



## METABOLIC AND BARIATRIC SURGERY FACT SHEET

### OVERVIEW

- Metabolic/bariatric surgery is the most effective and long-lasting treatment for severe obesity resulting in significant weight loss and the improvement, prevention or resolution of many related diseases including type 2 diabetes, heart disease, hypertension, sleep apnea and certain cancers.<sup>1,2</sup>
  - Studies show bariatric surgery may reduce a patient's risk of premature death by 30-50%.<sup>3,4</sup>
- Bariatric surgery is as safe or safer than some of the most commonly performed surgeries in America including gallbladder surgery, appendectomy and knee replacement.<sup>5</sup>

### EFFECTIVENESS

- Studies show patients typically lose the most weight 1-2 years after bariatric surgery and see substantial weight improvements in obesity-related conditions.<sup>6,7</sup>
  - Patients may lose as much as 60% of excess weight six months after surgery, and 77% of excess weight as early as 12 months after surgery.<sup>8</sup>
  - On average, five years after surgery, patients maintain 50% of their excess weight loss.<sup>9</sup>
- Majority of bariatric surgery patients with diabetes, dyslipidemia, hypertension, and obstructive sleep apnea experience remission of these obesity-related diseases.<sup>10</sup>

<u>Condition/Disease</u>	<u>Remission Rate</u>
Type 2 Diabetes	92%
Hypertension	75%
Obstructive Sleep Apnea	96%
Dyslipidemia	76%
Cardiovascular Disease	58%

### SAFETY and RISKS

- The risks of severe obesity outweigh the risks of metabolic/bariatric surgery for many patients.<sup>11,12</sup>
  - The risk of death associated with bariatric surgery is about 0.1%<sup>13</sup> and the overall likelihood of major complications is about 4%.<sup>14</sup>

### ECONOMICS of BARIATRIC SURGERY

- The average cost of bariatric surgery ranges between \$17,000 and \$26,000.<sup>15</sup>
- Because of the reduction or elimination of obesity-related conditions and associated treatment-costs:
  - Estimates suggest third-party payers will recover bariatric surgery costs within 2 to 4 years.<sup>16</sup>
  - Healthcare costs are reduced by 29% within five years of bariatric surgery.<sup>17</sup>

## Estimate of Bariatric Surgery Numbers, 2011-2019

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	2011	2012	2013	2014	2015	2016	2017	2018	2019*
<b>Total</b>	<b>158,000</b>	<b>173,000</b>	<b>179,000</b>	<b>193,000</b>	<b>196,000</b>	<b>216,000</b>	<b>228,000</b>	<b>252,000</b>	<b>256,000</b>
<b>Sleeve</b>	17.8%	33.0%	42.1%	51.7%	53.6%	58.1%	59.4%	61.4%	59.4%
<b>RYGB</b>	36.7%	37.5%	34.2%	26.8%	23.0%	18.7%	17.8%	17.0%	17.8%
<b>Band</b>	35.4%	20.2%	14.0%	9.5%	5.7%	3.4%	2.7%	1.1%	0.9%
<b>BPD-DS</b>	0.9%	1.0%	1.0%	0.4%	0.6%	0.6%	0.7%	0.8%	0.9%
<b>Revision</b>	6.0%	6.0%	6.0%	11.5%	13.6%	14.0%	14.1%	15.4%	16.7%
<b>Other</b>	3.2%	2.3%	2.7%	0.1%	3.2%	2.6%	2.5%	2.3%	2.4%
<b>Balloons</b>	—	—	—	—	0.3%	2.6%	2.8%	2.0%	1.8%

The ASMBS total bariatric procedure numbers are based on the best estimation from available data (BOLD,ACS/MBSAQIP, National Inpatient Sample Data and outpatient estimations).

*\*New methodology for estimating outpatient procedures done at non-accredited centers.*

### ASMBS ENDORSED PROCEDURES

#### Roux-en-Y Gastric Bypass

- Stomach reduced to size of walnut and then attached to middle of small intestine, bypassing a section of the small intestine (duodenum and jejunum) and limiting absorption of calories
- Risks include allergic reactions to medicines, blood clots in the legs, blood loss, breathing problems, heart attack or stroke during or after surgery and infection<sup>18</sup>

#### Sleeve Gastrectomy

- Stomach divided and stapled vertically, removing more than 85%, creating tube or banana-shaped pouch restricting amount of food that can be consumed and absorbed by the body
- Risks include gastritis, heartburn, stomach ulcers; injury to the stomach; intestines, or other organs during surgery; leakage from the line where parts of the stomach have been stapled together; poor nutrition, scarring inside the belly that could lead to a future blockage in the bowel; and vomiting<sup>19</sup>

#### Gastric Banding

- Adjustable silicone band filled with saline wrapped around upper part of stomach, creating small pouch that restricts food intake

- Risks include the gastric band eroding through the stomach, the gastric band slipping partly out of place, gastritis, heartburn, stomach ulcers, infection in the port, injury to the stomach, intestines, or other organs during surgery, poor nutrition, and scarring inside the belly<sup>20</sup>

## Duodenal Switch

- The majority of the most stretchable portion of the stomach is permanently removed and roughly two-thirds to three-fourths of the upper small intestines are bypassed.

## Intragastric Balloon

- Saline-filled silicone balloons temporarily placed in the stomach, limiting amount of food one can eat.

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<sup>1</sup> Weiner, R. A., et al. (2010). Indications and principles of metabolic surgery. U.S. National Library of Medicine. 81(4) pp.379-394. Accessed from: <https://www.ncbi.nlm.nih.gov/pubmed/20361370>

<sup>2</sup> The Effectiveness and Risks of Bariatric Surgery: An Updated Systematic Review and Meta-analysis, 2003-2012 Accessed from: <https://jamanetwork.com/journals/jamasurgery/fullarticle/1790378>

<sup>3</sup> Sjöström, L., et al. (2007). Effects of bariatric surgery on mortality in Swedish obese subjects. *New England Journal of Medicine*. 357 pp. 741-752 Accessed October 2013 from <http://www.nejm.org/doi/pdf/10.1056/NEJMoa066254>

<sup>4</sup> Adams, T. D., et al. (2007). Long-term mortality after gastric bypass surgery. *New England Journal of Medicine*. 357 pp. 753-761. Accessed from: <https://www.nejm.org/doi/full/10.1056/NEJMoa066603>

<sup>5</sup> Aminian, A., et al. (2015). How safe is metabolic/diabetes surgery? *Diabetes Obesity Metabolism*. Feb;17(2):198-201. doi: 10.1111/dom.12405 Accessed from <http://www.ncbi.nlm.nih.gov/pubmed/25352176>

<sup>6</sup> Buchwald, H., et al. (2009). Weight and type 2 diabetes after bariatric surgery: systematic review and meta-analysis. *American Journal of Medicine*. 122(3) pp. 205-206. Accessed from <http://www.ncbi.nlm.nih.gov/pubmed/19272486>

<sup>7</sup> The Effectiveness and Risks of Bariatric Surgery: An Updated Systematic Review and Meta-analysis, 2003-2012 Accessed from: <https://jamanetwork.com/journals/jamasurgery/fullarticle/1790378>

<sup>8</sup> Wittgrove, A. C., et al. (2000). Laparoscopic gastric bypass, roux-en-y: 500 patients: technique and results, with 3-60 month follow-up. *Obesity Surgery*. 10(3) pp. 233-239. Accessed from [http://www.lapbypass.com/pdf/LapGBP\\_500Patients.pdf](http://www.lapbypass.com/pdf/LapGBP_500Patients.pdf)

<sup>9</sup> Adams, T. D., et al. (2007). Long-term mortality after gastric bypass surgery. *New England Journal of Medicine*. 357 pp. 753-761 Accessed from <http://www.nejm.org/doi/full/10.1056/NEJMoa066603>

<sup>10</sup> Chang et al. (2014) The Effectiveness and Risks of Bariatric Surgery An Updated Systematic Review and Meta-analysis, 2003-2012. *JAMA Surg*.149(3):275–287. doi:10.1001/jamasurg.2013.3654 <https://jamanetwork.com/journals/jamasurgery/fullarticle/1790378>

<sup>11</sup> Christou, N. V., et al. (2004). Surgery decreases long-term mortality, morbidity, and health care use in morbidly obese patients. *Annals of Surgery*. 240(3) pp. 416–424 Accessed from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1356432/pdf/20040900s00003p416.pdf>

<sup>12</sup> Schauer, D. P., et al. (2010). Decision modeling to estimate the impact of gastric bypass surgery on life expectancy for the treatment of morbid obesity. *Archives of Surgery*. 145(1) pp.57-62. Accessed from <http://www.ncbi.nlm.nih.gov/pubmed/20083755>

<sup>13</sup> Agency for Healthcare Research and Quality (AHRQ). (2007). Statistical Brief #23. Bariatric Surgery Utilization and Outcomes in 1998 and 2004. Accessed October 2013 from <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb23.jsp>

<sup>14</sup> Flum, D. R., et al. (2009). Perioperative safety in the longitudinal assessment of bariatric surgery. *New England Journal of Medicine*. 361 pp.445-454. Accessed October 2013 from <http://content.nejm.org/cgi/content/full/361/5/445>

<sup>15</sup> Crémieux, P. Y., et al (2008). A study of economic impact of bariatric surgery. *The American Journal of Managed Care*. Accessed from: <https://www.ncbi.nlm.nih.gov/pubmed/18778174>

<sup>16</sup> Crémieux, P. Y., et al (2008). A study of economic impact of bariatric surgery. *The American Journal of Managed Care*. Accessed from: <https://www.ncbi.nlm.nih.gov/pubmed/18778174>

<sup>17</sup> Sampalis J. S., et al. (2004). Impact of weight reduction surgery on health care costs in morbidly obese patients. *Obesity Surgery*. Accessed from: <https://www.ncbi.nlm.nih.gov/pubmed/10605908>

<sup>18</sup> U.S. National Library of Medicine – National Institutes of Health. (2011). Gastric bypass surgery. Accessed from: <http://www.nlm.nih.gov/medlineplus/ency/article/007199.htm>

<sup>19</sup> U.S. National Library of Medicine – National Institutes of Health. (2011). Vertical sleeve gastrectomy. Accessed from: <http://www.nlm.nih.gov/medlineplus/ency/article/007435.htm>

<sup>20</sup> U.S. National Library of Medicine – National Institutes of Health. (2011). Laparoscopic gastric banding surgery. Accessed from: <http://www.nlm.nih.gov/medlineplus/ency/article/007388.htm>