

Bariatric Surgery (Adolescents: Ages 13 - 17)

Disclaimer

Clinical guidelines are developed and adopted to establish evidence-based clinical criteria for utilization management decisions. Oscar may delegate utilization management decisions of certain services to third-party delegates, who may develop and adopt their own clinical criteria.

The clinical guidelines are applicable to all commercial plans. Services are subject to the terms, conditions, limitations of a member's plan contracts, state laws, and federal laws. Please reference the member's plan contracts (e.g., Certificate/Evidence of Coverage, Summary/Schedule of Benefits) or contact Oscar at 855-672-2755 to confirm coverage and benefit conditions.

Summary

Morbid (clinically severe) obesity is a condition in which body fat accumulates to a level that can cause or inhibit the treatment of life-threatening medical comorbidities. Initial treatment steps include a regimented plan of diet and lifestyle changes, often designed and supervised by a team of healthcare professionals. Morbidly obese patients who have failed traditional treatment methods and are being treated for associated high-risk conditions including diabetes, hypertension, or obstructive sleep apnea, may be candidates for bariatric surgery. Bariatric surgery procedures attempt to reduce fat tissue accumulation through restrictive or malabsorptive approaches and can often be performed as open or laparoscopic surgery. Restrictive surgeries function by decreasing the effective size of the stomach, creating a sensation of early satiety and preventing the patient from intaking large meals. Malabsorptive procedures function by rearranging the flow of food through the digestive system to decrease overall digestion/absorption of calories. Some procedures combine restrictive and malabsorptive approaches. Additionally, a comprehensive post-operative plan of diet, exercise, and behavioral modification is critical in achieving durable weight loss outcomes, where success is defined reduction in excess body weight by 50% and returning to within 30% of a patient's ideal body weight. Treatment plans and surgical options differ for adults and adolescents [see CG008: Bariatric Surgery (Adults) for patients 18 years or older]. Bariatric surgery always requires prior authorization.

Definitions

"Body Mass Index (BMI)" relates body weight to height, defined as body mass divided by body height squared in units of kg/m² and is used to risk-stratify patients.

"Class I Obesity" is defined as a BMI of 30 - 34.9.

“Class II Obesity” is defined as a BMI 35 - 39.9.

“Class III Obesity” is defined as a BMI ≥ 40 .

“Bariatric” is a term referring to the treatment of obesity.

“Open Surgery” refers to a procedure where a large incision allows for direct visualization and access to intra-abdominal organs.

“Laparoscopic Surgery” or minimally invasive surgery refers to a procedure often consisting of multiple small incisions allowing the use a small camera (laparoscope) and several thin instruments.

“Bariatric Surgery” is surgery on the stomach and/or intestines to assist with weight loss in patients with severe or extreme obesity (Classes II and III). Bariatric surgery can be done via restrictive procedures, malabsorptive procedures, or a combination of the two.

- “Restrictive Procedures” decrease digestive capacity, promote early satiety, and decrease the speed at which food moves through the digestive system.
 - “Sleeve Gastrectomy (SG)” is where the greater curvature of the stomach is resected, resulting in a tube or sleeve-like shape to restrict capacity. This can be performed via open incision or laparoscopically. It can also be combined with malabsorptive surgery in a sequential 2-stage procedure or at a later date if adequate weight loss is not obtained.
- “Malabsorptive Procedures” reduce digestion and absorption of calories through re-arrangement of the digestive system:
 - “Gastric Bypass (Roux-en-Y Gastric Bypass [RYGB])” combines restrictive and malabsorptive features. The stomach is divided into either a horizontal or vertical plane similar to banded gastropathy (restrictive). The Roux-en-Y procedure then takes the small intestine and creates a “Y” shape, where the two legs of the “Y” allow a portion of food to pass through undigested while retaining a limited digestive capacity for the remaining food (malabsorptive). A gastric bypass can be performed via open incision or laparoscopically. Expected weight loss at two years is approximately 70%.

“Repair” refers to a procedure or operation performed to correct and/or treat a complication of a prior surgery.

“Conversion” is when a prior procedure is converted to a new one—for example, when there are complications or inadequate weight loss with the primary surgery. An example is sleeve gastrectomy conversion to Roux-en-Y gastric bypass.

“Revision” refers to a procedure or operation performed due to failure of desired outcome of prior surgery or to reverse/adjust a prior surgery. It does not result in a new procedure, unlike conversion.

Covered Services and Clinical Indications

Covered Procedures

Oscar covers the following procedures, settings, and goal lengths of stay for the treatment of morbid obesity in adolescents (ages 13-17) when medical necessity criteria are met:

- Roux-en-Y gastric bypass (<150cm)
 - Open - 2 days inpatient admission
 - Laparoscopic - 1 day inpatient admission
- Sleeve gastrectomy
 - Open - 1 day inpatient admission
 - Laparoscopic - Ambulatory or 1 day inpatient admission

Length of Stay (LOS) Extensions

Subject to medical necessity review, Oscar may cover extensions for hospital admission under the following circumstances:

- Patients <18 years old
- In the presence of complex comorbidities (COPD, renal disease, heart failure)
- Conversion from laparoscopic to open procedure
- Complications in the peri- or post-operative phases, such as anastomotic leak, thromboembolic disease (DVT or pulmonary embolism), wound infection, suture line bleeding, pneumonia, respiratory failure, evisceration, or splenic injury
- Clear liquid diet not tolerated during the post-operative phase
- Failure to meet general discharge criteria as per MCG guidelines

Criteria for Covered Procedures

Covered procedures are considered medically necessary when ALL of the following criteria are met.

1. Both patient and parental/guardian informed consent with appropriate explanation of risks, benefits, and alternatives; *and*
2. Adolescent aged 13-17 years who has achieved physical maturity, defined as ONE of the following criteria:
 - a. 95% of the predicted adult stature based on bone age; *or*
 - b. Tanner stage IV-V.
3. The presence of obesity with severe co-morbidities as meeting ONE of the following criteria:
 - a. BMI \geq 40 and any ONE of the following co-morbidities:
 - i. Hypertension; *or*
 - ii. Insulin resistance or glucose intolerance; *or*
 - iii. Substantially impaired quality of life or activities of daily living; *or*
 - iv. Dyslipidemia; *or*
 - v. Sleep apnea with AHI \geq 5.
 - b. BMI \geq 35 and any ONE of the following co-morbidities:
 - i. Type 2 diabetes mellitus; *or*

- ii. Moderate to severe sleep apnea (AHI > 15); *or*
 - iii. Pseudotumor cerebri; *or*
 - iv. Severe Non-Alcoholic Steatohepatitis (NASH).
- 4. Failure to achieve and maintain successful long-term weight loss via non-surgical therapy; *and*
- 5. Participation in a clinically supervised weight loss program includes ALL of the following:
 - a. Member participation and adherence is documented by the physician, dietitian, or nutritionist (Note: a physician's summary letter is NOT sufficient); *and*
 - b. Behavioral and dietary modification; *and*
 - c. An exercise regimen (unless contraindicated); *and*
 - d. The program lasts 6 months within 2 years of the planned bariatric surgery *or* 3 months within 6 months of the planned bariatric surgery; *and*
 - e. The program is in-person (i.e. cannot be entirely remote).
- 6. The proposed bariatric surgery includes a comprehensive pre- and post-operative plan to evaluate nutritional status, overall health, and any specific surgical risks:
 - a. Preoperative evaluation to rule out and treat any other reversible causes of weight gain/obesity, which may include routine lab testing, screenings, and risk evaluations such as:
 - i. Fasting blood glucose, fasting lipid panel, complete blood count (CBC), lipid/kidney function testing (Complete Metabolic Panel), blood typing, coagulation studies (PT/PTT/INR)
 - ii. Nutrient deficiency screening (vitamin B12, iron, folate) and formal nutrition evaluation by a registered dietician or nutritionist
 - iii. Cardiopulmonary risk evaluation - to assess as part of standard pre-operative clearance with EKG, Chest X-Ray, and echocardiogram as appropriate based on medical comorbidities
 - iv. Endocrine evaluation - Hemoglobin A1c if diabetic, serum TSH if indicated at risk, and appropriate workup of endocrine abnormalities such as Cushing's disease for suspected reversible causes of obesity as part of history and physical
 - v. Smoking cessation counseling, if applicable.
- 7. Psycho-social behavioral evaluation performed by a licensed adolescent psychologist to specifically assess for ALL of the following:
 - a. The member's emotional maturity; *and*
 - b. The member's ability to succeed and adhere to postoperative recommendations and long-term follow up; *and*
 - c. Any major mental health disorders that would contraindicate surgery and/or negatively impact patient compliance with postoperative follow-up care and adherence to nutrition guidelines; *and*
 - d. No current substance abuse has been identified; *and*
 - e. Members who have any of the following conditions must also have formal, documented preoperative clearance by a licensed psychiatrist:

- i. A history of schizophrenia, borderline personality disorder, suicidal ideation, severe depression
- ii. Who are currently under the care of a psychologist/psychiatrist
- iii. Who are on psychotropic medications, as necessary in order to exclude members who are unable to provide informed consent or who are unable to comply with the pre- and post-operative regimen

Repair, Removal, Revision, or Conversion

- Repair is considered medically necessary when there is documentation of a surgical complication related to the original surgery, including:
 - a. Fistula
 - b. Erosion
 - c. Leakage of suture/staple line
 - d. Herniated band
 - e. Obstruction
 - f. Enlargement of the pouch due to complications of vomiting
 - Note: Enlargement of pouch (stretching) is NOT covered if due to overeating, as this is not a surgical complication and is therefore not considered medically necessary.
- Removal of an adjustable gastric band medically necessary when recommended by the member's physician.
- Revision of a primary bariatric surgery is considered medically necessary when ALL of the following criteria are met:
 - a. The procedure has failed due to dilated gastrojejunal stoma, dilation of the anastomosis site, or dilation of the gastric pouch; *and*
 - b. The initial surgery successfully resulted in weight loss; *and*
 - c. The member has been compliant with the postoperative plan of diet, exercise, and behavioral modification.
- Conversion surgery to a sleeve gastrectomy or RYGB medically necessary when there are complications that cannot be corrected or when ALL of the following criteria are met:
 - a. Meets all medical necessity criteria for bariatric surgery; *and*
 - b. Documented compliance with postoperative plan of diet, exercise, and behavioral modification; *and*
 - c. A minimum of 2 years following original surgery with documentation of inadequate weight loss:
 - Weight loss of less than 50% of preoperative excess body weight; *and*
 - Remains >30% over ideal body weight.

Coverage Exclusions

Non-Covered Procedures

Although the following may be covered in adults meeting the appropriate criteria, there is a lack of clinical evidence and/or long-term data for the following procedures in morbidly obese adolescents:

- Laparoscopic adjustable gastric banding
- Biliopancreatic diversion with duodenal switch (open or laparoscopic)

Oscar considers the following procedures to be experimental, investigational or unproven as they have either not demonstrated long-term benefit, have unnecessary risks, or have demonstrated inferior outcomes to safer, more appropriate techniques:

- Gastroplasty (stomach stapling)
- Intra-gastric balloon
- Gastric plication (Laparoscopic)
- Vagal blockade
- Mini gastric bypass/Billroth II
- Aspiration therapy procedures
- Jejunioileal bypass
- BPD without duodenal switch
- >150cm long limb gastric bypass (except for BPD with DS)
- Vertical Banded Gastroplasty (VBG)
- Natural orifice transoral surgery (NOTES)
- Silastic ring (Fobi pouch)
- Open adjustable gastric banding
- Prophylactic mesh placement to prevent incisional hernia after open bariatric surgery

Skin Removal Surgery

Excess skin is common after successful bariatric surgery. Removal is considered a cosmetic and elective procedure that is NOT covered by Oscar.

General Contraindications

- Medically correctable cause of obesity
- Ongoing substance abuse or substance abuse in preceding 12 months
- Medical, psychological, psychosocial, or cognitive condition that prevents adherence to post-op dietary and medical requirements or impairs decision capacity
- Current or planned pregnancy within 12-18 months
- Inability of patient or parent to comprehend risks, benefits, and alternatives of surgical procedure
- Severe or poorly controlled psychiatric disorder or mental illness, as above
- Bulimia nervosa
- Any advanced stage neoplastic disease
- Diagnosis of inflammatory bowel disease
- Any medical condition requiring critical drug levels, such as in seizure or psychiatric illness, where malabsorption or changes in drug metabolism may result in serious consequences.

Applicable Billing Codes (HCPCS & CPT Codes)

Codes covered if clinical criteria are met:

<i>Code</i>	<i>Description</i>
43644	Laparoscopy, surgical, gastric restrictive procedure; with gastric bypass and Roux-en-Y gastroenterostomy (roux limb 150 cm or less)
43772	Laparoscopy, surgical, gastric restrictive procedure; removal of adjustable gastric restrictive device component only
43773	Laparoscopy, surgical, gastric restrictive procedure; removal and replacement of adjustable gastric restrictive device component only
43774	Laparoscopy, surgical, gastric restrictive procedure; removal of adjustable gastric restrictive device and subcutaneous port components
43775	Laparoscopy, surgical, gastric restrictive procedure; longitudinal gastrectomy (ie, sleeve gastrectomy)
43846	Gastric restrictive procedure, with gastric bypass for morbid obesity; with short limb (150 cm or less) Roux-en-Y gastroenterostomy
43848	Revision, open, of gastric restrictive procedure for morbid obesity, other than adjustable gastric restrictive device (separate procedure)
43850	Revision of gastroduodenal anastomosis (gastroduodenostomy) with reconstruction; without vagotomy
43860	Revision of gastrojejunal anastomosis (gastrojejunostomy) with reconstruction, with or without partial gastrectomy or intestine resection; without vagotomy
43887	Gastric restrictive procedure, open; removal of subcutaneous port component only
S9449	Weight management classes, non-physician provider, per session
S9451	Exercise classes, non-physician provider, per session
S9452	Nutrition classes, non-physician provider, per session
ICD-10 codes covered if criteria are met:	
<i>Code</i>	<i>Description</i>
E66.01	Morbid (severe) obesity due to excess calories

E66.2	Morbid (severe) obesity with alveolar hypoventilation
-------	---

Codes not covered for indications listed in this Guideline:

<i>Code</i>	<i>Description</i>
0312T	Vagus nerve blocking therapy (morbid obesity); laparoscopic implantation of neurostimulator electrode array, anterior and posterior vagal trunks adjacent to esophagogastric junction (EGJ), with implantation of pulse generator, includes programming
0313T	Vagus nerve blocking therapy (morbid obesity); laparoscopic revision or replacement of vagal trunk neurostimulator electrode array, including connection to existing pulse generator
0315T	Vagus nerve blocking therapy (morbid obesity); removal of pulse generator
0316T	Vagus nerve blocking therapy (morbid obesity); replacement of pulse generator
0317T	Vagus nerve blocking therapy (morbid obesity); neurostimulator pulse generator electronic analysis, includes reprogramming when performed
15876 - 15879	Suction assisted lipectomy; head and neck, trunk, upper/lower extremities
43620	Gastrectomy, total; with esophagoenterostomy
43621	Gastrectomy, total; with Roux-en-Y reconstruction
43622	Gastrectomy, total; with formation of intestinal pouch, any type
43631	Gastrectomy, partial, distal; with gastroduodenostomy
43632	Gastrectomy, partial, distal; with gastrojejunostomy
43632	Gastrectomy, partial distal; with gastrojejunostomy (Billroth II)
43633	Gastrectomy, partial, distal; with Roux-en-Y reconstruction
43634	Gastrectomy, partial, distal; with formation of intestinal pouch
43635	Vagotomy when performed with partial distal gastrectomy (List separately in addition to code(s) for primary procedure)
43645	Laparoscopy, surgical, gastric restrictive procedure; with gastric bypass and small intestine reconstruction to limit absorption
43647	Laparoscopy, surgical; implantation or replacement of gastric neurostimulator electrodes, antrum
43659	Unlisted laparoscopy procedure, stomach

43770	Laparoscopy, surgical, gastric restrictive procedure; placement of adjustable gastric restrictive device (eg, gastric band and subcutaneous port components)
43770	Laparoscopy, surgical, gastric restrictive procedure; placement of adjustable gastric restrictive device (eg, gastric band and subcutaneous port components)
43771	Laparoscopy, surgical, gastric restrictive procedure; revision of adjustable gastric restrictive device component only
43775	Laparoscopy, surgical, gastric restrictive procedure; longitudinal gastrectomy (ie, sleeve gastrectomy)
43842	Gastric restrictive procedure, without gastric bypass, for morbid obesity; vertical-banded gastroplasty
43843	Gastric restrictive procedure, without gastric bypass, for morbid obesity; other than vertical-banded gastroplasty
43845	Gastric restrictive procedure with partial gastrectomy, pylorus-preserving duodenoileostomy and ileoileostomy (50 to 100 cm common channel) to limit absorption (biliopancreatic diversion with duodenal switch)
43847	Gastric restrictive procedure, with gastric bypass for morbid obesity; with small intestine reconstruction to limit absorption
43855	Revision of gastroduodenal anastomosis (gastroduodenostomy) with reconstruction; with vagotomy
43865	Revision of gastrojejunal anastomosis (gastrojejunostomy) with reconstruction, with or without partial gastrectomy or intestine resection; with vagotomy
43881	Implantation or replacement of gastric neurostimulator electrodes, antrum, open
43886	Gastric restrictive procedure, open; revision of subcutaneous port component only
43888	Gastric restrictive procedure, open; removal and replacement of subcutaneous port component only
43999	Unlisted procedure, stomach
47562 - 47620	Cholecystectomy
S2083	Adjustment of gastric band diameter via subcutaneous port by injection or aspiration of saline

References

1. Abu-Abeid S, Gavert N, Klausner JM, et al. Bariatric surgery in adolescence. *J Pediatr Surg* 2003 Sep; 38(9):1379-1382
2. Adams T, Gress R, Smith S, et al. Long-term mortality after gastric bypass surgery. *N Engl J Med* 2007 August; 357(8):753-761
3. Alami RS, Morton JM, Schuster R. Is there a benefit to preoperative weight loss in gastric bypass patients? A prospective randomized trial. *Surg Obes Relat Dis*. 2007 Mar-Apr;3(2):141-5
4. Barnett SJ, Stanley C, Hanlon M, et al. Long-term follow-up and the role of surgery in adolescents with morbid obesity. *Surg Obes Relat Dis* 2005;1:394-8
5. Buchwald H, Avidor Y, Braunwald E, et al. Bariatric surgery: a systematic review and meta-analysis. *JAMA* 2004;292:1724 -37
6. Choi J, Digiori M, Milone L, et al: Outcomes of laparoscopic adjustable gastric banding in patients with low body mass index. *Surg Obes Relat Dis* 6:367-71, 2010
7. Cohen RV, Pinheiro JC, Schiavon CA, et al: Effects of gastric bypass surgery in patients with type 2 diabetes and only mild obesity. *Diabetes Care* 35:1420-8, 2012.
8. Davis J. New weight-loss surgery gains ground. Is the 'Fobi Pouch' an improvement on the traditional stomach bypass? *WebMD Medical News*. Danbury, CT: WebMD; August 11, 2000.
9. Demaria EJ, Winegar DA, Pate VW, et al: Early postoperative outcomes of metabolic surgery to treat diabetes from sites participating in the ASMBS bariatric surgery center of excellence program as reported in the Bariatric Outcomes Longitudinal Database. *Ann Surg* 252:559-66; discussion 566-7, 2010
10. Desai NK, Wulkan ML, Inge TH. Update on Adolescent Bariatric Surgery. *Endocrinol Metab Clin North Am*. 2016 Sep;45(3):667-76. doi: 10.1016/j.ecl.2016.04.015
11. Dixon JB, O'Brien PE, Playfair J, et al: Adjustable gastric banding and conventional therapy for type 2 diabetes: a randomized controlled trial. *Jama* 299:316-23, 2008
12. Dolan K, Creighton L, Hopkins G, et al. Laparoscopic gastric banding in morbidly obese adolescents. *Obes Surg* 2003 Feb;13(1):101-104
13. Duvnjak M, Lerotic I, Barsic N, et al. Pathogenesis and management issues for non-alcoholic fatty liver disease. *World J Gastroenterol*. 2007 Sep 14;13(34):4539-4550.
14. Fried M, Ribaric G, Buchwald JN, et al: Metabolic surgery for the treatment of type 2 diabetes in patients with BMI <35 kg/m²: an integrative review of early studies. *Obes Surg* 20:776-90, 2010
15. Froylich D, Corcelles R, Daigle C, Effect of Roux-en-Y gastric bypass and sleeve gastrectomy on nonalcoholic fatty liver disease: a comparative study. *Surg Obes Relat Dis*. 2016 Jan;12(1):127-31
16. Geloneze B, Geloneze SR, Fiori C, et al: Surgery for nonobese type 2 diabetic patients: an interventional study with duodenal-jejunal exclusion. *Obes Surg* 19:1077-83, 2009
17. Giordano S. Laparoscopic Roux-en-Y gastric bypass versus laparoscopic adjustable gastric banding in the super-obese: peri-operative and early outcomes. *Scandinavian Journal of Surgery*. 2015; 104(1):5-9
18. Harnisch MC, Portenier DD, Pryor AD, : Preoperative weight gain does not predict failure of weight loss or co-morbidity resolution of laparoscopic Roux-en-Y gastric bypass for morbid obesity. *Surg Obes Relat Dis* 2008;4:445-450

19. Himpens J, Dapri G, CadiGB. A prospective randomized study between laparoscopic gastric banding and laparoscopic isolated sleeve gastrectomy: results after 1 and 3 years. *Obes Surg.* 2006 Nov;16(11):1450-1456
20. Hsu WC, Araneta MRG, Kanaya AM, Chiang JL, Fujimoto W. BMI Cut Points to Identify At-Risk Asian Americans for Type 2 Diabetes Screening. *Diabetes Care.* 2015;38(1):150-158. doi:10.2337/dc14-2391
21. Huang CK, Shabbir A, Lo CH, et al: Laparoscopic Roux-en-Y gastric bypass for the treatment of type II diabetes mellitus in Chinese patients with body mass index of 25-35. *Obes Surg* 21:1344-9, 2011
22. Inge TH, Courcoulas AP, Jenkins TM, et al. Weight Loss and Health Status 3 Years after Bariatric Surgery in Adolescents. *The New England journal of medicine.* 2016;374(2):113-123. doi:10.1056/NEJMoa1506699
23. Inge TH, Zeller MH, Jenkins TM, et al. Perioperative Outcome of Adolescents Undergoing Bariatric Surgery: The Teen Longitudinal Assessment of Bariatric Surgery (Teen-LABS) Study. *JAMA pediatrics.* 2014;168(1):47-53. doi:10.1001/jamapediatrics.2013.4296
24. International Pediatric Endosurgery Group (IPEG)1. IPEG guidelines for surgical treatment of extremely obese adolescents. *J Laparoendosc Adv Surg Tech A.* 2009 Apr;19 Suppl 1:xiv-xvi. doi: 10.1089/lap.2009.9981.supp
25. Istfan NW, Anderson WA, Apovian CM, : Preoperative weight gain might increase risk of gastric bypass surgery. *Surg Obes Relat Dis* 2011;7:157–164
26. Jamal MH, Corcelles R, Shimizu H, et al. Thromboembolic events in bariatric surgery: a large multi-institutional referral center experience. *Surgical Endoscopy.* 2015; 29(2):376-380
27. Jammu GS1, Sharma R2. A 7-Year Clinical Audit of 1107 Cases Comparing Sleeve Gastrectomy, Roux-En-Y Gastric Bypass, and Mini-Gastric Bypass, to Determine an Effective and Safe Bariatric and Metabolic Procedure. *Obes Surg.* 2016 May;26(5):926-32
28. Jih J, Mukherjea A, Vittinghoff E, et al. Using appropriate body mass index cut points for overweight and obesity among Asian Americans. *Preventive medicine.* 2014;65:1-6. doi:10.1016/j.ypmed.2014.04.010
29. Karamanakos SN, Vagenas K, Kalfarentzos F, et al. 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 Mar;247(3):401-407. Kellum JM, DeMaria EJ, Sugerman HJ. The surgical treatment of morbid obesity. *Curr Probl Surg.* 1998;35(9):791-858
30. Katzmarzyk P, Barlow S, Bouchard C, et al. An evolving scientific basis for the prevention and treatment of pediatric obesity. *International journal of obesity (2005).* 2014;38(7):887-905. doi:10.1038/ijo.2014.49
31. Kelly AS, Barlow SE, Rao G. Severe obesity in children and adolescents: identification, associated health risks, and treatment approaches: a scientific statement from the American Heart Association. *Circulation.* 2013 Oct 8;128(15):1689-712
32. Kuruba R, Koche LS, Murr MM. Preoperative assessment and perioperative care of patients undergoing bariatric surgery. *Medical Clinics of North America* 2007;91(3):339-51.

33. Lawson ML, Kirk S, Mitchell T, et al. One-year outcomes of Rouxen-Y gastric bypass for morbidly obese adolescents: a multicenter study from the Pediatric Bariatric Study Group. *J Pediatr Surg* 2006; 41:137– 43
34. Lee JH, Nguyen QN, Le QA. Comparative effectiveness of 3 bariatric surgery procedures: Roux-en-Y gastric bypass, laparoscopic adjustable gastric band, and sleeve gastrectomy. *Surg Obes Relat Dis*. 2016 Jun;12(5):997-1002. doi: 10.1016/j.soard.2016.01.020. Epub 2016 Jan 21
35. Lee WJ, Chong K, Chen CY, et al: Diabetes remission and insulin secretion after gastric bypass in patients with body mass index <35 kg/m². *Obes Surg* 21:889-95, 2011
36. Lee WJ, Chong K, Ser KH, et al: Gastric bypass vs sleeve gastrectomy for type 2 diabetes mellitus: a randomized controlled trial. *Arch Surg* 146:143-8, 2011
37. Lee WJ, Ser KH, Chong K, et al: Laparoscopic sleeve gastrectomy for diabetes treatment in nonmorbidly obese patients: efficacy and change of insulin secretion. *Surgery* 147:664-9, 2010
38. Lee WJ, Wang W, Lee YC, et al: Effect of laparoscopic mini-gastric bypass for type 2 diabetes mellitus: comparison of BMI>35 and <35 kg/m². *J Gastrointest Surg* 12:945-52, 2008
39. Lee, C. Cirangle, P. Jossart, G. Vertical gastrectomy for morbid obesity in 216 patients: report of two-year results. *Surgical Endoscopy - 01-OCT-2007*; 21(10): 1810-6.
40. LeMont D, Moorehead MK, Parish MS, Reto CS, Ritz SJ. Suggestions for the pre-surgical psychological assessment of bariatric surgery candidates. American Society for Bariatric Surgery. October 2004.
s3.amazonaws.com/publicASMBS/GuidelinesStatements/Guidelines/PsychPreSurgicalAssessment.pdf (Accessed on January 18, 2017).
41. Li Q, Chen L, Yang Z, et al: Metabolic effects of bariatric surgery in type 2 diabetic patients with body mass index < 35 kg/m². *Diabetes Obes Metab* 14:262-70, 2012
42. Lim, RB. Bariatric operations for management of obesity: indications and preoperative preparation. In: UpToDate, Jones D (Ed), UpToDate, Waltham, MA. (Accessed on January 19, 2017)
43. Lim, RB. Bariatric procedures for the management of severe obesity: Descriptions. In: UpToDate, Jones D (Ed), UpToDate, Waltham, MA. (Accessed on January 19, 2017)
44. 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. *Frontiers in Pediatrics*. 2016;4:78. doi:10.3389/fped.2016.00078.
45. 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, Md)*. 2013;21(01):S1-27. doi:10.1002/oby.20461.
46. Messiah SE, Lopez-Mitnik G, Winegar D, et al. Changes in Weight and Comorbidities among Adolescents Undergoing Bariatric Surgery: 1-Year Results from the Bariatric Outcomes Longitudinal Database. *Surgery for obesity and related diseases : official journal of the American Society for Bariatric Surgery*. 2013;9(4):503-513. doi:10.1016/j.soard.2012.03.007

47. Michalsky M1, Reichard K, Inge T. ASMBS pediatric committee best practice guidelines. *Surg Obes Relat Dis.* 2012 Jan-Feb;8(1):1-7
48. Michalsky MP, Inge TH, Teich S, et al. Adolescent Bariatric Surgery Program Characteristics: The Teen Longitudinal Assessment of Bariatric Surgery (Teen-LABS) Study Experience. *Seminars in pediatric surgery.* 2014;23(1):5-10. doi:10.1053/j.sempedsurg.2013.10.020
49. Murr MM, Balsiger BM, Kennedy FP, et al. Malabsorptive procedures for severe obesity: comparison of pancreaticobiliary bypass and very very long limb Roux-en-Y gastric bypass. *J Gastrointest Surg.* 1999; 3(6):607-612
50. Myers JA, Sarker S, Shayani V. Treatment of massive super-obesity with laparoscopic adjustable gastric banding. *Surg Obes Relat Dis.* 2006; 2(1):37-40
51. Nadler EP, Reddy S, Isenalumhe A, et al. Laparoscopic adjustable gastric banding for morbidly obese adolescents affects android fat loss, resolution of co-morbidities, and improved metabolic status. *J Am Coll Surg.* 2009 Nov;209(5):638-644
52. CGS Administrators LLC. Available at: http://www.cms.gov/mcd/index_local_alpha.asp?from=alphalmrp&letter=P&num_on_page=25&page_num=1. Accessed on January 18, 2016. National Coverage Determination (NCD) for Bariatric Surgery for Treatment of Morbid Obesity (100.1)
53. National Heart, Lung, and Blood Institute. Body Mass Index Table 1. https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmi_tbl.htm (Accessed on March 5, 2017).
54. Nelson DW1, Blair KS, Martin MJ. Analysis of obesity-related outcomes and bariatric failure rates with the duodenal switch vs gastric bypass for morbid obesity. *Arch Surg.* 2012 Sep;147(9):847-54
55. Neovius M, Narbro K, Keating C, et al. Health care use during 20 years following bariatric surgery. *JAMA.* 2012; 308(11):1132-1141
56. Nguyen NT, Ho HS, Palmer LS, Wolfe BM. A comparison study of laparoscopic versus open gastric bypass for morbid obesity. *J Am Coll Surg.* 2000; 191(2):149-155
57. Nguyen NT, Rivers R, Wolfe BM. Factors associated with operative outcomes in laparoscopic gastric bypass. *J Am Coll Surg.* 2003; 197(4):548-557
58. NIH Consensus Conference on Surgical Treatment of Morbid Obesity 1998
59. O'Brien PE, Dixon JB, Laurie C, et al: Treatment of mild to moderate obesity with laparoscopic adjustable gastric banding or an intensive medical program: a randomized trial. *Ann Intern Med* 144:625-33, 2006
60. O'Brien PE, Sawyer SM, Laurie C, Laparoscopic adjustable gastric banding in severely obese adolescents: a randomized trial. *JAMA.* 2010;303(6):519
61. O'Brien PE, MacDonald L, Anderson M, Brennan L, Brown WA. Long-term outcomes after bariatric surgery: fifteen-year follow-up of adjustable gastric banding and a systematic review of the bariatric surgical literature. *Ann Surg.* 2013 Jan;257(1):87-94
62. Ochner CN, Puma LM, Raevuori A, Teixeira J, Geliebter A. Effectiveness of a Prebariatric Surgery Insurance-required Weight Loss Regimen and Relation to Postsurgical Weight Loss. *Obesity (Silver Spring, Md).* 2010;18(2):287-292. doi:10.1038/oby.2009.230

63. Parikh M, Duncombe J, Fielding GA: Laparoscopic adjustable gastric banding for patients with body mass index of ≤ 35 kg/m². *Surg Obes Relat Dis* 2:518-22, 2006
64. Paulus GF, de Vaan LEG, Verdam FJ, Bouvy ND, Ambergen TAW, van Heurn LWE. Bariatric Surgery in Morbidly Obese Adolescents: a Systematic Review and Meta-analysis. *Obesity Surgery*. 2015;25(5):860-878. doi:10.1007/s11695-015-1581-2
65. Pories WJ. Bariatric Surgery: Risks and Rewards. *The Journal of Clinical Endocrinology and Metabolism*. 2008;93(11 Suppl 1):S89-S96. doi:10.1210/jc.2008-1641
66. Pratt JS, Lenders CM, Dionne EA, et al. Best practice updates for pediatric/adolescent weight loss surgery. *Obesity (Silver Spring)* 2009;17: 901–10
67. 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* 19:307-12, 2009
68. Roller JE, Provost DA. Revision of failed gastric restrictive operations to Roux-en-Y gastric bypass: impact of multiple prior bariatric operations on outcome. *Obes Surg*. 2006;16(7):865-869
69. Saltzman E, Anderson W, Apovian CM, et al. Criteria for patient selection and multidisciplinary evaluation and treatment of the weight loss surgery patient. *Obes Res*. 2005;13 (2):234-243
70. Sanchez-Santos R, Masdevall C, Baltasar A, et al. Short- and mid-term outcomes of sleeve gastrectomy for morbid obesity: the experience of the Spanish National Registry. *Obes Surg*. 2009; 19(9):1203-1210
71. Sarr MG, Billington CJ, Brancatisano R, et al. The EMPOWER study: randomized, prospective, double-blind, multicenter trial of vagal blockade to induce weight loss in morbid obesity. *Obes Surg*. 2012; 22(11):1771-1782
72. 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
73. Schauer PR, Burguera B, Ikramuddin S, et al. Effect of laparoscopic Roux-en Y gastric bypass on type 2 diabetes mellitus. *Ann Surg*. 2003; 238(4):467-484
74. Schauer PR, Ikramuddin S, Gourash W, et al. Outcomes after laparoscopic Roux-en-Y gastric bypass for morbid obesity. *Ann Surg*. 2000; 232(4):515-529
75. Shah SS, Todkar JS, Shah PS, et al: Diabetes remission and reduced cardiovascular risk after gastric bypass in Asian Indians with body mass index <35 kg/m². *Surg Obes Relat Dis* 6:332-8, 2010
76. Silberhumer GR, Miller K, Kriwanek S, Widhalm K, Pump A, Prager G. Laparoscopic adjustable gastric banding in adolescents: the Austrian experience. *Obes Surg* 2006;16:1062–7
77. Sodergren MH, et al. Natural orifice transluminal endoscopic surgery: Critical appraisal of applications in clinical practice. *Surgical Endoscopy*, January 2009.
78. Strauss RS, Bradley LJ, Brolin RE. Gastric bypass surgery in adolescents with morbid obesity. *J Pediatr* 2001 Apr;138(4):499-504
79. Sudan R, Puri V, Sudan D. Robotically assisted biliary pancreatic diversion with a duodenal switch: a new technique. *Surg Endosc*. 2007 May;21(5):729-33

80. Sugerman HJ, Sugerman EL, DeMaria EJ, et al. Bariatric surgery for severely obese adolescents. *J Gastrointest Surg* 2003 Jan; 7(1):102-8
81. Sultan S, Parikh M, Youn H, et al: Early U.S. outcomes after laparoscopic adjustable gastric banding in patients with a body mass index less than 35 kg/m². *Surg Endosc* 23:1569-73, 2009
82. Tariq N, Chand B. Presurgical evaluation and postoperative care for the bariatric patient. *Gastrointestinal Endoscopy Clinics of North America*. 2011;21(2):22940. DOI: 10.1016/j.giec.2011.02.010
83. Torgersen Z1, Osmolak A, Forse RA. Sleeve gastrectomy and Roux En Y gastric bypass: current state of metabolic surgery. *Curr Opin Endocrinol Diabetes Obes*. 2014 Oct;21(5):352-7
84. Treadwell JR1, Sun F, Schoelles K. Systematic review and meta-analysis of bariatric surgery for pediatric obesity. *Ann Surg*. 2008 Nov;248(5):763-76. doi: 10.1097/SLA.0b013e31818702f4
85. Tucker ON, Szomstein S, Rosenthal R. Indications for sleeve gastrectomy as a primary procedure for weight loss in morbid obesity. *J Gastrotest Surg*. 2008;12:662-667
86. Vanguri P, Brengman M, Oiticica C, Wickham E, Bean M, Lanning D. Laparoscopic Gastric Plication in the Morbidly Obese Adolescent Patient. *Seminars in pediatric surgery*. 2014;23(1):24-30. doi:10.1053/j.sempedsurg.2013.10.018
87. Wee CC, Pratt JS, Fanelli R, et al: Best practice updates for informed consent and patient education in weight loss surgery. *Obesity (Silver Spring)* 17:885-8, 2009
88. West DS, Harvey-Berino J, Krukowski RA, Skelly J. Pretreatment Weight Change is Associated with Obesity Treatment Outcomes. *Obesity (Silver Spring, Md)*. 2011;19(9):1791-1795. doi:10.1038/oby.2011.22
89. Wulkan ML, Walsh SM. The multidisciplinary approach to adolescent bariatric surgery. *Seminars in Pediatric Surgery* 2014;23(1):24. DOI:10.1053/j.sempedsurg.2013.10.012
90. Xanthakos, SA. Surgical management of severe obesity in adolescents. In: UpToDate, Jones D (Ed), UpToDate, Waltham, MA. (Accessed on January 19, 2017)
91. Shah AS, et.al. Inge TH. Lipid changes 8 years post gastric bypass in adolescents with severe obesity (FABS-5+ study). *Int J Obes (Lond)*.2017 Oct;41(10): 1579-1584
92. Holly M. Ippisch, Thomas H. Inge, Stephen R. Daniels, Baiyang Wang, Philip R. Khoury, Sandra A. Witt, Betty J. Glascock , Victor F. Garcia, Thomas R. Kimball, Reversibility of Cardiac Abnormalities in Extremely Overweight Adolescents. *Journal of the American College of Cardiology* 2008 Apr 8;51(14):1342-8
93. Kalra, M., Inge, TH. et.al. Obstructive Sleep Apnea in Morbidly Obese Adolescents: Effect of Bariatric Surgical Intervention. *Obesity Research* 2005 13:1175-1179
94. Inge TH, et.al. Long-term outcomes of bariatric surgery in adolescents with severe obesity (FABS-5+): a prospective follow-up analysis. *Lancet Diabetes Endocrinol*. 2017 Mar;5(3): 165-173
95. Inge TH, et.al. Weight Loss and Health Status 3 Years after Bariatric Surgery in Adolescents. *New England Journal of Medicine*. 2016 Jan 14;374(2):113-23
96. Inge TH, et.al. Baseline BMI is a strong predictor of nadir BMI after adolescent gastric bypass. *Journal of Pediatrics*. 2010; 156(1):10

97. Inge TH, Prigeon RL, Elder DA, Jenkins TM, Cohen RM, Xanthakos SA, Benoit SC, Dolan LM, Daniels SR, D'Alessio DA. Insulin Sensitivity and β -Cell Function Improve after Gastric Bypass in Severely Obese Adolescents. *J Pediatr*. 2015 Nov;167(5): 1042-8.e1
98. Inge TH, Miyano G, Bean J, Helmrath M, Courcoulas A, Harmon CM, Chen MK, Wilson K, Daniels SR, Garcia VF, Brandt ML, Dolan LM. Reversal of type 2 diabetes mellitus and improvements in cardiovascular risk factors after surgical weight loss in adolescents. *Pediatrics*. 2009 Jan;123(1):214-22
99. Stefater MA, Inge TH. Bariatric Surgery for Adolescents with Type 2 Diabetes: an Emerging Therapeutic Strategy. *Curr Diab Rep*. 2017 Aug;17(8):62
100. Shah AS, D'Alessio D, Ford-Adams ME, Desai AP, Inge TH. Bariatric Surgery: A Potential
101. Treatment for Type 2 Diabetes in Youth. *Diabetes Care*. 2016 Jun;39(6):934-40
102. Brandt ML, Harmon CM, Helmrath MA, Inge TH, McKay SV, Michalsky MP. Morbid obesity in pediatric diabetes mellitus: surgical options and outcomes. *Nat Rev Endocrinol*. 2010 Nov;6(11):637-45
103. Beamish AJ, D'Alessio DA, Inge TH. Controversial Issues: When the drugs don't work, can surgery provide a different outcome for diabetic adolescents? *Surg Obes Relat Dis*. 2015 Jul-Aug;11(4):946-8

Clinical Guideline Revision/History Information

Original: Review/Revise Dates	Approval Signature/Title
Original Date:	5/2/2017
Reviewed/Revised:	1/18/2018, 4/13/2018
Signed:	Sean Martin, MD, Medical Director