

### Overview

- ◆ Heart disease is the leading cause of death in the United States for both men and women<sup>1</sup>
- ◆ About 630,000 Americans die of heart disease every year – which is about 1 in every 4 deaths<sup>2</sup>
- ◆ Every 40 seconds, someone in the U.S. has a heart attack, and each minute, more than one person in the U.S. dies from a heart disease-related event<sup>3</sup>
- ◆ Overweight and obesity are major risk factors for cardiovascular disease, including coronary heart disease, stroke, atrial fibrillation, venous thromboembolism, and congestive heart failure<sup>4</sup>
- ◆ High blood pressure, high cholesterol, and smoking are key risk factors for heart disease. About half of Americans (47%) have at least one of these three risks<sup>5</sup>
- ◆ Obesity increases the risk of developing many other heart disease risk factors, including hypertension, dyslipidemia, and diabetes mellitus, yet even in the absence of these factors, people with obesity have an increased risk of cardiovascular disease<sup>6</sup>
- ◆ Bariatric surgery has been shown to improve or resolve many cardiovascular disease risk factors, and reduce the risk of heart failure, heart attack, stroke, and mortality from heart disease<sup>7,8,9</sup>

### PREVALENCE and DISEASE BURDEN

- About 28.1 million adults in the U.S. -- 11.5% of the population – have been diagnosed with heart disease<sup>10</sup>
- **Heart disease** refers to several types of heart conditions
  - The most common type is coronary heart disease, which can cause heart attacks; other types of heart disease include arrhythmias, or irregular heartbeats, and congestive heart failure - when the heart is not able to pump blood sufficiently<sup>11</sup>
  - About **5.7 million** adults in the United States have heart failure<sup>12</sup>
- Heart disease costs the U.S. about **\$200 billion** each year, which includes the total cost of health care services, medications, and lost productivity<sup>13</sup>

### OBESITY and HEART DISEASE

- Obesity is among the leading causes of elevated cardiovascular disease mortality and morbidity, and is associated with increased incidence of hypertension, dyslipidemia, and diabetes, all of which increase the risk of cardiovascular disease events<sup>14</sup>
  - Men with obesity have a 67% increased risk of heart disease and men with severe obesity have a 214% increased risk of heart disease, compared to men of normal weight<sup>15</sup>
  - Women with obesity have an 85% increased risk of heart disease and women with severe obesity have a 153% increased risk of heart disease, compared to women of normal weight<sup>16</sup>

- Individuals with obesity have a 104% increased risk of developing heart failure compared to individuals of normal weight<sup>17</sup>
- At least 75% of the incidence of hypertension is related directly to obesity and when someone has both obesity and hypertension, the risk of cardiovascular mortality doubles<sup>18</sup>
- People with obesity have 7-times the risk of developing type 2 diabetes<sup>19</sup>
  - Heart attacks and strokes strike people with diabetes nearly twice as often as people without diabetes<sup>20</sup>
  - Two out of three people with diabetes die from heart disease or stroke<sup>21</sup>

## **Bariatric Surgery and Heart Disease**

- Bariatric surgery is associated with a 56% decreased risk of mortality from coronary artery disease in patients with severe obesity, with a mean follow-up of 7.1 years (NEJM, 2007)<sup>22</sup>
- Gastric bypass surgery was associated with approximately one half the incidence of heart failure compared with intensive lifestyle modification over a 4-year period, with increasing weight loss associated with decreasing risk of heart failure (Circulation, 2017)<sup>23</sup>
- Individuals with obesity who have Roux-en-Y gastric bypass have nearly half the risk of a severe cardiovascular event eight years after surgery compared to similar patients who do not have surgery (Journal of the American Heart Association, 2017)<sup>24</sup>
- Patients with severe obesity and type 2 diabetes who have bariatric surgery are 40% less likely to have a heart attack or stroke within 5 years than those who had usual medical care for their diabetes (JAMA, 2018)<sup>25</sup>
  - Patients who had bariatric surgery were about one-third less likely to develop coronary heart disease and two-thirds less likely to die from any cause
- Bariatric surgery may reduce or eliminate the need for high blood pressure medications in patients with obesity (Circulation, 2017)<sup>26</sup>
  - Within 30 days of surgery, 83.7% of gastric bypass patients achieved blood pressure control with at least 30% fewer medications, and within one year, more than half (51%) of patients experienced remission

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### REFERENCES

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<sup>1</sup> [https://www.cdc.gov/dhdsdp/data\\_statistics/fact\\_sheets/fs\\_heart\\_disease.htm](https://www.cdc.gov/dhdsdp/data_statistics/fact_sheets/fs_heart_disease.htm)

<sup>2</sup> [https://www.cdc.gov/dhdsdp/data\\_statistics/fact\\_sheets/fs\\_heart\\_disease.htm](https://www.cdc.gov/dhdsdp/data_statistics/fact_sheets/fs_heart_disease.htm)

<sup>3</sup> [https://www.cdc.gov/dhdsdp/data\\_statistics/fact\\_sheets/fs\\_heart\\_disease.htm](https://www.cdc.gov/dhdsdp/data_statistics/fact_sheets/fs_heart_disease.htm)

<sup>4</sup> Benjamin et al. Heart Disease and Stroke Statistics— 2018 Update: a report from the American Heart Association. *Circulation*. 2018;137:e67–e492. DOI: 10.1161/CIR.0000000000000558

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<sup>6</sup> Benjamin et al. Heart Disease and Stroke Statistics— 2018 Update: a report from the American Heart Association. *Circulation*. 2018;137:e67–e492. DOI: 10.1161/CIR.0000000000000558

<sup>7</sup> Benotti et al. Gastric Bypass Surgery Produces a Durable Reduction in Cardiovascular Disease Risk Factors and Reduces the Long-Term Risks of Congestive Heart Failure. *Journal of the American Heart Association*. May 2017 <https://www.ahajournals.org/doi/10.1161/JAHA.116.005126>

<sup>8</sup> Sundström et al. Weight Loss and Heart Failure: A Nationwide Study of Gastric Bypass Surgery Versus Intensive Lifestyle Treatment. *Circulation*. 2017 Apr 25;135(17):1577-1585. doi: 10.1161/CIRCULATIONAHA.116.025629. Epub 2017 Mar 3. <https://www.ahajournals.org/doi/abs/10.1161/circulationaha.116.025629>

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<sup>10</sup> <https://www.cdc.gov/nchs/fastats/heart-disease.htm>

<sup>11</sup> [https://www.cdc.gov/heartdisease/other\\_conditions.htm](https://www.cdc.gov/heartdisease/other_conditions.htm)

<sup>12</sup> [https://www.cdc.gov/dhdsdp/data\\_statistics/fact\\_sheets/fs\\_heart\\_failure.htm](https://www.cdc.gov/dhdsdp/data_statistics/fact_sheets/fs_heart_failure.htm)

<sup>13</sup> [https://www.cdc.gov/dhdsdp/data\\_statistics/fact\\_sheets/fs\\_heart\\_disease.htm](https://www.cdc.gov/dhdsdp/data_statistics/fact_sheets/fs_heart_disease.htm)

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<sup>14</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3250069/>

<sup>15</sup> Khan SS, Ning H, Wilkins JT, et al. Association of Body Mass Index With Lifetime Risk of Cardiovascular Disease and Compression of Morbidity. *JAMA Cardiol.* 2018;3(4):280–287. doi:10.1001/jamacardio.2018.0022

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