdc.gov/wisewoman/1816-nofo.htm.