



UTILIZATION MANAGEMENT POLICY

TITLE: BARIATRIC SURGERY

EFFECTIVE DATE: November 22, 2021

This policy was developed with input from specialists in general and bariatric surgery, and endorsed by the Medical Policy Committee.

IMPORTANT INFORMATION – PLEASE READ BEFORE USING THIS POLICY

These services may or may not be covered by all Medica plans. Please refer to the member's plan document for specific coverage information. If there is a difference between this general information and the member's plan document, the member's plan document will be used to determine coverage. With respect to Medicare and Minnesota Health Care Programs, this policy will apply unless these programs require different coverage. Members may contact Medica Customer Service at the phone number listed on their member identification card to discuss their benefits more specifically. Providers with questions about this Medica utilization management policy may call the Medica Provider Service Center toll-free at 1-800-458-5512.

Medica utilization management policies are not medical advice. Members should consult with appropriate health care providers to obtain needed medical advice, care and treatment.

PURPOSE

To promote consistency between utilization management reviewers by providing the criteria that determines the medical necessity.

BACKGROUND

I. Definitions

- A. **Bariatric surgical preparatory program** is a multi-disciplinary approach to preoperative care of the bariatric patient. It encompasses bariatric surgical procedure education; dietary, nutrition, and exercise counseling; management of comorbidities; nursing care; and psychological evaluation and counseling, as warranted.
- B. **Body Mass Index (BMI)** is a formula that uses a person's body mass (height and weight) to estimate that person's risk for morbidity and premature mortality. (See Appendix 1 – Body Mass Index [BMI] Conversion Table.) A BMI between 35 and 39 is viewed as a very high health risk, while a BMI of 40 or more is viewed as an extremely high health risk. The BMI associated with the lowest mortality is between 20 and 25. **Note:** BMI is not to be used with certain groups of people (i.e., athletes, body builders, or pregnant women) who have high BMIs due to muscle mass, fetal tissue, etc.
- C. **Combined restrictive and malabsorptive surgical procedures** restrict meal size and may alter the digestion process, thus causing food to be incompletely absorbed. Examples of combined restrictive and malabsorptive procedures include Roux-en-Y gastric bypass and biliopancreatic diversion with duodenal switch.
- D. **Estimates of adult height** are qualitative indices that assist a caregiver in determining whether a child is growing as expected. One commonly used tool is a growth chart, which records a child's height, weight, and head size over time. Other methods are the 'two years times two' method (i.e., doubling a boy's height at age two; doubling a girl's height at 18 months) or a mid-parental height adjustment measurement.
- E. **Obesity** is a condition in which excessive body fat compromises organ systems, psychosocial well-being, and overall quality of life. The Centers for Disease Control and Prevention (CDC) defines weight higher than what is considered healthy for a given height as being overweight or obese. Body Mass Index (BMI) is a screening tool for overweight and obesity. Overweight is defined as a body mass index (BMI) of 25 to less than 30. The CDC ranks obesity into the following classes:
 1. Class 1: BMI of 30 to less than 35
 2. Class 2: BMI of 35 to less than 40
 3. Class 3: BMI of 40 or higher. Class 3 obesity is sometimes referred to as severe obesity.
- F. **Restrictive surgical procedures** reduce the size of the stomach and limit the amount of food that can be ingested at one time. Surgical incision and resection of the intestine is not involved. Examples of

purely restrictive operations for obesity include adjustable silicone gastric banding (LapBand), sleeve gastrectomy, and vertical banded gastroplasty.

- G. **Skeletal (bone) maturity** occurs when bone growth ceases after puberty and refers to demonstration of fusion of skeletal bones. Females reach skeletal maturity at approximately 16 years of age, while males reach skeletal maturity around 18 years of age. Radiographs of either the knee or of the hand and wrist with subsequent mathematical calculations are often used when exact measurement of skeletal maturity is warranted.
- H. **Substance use disorder**, as defined by the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) is a problematic pattern of use of an intoxicating substance leading to clinically significant impairment or distress. The symptoms associated with a substance use disorder fall into four major groupings: impaired control, social impairment, risky use, and pharmacological criteria (i.e., tolerance and withdrawal).
- I. **Super-obesity** refers to overweight individuals with a BMI of 50-60. Patients with BMI >60 are classified as **super-super obese**.
- J. **Sexual Maturity Rating** (aka, Tanner stage/Tanner scale) is a measure of physical development in children, adolescents, and adults. The scale is named after its originator, James Tanner, a British pediatrician. The scale defines physical measurement of maturity based on external primary and secondary sex characteristics, such as breast or genital size, testicular volume, and development of pubic hair. (See *Appendix 2 – Tanner Stages*).
- K. **Weight loss surgery** encompasses major operations with significant risks of complications. The risks are reduced if the operation and follow-up care are performed by a specialist in bariatric surgery.

II. Common surgical interventions

A. Purely Restrictive procedures:

1. **Vertical banded gastroplasty** consists of constructing a small pouch by placing a vertical staple line along the lesser curvature of the stomach. An opening (or stoma) is created at the distal end of the pouch to allow food to pass normally, but more slowly, from the pouch to the stomach and then to the small intestines. The pouch generally holds about one ounce of food. The person feels full quickly and experiences pain, nausea and/or vomiting when overeating. Both open and laparoscopic techniques are performed for this procedure.
2. **Adjustable silicone gastric banding** is similar in intent to the vertical banded gastroplasty except that an inflatable, adjustable silicone band is laparoscopically inserted around the upper stomach to create a small stomach pouch. An injection reservoir is enclosed under the skin's surface. The inflatable inner surface of the band is then injected with saline to a level suitable for food restriction and subsequent weight loss, as well as patient comfort. The degree of inflation can be adjusted by a clinician as needed. By removing the silicone band, the procedure can be reversed with minimal need for stomach reconstruction. Although most commonly inserted laparoscopically, this procedure can also be done using an open incision.
3. **Sleeve gastrectomy** is a restrictive procedure that is accomplished by removing the outer portion (upper curvature) of the stomach. This leaves a small sleeve of stomach, reducing stomach volume as much as 80 percent. The procedure was originally designed as the first step of a restrictive/malabsorption staged procedure, but is recently being suggested as a primary (one stage) procedure.

B. Combined Restrictive and Malabsorptive procedures:

1. **Roux-en-Y gastric bypass** and its variants consist of two basic steps: creating a small stomach pouch and re-routing the intestines to connect to the pouch. First, a small gastric pouch is constructed, thereby partitioning the pouch from the remaining stomach. The intestine is cut, and the distal end of the bowel is attached to the pouch where the stoma is created. The remaining intestinal limb is reattached farther down the intestinal tract, thereby creating a Y-shaped limb of varying lengths. Gastric bypass procedures work by restricting food intake and by limiting the absorption of calories and nutrients. A gastric bypass is both a gastric restrictive and a malabsorptive procedure. Both open and laparoscopic techniques are performed for this procedure.
2. **Biliopancreatic diversion with duodenal switch** combines biliopancreatic/intestinal bypass and stomach size reduction. First, a sleeve gastrectomy is done, creating a smaller stomach with both the esophageal connection and the pylorus valve remaining intact. Next, a shorter alimentary limb is created from the pylorus to the duodenum and carries food. A longer biliary limb runs from the pancreas and liver and carries bile and pancreatic secretions. The biliary limb is then connected to the alimentary limb, creating a short common channel where limited fat absorption can occur prior to content entry into the colon. This procedure is primarily malabsorptive, with less restriction than that in

the Roux-en-Y gastric bypass. Both open and two-stage laparoscopic techniques are performed for this procedure.

BENEFIT CONSIDERATIONS

1. Prior authorization **is required** for gastrointestinal surgery for obesity for the initial surgical procedure, for a surgical revision, and for a second procedure. Please see the prior authorization list for product specific prior authorization requirements.
2. Coverage may vary according to the terms of the member's plan document.
3. Gastrointestinal surgical procedures for obesity or surgery for weight loss not specifically mentioned in the Medical Necessity Criteria section *are investigative and therefore not covered*. These include, but are not limited to:
 - a. Open loop gastric bypass ("mini" gastric bypass; omega loop gastric bypass; single-anastomosis gastric bypass)
 - b. Unmodified biliopancreatic diversion
 - c. Combined vertical banded gastroplasty-gastric bypass
 - d. Magenstrasse and Mill Procedure (laparoscopic non banded vertical gastroplasty)
 - e. Single-Anastomosis Duodenal Switch, stand-alone procedure (aka, stomach intestinal pylorus-sparing surgery; SIPS)
 - f. AspireAssist Weight Loss Therapy Implant
 - g. Transected silastic ring vertical gastric bypass (Fobi pouch)
 - h. Transoral endoscopic procedures for obesity including, but not limited to, natural orifice transluminal endoscopic surgery and endoscopic revision following bariatric surgery (all methods including, but not limited to, endoluminal suturing and/or stapling, prosthetic insertion [e.g., intragastric balloon; endoluminal sleeve], or endoscopic sclerosant injection).
4. A second procedure for gastrointestinal surgery for obesity in the absence of complications *is not covered*.
5. A reversal (takedown) of gastrointestinal surgery for obesity in the absence of complications *is not covered*.
6. The following services *are NOT covered*:
 1. Education classes
 2. Liquid protein diet replacements/supplements
 3. Appetite suppressants
 4. Over-the-counter vitamin and/or mineral supplements
 5. Weight loss program fees.
7. Medica network providers who are designated by Medica as a bariatric surgeon of excellence will be eligible for reimbursement for bariatric surgical procedures or revisions considered not investigative by Medica's Medical Technology Assessment Committee when performed at a facility designated as a bariatric center of excellence (COE) by Medica. Coverage may vary according to the terms of the member's plan document.
8. Medica has entered into separate contracts with designated providers and facilities to provide gastrointestinal surgery for obesity services as described in the member's plan document. Medica network providers who are *not designated* by Medica as a bariatric surgeon of excellence (COE) *may not be eligible* for reimbursement from Medica when performing gastrointestinal surgery for obesity, dependent on the terms of the member's plan document.
9. Medica network providers who are recognized by Medica as a bariatric surgeon of excellence, but are performing gastrointestinal surgery for obesity at a *facility not designated* by Medica as an inpatient bariatric centers of excellence (COE), *may not be eligible* by Medica for reimbursement for facility charges when performing gastrointestinal surgery for obesity, dependent on the term's of the member's plan document.
10. The Medica approved list, *COE Programs for Bariatric Care* (surgeons and hospitals), in the Medica service area is available online at www.medica.com in the Providers" section. This list is subject to change based on the ongoing approval process for the program. This listing is also available by calling Medica's Provider Literature Request Line at 952-992-2355 or toll-free at 1-800-458-5512, option 1, then option 5, ext. 2-2355.
11. Additional information regarding surgeons or centers of excellence for bariatric care outside the Medica service area can be found on the ASMBS Web site at: <http://asmbs.org> or the ACS Web site at www.facs.org.
12. If the Medical Necessity Criteria and Benefit Considerations are met, Medica will authorize benefits within the limits in the member's plan document.
13. If it appears that the Medical Necessity Criteria and Benefit Considerations are not met, the individual's case will be reviewed by the medical director or an external reviewer. Practitioners are advised of the appeal process in their Medica administrative handbook.

MEDICAL NECESSITY CRITERIA

- I. Indications for initial procedure in individuals over 18 years of age
Gastrointestinal surgery for obesity is considered medically necessary when documentation in the medical record indicates that **all of the following** criteria are met:
 - A. **One of the following** procedures is being requested:
 1. Open or laparoscopic Roux-en-Y (RNY) gastric bypass
 2. Laparoscopic adjustable silicone gastric banding
 3. Open or laparoscopic sleeve gastrectomy
 4. Open or laparoscopic biliopancreatic diversion with duodenal switch (BPD/DS)
 5. Single anastomosis duodeno-ileal bypass with sleeve gastrectomy (SADI-S).
 - B. Psychiatric/psychological evaluation has been conducted by a *licensed* psychologist or psychiatrist, or other *licensed* mental health professional who has an appropriate working knowledge of the psychosocial issues involved in obesity and bariatric surgery, and **all of the following** are documented:
 1. Evaluation has been completed within the past 12 months.
 2. Confirmation of the individual's ability to understand the risks and goals of the surgical procedure.
 3. Absence of unmanageable acute psychiatric illness and/or psychological distress, including but not limited to depression or substance use disorder.
 4. Confirmation of individual's understanding of need to comply with long-term aftercare and with the behavioral changes expected after surgery.
 - C. The initial pre-surgical consultation with the bariatric surgical preparatory team has occurred at least one month prior to the date of surgery.
 - D. **One of the following** is documented:
 1. A BMI **equal to or greater than 40**, and **all of the following** are documented:
 - a. BMI recorded at least one-month preceding surgery.
 - b. Participation in a diet, nutrition, and exercise counseling regimen as recommended and documented by the bariatric surgical preparatory team.
 2. A BMI **between 35 and 39.9**, and **all of the following** are documented:
 - a. BMI recorded at least one month preceding surgery.
 - b. **One of the following** comorbidities documented in the medical record:
 - i. Diabetes mellitus requiring medication (insulin or oral hypoglycemic) or a documented glycosylated hemoglobin (HgbA1c) level at or above 8 documented within the 12 months prior to surgical intervention.
 - ii. Clinically significant hyperlipemia or dyslipidemia requiring medical management or a documented LDL level greater than 130 milligrams per deciliter.
 - iii. Hypertension requiring medical management or blood pressure equal to or greater than 140 mmHg systolic and/or 90 mmHg diastolic documented on more than one occasion.
 - iv. Obstructive sleep apnea requiring CPAP or other related sleep apnea treatment.
 - v. Significant gastroesophageal reflux disease (GERD) (e.g., esophagitis with open reflux/transient lower esophageal sphincter relaxation when Nissen fundoplication has been previously determined not appropriate.)
 - c. Participation in a diet, nutrition, and exercise counseling regimen as recommended and documented by the bariatric surgical preparatory team.
- II. Indications for initial procedure in individuals less than or equal to 18 years of age
Gastrointestinal surgery for obesity is considered medically necessary when documentation in the medical record indicates **all of the following** criteria are met:
 - A. The individual meets criteria I.A.-D., above,
 - B. Greater than 95% of estimated adult height has been achieved based on previously documented individual growth pattern (e.g., two years times two measurement, mid-parental measurement, growth chart tracking)
 - C. A minimum Tanner stage of IV. (See Appendix 2.)
- III. Indications for surgical revisions
Surgical revision following previous gastrointestinal surgery for obesity is considered medically necessary when documentation in the medical record indicates that **all of the following** criteria are met:
 - A. **One of the following** procedures is being requested:
 1. Open or laparoscopic Roux-en-Y (RNY) gastric bypass
 2. Open or laparoscopic sleeve gastrectomy
 3. Open or laparoscopic biliopancreatic diversion with duodenal switch (BPD/DS)
 4. Removal of adjustable gastric band and/or port

5. Vertical banded gastroplasty (VBG).
- B. Documentation in the medical record that the BMI prior to the initial procedure was equal to or greater than 35.
- C. Documentation in medical record of a surgical complication following the primary procedure and related medical confirmation (e.g., imaging results, endoscopic reports).
NOTE: Examples of complications include, but are not limited to:
 1. Stoma ulcer or dilation
 2. Mechanical obstruction
 3. Significant malnutrition
 4. Stenosis
 5. Leakage (e.g., from staple line breakdown, distal stricture, band, port, tubing)
 6. Esophageal or pouch dilation
 7. Uncontrollable gastroesophageal reflux (with or without hiatal hernia), esophagitis, and/or vomiting
 8. Gastric band erosion or slippage of gastric band or port
 9. Infection around hardware (e.g., port used for band adjustments, staple line)
 10. New or recurrent hiatal hernia
 11. Gastric hemorrhage
 12. Hardware failure/malfunction of a mechanical device
 13. Gastrogastric fistula.

CENTERS FOR MEDICARE & MEDICAID SERVICES (CMS)

- For Medicare members, refer to the following, as applicable at: <https://www.cms.gov/medicare-coverage-database/new-search/search.aspx>

MINNESOTA HEALTH CARE PROGRAMS (MHCP)

- For MHCP members, refer to https://www.dhs.state.mn.us/main/idcplg?ldcService=GET_DYNAMIC_CONVERSION&RevisionSelectionMethod=LatestReleased&dDocName=id_000094#
- No MHCP policy found as of 11/10/2021.

DOCUMENT HISTORY

Original Effective Date	November 2005
MPC Endorsement Date(s)	12/2005, 11/2006, 11/2007, 11/2008, 11/2009, 02/2010, 04/2010, 04/2011, 04/2012, 04/2013, 04/2014, 04/2015, 04/2016, 06/2017, 10/2017, 11/2018, 04/2019, 04/2020, 04/2021, 11/2021
Administrative Updates	05/01/2017

References:

Pre 04/2016 Medical Policy Committee (MPC):

1. Aasheim ET, Bjorkman S, Sovik TT, et al. Vitamin status after bariatric surgery: a randomized study of gastric bypass and duodenal switch. *Am J Clin Nutr.* 2009;90(1):15-22.
2. Adams TD, Davidson LE, Litwin SE, et al. Health benefits fo gastric bypass after 6 years. *JAMA.* 2012;308(11):1122-1131.
3. Adrianus C, Berende S, de Zoete JP, Smulders JF, NienhuijsSW. Laparoscopic sleeve gastrectomy feasible for bariatric revision surgery. *Obes Surg.* 2012;22:330-334.
4. Akram J, Matzen SH. Rectus abdominis diastasis. *J Plast Surg Hand Surg.* 2014;48(3):163-9. doi: 10.3109/2000656X.2013.859145.
5. American College of Obstetricians and Gynecologists (ACOG). *Bariatric Surgery and Pregnancy.* ACOG. 2009. (ACOG practice bulletin; no. 105).
6. American Diabetes Association. Executive Summary: Standards of Medical Care in Diabetes-2011. *Diabetes Care.* 2011;34(S1):S4-S10.
7. Anderson MA, Gan SI, Fanelli RD, et al. ASGE Standards of Practice Committee: Role of endoscopy in the bariatric surgery patient. *Gastrointest Endosc.* 2008;68(1):1-10.

8. Bardaro SJ, Gagner M, Consten E, et al. Routine cholecystectomy during laparoscopic biliopancreatic diversion with duodenal switch is not necessary. *Surg Obes Relat Dis*. 2007;3(5):549-553.
9. Brethauer SA, Hammel JP, Schauer PR. Systematic review of sleeve gastrectomy as staging and primary bariatric procedure. *J Surg Obes Related Disease*. 2009;5(4):469-475.
10. BlueCross BlueShield Association. *BCBS Association Tec Assessment: Laparoscopic Adjustable Gastric Banding for Morbid Obesity*. August 2005. [Archived]. Chicago, IL.
11. BlueCross BlueShield Association. *BCBS Association Tec Assessment: Laparoscopic Gastric Bypass Surgery for Morbid Obesity*. August 2005. [Archived]. Chicago, IL.
12. BlueCross BlueShield Association. *BCBS Association Tec Assessment: Newer Techniques in Bariatric Surgery for Morbid Obesity: Laparoscopic Adjustable Gastric Banding, Biliopancreatic Diversion, and Long-Limb Gastric Bypass*. August 2005. [Archived]. Chicago, IL.
13. Buchwald H, Dellogg TA, Leslie DB, Ikramuddin S. Duodenal switch operative mortality and morbidity are not impacted by body mass index. *Ann Surg*. 2008;248(4):541-548.
14. Catalano MF, Rudic G, Anderson AJ, Chua TY. Weight gain after bariatric surgery as a result of a large gastric stoma: endotherapy with sodium morrhuate may prevent the need for surgical revision. *Gastrointest Endosc*. 2007;66(2):240-245.
15. Centers for Medicare and Medicaid Services (CMS). *CMS National Coverage Determination for Bariatric Surgery for Morbid Obesity (100.1)*. <http://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=57&ncdver=3&DocID=100.1&SearchType=Advanced&bc=IAAAABAAAA&>. Accessed May 21, 2014.
16. Colquitt JL, Picot J, Loveman E, Clegg AJ. *Surgery for obesity*. Cochrane Database of Systematic Reviews. 2009, Issue 2. Art. No.: CD003641. DOI: 10/1002/14651858.CD003641.pub3.
17. Cossu ML, Meloni GB, Alagna S, et al. Emergency surgical conditions after biliopancreatic diversion. *Obes Surg*. 2007;17:637-641.
18. Courcoulas AP, Christian NJ, Belle SH, et al. Weight change and health outcomes at 3 years after bariatric surgery among individuals with severe obesity. *JAMA*. 2013;310(22):2416-2425.
19. Dakin GF, Eid G, Mikami D, Pryor A. Endoluminal revision of gastric bypass for weight regain—a systematic review. *Surg Obes Relat Dis*. 2013;9(3):335-342.
20. Darabi S, Talebpour M, Zeinoddini A, Heidari R. Laparoscopic gastric plication versus mini-gastric bypass surgery in the treatment of morbid obesity: a randomized clinical trial. *Surg Obes Relat Dis*. 2013;9(6):914-919.
21. ECRI Institute. *ECRI Custom Hotline Response: Natural Orifice Transluminal Endoscopic Surgery*. October 2007. Last updated November 2008. [Archived]. Plymouth Meeting, PA.
22. ECRI Institute. *ECRI Custom Hotline Response: Safety and Efficacy of StomaphyX Device for Gastric Pouch Reduction after Gastric Bypass Surgery*. February 2008. [Archived] Plymouth Meeting, PA.
23. ECRI Institute. *ECRI Emerging Technology Evidence Report: Laparoscopic Sleeve Gastrectomy for Obesity*. September 2010. Last updated October 2011. [Archived]. Plymouth Meeting, PA.
24. ECRI Institute. *ECRI Evidence Report: Bariatric Surgery for Obesity*. September 2004. Plymouth Meeting, PA.
25. ECRI Institute. *ECRI Evidence Report: Laparoscopic Bariatric Surgery for Morbid Obesity*. May 2005. [Archived] Plymouth Meeting, PA.
26. ECRI Institute. *ECRI Health Technology Forecast: Bariatric Surgery for Treating Type II Diabetes Mellitus in Patients with BMI <35*. April 2011. [Archived]. Plymouth Meeting, PA.
27. ECRI Institute. *ECRI Health Technology Forecast: Bariatric Surgery for Treating Type II Diabetes Mellitus in Patients with BMI <35*. April 2012. [Archived]. Plymouth Meeting, PA.
28. ECRI Institute. *ECRI Health Technology Forecast: Endoluminal Sleeve for Bariatric Preoperative Weight Loss*. May 2011. [Archived]. Plymouth Meeting, PA.
29. ECRI Institute. *ECRI Health Technology Forecast: Natural Orifice Transluminal Endoscopic Surgery (NOTES)*. April 2010. [Archived]. Plymouth Meeting, PA.
30. ECRI Institute. *ECRI Health Technology Forecast: Transoral Gastroplasty for Treating Obesity*. April 2011. [Archived]. Plymouth Meeting, PA.
31. ECRI Institute. *ECRI Hotline Response: Laparoscopic Biliopancreatic Diversion with Duodenal Switch*. February 2010. Plymouth Meeting PA.
32. ECRI Institute. *ECRI Hotline Response: Laparoscopic Sleeve Gastrectomy for Morbid Obesity*. January 2012. Plymouth Meeting, PA.
33. ECRI Institute. *ECRI Emerging Technology Evidence Report: Metabolic Surgery for Resolving Type 2 Diabetes Mellitus in Patients with BMI <35 kg/m2*. July 2013. Plymouth Meeting, PA.
34. ECRI Institute. *ECRI Health Technology Forecast: Endoluminal Sleeve (EndoBarrier) for Preoperative Weight Loss for Treating Obesity*. April 2013. Plymouth Meeting, PA.
35. ECRI Institute. *ECRI Health Technology Forecast: Metabolic (Bariatric) Surgery for Treating Type 2 Diabetes Mellitus in Patients with BMI <35 kg/m2*. April 2013. Plymouth Meeting, PA.

36. ECRI Institute. *ECRI Hotline Response: Repeat Bariatric Surgery for Patients Who Have Not Reached Weight-loss Goals after Previous Surgery*. September 2014. Plymouth Meeting, PA.
37. Eisendrath P, Cremer M, Himpens J, Cadiere GB, Le Moine O, Deviere J. Endotherapy including temporary stenting of fistulas of the upper gastrointestinal tract after laparoscopic bariatric surgery. *Endoscopy*. 2007;39(7):625-630.
38. Farrel TM, Haggerty SP, Overby DW, Kohn GP, Richardson WS, Fanelli RD. Clinical application of laparoscopic bariatric surgery: an evidence-based review. *Surg Endosc*. 2009;23:930-949.
39. Finks JF, Carlin A, Share D, et al. Effect of surgical techniques on clinical outcomes after laparoscopic gastric bypass – results from the Michigan Bariatric Surgery Collaborative. *J Surg Obes Related Disease*. 2011;7(3):284-289.
40. Fuller NR, Pearson S, Lau NS, et al. An intragastric balloon in the treatment of obese individuals with metabolic syndrome: a randomized controlled study. *Obesity (Silver Spring)*. 2013;21(8):1561-1570.
41. Gaggiotti G, Tack J, Garrido AB Jr, Palau M, Cappelluti G, Di Matteo F. Adjustable totally implantable intragastric prosthesis (ATIIP)-Endogast for treatment of morbid obesity: one-year follow-up of a multicenter prospective clinical survey. *Obes Surg*. 2007;17(7):949-956.
42. Gagner M, Deitel M, Kalberer TL, Erickson AL, Crosby RD. The Second International Consensus Summit for Sleeve Gastrectomy, March 19-21, 2009. *J Surg Obes Related Disease*. 2009;5(4):476-485.
43. Georgiadou D, Sergentanis TN, Nixon A, Diamantis T, Tsigris C, Psaltopoulou T. Efficacy and safety of laparoscopic mini gastric bypass. A systematic review. *Surg Obes Relat Dis*. 2014;10(5):984-991.
44. Gumbs AA, Gagner M, Dakin G, Pomp A. Sleeve gastrectomy for morbid obesity. *Obes Surg*. 2007;17:962-929.
45. Hayes Inc. *Hayes Search and Summary: Gastric Imbrication for the Treatment of Morbid Obesity*. December 2010. [Archived January 2012]. Lansdale, PA.
46. Hayes Inc. *Hayes Search and Summary: Natural Orifice Transluminal Surgery (NOTES®) for Gastrointestinal Indications*. December 2008. [Archived January 2010]. Lansdale, PA.
47. Hayes Inc. *Hayes Search and Summary: ROSE Procedure (Restorative Obesity Surgery Endoscopic)*. May 2010. [Archived April 2011]. Lansdale, PA.
48. Hayes, Inc. *Hayes Brief: Laparoscopic Ileal Interposition and Sleeve Gastrectomy for Treatment of Type 2 Diabetes*. February 2009. Search last updated March 2011. [Archived March 2012]. Lansdale, PA.
49. Hayes, Inc. *Hayes Brief: Laparoscopic Mini-Gastric Bypass for Morbid Obesity*. August 2006. Search last updated September 2008. [Archived September 2009]. Lansdale, PA.
50. Hayes, Inc. *Hayes Brief: Laparoscopic Sleeve Gastrectomy for Super Obesity in Adults*. December 2010. Search last updated November 2011. [Archived]. Lansdale, PA.
51. Hayes, Inc. *Hayes Brief: Laparoscopic Sleeve Gastrectomy for Super Obesity in Adults*. October 2012. Annual Review last updated October 2013. Lansdale, PA.
52. Hayes, Inc. *Hayes Directory: Laparoscopic Bariatric Surgery: Roux-en-Y Gastric Bypass, Vertical Banded Gastroplasty and Adjustable Gastric Banding*. June 2007. Search last updated June 2011. [Archived July 2012]. Lansdale PA.
53. Hayes, Inc. *Hayes Directory: Malabsorptive Bariatric Surgery: Open and Laparoscopic Biliopancreatic Diversion*. June 2007. Search last updated June 2011. [Archived July 2012]. Lansdale, PA.
54. Hayes, Inc. *Hayes Directory: Open Malabsorptive Bariatric Surgery: Roux-en-Y Gastric Bypass*. June 2007. Search last updated June 2011. [Archived July 2012]. Lansdale, PA.
55. Hayes, Inc. *Hayes Directory: Open Restrictive Bariatric Surgery: Gastroplasty and Gastric Banding*. June 2007. Search last updated June 2011. [Archived July 2012]. Lansdale, PA.
56. Hayes, Inc. *Hayes Directory: Pediatric Bariatric Surgery for Morbid Obesity*. June 2007. Search last updated June 2011. [Archived July 2012]. Lansdale, PA.
57. Hayes, Inc. *Hayes Directory: Roux-en-Y Gastric Bypass for Gastroesophageal Reflux Disease in Obese or Severely Obese Patients*. July 2013. Annual Review last updated July 2014. Lansdale, PA.
58. Hayes, Inc. *Hayes Search & Summary: Endoscopic Revision of Failed Bariatric Surgery*. November 2007. [Archived]. Lansdale, PA.
59. Hayes, Inc. *Hayes Search & Summary: Endoscopic Reoperation for Treatment of Complications After Bariatric Roux-en-Y Gastric Bypass Surgery*. November 2013. Lansdale, PA.
60. Hayes, Inc. *Hayes Search & Summary: StomaphX™ (EndoGastric Solutions Inc.) for Gastric Pouch Reduction after Gastric Bypass Surgery*. November 2010. [Archived December 2011]. Lansdale, PA.
61. Hayes, Inc. *Hayes Directory: Laparoscopic Sleeve Gastrectomy for Super Obesity in Adults*. October 2012. Annual Review last updated September 2014. Lansdale, PA.
62. Hayes, Inc. *Hayes Directory: Revisional Surgery for Treatment of Complications After Bariatric Surgery*. July 2014. Lansdale, PA.
63. Hayes, Inc. *Hayes Directory: Roux-en-Y Gastric Bypass for Diabetes in Obese or Severely Obese Patients*. August 2014. Lansdale, PA.
64. Hayes, Inc. *Hayes Directory: Roux-en-Y Gastric Bypass for Gastroesophageal Reflux Disease in Obese or Severely Obese Patients*. July 2013. Lansdale, PA.

65. Hayes, Inc. *Hayes Search & Summary: Biliopancreatic Diversion with Duodenal Switch for Treatment of Obesity in Adults*. July 2014. Lansdale, PA.
66. Himpens J, Dapri G, Cadiere GB. A prospective randomized study between laparoscopic gastric banding and laparoscopic isolated sleeve gastrectomy: results after 1 and 3 years. *Obes Surg*. 2006;16(11):1450-1456.
67. Hutter MM, Schirmer BD, Jones DB, et al. First report from the American College of Surgeons Bariatric Surgery Center Network: laparoscopic sleeve gastrectomy has morbidity and effectiveness positioned between the band and the bypass. *Ann Surg*. 2001;254:410-422.
68. Iannelli A, Schneck AS, Noel P, Amor IB, Krawczykowski D, Gugenheim J. Re-sleeve gastrectomy for failed laparoscopic sleeve gastrectomy: a feasibility study. *Obes Surg*. 2011;21:832-835.
69. Ikramuddin S, Horner J, Lee WJ, et al. Roux-en-Y gastric bypass vs intensive medical management for the control of Type 2 diabetes, hypertension, and hyperlipidemia. *JAMA*. 2013;309(21):2240-2249.
70. Institute for Clinical Systems Improvement (ICSI). *ICSI Clinical Guideline: Prevention and Management of Obesity (Mature Adolescents and Adults)*. April 2011. Bloomington, MN.
71. Institute for Clinical Systems Improvement (ICSI). *ICSI Technology Assessment: Gastric Restrictive Surgery for Clinically Severe Obesity in Adults*. May 2005. [Archived]. Bloomington, MN.
72. Karamanakos SN, Vagenas K, Kalfarentzos F, Alexandrides TK. Weight loss, appetite suppression, and changes in fasting and postprandial ghrelin and peptide YY levels after Roux en Y gastric bypass and sleeve gastrectomy: a prospective, double blind study. *Ann Surg*. 2008;247(3):401-407.
73. Lee WJ, Yu PJ, Wang W, Chen TC, Wei PL, Huang MT. Laparoscopic Roux-en-Y versus mini-gastric bypass for the treatment of morbid obesity – a prospective randomized controlled clinical trial. *Ann Surg*. 2005;242(1):20-28.
74. Mahawar KK, Jennings N, Brown J, Gupta A, Balupuri S, Small PK. "Mini" gastric bypass: systematic review of a controversial procedure. *Obes Surg*. 2013;23(11):1890-1898.
75. Martins C, Strommen M, Stavne OA, Nossum R, Marvik R, Kulseng B. Bariatric surgery versus lifestyle interventions for morbid obesity – changes in body weight, risk factors and comorbidities at 1 year. *Obes Surg*. 2011;21:841-849.
76. McGee M, Osen M, Marks J, et al. A primer on natural orifice transluminal endoscopic surgery: building a new paradigm. *Surg Innov*. 2006;13(2):86-93.
77. McNatt SS, Longhi JJ, Goldman CD, McFadden DW. Surgery for obesity: a review of the current state of the art and future directions. *J Gastrointest Surg*. 2007;11:382-402.
78. Mechanick JI, Youdim A, Jones DB, et al. Clinical practice guidelines for the perioperative nutritional, metabolic, and nonsurgical support of the bariatric surgery patient—2013 update: cosponsored by American Association of Clinical Endocrinologists, The Obesity Society, and American Society for Metabolic & Bariatric Surgery. *Obesity (Silver Spring)*. 2013;21(Suppl 1):S1-S27.
79. Musella M, Susa A, Greco F, et al. The laparoscopic mini-gastric bypass: the Italian experience: outcomes from 974 consecutive cases in a multicenter review. *Surg Endosc*. 2014;28(1):156-163.
80. Mingrone G, Panunzi S, De Gaetano A, et al. Bariatric surgery versus conventional medical therapy for type 2 diabetes. *N Engl J Med*. 2012;366(17):1577-1585.
81. Nocca D, Guillaume F, Noel P, et al. Impact of laparoscopic sleeve gastrectomy and laparoscopic gastric bypass on HbA1c blood level and pharmacological treatment of Type 2 diabetes mellitus in severe or morbidly obese patients: results of a multicenter prospective study at 1 year. *Obes Surg*. 2011;21:738-743.
82. Parikh M, Pomp A, Gagner M. Laparoscopic conversion of failed gastric bypass to duodenal switch: technical considerations and preliminary outcomes. *Surg Obes Relat Dis*. 2007;3(6):611-618.
83. Patel SR, Mason J, Hakim N. The Duodenal-jejunal Bypass Sleeve (EndoBarrier Gastrointestinal Liner) for Weight Loss and Treatment of Type II Diabetes. *Indian J Surg*. 2012;74(4):275-277.
84. Peker U, Coskun H, Boskurt S, Cin N, Atak T, and Genc H. Comparison of results of laparoscopic gastric banding and consecutive intragastric balloon application at 18 months: a clinical prospective study. *J Laparoendo Adv Surg Tech*. 2011;21(6):471-475.
85. Peterli R, Wolnerhanssen B, Peters T, et al. Improvement in glucose metabolism after bariatric surgery: comparison of laparoscopic Roux-en-Y gastric bypass and laparoscopic sleeve gastrectomy. *Ann Surg*. 2009;250(2):234-241.
86. Poirier P, Cornier MA, Massone T, et al. Bariatric surgery and cardiovascular risk factors: a scientific statement from the American Heart Association. *Circulation*. 2011;123:1683-1701.
87. Prachand VN, DaVee RT, Alverdy JC. Duodenal switch provides superior weight loss in the super-obese (BMI >50kg/m²) compared with gastric bypass. *Ann Surg*. 2006;244(4):611-619.
88. Ramos AC, Galvao Neto MP, de Souza YM, et al. Laparoscopic duodenal-jejunal exclusion in the treatment of type 2 diabetes mellitus in patients with BMI<30 kg/m² (LBMI). *Obes Surg*. 2009;19(3):307-312.
89. Rohde U, Hedbäck N, Gluud LL, Vilsbøll T, Knop FK. Effect of the EndoBarrier Gastrointestinal Liner on obesity and type 2 diabetes: protocol for systematic review and meta-analysis of clinical studies. *BMJ Open*. 2013;3(9):e003417.
90. Sakai P, Faintuch J. Evolving endoscopic surgery. *J Gastroenterol Hepatol*. 2014;29(6):1132-1138.

91. Saunders JK, Ballantyne GH, Belsley S, et al. 30-day readmission rates at a high volume bariatric surgery center: laparoscopic adjustable gastric banding, laparoscopic gastric bypass, and vertical banded gastroplasty-Roux-en-Y gastric bypass. *Obes Surg.* 2007;17:1171-1177.
92. Schauer PR, Kashyap SR, Wolski K, et al. Bariatric surgery versus intensive medical therapy in obese patients with diabetes. *N Engl J Med.* 2012;366(17):1567-1576.
93. Schauer P, Chand B, Brethauer S. New applications for endoscopy: the emerging field of endoluminal and transgastric bariatric surgery. *Surg Endosc.* 2007;21(3):347-356.
94. Schauer PR, Bhatt DL, Kirwan JP, et al. Bariatric surgery versus intensive medical therapy for diabetes--3-year outcomes. *N Engl J Med.* 2014;370(21):2002-2013.
95. Scozzari G, Farinella E, Bonnet G, Toppino M, Morino M. Laparoscopic adjustable silicone gastric banding vs laparoscopic vertical banded gastroplasty in morbidly obese patients: long-term results of a prospective randomized controlled clinical trial. *Obes Surg.* 2009;19(8):1108-1115.
96. Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). *SAGES Guideline for Clinical Application of Laparoscopic Bariatric Surgery.* <http://www.sages.org/publication/id/30/>. June 2008. Accessed May 21, 2014.
97. Stroh C, Birk D, Flade R, et al. Results of sleeve gastrectomy – data from a nationwide survey on bariatric surgery in Germany. *Obes Surg.* 2009;19:632-640.
98. Sudan R, Puri V, Sudan D. Robotically assisted biliary pancreatic diversion with a duodenal switch: a new technique. *Surg Endosc.* 2007;21(5):729-733.
99. Vest AR, Heneghan HM, Agarwal S, Schauer PR, Young JB. Bariatric surgery and cardiovascular outcomes: a systematic review. *Heart.* 2012;98(24):1763-1777.
100. Vijgen GHEJ, Schouten F, Pelzers L, Greve JW, van Helden SH, Bouvy ND. Revision of laparoscopic adjustable gastric banding: success or failure? *Obes Surg.* 2012;22:287-292.
101. Wagh MS, Thompson CC. Surgery insight: natural orifice transluminal endoscopic surgery – an analysis of work to date. *Nat Clin Pract Gastroenterol Hepatol.* 2007;4(7):386-392.
102. Weiner RA, Weiner S, Pomhoff, Jacobi C, Makarewicz W, Weigand G. Laparoscopic sleeve gastrectomy – influence of sleeve size and resected gastric volume. *Obes Surg.* 2007;17:1297-1305.
103. Zimmet P, Alberti GMM. Surgery or medical therapy for obese patients with type 2 diabetes? *N Engl J Med.* 2010. doi:10.1056/NEJMe1202443).
104. Zundel N, Hernandez JD. Revisional surgery after restrictive procedures for morbid obesity. *Surg Laparosc Endosc Percutan Tech.* 2012;366(17):1635-1636.

04/2016 MPC:

105. Baskota A, Li S, Dhakal N, Liu G, Tian H. Bariatric Surgery for Type 2 Diabetes Mellitus in Patients with BMI <30 kg/m²: A Systematic Review and Meta-Analysis. *PLoS One.* 2015;10(7):e0132335. doi: 10.1371/journal.pone.0132335.
106. Müller-Stich BP, Senft JD, Warschkow R, et al. Surgical versus medical treatment of type 2 diabetes mellitus in nonseverely obese patients: a systematic review and meta-analysis. *Ann Surg.* 2015;261(3):421-429.
107. Paulus GF, de Vaan LE, Verdam FJ, Bouvy ND, Ambergen TA, van Heurn LW. Bariatric surgery in morbidly obese adolescents: a systematic review and meta-analysis. *Obes Surg.* 2015;25(5):860-78. Doi 10.1007/s11695-015-1581-2.

06/2017 MPC:

108. Cadejani FA, Diniz GC, Alves G. Aggressive clinical approach to obesity improves metabolic and clinical outcomes and can prevent bariatric surgery: a single center experience. *BMC Obes.* 2017;4:9. doi: 10.1186/s40608-017-0147-3.
109. Hayes, Inc. Hayes Directory: Roux-en-Y Bypass for Treatment of Type II Diabetes: A Review of Reviews. May 2017. Lansdale, PA.
110. Schauer PR, Bhatt DL, Kirwan JP1, Wolski K, Aminian A, Brethauer, et al. Bariatric Surgery versus Intensive Medical Therapy for Diabetes - 5-Year Outcomes. *N Engl J Med.* 2017;376(7):641-651. doi: 10.1056/NEJMoa1600869.

10/2017 MPC:

111. Beamish AJ, Gronowitz E, Olbers T, Flodmark CE, Marcus C, Dahlgren J. Body composition and bone health in adolescents after Roux-en-Y gastric bypass for severe obesity. *Pediatr Obes.* 2017;12(3):239-246. doi: 10.1111/ijpo.12134.
112. Brissman M, Ekblom K, Hagman E, et al. Physical Fitness and Body Composition Two Years after Roux-En-Y Gastric Bypass in Adolescents. *Obes Surg.* 2017;27(2):330-337. doi: 10.1007/s11695-016-2282-1
113. Ejaz A, Patel P, Gonzalez-Heredia R, Holterman M, Elli EF, Kanard R. Laparoscopic sleeve gastrectomy as first-line surgical treatment for morbid obesity among adolescents. *J Pediatr Surg.* 2017 Apr;52(4):544-548.

114. Hervieux E1, Baud G2, Dabbas M3, et al. Comparative results of gastric banding in adolescents and young adults. *J Pediatr Surg*. 2016;51(7):1122-1125.
115. Hsia DS, Fallon SC, Brandt ML. Adolescent bariatric surgery. *Arch Pediatr Adolesc Med*. 2012 Aug;166(8):757-766.
116. Inge TH, Jenkins TM, Xanthakos SA, et al. Long-term outcomes of bariatric surgery in adolescents with severe obesity (FABS-5+): a prospective follow-up analysis. *Lancet Diabetes Endocrinol*. 2017;5(3):165-173.
117. Maffazioli GD, Stanford FC, Campoverde Reyes KJ, et al. Comparing Outcomes of Two Types of Bariatric Surgery in an Adolescent Obese Population: Roux-en-Y Gastric Bypass vs. Sleeve Gastrectomy. *Front Pediatr*. 2016;4:78. doi: 10.3389/fped.2016.00078.
118. Mirensky TL. Bariatric Surgery in Youth. *Endocrinol Metab Clin North Am*. 2016 ;45(2):419-431. doi: 10.1016/j.ecl.2016.02.003.
119. Olbers T, Beamish AJ, Gronowitz E, et al. Laparoscopic Roux-en-Y gastric bypass in adolescents with severe obesity (AMOS): a prospective, 5-year, Swedish nationwide study. *Lancet Diabetes Endocrinol*. 2017;5(3):174-183.
120. Paulus GF, de Vaan LE, Verdam FJ, Bouvy ND, Ambergen TA, van Heurn LW. Bariatric surgery in morbidly obese adolescents: a systematic review and meta-analysis. *Obes Surg*. 2015;25(5):860-878. doi: 10.1007/s11695-015-1581-2.
121. Pratt JS, Lenders CM, Dionne EA, et al. Best practice updates for pediatric/adolescent weight loss surgery. *Obesity (Silver Spring)*. 2009;17(5):901-910. doi: 10.1038/oby.2008.577.
122. Serrano OK, Zhang Y, Kintzer E3, et al. Outcomes of bariatric surgery in the young: a single-institution experience caring for patients under 21 years old. *Surg Endosc*. 2016;30(11):5015-5022.
123. Vilallonga R1, Himpens J, van de Vrande S. Long-Term (7 Years) Follow-Up of Roux-en-Y Gastric Bypass on Obese Adolescent Patients (<18 Years). *Obes Facts*. 2016;9(2):91-100. doi: 10.1159/000442758.
124. Zitsman JL, DiGiorgi MF, Fennoy I, Kopchinski JS, Sysko R, Devlin MJ. Adolescent laparoscopic adjustable gastric banding (LAGB): prospective results in 137 patients followed for 3 years. *Surg Obes Relat Dis*. 2015;11(1):101-9. doi: 10.1016/j.soard.2014.06.001.

09/2018 MTAC and 11/2018 MPC:

125. Ali MR, Moustarah F, Kim JJ; American Society for Metabolic and Bariatric Surgery Clinical Issues Committee. American Society for Metabolic and Bariatric Surgery position statement on intragastric balloon therapy endorsed by the Society of American Gastrointestinal and Endoscopic Surgeons. *Surg Obes Relat Dis*. 2016;12(3):462-467. doi: 10.1016/j.soard.2015.12.026.
126. ASGE STANDARDS OF PRACTICE COMMITTEE, Evans JA, Muthusamy VR, et al. The role of endoscopy in the bariatric surgery patient. *Surg Obes Relat Dis*. 2015;11(3):507-17. doi: 10.1016/j.soard.2015.02.015.
127. Carbajo MA, Luque-de-León E, Jiménez JM, Ortiz-de-Solórzano J, Pérez-Miranda M, Castro-Alija MJ. Laparoscopic One-Anastomosis Gastric Bypass: Technique, Results, and Long-Term Follow-Up in 1200 Patients. *Obes Surg*. 2017;27(5):1153-1167. doi: 10.1007/s11695-016-2428-1.
128. Chevallier JM, Arman GA, Guenzi M, et al. One thousand single anastomosis (omega loop) gastric bypasses to treat morbid obesity in a 7-year period: outcomes show few complications and good efficacy. *Obes Surg*. 2015;25(6):951-8. doi: 10.1007/s11695-014-1552-z.
129. Cohen R1, Le Roux CW2, Junqueira S3, Ribeiro RA4, Luque A3. Roux-En-Y Gastric Bypass in Type 2 Diabetes Patients with Mild Obesity: a Systematic Review and Meta-analysis. *Obes Surg*. 2017;27(10):2733-2739. doi: 10.1007/s11695-017-2869-1.
130. Coffin B, Maunoury V, Pattou F, et al. Impact of Intragastric Balloon Before Laparoscopic Gastric Bypass on Patients with Super Obesity: a Randomized Multicenter Study. *Obes Surg*. 2017;27(4):902-909. doi: 10.1007/s11695-016-2383-x.
131. Cottam A, Cottam D, Portenier D, et al. A Matched Cohort Analysis of Stomach Intestinal Pylorus Saving (SIPS) Surgery Versus Biliopancreatic Diversion with Duodenal Switch with Two-Year Follow-up. *Obes Surg*. 2017;27(2):454-461. doi: 10.1007/s11695-016-2341-7.
132. Courcoulas A, Abu Dayyeh BK, Eaton L, et al. Intragastric balloon as an adjunct to lifestyle intervention: a randomized controlled trial. *Int J Obes (Lond)*. 2017;41(3):427-433. doi: 10.1038/ijo.2016.229.
133. Dargent J, Mion F, Costil V, et al. Multicenter Randomized Study of Obesity Treatment with Minimally Invasive Injection of Hyaluronic Acid Versus and Combined with Intragastric Balloon. *Obes Surg*. 2015;25(10):1842-1847. doi: 10.1007/s11695-015-1648-0.
134. De Roover A, Kohnen L, Deflines J, et al. Laparoscopic Magenstrasse and Mill gastropasty. First results of a prospective study. *Obes Surg*. 2015;25(2):234-241. doi: 10.1007/s11695-014-1424-6.
135. ECRI Institute. ECRI Clinical Specialty Forecast. Bariatric Services: New Devices and Procedures for Treating Obesity. 2016. Plymouth Meeting, PA.
136. ECRI Institute. ECRI Product Brief: AspireAssist (Aspire Bariatrics, Inc.) Implant for Evacuating Post-meal Stomach Contents to Lose Weight. July 2016. Plymouth Meeting, PA.
137. Forssell H, Norén E. A novel endoscopic weight loss therapy using gastric aspiration: results after 6 months. *Endoscopy*. 2015;47(1):68-71. doi: 10.1055/s-0034-1378097.

138. Gaur S, Lewy S, Mathus-Vliegen L, Chuttani R. Balancing risk and reward: a critical review of the intragastric balloon for weight loss. *Gastrointest Endosc.* 2015;81(6):1330-1336. doi: 10.1016/j.gie.2015.01.054.
139. Hayes Inc. Hayes Directory: Comparative Effectiveness of Roux-en-Y Gastric Bypass and Sleeve Gastrectomy for Treatment of Type II Diabetes: A Review of Reviews. July 2017. Annual Review last updated July 2018. Lansdale, PA.
140. Hayes, Inc. Hayes Annual Review: Laparoscopic Sleeve Gastrectomy for Super Obesity in Adults. September 2016. Lansdale, PA.
141. Hayes, Inc. Hayes Annual Review: Revisional Surgery for Treatment of Complications After Bariatric Surgery. September 2016. Lansdale, PA.
142. Hayes, Inc. Hayes Brief: Single-Anastomosis Duodenal Switch for Weight Loss. February 2018. Lansdale, PA.
143. Hayes, Inc. Hayes Clinical Research Response: Orbera Intragastric Balloon System (Apollo Endosurgery Inc.). October 2015. Lansdale, PA.
144. Hayes, Inc. Hayes Clinical Research Response: OverStitch Endoscopic Suturing System (Apollo Endosurgery Inc.). May 2018. Lansdale, PA.
145. Hayes, Inc. Hayes Directory: Bariatric Surgeries for Treatment of Obesity in Adolescents. May 2018. Lansdale, PA.
146. Hayes, Inc. Hayes Directory: Impact of Preoperative Supervised Weight Loss Programs on Bariatric Surgery Outcomes. December 2017. Lansdale, PA.
147. Hayes, Inc. Hayes Directory: Intragastric Balloons for Treatment of Obesity. March 2018. Lansdale, PA.
148. Hayes, Inc. Hayes Search & Summary: Roux-en-Y Gastric Bypass (RYGB) for Treatment of Obesity in Adolescent Patients. November 2017. Lansdale, PA.
149. Hayes, Inc. Hayes Search & Summary: Sleeve Gastrectomy for Treatment of Obesity in Adolescent Patients. December 2017. Lansdale, PA.
150. Hayes, Inc. Hayes Search & Summary: Transoral Outlet Reduction (TORe) After Bariatric Surgery. January 2017. Lansdale, PA.
151. Graus Morales J, Crespo Pérez L, Marques A, et al. Modified endoscopic gastroplasty for the treatment of obesity. *Surg Endosc.* 2018;32(9):3936-3942. doi: 10.1007/s00464-018-6133-0.
152. Jirapinyo P, Dayyeh BK, Thompson CC3. Gastrojejunal anastomotic reduction for weight regain in roux-en-y gastric bypass patients: physiological, behavioral, and anatomical effects of endoscopic suturing and sclerotherapy. *Surg Obes Relat Dis.* 2016;12(10):1810-1816. doi: 10.1016/j.soard.2016.09.036.
153. Kim J, Eisenberg D, Azagury D, Rogers A, Campos GM. American Society for Metabolic and Bariatric Surgery position statement on long-term survival benefit after metabolic and bariatric surgery. *Surg Obes Relat Dis.* 2016;12(3):453-459. doi: 10.1016/j.soard.2015.11.021.
154. Kim J; American Society for Metabolic and Bariatric Surgery Clinical Issues Committee. American Society for Metabolic and Bariatric Surgery statement on single-anastomosis duodenal switch. *Surg Obes Relat Dis.* 2016;12(5):944-945. doi: 10.1016/j.soard.2016.05.006.
155. Kumar N, Abu Dayyeh BK, Lopez-Nava Breviere G, et al. Endoscopic sutured gastroplasty: procedure evolution from first-in-man cases through current technique. *Surg Endosc.* 2018;32(4):2159-2164. doi: 10.1007/s00464-017-5869-2.
156. Kumar N, Thompson CC. Transoral outlet reduction for weight regain after gastric bypass: long-term follow-up. *Gastrointest Endosc.* 2016;83(4):776-779. doi: 10.1016/j.gie.2015.08.039.
157. Lim RB. Bariatric procedures for the management of severe obesity: Descriptions. Last updated May 31, 2018. In: *UpToDate*, Basow, DS (Ed), UpToDate, Waltham, MA, 2018.
158. Lim RB. Intragastric balloon therapy for weight loss. Last updated June 11, 2018. In: *UpToDate*, Basow, DS (Ed), UpToDate, Waltham, MA, 2018.
159. Mahawar KK, Himpens J, Shikora SA, et al. The First Consensus Statement on One Anastomosis/Mini Gastric Bypass (OAGB/MGB) Using a Modified Delphi Approach. *Obes Surg.* 2018;28(2):303-312. doi: 10.1007/s11695-017-3070-2.
160. Moura D, Oliveira J, De Moura EG, et al. Effectiveness of intragastric balloon for obesity: A systematic review and meta-analysis based on randomized control trials. *Surg Obes Relat Dis.* 2016;12(2):420-429. doi: 10.1016/j.soard.2015.10.077.
161. Norén E, Forssell H. Aspiration therapy for obesity; a safe and effective treatment. *BMC Obes.* 2016;3:56. doi: 10.1186/s40608-016-0134-0.
162. Nyström M, Machytka E, Norén E, et al. Aspiration Therapy As a Tool to Treat Obesity: 1- to 4-Year Results in a 201-Patient Multi-Center Post-Market European Registry Study. *Obes Surg.* 2018;28(7):1860-1868. doi: 10.1007/s11695-017-3096-5.
163. Papasavas P, El Chaar M, Kothari SN; American Society for Metabolic and Bariatric Surgery Clinical Issues Committee. American Society for Metabolic and Bariatric Surgery position statement on vagal blocking therapy for obesity. *Surg Obes Relat Dis.* 2016;12(3):460-461. doi: 10.1016/j.soard.2015.12.004.

164. Ponce J, Woodman G, Swain J, et al. The REDUCE pivotal trial: a prospective, randomized controlled pivotal trial of a dual intragastric balloon for the treatment of obesity. *Surg Obes Relat Dis*. 2015;11(4):874-881. doi: 10.1016/j.soard.2014.12.006.
165. Rubino F, Nathan DM, Eckel RH, et al. Metabolic Surgery in the Treatment Algorithm for Type 2 Diabetes: a Joint Statement by International Diabetes Organizations. *Obes Surg*. 2017;27(1):2-21. doi: 10.1007/s11695-016-2457-9.
166. Saber AA, Shoar S, Almadani MW, et al. Efficacy of First-Time Intragastric Balloon in Weight Loss: a Systematic Review and Meta-analysis of Randomized Controlled Trials. *Obes Surg*. 2017;27(2):277-287. doi: 10.1007/s11695-016-2296-8.
167. Shoar S, Poliakin L, Rubenstein R, Saber AA. Single Anastomosis Duodeno-Ileal Switch (SADIS): A Systematic Review of Efficacy and Safety. *Obes Surg*. 2018;28(1):104-113. doi: 10.1007/s11695-017-2838-8.
168. Stavropoulos SN, Modayil R, Friedel D. Current applications of endoscopic suturing. *World J Gastrointest Endosc*. 2015;7(8):777-789. doi: 10.4253/wjge.v7.i8.777.
169. Surve A, Zaveri H, Cottam D, Belnap L, Cottam A, Cottam S. A retrospective comparison of biliopancreatic diversion with duodenal switch with single anastomosis duodenal switch (SIPS-stomach intestinal pylorus sparing surgery) at a single institution with two year follow-up. *Surg Obes Relat Dis*. 2017;13(3):415-422. doi: 10.1016/j.soard.2016.11.020.
170. Topart P, Becouarn G. The single anastomosis duodenal switch modifications: a review of the current literature on outcomes. *Surg Obes Relat Dis*. 2017;13(8):1306-1312. doi: 10.1016/j.soard.2017.04.027.
171. Vargas EJ, Bazerbachi F, Rizk M, et al. Transoral outlet reduction with full thickness endoscopic suturing for weight regain after gastric bypass: a large multicenter international experience and meta-analysis. *Surg Endosc*. 2018;32(1):252-259. doi: 10.1007/s00464-017-5671-1.
172. Weissman L, Bredgemohan C. Autism spectrum disorder in children and adolescents: Behavioral and educational interventions. Last updated June 28, 2018. In: *UpToDate*, Basow, DS (Ed), UpToDate, Waltham, MA, 2018.
173. Yorke E, Switzer NJ, Reso A, et al. Intragastric Balloon for Management of Severe Obesity: a Systematic Review. *Obes Surg*. 2016;26(9):2248-2254. doi: 10.1007/s11695-016-2307-9.
174. Zorron R, Galvão-Neto MP, Campos J, et al. From complex evolving to simple: current revisional and endoscopic procedures following bariatric surgery. *Arq Bras Cir Dig*. 2016;29Suppl 1(Suppl 1):128-133. doi: 10.1590/0102-6720201600S10031.

04/2019 MPC:

No new references.

04/2020 MPC:

175. Armstrong SC, Bolling CF, Michalsky MP, Reichard KW. Section on Obesity, Section on Surgery. Pediatric Metabolic and Bariatric Surgery: Evidence, Barriers, and Best Practices. *Pediatrics*. 2019;144(6). pii: e20193223. doi: 10.1542/peds.2019-3223.
176. Hayes Inc. *Hayes Comparative Effectiveness Review: Comparative Effectiveness Review of Bariatric Surgeries for Treatment of Obesity in Adolescents*. January 2019. Annual Review last updated June 2019. Lansdale, PA.
177. Lim RB. Bariatric operations for management of obesity: Indications and preoperative preparation. Last updated April 23, 2018. In: *UpToDate*, Basow, DS (Ed), UpToDate, Waltham, MA, 2020.
178. Lim RB. Bariatric procedures for the management of severe obesity: Descriptions. Last updated February 03, 2020. In: *UpToDate*, Basow, DS (Ed), UpToDate, Waltham, MA, 2020.
179. Ramachandran D, Atlantis E, Markovic T, Hocking S, Gill T. Standard baseline data collections in obesity management clinics: A Delphi study with recommendations from an expert panel. *Clin Obes*. 2019;9(3):e12301. doi: 10.1111/cob.12301.

04/2021 MPC:

180. Ames GE, Maynard JR, Collazo-Clavell ML, Clark MM, Grothe KB, Elli EF. Rethinking Patient and Medical Professional Perspectives on Bariatric Surgery as a Medically Necessary Treatment. *Mayo Clin Proc*. 2020 Mar;95(3):527-540. doi: 10.1016/j.mayocp.2019.09.019.
181. Rajan N. The high-risk patient for ambulatory surgery. *Curr Opin Anaesthesiol*. 2020 Dec;33(6):724-731. doi: 10.1097/ACO.0000000000000919.

11/2021 MPC:

182. Kallies K, Rogers AM; American Society for Metabolic and Bariatric Surgery Clinical Issues Committee. American Society for Metabolic and Bariatric Surgery updated statement on single-anastomosis duodenal switch. *Surg Obes Relat Dis*. 2020;16(7):825-830. doi: 10.1016/j.soard.2020.03.020.

APPENDIX 1 – Body Mass Index (BMI) Conversion Table

		Normal										Overweight										Obese										Extreme Obesity									
		19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54				
BMI	Height (inches)	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258				
58		94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267				
59		97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276				
60		100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285				
61		104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295				
62		107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304				
63		110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314				
64		114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324				
65		118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334				
66		121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344				
67		125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354				
68		128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365				
69		132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376				
70		136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386				
71		140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397				
72		144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408				
73		148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389	396	404	412	420				
74		152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431				
75		156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443				
76																																									

The BMI describes relative weight for height. It is calculated as weight (in kilograms) / height (in meters) squared. The National Heart, Lung, and Blood Institute (NHLBI) guidelines classify overweight as a BMI of 25 through 29.9 kg/meter squared, obesity as a BMI equal to or greater than 30 kg/meter squared, and extreme obesity as a BMI equal to or greater than 40 kg/meter squared.

Adapted from: National Heart Lung and Blood Institute. Clinical Guidelines on the Identification, Evaluation and Treatment of Overweight and Obesity in Adults. Available at <http://www.ncbi.nlm.nih.gov/books/NBK2003/pdf/TOC.pdf>.

APPENDIX 2 – Tanner Stages

Because the onset and progression of puberty are so variable, Tanner has proposed a scale, now uniformly accepted, to describe the onset and progression of pubertal changes. Boys and girls are rated on a 5 point scale. Boys are rated for genital development and pubic hair growth, and girls are rated for breast development and pubic hair growth.

Pubic hair growth in females is staged as follows:

- Stage I (Preadolescent) - Vellus hair develops over the pubes in a manner not greater than that over the anterior wall. There is no sexual hair.
- Stage II - Sparse, long, pigmented, downy hair, which is straight or only slightly curled, appears. These hairs are seen mainly along the labia. This stage is difficult to quantitate on black and white photographs, particularly when pictures are of fair-haired subjects.
- Stage III - Considerably darker, coarser, and curlier sexual hair appears. The hair has now spread sparsely over the junction of the pubes.
- Stage IV - The hair distribution is adult in type but decreased in total quantity. There is no spread to the medial surface of the thighs.
- Stage V - Hair is adult in quantity and type and appears to have an inverse triangle of the classically feminine type. There is spread to the medial surface of the thighs but not above the base of the inverse triangle.

The stages in male pubic hair development are as follows:

- Stage I (Preadolescent) - Vellus hair appears over the pubes with a degree of development similar to that over the abdominal wall. There is no androgen-sensitive pubic hair.
- Stage II - There is sparse development of long pigmented downy hair, which is only slightly curled or straight. The hair is seen chiefly at the base of penis. This stage may be difficult to evaluate on a photograph, especially if the subject has fair hair.
- Stage III - The pubic hair is considerably darker, coarser, and curlier. The distribution is now spread over the junction of the pubes, and at this point that hair may be recognized easily on black and white photographs.
- Stage IV - The hair distribution is now adult in type but still is considerably less that seen in adults. There is no spread to the medial surface of the thighs.
- Stage V - Hair distribution is adult in quantity and type and is described in the inverse triangle. There can be spread to the medial surface of the thighs.

In young women, the Tanner stages for breast development are as follows:

- Stage I (Preadolescent) - Only the papilla is elevated above the level of the chest wall.
- Stage II - (Breast Budding) - Elevation of the breasts and papillae may occur as small mounds along with some increased diameter of the areolae.
- Stage III - The breasts and areolae continue to enlarge, although they show no separation of contour.
- Stage IV - The areolae and papillae elevate above the level of the breasts and form secondary mounds with further development of the overall breast tissue.
- Stage V - Mature female breasts have developed. The papillae may extend slightly above the contour of the breasts as the result of the recession of the aerolae.

The stages for male genitalia development are as follows:

- Stage I (Preadolescent)- The testes, scrotal sac, and penis have a size and proportion similar to those seen in early childhood.
- Stage II - There is enlargement of the scrotum and testes and a change in the texture of the scrotal skin. The scrotal skin may also be reddened, a finding not obvious when viewed on a black and white photograph.
- Stage III - Further growth of the penis has occurred, initially in length, although with some increase in circumference. There also is increased growth of the testes and scrotum.
- Stage IV - The penis is significantly enlarged in length and circumference, with further development of the glans penis. The testes and scrotum continue to enlarge, and there is distinct darkening of the scrotal skin. This is difficult to evaluate on a black-and-white photograph.
- Stage V - The genitalia are adult with regard to size and shape.

Source: Reprinted with permission from Feingold, David. "Pediatric Endocrinology" in *Atlas of Pediatric Physical Diagnosis, Second Edition*, Philadelphia W.B. Saunders, 1992, 9.16-19.