

**2014 Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP)  
Qualified Clinical Data Registry (QCDR)  
Non-PQRS Measures Specifications**

**MBSAQIP Measure # 1**

**Risk standardized rate of patients who experienced a postoperative complication within 30 days following a Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy operation, performed as a primary (not revisional) procedure.**

**National Quality Strategy (NQS) Domain:** Effective Clinical Care

**Measure Type (Process/Outcome):** Outcome

**DESCRIPTION:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced a postoperative complication within 30 days

**DENOMINATOR:**

Patients with Primary CPT **43644, 43645 or 43775**

The following combinations of Primary CPT by Other CPT will also be included in the denominator:

**(43644,43644), (43644,43645), (43644,43846), (43644,43847), (43645,43644), (43645,43645), (43645,43846), (43645,43847), (43659,43644), (43659,43645), (43846,43644), (43846,43645), (43847,43644), (43847,43645), (43999,43644), (43999,43645), (43659,43775), (43775,43775), (43775,43842), (43843,43775), (43999,43775)**

**DENOMINATOR EXCLUSIONS/EXCEPTIONS:**

Revisional procedures, emergent procedures, mini-loop gastric bypass procedures, gastric plication procedures, and procedures performed for weight loss or metabolic purposes utilizing the endoscopic approach will be excluded from the denominator.

**NUMERATOR:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced a postoperative complication within 30 days

**RATIONALE:**

Post-operative overall complication rate is reflective of harm to patients, and thus it is important to measure and report. Until a decade ago, the overall complication rate for bariatric procedures was as high as 30% (1). More recent data report improved outcomes; however, the overall rate of complications remains high. A study of multi-institutional ACS- NSQIP 2005-2006 data for laparoscopic and open roux en y gastric bypass of 5,777 patients showed overall 30-day complication rates of almost 7% for laparoscopic and 13% for open bariatric procedures, with 3.4% and 7.4% major complications, respectively (2). A study involving 25 hospitals with 9895 patients who underwent either sleeve

gastrectomy or gastric bypass during 2006-2009 showed an almost 6% 30-day complication rate with sleeve gastrectomy, and 10.3% complication rate with gastric bypass (3). Serious life threatening or permanently disabling complications, such as pulmonary embolism or respiratory failure, were reported at 2.2% and 3.6% for sleeve gastrectomy and gastric bypass respectively. A study of ACS-Bariatric Surgery Center Network (BSCN) accreditation program data from 109 hospitals for 28,616 patients from 2007-2010 undergoing bariatric operations, with 16,423 undergoing laparoscopic sleeve gastrectomy or laparoscopic or open gastric bypass showed 30-day overall complication rates of 5.6% for laparoscopic sleeve gastrectomy, 5.9% for laparoscopic gastric bypass, and 15% for open gastric bypass (4). Post-operative complications result in disability, increased lengths of stay, and increased hospital costs.

#### **CLINICAL RECOMMENDATION STATEMENTS:**

Several risk factors for postoperative complications following bariatric surgery have been identified for patients undergoing bariatric surgery. Studies have consistently shown that age, type of bariatric surgery, higher BMI, cardiac and pulmonary disease, prior VTE, functional dependence, and limited mobility are risk factors for post-operative complications (5, 6, 7). These should be carefully monitored in patients undergoing bariatric surgery. Patients with cardiopulmonary disease should be optimized pre-operatively; those with a history of VTE should be given more aggressive chemoprophylaxis post-operatively.

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1. Schauer PR, Ikramuddin S, Gourash W, Ramanathan R, Luketich J. Outcomes after laparoscopic Roux-en-Y gastric bypass for morbid obesity. *Ann. Surg.* 232(4), 515–529 (2000).
  2. Lancaster RT, Hutter MM. Bands and bypasses: 30-day morbidity and mortality of bariatric surgical procedures as assessed by prospective, multi-center, risk-adjusted ACS- NSQIP data. *Surg. Endosc.* 22(12), 2554–2563 (2008).
  3. Birkmeyer N.J., Dimick J.B., Share D., Hawasli A., English W.J., Genaw J., et al: Hospital complication rates with bariatric surgery in Michigan. *JAMA* 304. 435-442 (2010).
  4. 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. *Annals of Surgery*, 2011 Sep;254(3):410-20.
  5. Jonathan F. Finks, Kerry L. Kole, Panduranga R. et al. Predicting Risk for Serious Complications With Bariatric Surgery: Results from the Michigan Bariatric Surgery Collaborative. *Annals of Surgery*, Volume 254, Number 4, October 2011
  6. Gupta PK, Franck C, Miller WJ, et al. Development and validation of a bariatric surgery morbidity risk calculator using the prospective, multicenter NSQIP dataset. *J Am Coll Surg.* 212:301–309.
  7. Turner PL, Saager L, Dalton J, et al. A Nomogram for predicting surgical complications in bariatric surgery patients. *Obes Surg.* 2011;21:655–662.
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#### **MBSAQIP Measure # 2**

**Risk standardized rate of patients who experienced a readmission (likely related to the initial operation) within 30 days following a Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy operation, performed as a primary (not revisional) procedure.**

**National Quality Strategy (NQS) Domain:** Efficiency and Cost Reduction

**Measure Type (Process/Outcome):** Outcome

**DESCRIPTION:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced a readmission (likely related to the initial operation) to any hospital within 30 days

**DENOMINATOR:**

Patients with Primary CPT **43644, 43645 or 43775**

The following combinations of Primary CPT by Other CPT will also be included in the denominator:

**(43644,43644), (43644,43645), (43644,43846), (43644,43847), (43645,43644), (43645,43645), (43645,43846), (43645,43847), (43659,43644), (43659,43645), (43846,43644), (43846,43645), (43847,43644), (43847,43645), (43999,43644), (43999,43645), (43659,43775), (43775,43775), (43775,43842), (43843,43775), (43999,43775)**

**DENOMINATOR EXCLUSIONS/EXCEPTIONS:**

Revisional procedures, emergent procedures, mini-loop gastric bypass procedures, gastric plication procedures, and procedures performed for weight loss or metabolic purposes utilizing the endoscopic approach will be excluded from the denominator.

**NUMERATOR:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced a readmission (likely related to the initial operation) to any hospital within 30 days

**RATIONALE:**

Readmissions add greatly to hospital costs nationwide, and are also a measure of untoward events and complications, and are therefore important to measure and report. A study involving 25 hospitals with 9,895 patients who underwent either sleeve gastrectomy or gastric bypass during 2006-2009 showed a 30-day readmission rate of 5.5% for patients who underwent sleeve gastrectomy, and a 5.1% readmission rate with gastric bypass (1). A single center study of 2,823 patients that underwent bariatric procedures during 2003-2006 found an overall readmission rate of 6.5% within 30 days, with a 7.3% readmission rate specifically for laparoscopic gastric bypasses (2). A study of ACS-Bariatric Surgery Center Network (BSCN) accreditation program data from 109 hospitals for 28,616 patients from 2007-2010 undergoing bariatric operations, with 16,423 undergoing laparoscopic sleeve gastrectomy or laparoscopic or open gastric bypass showed 30-day readmission rates of 5.4% for laparoscopic sleeve gastrectomy, 6.4% for laparoscopic gastric bypass, and 9.4% for open gastric bypass (3). In a review of 10,882 patient records following colorectal surgery from 2002-2008, the median cost of readmission was \$8,885 (4). A study of insurance claims from 2,522 bariatric operations at 308 hospitals during 2001-2002 found that the most costly aspect of bariatric surgery was readmissions (5). The total risk-adjusted healthcare payments were \$65,031 for patients with complications requiring readmission over a 6 month period post-operatively, compared to \$27,125 for those with complications not requiring readmission.

## CLINICAL RECOMMENDATION STATEMENTS:

Numerous studies have shown increased odds of readmission with increased length of stay after initial operation for surgical patients, including bariatric patients (6, 7). A study of 2,823 patients who underwent bariatric procedures, 40.2% of 30-day readmissions were due to technical causes and 23.4% due to gastrointestinal complaints such as vomiting (2). In a retrospective review of 1222 patients who underwent gastric bypass during 2004-2007, of the 127 emergency room visits, reoperations, and readmissions within 30 days, 58% were due to nausea, vomiting, and dehydration, or benign abdominal pain (8). By close attention to patients with longer initial LOS and monitoring and early intervention for gastrointestinal complaints, costly readmissions may be prevented.

1. Birkmeyer N.J., Dimick J.B., Share D., Hawasli A., English W.J., Genaw J., et al: Hospital complication rates with bariatric surgery in Michigan. *JAMA* 304. 435-442 (2010).
2. 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 Sep; 17(9):1171-7.
3. 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.* 2011 Sep;254(3):410-20.
4. Wick, Elizabeth C; Shore, Andrew D; Hirose, Kenzo. Readmission Rates and Cost Following Colorectal Surgery. *Diseases of the Colon & Rectum*, Vol 54(12), Dec 2011, pp 1475-1479.
5. Encinosa, William E; Bernard, Didem M; Chen, Chi-Chang et al. Healthcare Utilization and Outcomes After Bariatric Surgery. *Medical Care.* Vol 44(8), Aug 2006, pp 706-712.
6. Saunders J, Ballantyne GH, Belsley S, et al. One-year 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.* 2008 Oct; 18(10):1233-40.
7. Lucas DJ, Haider A, Haut E, et al. Assessing readmission after general, vascular, and thoracic surgery using ACS-NSQIP. *Ann Surg.* 2013 Sep;258(3):430-9.
8. Kellogg, TA, Swan T, Leslie DA, et al. Patterns of readmission and reoperation within 90 days after Roux-en-Y gastric bypass. *Surg Obes Relat Dis.* 2009 Jul-Aug;5(4):416-23.

## **MBSAQIP Measure # 3**

**Risk standardized rate of patients who experienced a reoperation (likely related to the initial operation) within 30 days following a Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy operation, performed as a primary (not revisional) procedure.**

**National Quality Strategy (NQS) Domain:** Efficiency and Cost Reduction

**Measure Type (Process/Outcome):** Outcome

### **DESCRIPTION:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced reoperation (likely related to the initial operation) within 30 days

### **DENOMINATOR:**

Patients with Primary CPT **43644, 43645 or 43775**

The following combinations of Primary CPT by Other CPT will also be included in the denominator:

(43644,43644), (43644,43645), (43644,43846), (43644,43847), (43645,43644), (43645,43645), (43645,43846), (43645,43847), (43659,43644), (43659,43645), (43846,43644), (43846,43645), (43847,43644), (43847,43645), (43999,43644), (43999,43645), (43659,43775), (43775,43775), (43775,43842), (43843,43775), (43999,43775)

**DENOMINATOR EXCLUSIONS/EXCEPTIONS:**

Revisional procedures, emergent procedures, mini-loop gastric bypass procedures, gastric plication procedures, and procedures performed for weight loss or metabolic purposes utilizing the endoscopic approach will be excluded from the denominator.

**NUMERATOR:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced reoperation (likely related to the initial operation) within 30 days

**RATIONALE:**

Reoperations significantly increase morbidity and mortality in patients undergoing bariatric surgery, as well as operating room and hospital costs, and are thus important to measure and report. A study utilizing ACS-NSQIP data for 28,241 patients undergoing bariatric surgery during 2007-2009, of which 18,671 patients underwent laparoscopic gastric bypass, revealed a 2.9% reoperation rate within 30 days for those who underwent laparoscopic gastric bypass as the index procedure (1). A study of multi-institutional ACS-NSQIP 2005-2006 data for laparoscopic and open roux en y gastric bypass of 5,777 patients showed 30-day reoperation rates of 3.6% for laparoscopic and 5.0% for open bariatric procedures (2). A study involving 25 hospitals with 9895 patients who underwent either sleeve gastrectomy or gastric bypass during 2006-2009 showed a 0.6% 30-day reoperation rate with sleeve gastrectomy and 2.5% with gastric bypass (3). Reoperations are undertaken for leaks and perforations, severe wound infections, major bleeding, and strictures. A study of ACS-Bariatric Surgery Center Network (BSCN) accreditation program data from 109 hospitals for 28,616 patients from 2007-2010 undergoing bariatric operations, with 16,423 undergoing laparoscopic sleeve gastrectomy or laparoscopic or open gastric bypass showed 30-day reoperation rates of 3% for laparoscopic sleeve gastrectomy, and 5% for laparoscopic and open gastric bypass (4). The ACS-NSQIP data for 28,241 patients undergoing bariatric surgery revealed an overall significant increase in morbidity (40% vs. 3.3%) and mortality (2.2% vs. 0.01%) for those undergoing reoperations (1).

**CLINICAL RECOMMENDATION STATEMENTS:**

Several risk factors have been identified that increase the likelihood of requiring reoperation following bariatric surgery. Patient with bleeding disorders (OR 2.1), low pre-operative serum albumin (OR 0.8), hemodialysis requirement (OR 9.2), or those with increased anesthesia time (OR 1.0) have an increased risk of reoperations (1). For patients with low albumin levels preoperatively, nutritional counseling can be undertaken prior to the procedure. Patients can also be counseled as to increased risk of reoperation and morbidity with these risk factors to ensure a better understanding of the risks of the planned procedure for purposes of informed consent.

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References: 1. Nandipati K, Lin E, Husain F, et al. Factors predicting the increased risk for return to the operating room in bariatric patients: a NSQIP database study. Surg Endosc. 2013 Apr;27(4):1172-7.  
2. Lancaster RT, Hutter MM. Bands and bypasses: 30-day morbidity and mortality of bariatric surgical procedures as assessed by prospective, multi-center, risk-adjusted ACS- NSQIP data. Surg. Endosc. 22(12), 2554–2563 (2008).  
3. Birkmeyer N.J., Dimick J.B., Share D., Hawasli A., English W.J., Genaw J., et al: Hospital complication rates with bariatric surgery in Michigan. JAMA 304. 435-442 (2010).  
4. 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. 2011 Sep; 254(3):410-20.

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#### **MBSAQIP Measure # 4**

**Risk standardized rate of patients who experienced an anastomotic/staple line leak within 30 days following a Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy operation, performed as a primary (not revisional) procedure.**

**National Quality Strategy (NQS) Domain:** Effective Clinical Care

**Measure Type (Process/Outcome):** Outcome

#### **DESCRIPTION:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced an anastomotic/staple line leak within 30 days

#### **DENOMINATOR:**

Patients with Primary CPT **43644, 43645 or 43775**

The following combinations of Primary CPT by Other CPT will also be included in the denominator: **(43644,43644), (43644,43645), (43644,43846), (43644,43847), (43645,43644), (43645,43645), (43645,43846), (43645,43847), (43659,43644), (43659,43645), (43846,43644), (43846,43645), (43847,43644), (43847,43645), (43999,43644), (43999,43645), (43659,43775), (43775,43775), (43775,43842), (43843,43775), (43999,43775)**

#### **DENOMINATOR EXCLUSIONS/EXCEPTIONS:**

Revisional procedures, emergent procedures, mini-loop gastric bypass procedures, gastric plication procedures, and procedures performed for weight loss or metabolic purposes utilizing the endoscopic approach will be excluded from the denominator.

#### **NUMERATOR:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced an anastomotic/staple line leak within 30 days

#### **RATIONALE:**

Anastomotic/staple line leaks greatly increase the morbidity and mortality for patients undergoing bariatric surgery, and are therefore important to measure and report. A study involving 25 hospitals with 9895 patients who underwent either sleeve gastrectomy or gastric bypass during 2006-2009 showed a 30-day leak rate of 0.92% with gastric bypass operations and 0.35% with sleeve gastrectomy

(1). A multi-institute study of 25,469 patients undergoing bariatric procedures showed a 30-day leak rate of 0.8% with laparoscopic gastric bypass, 0.6% with open gastric bypass, and 1.0% with sleeve gastrectomy (2). A study of ACS- Bariatric Surgery Center Network (BSCN) accreditation program data from 109 hospitals for 28,616 patients from 2007-2010 undergoing bariatric operations, with 16,423 undergoing laparoscopic sleeve gastrectomy or laparoscopic or open gastric bypass showed 30-day leak rates of 0.74% for laparoscopic sleeve gastrectomy, 0.78% for laparoscopic gastric bypass, and 1.5% for open gastric bypass (3). A study of 3,018 patients who underwent gastric bypass at 4 tertiary care centers showed a 2.1% leak rate (4). The majority of these occurred at the site of the gastrojejunostomy. Median time to symptoms was 3 days. In this study, 63% required reoperations, for drainage of intra-abdominal abscesses or revision or repair of the anastomosis, with an overall morbidity of 53% and mortality of 10%. Those treated non-operatively required placement of drains, intravenous antibiotics, and withholding of oral intake. Two-thirds of the patients required transfer to an intensive care unit with median length of stay of 8 days.

#### **CLINICAL RECOMMENDATION STATEMENTS:**

Leaks after bariatric surgery are difficult to diagnose due to lack of peritoneal signs in morbidly obese abdomens, and low sensitivity of imaging studies such as upper GI studies and CT scans. Fever, tachycardia, and abdominal pain are non-specific signs but should raise suspicion for leaks. There should be a higher index of suspicion for patients with higher BMI or those who have had previous abdominal surgery (4, 5).

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1. Birkmeyer N.J., Dimick J.B., Share D., Hawasli A., English W.J., Genaw J., et al: Hospital complication rates with bariatric surgery in Michigan. *JAMA* 304. 435-442 (2010).
  2. Jonathan F. Finks, Kerry L. Kole, Panduranga R. et al. Predicting Risk for Serious Complications With Bariatric Surgery: Results from the Michigan Bariatric Surgery Collaborative. *Annals of Surgery*, Volume 254, Number 4, October 2011
  3. 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*. 2011 Sep;254(3):410-20.
  4. Gonzalez R, Sarr MG, Smith CD et al. Diagnosis and contemporary management of anastomotic leaks after gastric bypass for obesity. *J. Am. Coll. Surg*. 204(1), 47-55 (2007).
  5. Livingston E.H., Ko C.Y.: Assessing the relative contribution of individual risk factors on surgical outcome for gastric bypass surgery: a baseline probability analysis. *J Surg Res* 2002; 105: 48-52
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#### **MBSAQIP Measure # 5**

**Risk standardized rate of patients who experienced a bleeding/hemorrhage event requiring transfusion, intervention/operation, or readmission within 30 days following a Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy operation, performed as a primary (not revisional) procedure.**

**National Quality Strategy (NQS) Domain:** Effective Clinical Care

**Measure Type (Process/Outcome):** Outcome

**DESCRIPTION:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced a bleeding/hemorrhage event requiring transfusion or intervention within 30 days

**DENOMINATOR:**

Patients with Primary CPT **43644, 43645 or 43775**

The following combinations of Primary CPT by Other CPT will also be included in the denominator:

**(43644,43644), (43644,43645), (43644,43846), (43644,43847), (43645,43644), (43645,43645), (43645,43846), (43645,43847), (43659,43644), (43659,43645), (43846,43644), (43846,43645), (43847,43644), (43847,43645), (43999,43644), (43999,43645), (43659,43775), (43775,43775), (43775,43842), (43843,43775), (43999,43775)**

**DENOMINATOR EXCLUSIONS/EXCEPTIONS:**

Revisional procedures, emergent procedures, mini-loop gastric bypass procedures, gastric plication procedures, and procedures performed for weight loss or metabolic purposes utilizing the endoscopic approach will be excluded from the denominator.

**NUMERATOR:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced a bleeding/hemorrhage event requiring transfusion or intervention within 30 days

**RATIONALE:**

Perioperative bleeding is an adverse surgical outcome which can significantly delay discharge after bariatric procedures and is a measure of harm, and is therefore important to measure and report. A study of multi-institutional ACS-NSQIP 2005-2006 data for laparoscopic and open roux en y gastric bypass of 5,777 patients reported post-operative bleeding requiring blood transfusions within 30 days of the index procedure in 0.4% of patients undergoing laparoscopic and 0.5% of patients undergoing open bariatric procedures (1). A study involving 25 hospitals with 9895 patients who underwent either sleeve gastrectomy or gastric bypass during 2006-2009 reported 30-day bleeding complications in 2.3% of gastric bypass operations, and 0.6% of sleeve gastrectomy procedures (2). A multi-institute study of 25,469 patients undergoing bariatric procedures showed 30-day bleeding rates of 2.7% with laparoscopic gastric bypass, 3.4% with open gastric bypass, and 1.0% with sleeve gastrectomy (3). Approximately one-third to half of these patients required transfusion of greater than 4 units of packed cells or an intervention such as endoscopy or reoperation. A study of ACS-Bariatric Surgery Center Network (BSCN) accreditation program data from 109 hospitals for 28,616 patients from 2007-2010 undergoing bariatric operations, with 16,423 undergoing laparoscopic sleeve gastrectomy or laparoscopic or open gastric bypass showed 30-day bleeding rate of 0.64% for laparoscopic sleeve gastrectomy, and 1.1% for laparoscopic and open gastric bypass (4). In a study of 4,466 patients undergoing gastric bypass over 10 years, 87% of patients who developed bleeding complications within 30 days had their discharge delayed by greater than 4 days (5).

## CLINICAL RECOMMENDATION STATEMENTS:

Bleeding post-bariatric surgery can be difficult to manage, however, patients who are hemodynamically unstable, unresponsive to transfusion, or in whom a bleeding source cannot be identified, merit operative intervention. Patients with post-operative bleeding should be monitored closely, as while most bleeding cases resolve, others result in additional notable complications (6). Bleeding disorders should be identified preoperatively with adequate history and laboratory testing.

1. Lancaster RT, Hutter MM. Bands and bypasses: 30-day morbidity and mortality of bariatric surgical procedures as assessed by prospective, multi-center, risk-adjusted ACS- NSQIP data. *Surg. Endosc.* 22(12), 2554–2563 (2008).
2. Birkmeyer N.J., Dimick J.B., Share D., Hawasli A., English W.J., Genaw J., et al: Hospital complication rates with bariatric surgery in Michigan. *JAMA* 304. 435-442 (2010).
3. Jonathan F. Finks, Kerry L. Kole, Panduranga R. et al. Predicting Risk for Serious Complications With Bariatric Surgery: Results from the Michigan Bariatric Surgery Collaborative. *Annals of Surgery*, Volume 254, Number 4, October 2011
4. 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.* 2011 Sep;254(3):410-20
5. Heneghan HM, Meron-Eldar S, Yenumula P, et al. Incidence and management of bleeding complications after gastric bypass surgery in the morbidly obese. *Surg Obes Relat Dis.* 2012 Nov-Dec;8(6):729-35.
6. Dick A., Byrne T.K., Baker M., et al. Gastrointestinal bleeding after gastric bypass surgery: nuisance or catastrophe?. *Surg Obes Relat Dis* 2010; 6: 643-647

## **MBSAQIP Measure # 6**

**Risk standardized rate of patients who experienced a postoperative surgical site infection (SSI) (superficial incisional, deep incisional, or organ/space SSI) within 30 days following a Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy operation, performed as a primary (not revisional) procedure.**

**National Quality Strategy (NQS) Domain:** Effective Clinical Care

**Measure Type (Process/Outcome):** Outcome

### **DESCRIPTION:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced a postoperative surgical site infection within 30 days

### **DENOMINATOR:**

Patients with Primary CPT **43644, 43645 or 43775**

The following combinations of Primary CPT by Other CPT will also be included in the denominator: **(43644,43644), (43644,43645), (43644,43846), (43644,43847), (43645,43644), (43645,43645), (43645,43846), (43645,43847), (43659,43644), (43659,43645), (43846,43644), (43846,43645), (43847,43644), (43847,43645), (43999,43644), (43999,43645), (43659,43775), (43775,43775), (43775,43842), (43843,43775), (43999,43775)**

### **DENOMINATOR EXCLUSIONS/EXCEPTIONS:**

Revisional procedures, emergent procedures, mini-loop gastric bypass procedures, gastric plication procedures, and procedures performed for weight loss or metabolic purposes utilizing the endoscopic

approach will be excluded from the denominator. Patients who have PATOS (Present at Time of Surgery) modifiers will also be excluded from the denominator.

**NUMERATOR:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced a postoperative surgical site infection within 30 days

**RATIONALE:**

Surgical Site Infections (SSIs) remain the most frequently reported complication following bariatric surgery (1, 2, 3). SSIs are an adverse surgical outcome, and thus important to measure and report. Over the past decade, the reported incidence of SSI after bariatric surgery has ranged from 8% to 12% (2, 4) for open procedures, and 3-4% for laparoscopic procedures (1, 2). A study of ACS-Bariatric Surgery Center Network (BSCN) accreditation program data from 109 hospitals for 28,616 patients from 2007-2010 undergoing bariatric operations, with 16,423 undergoing laparoscopic sleeve gastrectomy or laparoscopic or open gastric bypass showed 30-day SSI rates of 2% for laparoscopic sleeve gastrectomy, 2.2% for laparoscopic gastric bypass, and 7.8% for open gastric bypass (4). The organisms isolated are predominantly gram-positives such as staphylococci and streptococci, but also include gram negative bacteria and anaerobes (5). The cost attributable to a surgical site infection was reported as \$20,785 and the LOS as 11.2 days in recent student published in JAMA (6). Costs and LOS both more than doubled for SSIs caused by methicillin resistant staph aureus.

**CLINICAL RECOMMENDATION STATEMENTS:**

A study of 2012 patients at 9 community hospitals during 2007- 2008 showed wide variation in antibiotic prophylactic regimens (7). This can be optimized by adherence to Clinical Practice Guidelines for Antimicrobial Prophylaxis in Surgery (8). Cefazolin should be used according to established prophylaxis guidelines. In case of a B-lactam allergy, Clindamycin or vancomycin plus aminoglycoside or aztreonam or fluoroquinolone should be used. Standard doses may results in low tissue and serum concentrations in obese patients. The highest weight-based dose that can be safely used should be administered (9). Hyperglycemia should be adequately controlled (10). Laparoscopic approach should be utilized if possible.

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1. Birkmeyer N.J., Dimick J.B., Share D., Hawasli A., English W.J., Genaw J., et al: Hospital complication rates with bariatric surgery in Michigan. JAMA 304. 435-442 (2010).
2. Lancaster RT, Hutter MM. Bands and bypasses: 30-day morbidity and mortality of bariatric surgical procedures as assessed by prospective, multi-center, risk-adjusted ACS- NSQIP data. Surg. Endosc. 22(12), 2554–2563 (2008).
3. Schauer PR, Ikramuddin S, Gourash W, Ramanathan R, Luketich J. Outcomes after laparoscopic Roux-en-Y gastric bypass for morbid obesity. Ann. Surg. 232(4), 515–529 (2000).
4. 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. 2011 Sep;254(3):410-20
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10. Ruiz-Tovar J, Oller I, Llaveró C, et al. Pre-operative and early post-operative factors associated with surgical site infection after laparoscopic sleeve gastrectomy. Surg Infect (Larchmt). 2013 Aug;14(4):369-73.

### **MBSAQIP Measure # 7**

**Risk standardized rate of patients who experienced postoperative nausea, vomiting or fluid/electrolyte/nutritional depletion within 30 days following a Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy operation, performed as a primary (not revisional) procedure.**

**National Quality Strategy (NQS) Domain:** Effective Clinical Care

**Measure Type (Process/Outcome):** Outcome

#### **DESCRIPTION:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced a postoperative nausea, vomiting or fluid/electrolyte/nutritional depletion within 30 days

#### **DENOMINATOR:**

Patients with Primary CPT **43644, 43645 or 43775**

The following combinations of Primary CPT by Other CPT will also be included in the denominator: **(43644,43644), (43644,43645), (43644,43846), (43644,43847), (43645,43644), (43645,43645), (43645,43846), (43645,43847), (43659,43644), (43659,43645), (43846,43644), (43846,43645), (43847,43644), (43847,43645), (43999,43644), (43999,43645), (43659,43775), (43775,43775), (43775,43842), (43843,43775), (43999,43775)**

#### **DENOMINATOR EXCLUSIONS/EXCEPTIONS:**

Revisional procedures, emergent procedures, mini-loop gastric bypass procedures, gastric plication procedures, and procedures performed for weight loss or metabolic purposes utilizing the endoscopic approach will be excluded from the denominator.

#### **NUMERATOR:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced a postoperative nausea, vomiting or fluid/electrolyte/nutritional depletion within 30 days

#### **RATIONALE:**

Post-operative nausea, vomiting, and fluid/electrolyte/nutritional depletion rate affects the post-operative recovery for patients and thus it is important to measure and report. A study of ACS-Bariatric Surgery Center Network (BSCN) accreditation program data from 109 hospitals for 28,616 patients from 2007-2010 undergoing bariatric operations, with 16,423 undergoing laparoscopic sleeve gastrectomy or laparoscopic or open gastric bypass showed 30- day fluid, electrolyte, and nutritional depletion rates of

1.9% for laparoscopic sleeve gastrectomy, 1.5% for laparoscopic gastric bypass, and 2.1% for open gastric bypass (1). In a retrospective review of 1222 patients who underwent gastric bypass during 2004-2007, of the 127 emergency room visits, reoperations, and readmissions within 30 days, almost 40% were due to nausea, vomiting, and dehydration (2). These symptoms were also the most common complaint, at 26%, for those patients who presented to an emergency room within the first 90 days of a bariatric procedure. These symptoms can also be indicative of post-operative ileus or small bowel obstruction (SBO). A study involving 25 hospitals with 9895 patients who underwent either sleeve gastrectomy or gastric bypass during 2006-2009 reported 30-day ileus/SBO in 0.8% of gastric bypass operations, and 0.1% of sleeve gastrectomy procedures (3).

#### **CLINICAL RECOMMENDATION STATEMENTS:**

Clinical practice guidelines exist to address post-operative fluid/electrolyte/nutritional needs for bariatric patients (4). Those could be adhered to as clinically appropriate to reduce these post-operative conditions for an improved patient care and to reduce costly readmissions. Post-operative nausea and vomiting should be addressed early and patient counseling could be undertaken to avoid dehydration and electrolyte deficiencies.

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1. 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.* 2011 Sep;254(3):410-20
  2. Kellogg, TA, Swan T, Leslie DA, et al. Patterns of readmission and reoperation within 90 days after Roux-en-Y gastric bypass. *Surg Obes Relat Dis.* 2009 Jul-Aug;5(4):416-23.
  3. Birkmeyer N.J., Dimick J.B., Share D., Hawasli A., English W.J., Genaw J., et al: Hospital complication rates with bariatric surgery in Michigan. *JAMA* 304. 435-442 (2010).
  4. 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. *Surg Obes Relat Dis.* 2013 Mar-Apr;9(2):159-91.
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#### **MBSAQIP Measure # 8**

**Risk standardized rate of patients who experienced extended length of stay (> 7 days) following a Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy operation, performed as a primary (not revisional) procedure.**

**National Quality Strategy (NQS) Domain:** Patient Safety

**Measure Type (Process/Outcome):** Outcome

#### **DESCRIPTION:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced extended length of stay (> 7 days)

#### **DENOMINATOR:**

Patients with Primary CPT **43644, 43645 or 43775**

The following combinations of Primary CPT by Other CPT will also be included in the denominator:

(43644,43644), (43644,43645), (43644,43846), (43644,43847), (43645,43644), (43645,43645), (43645,43846), (43645,43847), (43659,43644), (43659,43645), (43846,43644), (43846,43645), (43847,43644), (43847,43645), (43999,43644), (43999,43645), (43659,43775), (43775,43775), (43775,43842), (43843,43775), (43999,43775)

**DENOMINATOR EXCLUSIONS/EXCEPTIONS:**

Revisional procedures, emergent procedures, mini-loop gastric bypass procedures, gastric plication procedures, and procedures performed for weight loss or metabolic purposes utilizing the endoscopic approach will be excluded from the denominator.

**NUMERATOR:**

Laparoscopic Roux-en-Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy patients who experienced extended length of stay (> 7 days)

**RATIONALE:**

Extended length of stay (LOS) can be a marker of post-operative complications and is therefore important to measure and report. An analysis of current data suggests that only 1.5% of patients have a LOS greater than 7 days. A study of multi-institutional ACS-NSQIP 2005-2006 data for laparoscopic and open roux en y gastric bypass of 5,777 patients reported median LOS 2.0 days for laparoscopic and 3.0 days for open gastric bypass (1). A single center study of 2,823 patients that underwent bariatric procedures during 2003-2006 found LOS >3 days at the initial operation increased the odds of unplanned readmissions within 30 days (2). A study of 1,939 patients undergoing a variety of bariatric procedures and followed for one year post- operatively found that the mean initial LOS for the 265 readmitted patients was 0.5 days longer that the LOS for those not readmitted. The mean length of stay at readmission was 3 days (3). A study of 100 patients at a single institution who underwent laparoscopic sleeve gastrectomy between 2008 and 2011 showed a median LOS of 3.1 days (4).

**CLINICAL RECOMMENDATION STATEMENTS:**

Extended initial length of stay is a risk factor for readmission later in the post-operative course. Patients who have a longer initial length of stay may benefit from additional follow up visits to prevent morbidity from complications and costly readmissions.

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1. Lancaster RT, Hutter MM. Bands and bypasses: 30-day morbidity and mortality of bariatric surgical procedures as assessed by prospective, multi-center, risk-adjusted ACS- NSQIP data. *Surg. Endosc.* 22(12), 2554–2563 (2008).  
2. 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 Sep; 17(9):1171-7.  
3. Saunders J, Ballantyne GH, Belsley S, et al. One-year 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.* 2008 Oct; 18(10):1233-40.  
4. Sucandy I, Antanavicius G, Bonanni F Jr. Outcome analysis of early laparoscopic sleeve gastrectomy experience. *JLS.* 2013 Oct-Dec;17(4):602-6.

**MBSAQIP Measure # 9**

**Percentage of patients who had complete 30 day follow-up following any metabolic and bariatric procedure**

**National Quality Strategy (NQS) Domain:** Communication and Care Coordination

**Measure Type (Process/Outcome):** Process

**DESCRIPTION:**

Patients who had complete 30 day follow-up following any metabolic and bariatric procedure. Providers will also be given credit for complete 30 day follow-up for a patient if (1) one phone call was placed to the patient AND one letter was sent to the patient OR (2) the patient refuses long-term follow-up.

**DENOMINATOR:**

Patients with primary CPT in the MBSAQIP 2014 CPT Code List for metabolic and bariatric procedures: **43280, 43281, 43282, 43332, 43333, 43334, 43335, 43336, 43337, 43501, 43620, 43621, 43622, 43631, 43632, 43633, 43634, 43644, 43645, 43659, 43770, 43771, 43772, 43773, 43774, 43775, 43810, 43820, 43825, 43840, 43842, 43843, 43845, 43846, 43847, 43848, 43850, 43855, 43860, 43865, 43886, 43887, 43888, 43999, 44050, 44602, 44603**

**DENOMINATOR EXCLUSIONS/EXCEPTIONS:**

Revisional procedures, emergent procedures, mini-loop gastric bypass procedures, gastric plication procedures, and procedures performed for weight loss or metabolic purposes utilizing the endoscopic approach will be excluded from the denominator.

**NUMERATOR:**

Patients who had complete 30 day follow-up following any metabolic and bariatric procedure. Providers will also be given credit for complete 30 day follow-up for a patient if (1) one phone call was placed to the patient AND one letter was sent to the patient OR (2) the patient refuses long-term follow-up.

**RATIONALE:**

30 day post-operative follow-up rate captures not only active follow-up but also allows for care coordination post-operatively. It is therefore important to measure and report. Multi-disciplinary care and care coordination are important in this patient population. Since obesity is a lifelong disease, we expect these patients to have longitudinal follow-up, and certainly at 30 days. Validating outcomes for other metrics require appropriately follow-up care. We expect sites to have at least 80% follow-up so that we can calculate risk-adjusted rates for the procedures.

**CLINICAL RECOMMENDATION STATEMENTS:**

Patient should follow-up with the primary surgeon within 30 days of the procedure. Early complications are common and with close follow-up, these problems may be identified sooner and prevent clinical deterioration and costly readmissions. This will also allow for multi-disciplinary care and for care coordination.