

Endocrinology & Metabolism Institute



Measuring Outcomes Promotes Quality Improvement





Measuring and understanding outcomes of medical treatments promotes quality improvement. Cleveland Clinic has created a series of Outcomes books similar to this one for its clinical institutes. Designed for a physician audience, the Outcomes books contain a summary of many of our surgical and medical treatments, with a focus on outcomes data and a review of new technologies and innovations.

The Outcomes books are not a comprehensive analysis of all treatments provided at Cleveland Clinic, and omission of a particular treatment does not necessarily mean we do not offer that treatment. When there are no recognized clinical outcome measures for a specific treatment, we may report process measures associated with improved outcomes. When process measures are unavailable, we may report volume measures; a relationship has been demonstrated between volume and improved outcomes for many treatments, particularly those involving surgical and procedural techniques.

In addition to these institute-based books of clinical outcomes, Cleveland Clinic supports transparent public reporting of healthcare quality data. The following reports are available to the public:

- Joint Commission Performance Measurement Initiative (qualitycheck.org)
- Centers for Medicare and Medicaid Services (CMS) Hospital Compare (medicare.gov/hospitalcompare), and Physician Compare (medicare.gov/PhysicianCompare)
- Cleveland Clinic Quality Performance Report (clevelandclinic.org/QPR)

Our commitment to transparent reporting of accurate, timely information about patient care reflects Cleveland Clinic's culture of continuous improvement and may help referring physicians make informed decisions.

We hope you find these data valuable, and we invite your feedback. Please send your comments and questions via email to:

OutcomesBooksFeedback@ccf.org.

To view all of our Outcomes books, please visit clevelandclinic.org/outcomes.



Dear Colleague:

Welcome to this 2016 Cleveland Clinic Outcomes book. Every year, we publish Outcomes books for 14 clinical institutes with multiple specialty services. These publications are unique in healthcare. Each one provides an overview of medical or surgical trends, innovations, and clinical data for a particular specialty over the past year. We are pleased to make this information available.

Cleveland Clinic uses data to manage outcomes across the full continuum of care. Our unique organizational structure contributes to our success. Patient services at Cleveland Clinic are delivered through institutes, and each institute is based on a single disease or organ system. Institutes combine medical and surgical services, along with research and education, under unified leadership. Institutes define quality benchmarks for their specialty services and report on longitudinal progress.

All Cleveland Clinic Outcomes books are available in print and online. Additional data are available through our online Quality Performance Reports (clevelandclinic.org/QPR). The site offers process measure, outcome measure, and patient experience data in advance of national and state public reporting sites.

Our practice of releasing annual Outcomes books has become increasingly relevant as healthcare transforms from a volume-based to a value-based system. We appreciate your interest and hope you find this information useful and informative.

Sincerely,

A handwritten signature in black ink, appearing to read 'DMC'.

Delos M. Cosgrove, MD
CEO and President

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Chairman Letter

Dear Colleagues,

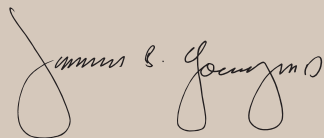
On behalf of Cleveland Clinic's Endocrinology & Metabolism Institute, I am once again pleased to share our annual Outcomes book. In 2016, we ranked No. 3 for diabetes & endocrinology care in the country according to *U.S. News & World Report* and No. 1 in Ohio. Transformation of care, continuous improvement, quality outcomes, patient experience and safety, and caregiver engagement remain our top priorities. Management of chronic disease continues to be our focus.

Highlights of our team's 2016 accomplishments include:

- Affiliated with the National Diabetes & Obesity Research Institute in Biloxi, Mississippi, whose mission is to help research and reduce the prevalence of obesity and diabetes in Mississippi, the Diabetes Belt, nationally, and around the world
- Expanded our Endocrine Surgery program to Cleveland Clinic Florida
- Managed more than 82,000 patient visits and 30,000 MyChart® messages in the electronic medical record (EMR)
- Completed almost 500 shared medical appointments and shared nutrition appointments as part of our integrated Medical Weight Management program
- Completed more than 100 Express Care® online virtual visits for both surgical and medical endocrine conditions, including diabetes education
- Created an EMR MyChart hypoglycemia questionnaire
- Worked with the Medicine Institute to pilot the adult diabetes type 2 care path utilizing the EMR
- Introduced volume 2 of the Cleveland Clinic diabetes education guide, "Healthy You: A Guide to Diabetes Self-Care," and the first revisions of 2 companion guides
- Saw a 100% board pass rate among Endocrinology fellows (national average 95%)
- Provided 8 live CME courses, including 3 in Biloxi, Mississippi
- Authored and published 35 journal articles on endocrinology, diabetes, and bariatric and endocrine surgery

We welcome your feedback, questions, and ideas for collaboration. Please contact me via email at OutcomesBooksFeedback@ccf.org and reference the Endocrinology & Metabolism Institute book in your message.

Sincerely,



James B. Young, MD
Chairman, Endocrinology & Metabolism Institute
Professor of Medicine and Executive Dean, Cleveland Clinic Lerner College of Medicine



Institute Overview

Cleveland Clinic's Endocrinology & Metabolism Institute is committed to providing the highest quality healthcare for patients with diabetes, endocrine and metabolic disorders, and obesity. The Endocrinology & Metabolism Institute's staff of more than 100 caregivers, located on the main campus and throughout the Cleveland Clinic enterprise, is dedicated to exploring ways to improve the care of these patients, and to teaching the best methods for treating them. Cleveland Clinic diabetes and endocrinology services are ranked No. 3 in the nation by *U.S. News & World Report*.

2016 Department of Endocrinology, Diabetes, and Metabolism

The Department of Endocrinology, Diabetes, and Metabolism conducts disease-specific clinics for patients with type 1 or type 2 diabetes, gestational diabetes, post-pancreas transplant diabetes, pituitary disorders, obesity, thyroid/parathyroid disorders, and post-pancreas transplant and liver/adrenal tumor care needs. The department also offers a pituitary clinic staffed by endocrine medicine and surgical specialists, a preventive cardiology clinic, a calcium clinic, and a transition diabetes clinic for adolescents ready for adult endocrine care.

The department's obesity treatment options include an Integrated Medical Weight Management Program which is in its second year of existence. Elements of weight loss, exercise, healthy nutrition, medication, optimization of sleep habits, and stress management are combined through an interdisciplinary team approach. These options include Mediterranean diet, protein-sparing modified fast, and meal replacement programs, provided in a shared medical or individual appointment.

2016 Endocrine Surgery Department

The center's endocrine surgery service is among the most experienced in the world. Cleveland Clinic often utilizes advanced minimally invasive technology for surgical care of thyroid, parathyroid, adrenal, liver, endocrine, and pancreas disorders, including robot-assisted adrenalectomy. The endocrine surgery service increasingly treats patients referred for complex conditions such as reoperative problems, advanced cancers, and hereditary endocrine syndromes.

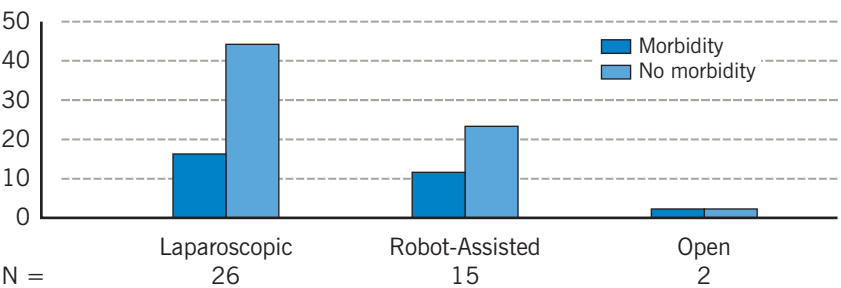
Endocrinology	
Total patient visits	66,429
Endocrinology new visits	9939
Patients having fine needle aspiration biopsy of the thyroid	777
Diabetes	
Diabetes Center total patient visits	10,916
Regional diabetes total visits	7129
Diabetes new visits	3749
Diabetes education visits	4535

Endocrine Surgery	
Total patient visits	5314
New visits	1707
Patients having fine needle aspiration biopsy of the thyroid	518
Total endocrine surgery cases	982
Neck cases	838
Abdominal cases	145
Robot-assisted cases (Neck or Abdominal)	45

Surgical Approach and Morbidity Following Bilateral Adrenal Tumors (N = 43)

2000 – 2016

Percent



The management of patients with bilateral adrenal tumors can be challenging. Cleveland Clinic surgeons have created surgical algorithms for efficient treatment of bilateral masses, with 95% of surgeries performed using minimally invasive procedures.

Bilateral Adrenalectomy Patient Information and Outcomes (N = 43)

2000 – 2016

	Laparoscopic (N = 26)	Robot-Assisted (N = 15 ^a)	Open (N = 2)
Age, years, mean	52.7	51.1	60.0
Sex, N			
Female	19	11	2
Male	7	4	0
Diagnosis, N			
Cushing	23	10	0
Pheochromocytoma	2	5	1
Metastasis	1	0	1
Approach, N			
Lateral	6	7	NA
Posterior	20	8	NA
Operative time, minutes, mean	296	393	294
Estimated blood loss, mL, mean	88.1	66.9	1000.0
Length of stay, days, mean	4.4	2.5	8.5
30-day complications, N			
Morbidity	7	5	1
Mortality	0	0	0

^aOne robot-assisted case was converted to laparoscopic.

Bilateral Adrenalectomy Comparing Lateral Transabdominal Approach to Posterior Retroperitoneal Approach (N = 41^a)

2000 – 2016

	Lateral (N = 13)	Posterior (N = 28)
Age, years, mean	48.7	53.7
Sex, N		
Female	10	20
Male	3	8
ASA, ^b median	3	3
Body mass index, kg/m ² , mean	37.3	29.8
Diagnosis, N		
Cushing	10	23
Pheochromocytoma	3	4
Metastasis	0	1
Operative time, minutes, mean	377	311
Estimated blood loss, mL, mean	78.4	81.1
Length of stay, days, mean	3.0	3.8
30-day complications, N		
Morbidity	5	7
Mortality	0	0

ASA = American Society of Anesthesiologists

^aOpen surgical approach not included

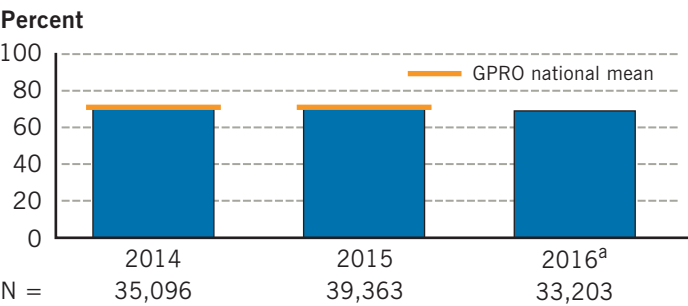
^bAmerican Society of Anesthesiologists Physical Status Classification System

Diabetes

The epidemic of diabetes mellitus is of great concern. Institute physicians closely monitor the care of patients with diabetes. Glycemic control for patients aged 18 to 75 is reported. The percentage of patients with diabetes whose glucose is adequately controlled (hemoglobin A_{1c} < 8%) is reported, as well as the percentage of patients with poor control (hemoglobin A_{1c} ≥ 9%). Institute performance has remained stable during the past 3 years and was compared with benchmarks established through the national group practice reporting option (GPRO) created by the Centers for Medicare & Medicaid Services (CMS) for the Physician Quality Reporting System in 2010.

ACO 22: Blood Sugar Control in Patients With Diabetes (Hemoglobin A_{1c} < 8%)

2014 – 2016

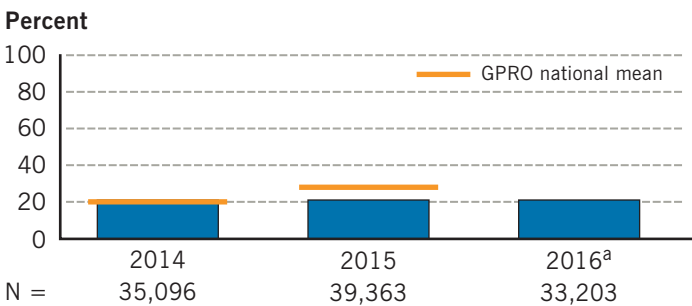


ACO = accountable care organization, GPRO = group practice reporting option

^aGPRO national mean not available

ACO 27: Blood Sugar Control in Patients With Diabetes (Hemoglobin A_{1c} ≥ 9%)

2014 – 2016



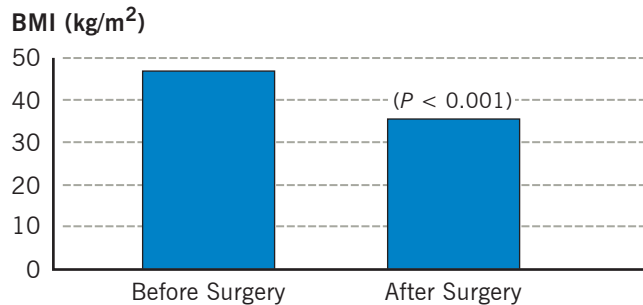
ACO = accountable care organization, GPRO = group practice reporting option

^aGPRO national mean not available

Bariatric Surgery for Diabetes

Mean Body Mass Index Before and After Bariatric Surgery for Obese Diabetic Patients With Baseline Hemoglobin A_{1c} Values > 6.5% (N = 458)

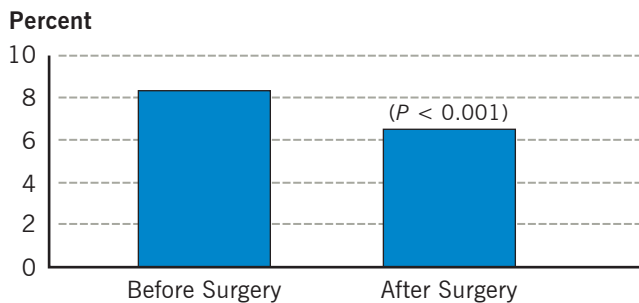
2004 – 2016



The mean body mass index (BMI) difference before and after surgery was significant, with baseline BMI at 46.5 and follow-up at 35.5. The mean follow-up duration was 3.5 years.

Mean Hemoglobin A_{1c} Values Before and After Bariatric Surgery for Diabetic Patients With Baseline Hemoglobin A_{1c} Values > 6.5% (N = 458)

2004 – 2016



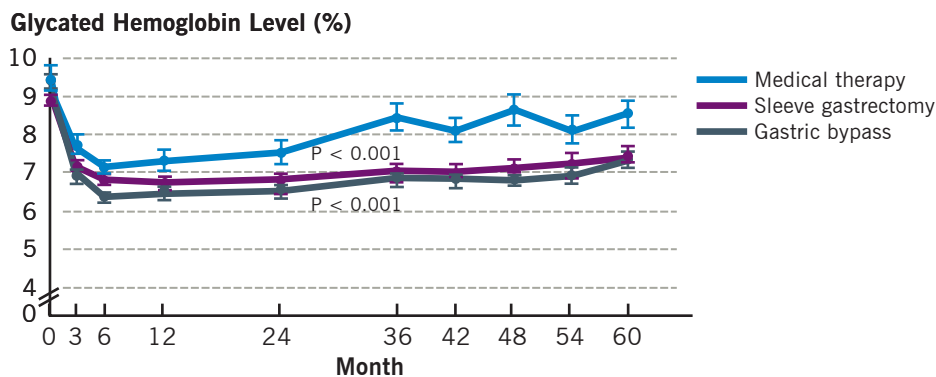
The mean hemoglobin A_{1c} difference before and after surgery was significant, with a mean hemoglobin A_{1c} baseline of 8.2% before surgery and a most recently available hemoglobin A_{1c} of 6.5% after surgery. The average time between pre- and postoperative hemoglobin A_{1c} values was 15 months.

Diabetes

Long-term (5-year) follow-up analyses from the Surgical Treatment and Medications Potentially Eradicate Diabetes Efficiently (STAMPEDE) trial found that bariatric surgery plus intensive medical therapy is more effective than intensive medical therapy alone in decreasing, or in some cases resolving, hyperglycemia.¹

Outcomes were assessed in 150 Cleveland Clinic patients with type 2 diabetes and a body mass index of 27 to 43. Patients were randomly assigned to receive intensive medical therapy alone or intensive medical therapy plus Roux-en-Y gastric bypass or sleeve gastrectomy. The primary outcome was a glycated hemoglobin level of $\leq 6.0\%$ with or without the use of diabetes medications.¹

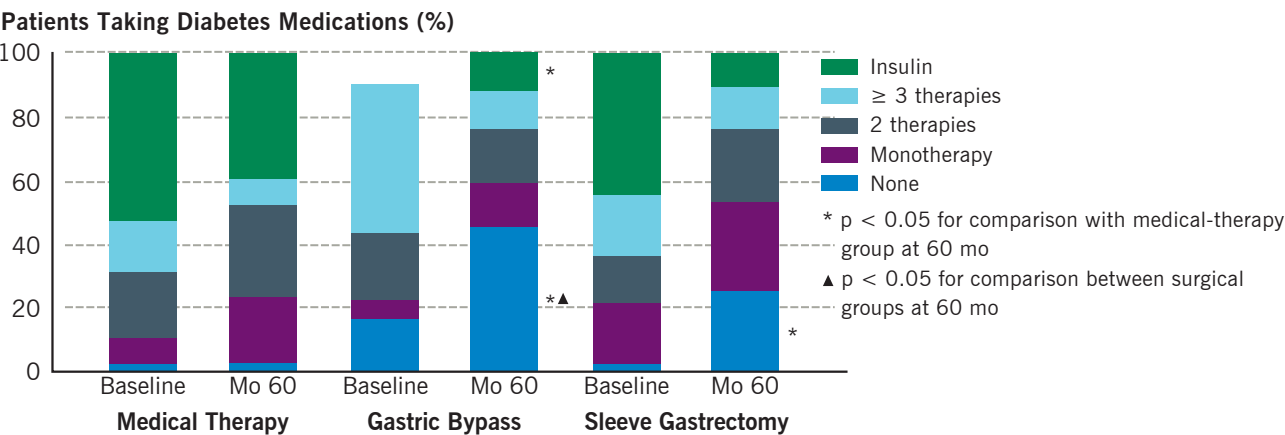
Mean Glycated Hemoglobin by Intervention (N = 150)



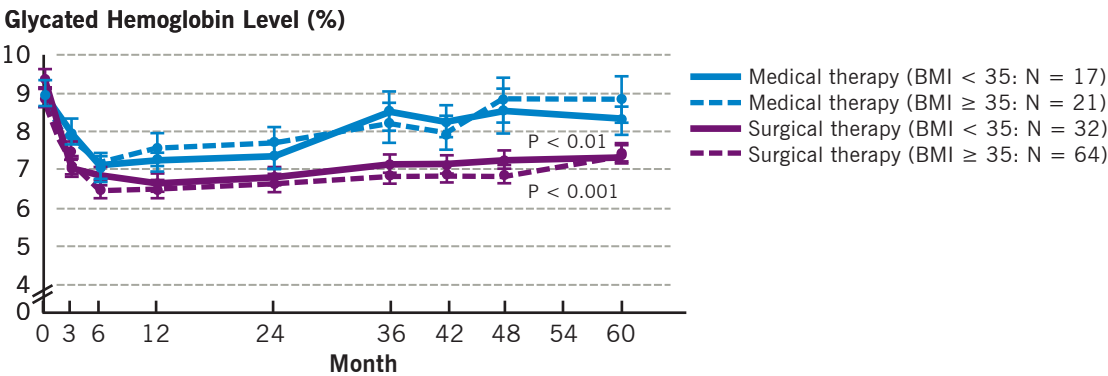
Mean (median) Value at Visit

Medical therapy	8.8 (8.6)	7.3 (6.8)	7.5 (7.2)	8.4 (7.7)	8.6 (8.2)	8.5 (8.0)
Gastric bypass	9.3 (9.4)	6.4 (6.2)	6.5 (6.4)	6.8 (6.6)	6.8 (6.8)	7.3 (6.9)
Sleeve gastrectomy	9.5 (8.9)	6.7 (6.4)	6.8 (6.8)	7.0 (6.7)	7.1 (6.6)	7.4 (7.2)

Change in Patients' Diabetes Medications 5 Years Postintervention



Mean Glycated Hemoglobin Levels According to Body Mass Index and Intervention



Mean (median)							
Value at Visit							
Medical < 35	8.8 (8.9)	7.5 (6.9)	7.7 (7.4)	8.2 (7.9)	8.8 (8.6)	8.8 (8.0)	
Medical ≥ 35	8.9 (8.5)	7.2 (6.5)	7.3 (6.8)	8.5 (7.1)	8.5 (8.2)	8.3 (8.0)	
Surgical < 35	9.5 (9.1)	6.6 (6.7)	6.8 (6.8)	7.1 (6.7)	7.2 (6.8)	7.3 (7.1)	
Surgical ≥ 35	9.4 (9.2)	6.5 (6.2)	6.6 (6.4)	6.8 (6.6)	6.8 (6.5)	7.3 (7.1)	

Reference

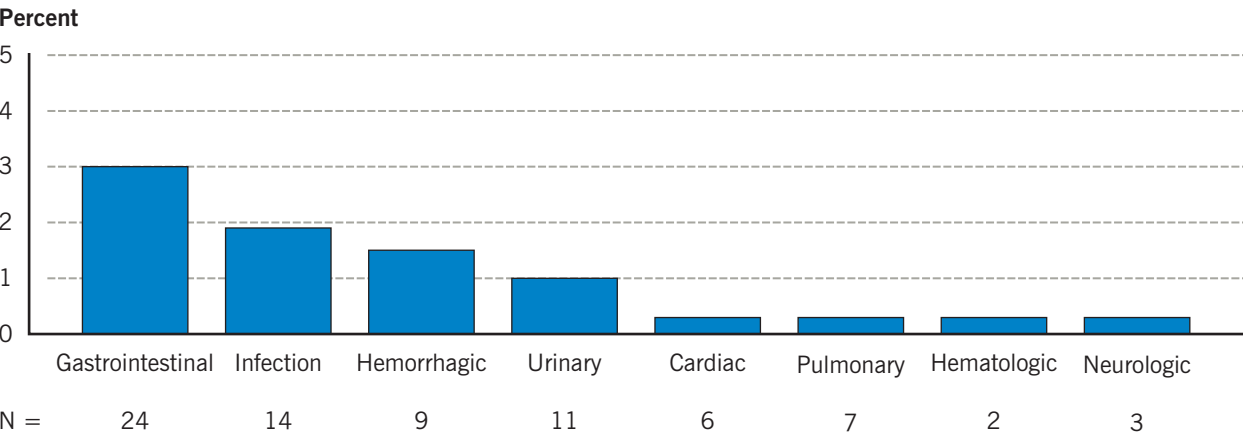
¹Schauer PR, Bhatt DL, Kirwan JP, Wolski K, Aminian A, Brethauer SA, Navaneethan SD, Singh RP, Pothier CE, Nissen SE, Kashyap SR; STAMPEDE Investigators. Bariatric Surgery versus Intensive Medical Therapy for Diabetes — 5-Year Outcomes. *N Engl J Med*. 2017 Feb 16;376(7):641-651.

Laparoscopic Radiofrequency Ablation

Between 1996 and 2016, a cohort of 1052 patients underwent 1372 laparoscopic radiofrequency thermal ablation procedures for malignant liver tumors at Cleveland Clinic.

Postoperative Complication Rates for Laparoscopic Radiofrequency Thermal Ablation of Malignant Liver Tumors (N = 1052)

1996 – 2016



Complications occurred in 7.2% of patients (N = 76).

Types of Postoperative Complications Related to Laparoscopic Radiofrequency Ablation of Malignant Liver Tumors: 20-Year Experience (N = 1052)

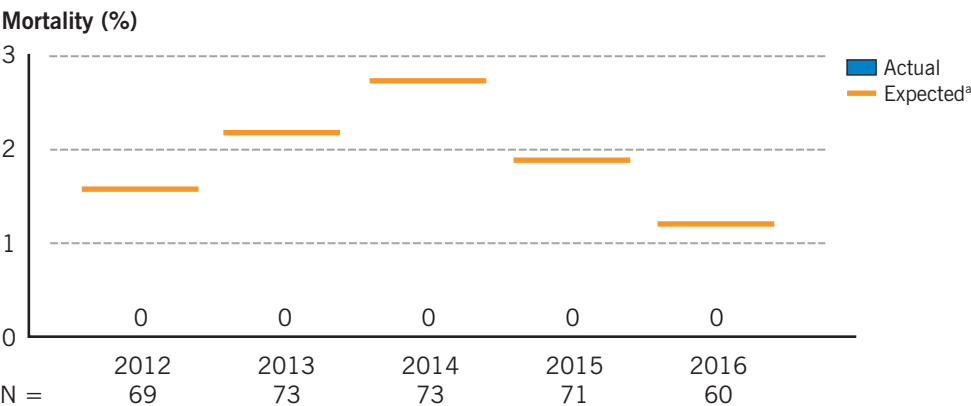
1996 – 2016

Complication	Type	Number of Complications
Gastrointestinal	Delayed abdominal pain	8
	Trocar injury	3
	Worsened postoperative ascites	4
	Ileus	6
	Nausea	3
Infection	Liver abscess	6
	Wound infection	5
	Sepsis	1
	Right flank abscess	1
	Empyema	1
Hemorrhagic	Intra-abdominal bleeding	7
	Esophageal variceal bleeding	1
	Mesenteric colon bleeding	1
Urinary	Urinary retention	5
	Myoglobinuria	3
	Acute renal failure	3
Cardiac	Myocardial infarction	2
	Arrhythmia	3
	Worsened postoperative hypertension	1
Pulmonary	Pneumonia	3
	Pulmonary embolism	3
	Retained CO ₂ requiring delayed intubation	1
Hematologic	Thrombocytopenia	1
	Idiopathic thrombocytopenic purpura	1
Neurologic	Hallucinations/delirium	2
	Hand-foot syndrome	1

Pituitary Surgery

Pituitary Surgery: Inpatient Mortality

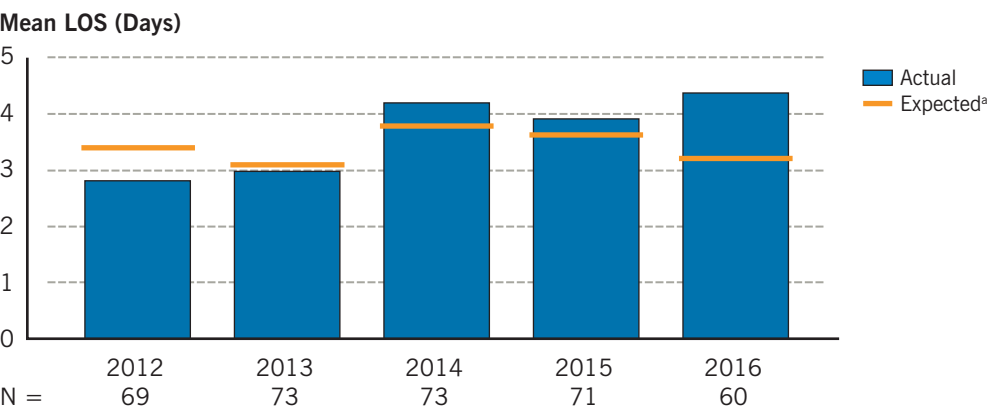
2012 – 2016



^aThe 3M™ All Patient Refined Diagnosis Related Groups (APR DRG) Classification System is used for adjusting data for severity of illness and risk of mortality. [solutions.3m.com/wps/portal/3M/en_US/Health-Information-Systems/HIS/Products-and-Services/Products-List-A-Z/APR-DRG-Software](https://www.solutions.3m.com/wps/portal/3M/en_US/Health-Information-Systems/HIS/Products-and-Services/Products-List-A-Z/APR-DRG-Software).

Pituitary Surgery: Length of Stay

2012 – 2016



Following pituitary surgery, there have been no surgical inpatient deaths in the past 5 years, and actual LOS has been below or close to expected LOS.

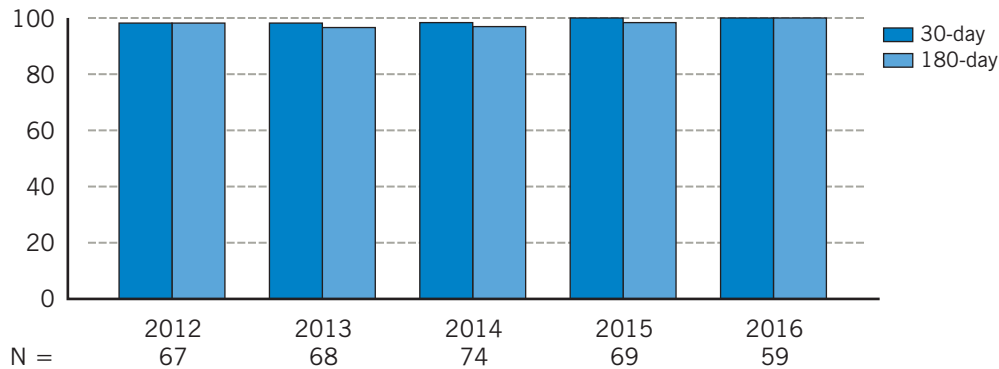
LOS = length of stay

^aThe 3M™ All Patient Refined Diagnosis Related Groups (APR DRG) Classification System is used for adjusting data for severity of illness and risk of mortality. [solutions.3m.com/wps/portal/3M/en_US/Health-Information-Systems/HIS/Products-and-Services/Products-List-A-Z/APR-DRG-Software](https://www.solutions.3m.com/wps/portal/3M/en_US/Health-Information-Systems/HIS/Products-and-Services/Products-List-A-Z/APR-DRG-Software).

Pituitary Surgery: Survival

2012 – 2016

Survival (%)

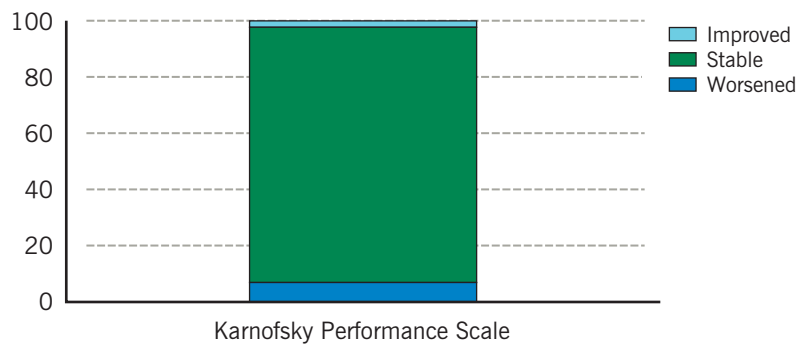


Thirty- and 180-day survival was 100% for pituitary surgery (for the first 6 months of 2016). N = number of pituitary tumor surgeries per year, based on available data.

Pituitary Surgery: Karnofsky Performance Scale (N = 44)

2016

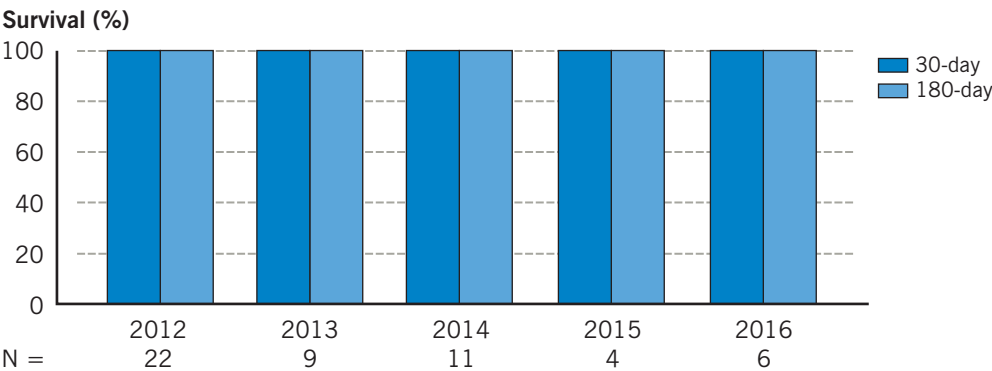
Patients (%)



Performance status, as measured by the KPS, was stable or improved in 93% of patients within 30 days of pituitary surgery. Change in KPS status was defined as a change of ≥ 20 points.

Gamma Knife Radiosurgery: Pituitary Tumor Survival

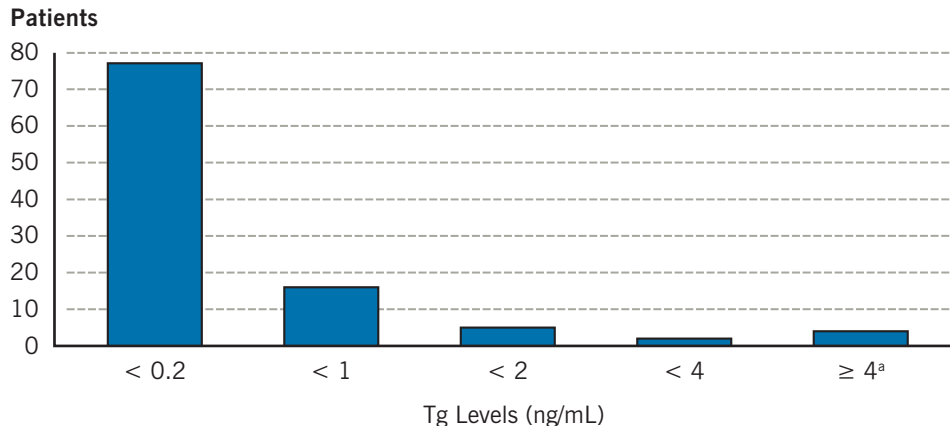
2012 – 2016



Thyroid and Parathyroid

Thyroglobulin Levels Among Papillary Thyroid Cancer Patients 6 Months Post-Total Thyroidectomy (N = 104)

2012 – 2016

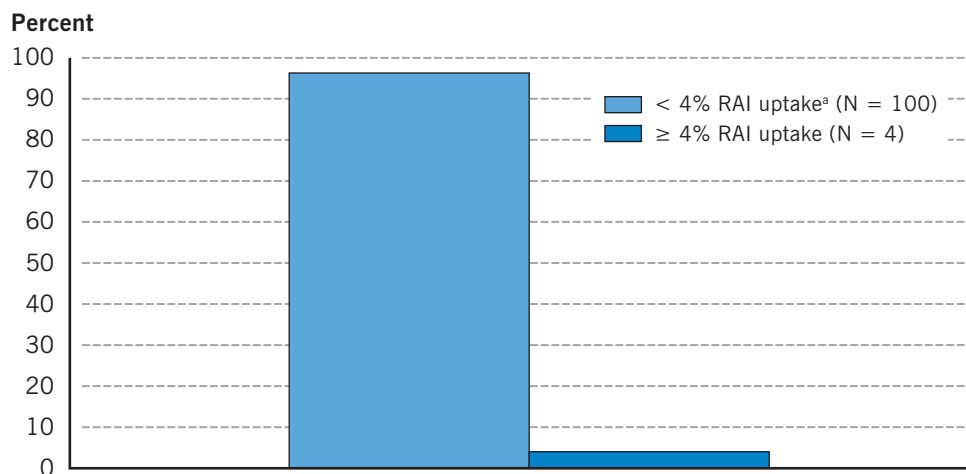


^a7.6, 20.2, 57.3 ng/mL

For post-total thyroidectomy patients, completeness of thyroid surgery is assessed by the serum thyroglobulin levels 6 months postoperatively. Generally, an undetectable level (≤ 2 ng/mL) is a good indication of successful surgical treatment for thyroid cancer.

Radioactive Iodine Uptake in Papillary Thyroid Cancer Patients Post-Total Thyroidectomy (N = 104)

2012 – 2016



RAI = radioactive iodine

^a< 4% uptake on the radioactive iodine scan represents a more complete removal of thyroid tissue.

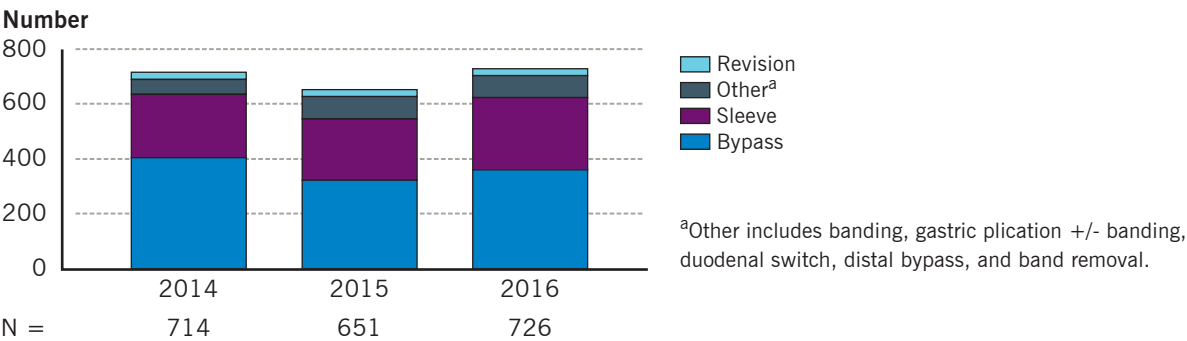
Obesity and Metabolic Disease

Bariatric Surgery

In 2015, Cleveland Clinic's Bariatric and Metabolic Institute marked its 10th anniversary and continues to be accredited as a designated Bariatric Surgery Center of Excellence by the American Society for Metabolic & Bariatric Surgery and the American College of Surgeons. This designation is awarded to programs that meet high quality standards and perform a minimum of 125 procedures annually.

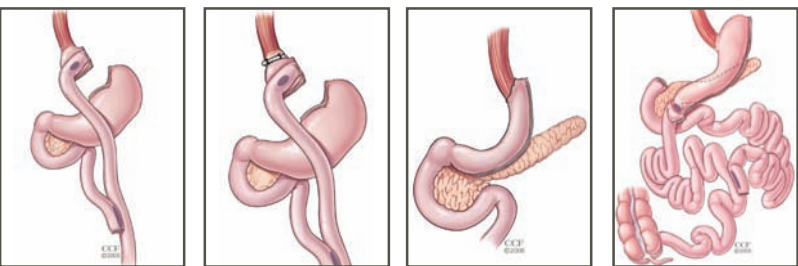
Bariatric Surgery Cases

2014 – 2016



In 2016, laparoscopic Roux-en-Y gastric bypass was the most frequently performed bariatric procedure at Cleveland Clinic, followed by laparoscopic sleeve gastrectomy. Due to patient preference, laparoscopic adjustable gastric banding has shown large declines over the past several years.

More Common Procedures



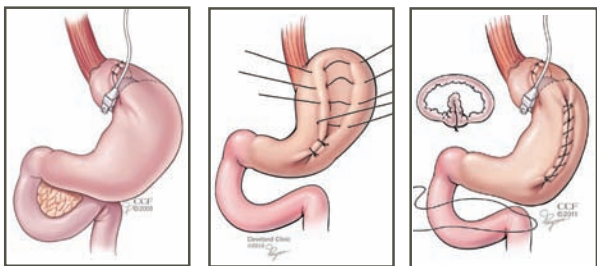
Bypass

Ringed Bypass

Sleeve

Duodenal Switch

Less Common Procedures



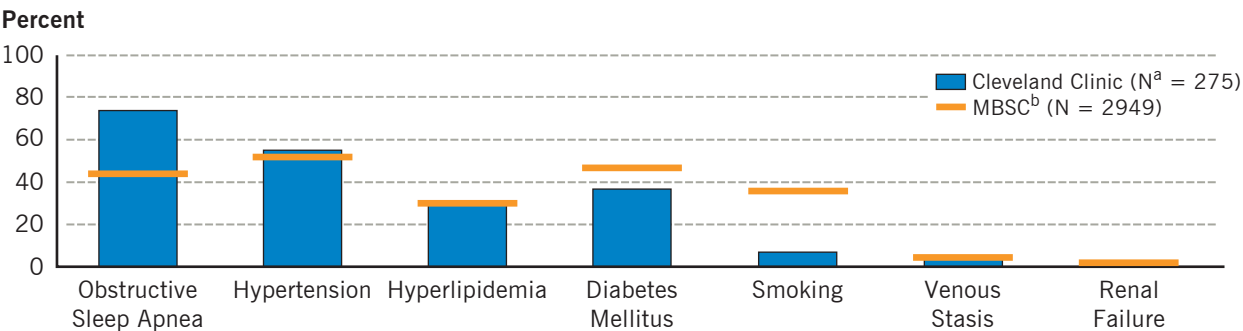
Band

Gastric Plication

Banded Plication

Baseline Comorbidities, Laparoscopic Roux-en-Y Gastric Bypass

2016



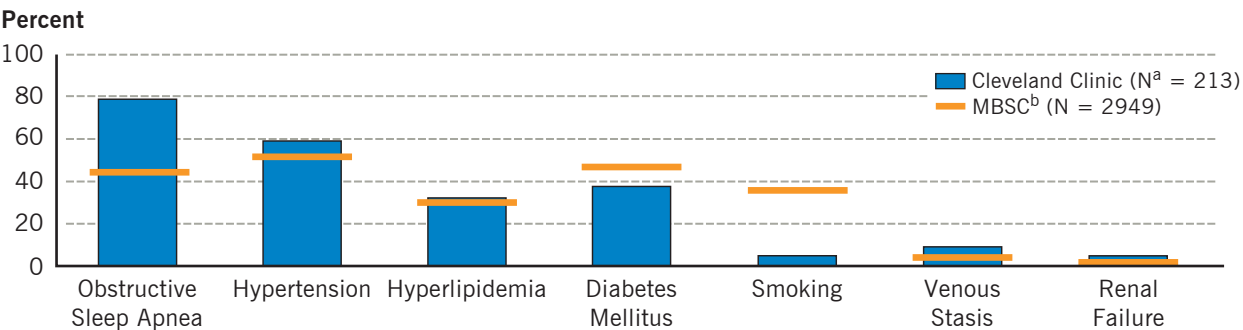
MBSC = Michigan Bariatric Surgery Collaborative

^aRepresents primary procedures only

^bBenchmark: MBSC michiganbsc.org

Baseline Comorbidities, Laparoscopic Sleeve Gastrectomy

2016



MBSC = Michigan Bariatric Surgery Collaborative

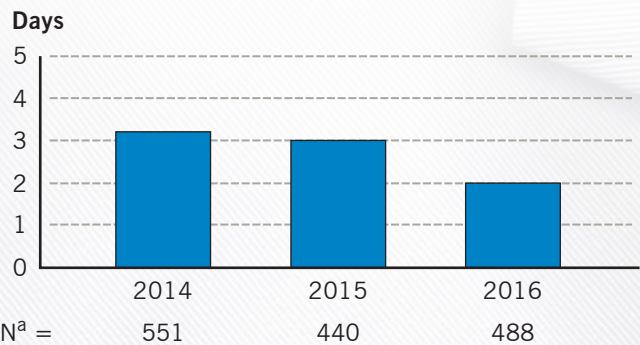
^aRepresents primary procedures only

^bBenchmark: MBSC michiganbsc.org

Obesity and Metabolic Disease

Median Length of Stay, Laparoscopic Roux-en-Y Gastric Bypass and Laparoscopic Sleeve Gastrectomy

2014 – 2016



^aRepresents primary procedures only



Thirty-Day Complication Rate, Bariatric Surgery (N^a = 488)

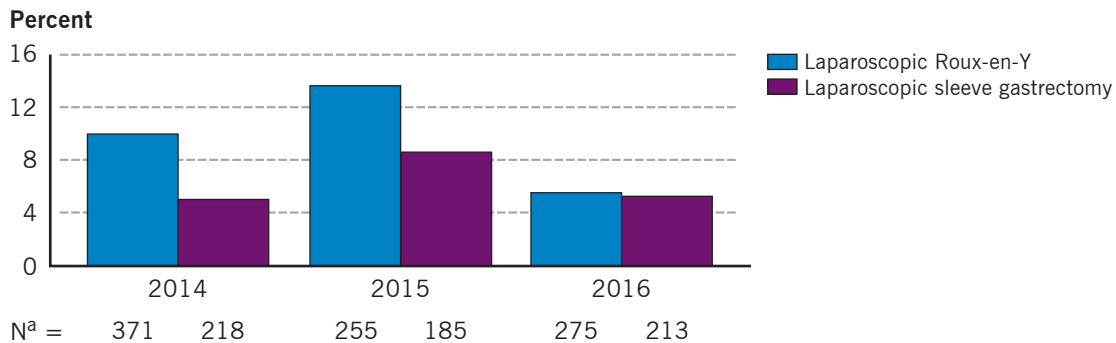
2016

Complications	Rate (%)
Respiratory failure	0.21
Deep vein thrombosis	0.0
Bleeding	0.62
Intestinal obstruction	0.0
Wound infection/visceration	0.21
Anastomotic leak	0.0

^aRepresents primary procedures only

Thirty-Day Readmission Rate, Laparoscopic Roux-en-Y Gastric Bypass and Laparoscopic Sleeve Gastrectomy

2014 – 2016

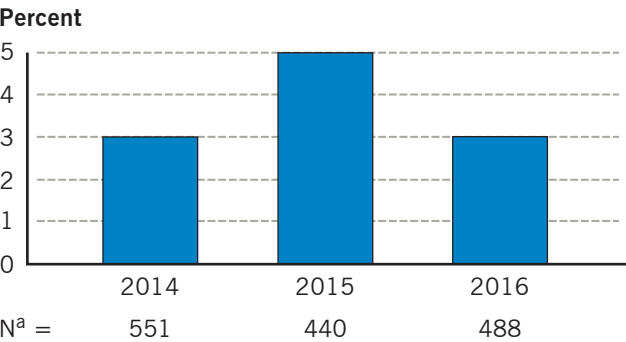


^aRepresents primary procedures only

Obesity and Metabolic Disease

Intensive Care Unit Admission, Laparoscopic Roux-en-Y Gastric Bypass and Laparoscopic Sleeve Gastrectomy

2014 – 2016



^aRepresents primary procedures only

Thirty-Day Mortality Rates, Bariatric Surgery

2016

Surgery Type, % (N ^a)	Cleveland Clinic	BOLD ^b
All bariatric surgeries	0.41 (488)	0.1 (186,567)
Laparoscopic Roux-en-Y gastric bypass	0.36 (275)	0.14 (136,036)
Laparoscopic sleeve gastrectomy	0.47 (213)	0.08 (15,964)

BOLD = Bariatric Outcomes Longitudinal Database

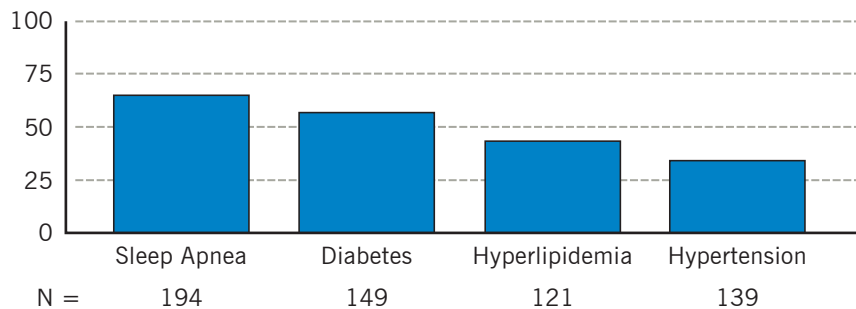
^aRepresents primary procedures only

^bBenchmark: BOLD asmbs.org

Comorbidity Resolution at 3-Year Follow-Up, Bariatric Surgery

2008 – 2016

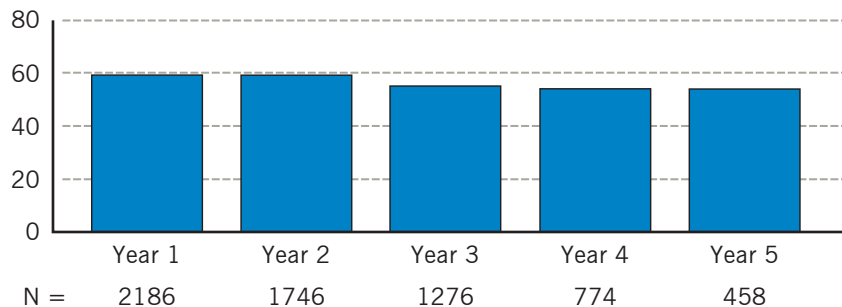
Percent



Mean Percent Weight Loss^a Toward Ideal Body Mass Index at Follow-Up, Bariatric Surgery

2008 – 2016

Percent



^aWeight loss formula: $(\text{baseline BMI} - \text{follow-up BMI}) / (\text{baseline BMI} - \text{ideal BMI [25]}) \times 100$

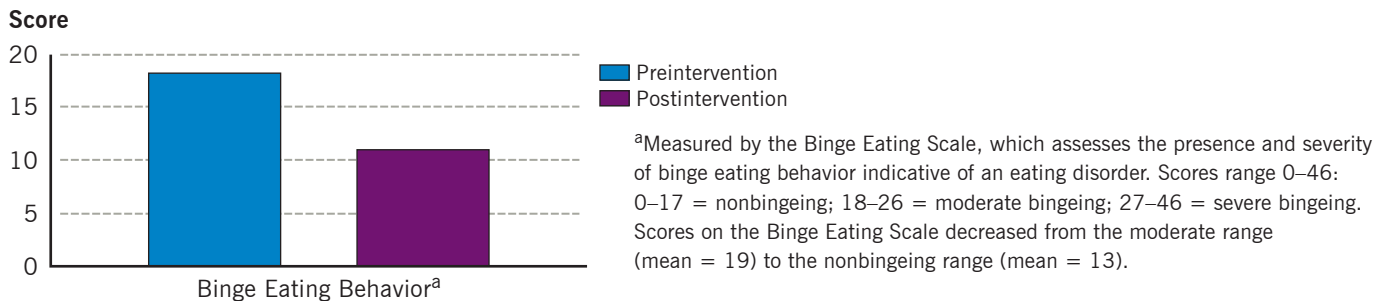
Obesity and Metabolic Disease

Bariatric Behavioral Health

Cleveland Clinic provides a 4-session cognitive behavioral group intervention for patients with binge eating disorder undergoing weight loss surgery, with the goal of reducing binge eating episodes and anxiety and depression associated with binge eating behaviors.

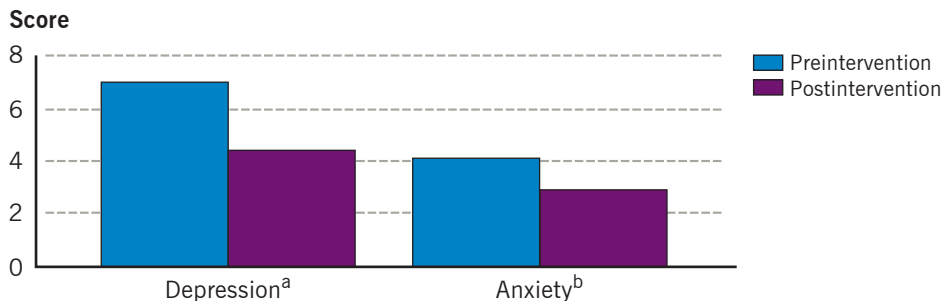
Mean Binge Eating Behavior Scores Before and After Cognitive Behavioral Group Intervention, Bariatric Surgery Patients (N = 176)

2015 – 2016



Mean Depression and Anxiety Scores Before and After Cognitive Behavioral Group Intervention, Bariatric Surgery Patients (N = 176)

2015 – 2016



^aMeasured by the Patient Health Questionnaire-9, used to screen, diagnose, monitor, and measure severity of depression. Scores range 0–27: 0–4 = minimal depression; 5–9 = mild depression; 10–14 = moderate depression; 15–19 = moderately severe depression; 20–27 = severe depression.

^bMeasured by the Generalized Anxiety Disorder 7-item scale used to screen and assess the severity of generalized anxiety disorder. Scores range 0–21: 0–4 = minimal anxiety; 5–9 = mild anxiety; 10–14 = moderate anxiety; 15–21 = severe anxiety.

Patients also showed statistically significant improvements in depression scores ($P < 0.001$) and in anxiety scores ($P < 0.001$), suggesting that the cognitive behavioral intervention was effective in reducing mood symptoms.

Medical Weight Management (N = 397)

Medical weight management includes patient education in shared monthly nutrition visits and medical supervision in shared monthly medical appointments. Each group of participants focuses on 1 of 3 diet regimens: meal replacement, Mediterranean diet, or protein-sparing modified fast.

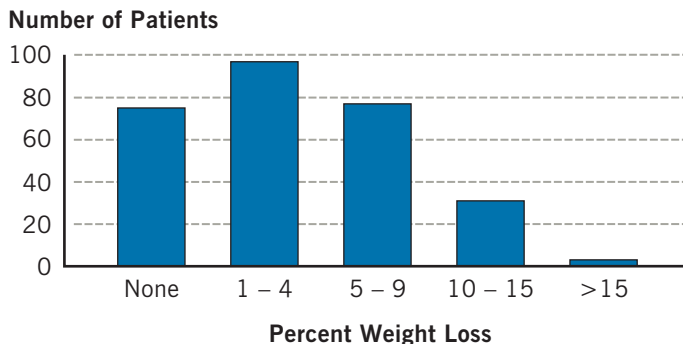
August 2014 – August 2016

	Meal Replacement	Mediterranean	PSMF
Patients, N	66	237	94
Average months in program	7.7	7.9	6.4
Dropped out of program	32	147	44
Switched to other diet	11	10	14

PSMF = protein-sparing modified fast.

Medical Weight Management Program Weight Loss (N = 310)

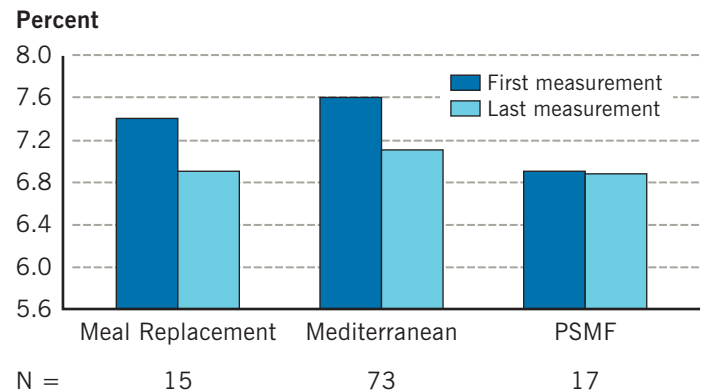
August 2014 – August 2016



Since program inception (August 2014), 76% of patients active in the program for at least 3 months lost at least some of their body weight. Forty-five percent (N = 138) lost more than 5% of their starting body weight. Mean entry weight was 257 pounds. Current program duration averaged 7.5 months.

Medical Weight Management HbA_{1c} Change by Program Type (N = 105)

August 2014 – August 2016



PSMF = protein-sparing modified fast

Both the meal replacement and Mediterranean dietary programs showed a mild improvement in HbA_{1c} for prediabetic and diabetic patients. The upper limit of normal for HbA_{1c} is 5.6%.

Patient Experience — Endocrinology & Metabolism Institute

Keeping patients at the center of all that Cleveland Clinic does is critical. Patients First is the guiding principle at Cleveland Clinic. Patients First is safe care, high-quality care, in the context of patient satisfaction, and high value. Ultimately, caregivers have the power to impact every touch point of a patient's journey, including their clinical, physical, and emotional experience.

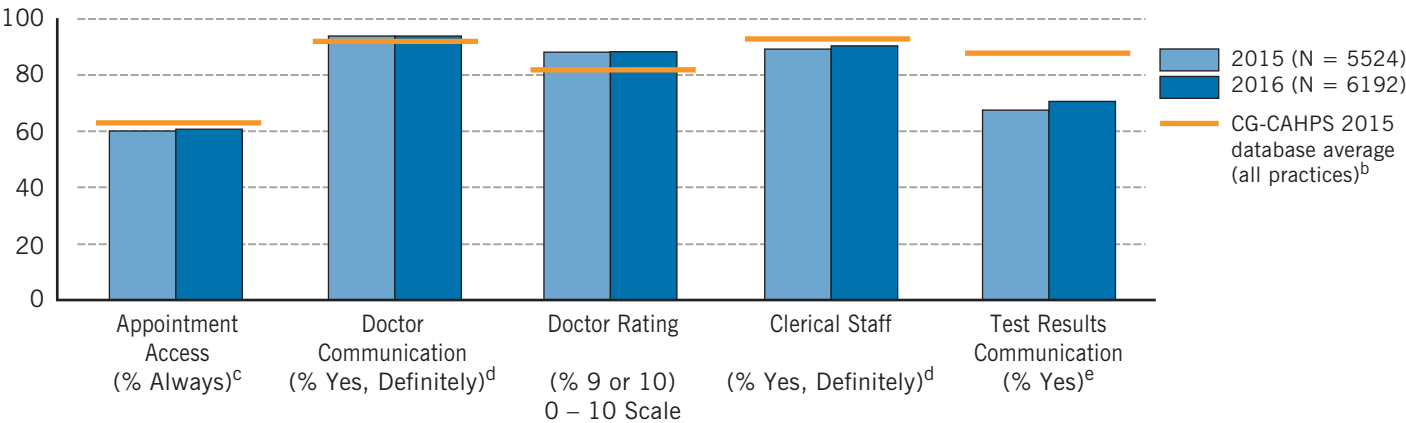
Cleveland Clinic recognizes that patient experience goes well beyond patient satisfaction surveys. Nonetheless, sharing the survey results with caregivers and the public affords opportunities to improve how Cleveland Clinic delivers exceptional care.

Outpatient Office Visit Survey — Endocrinology & Metabolism Institute

CG-CAHPS Assessment^a

2015 – 2016

Percent Best Response



^aIn 2013, Cleveland Clinic began administering the Clinician and Group Practice Consumer Assessment of Healthcare Providers and Systems surveys (CG-CAHPS), standardized instruments developed by the Agency for Healthcare Research and Quality (AHRQ) and supported by the Centers for Medicare & Medicaid Services for use in the physician office setting to measure patients' perspectives of outpatient care.

^bBased on results submitted to the AHRQ CG-CAHPS database from 2829 practices in 2015

^cResponse options: Always, Usually, Sometimes, Never

^dResponse options: Yes, definitely; Yes, somewhat; No

^eResponse options: Yes, No

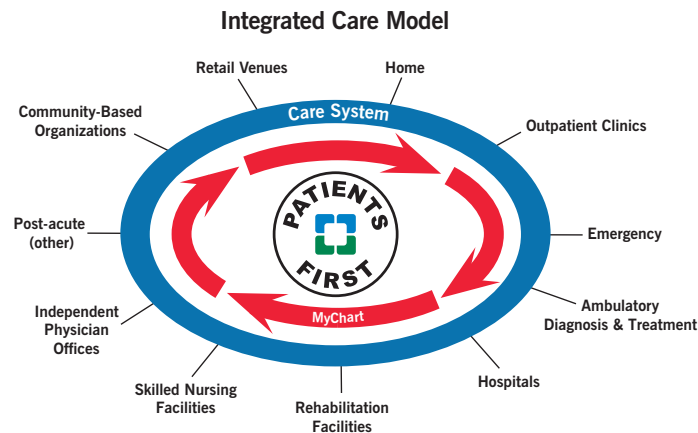
Source: Press Ganey, a national hospital survey vendor

Cleveland Clinic — Implementing Value-Based Care

Focus on Value

Cleveland Clinic has developed and implemented new models of care that focus on “Patients First” and aim to deliver on the Institute of Medicine goal of **Safe, Timely, Effective, Efficient, Equitable, Patient-centered** care. Creating new models of Value-Based Care is a strategic priority for Cleveland Clinic. As care delivery shifts from fee-for-service to a population health and bundled payment delivery system, Cleveland Clinic is focused on concurrently improving patient safety, outcomes, and experience.

What does this new model of care look like?



The Cleveland Clinic Integrated Care Model (CCICM) is a value-based model of care, designed to improve outcomes while reducing cost. It is designed to deliver value in both population health and specialty care.

- The patient remains at the heart of the CCICM.
- The blue band represents the care system, which is a seamless pathway that patients move along as they receive care in different settings. The care system represents integration of care across the continuum.
- Critical competencies are required to build this new care system. Cleveland Clinic is creating disease- and condition-specific care paths for a variety of procedures and chronic diseases. Another facet is implementing comprehensive care coordination for high-risk patients to prevent unnecessary hospitalizations and emergency department visits. Efforts include managing transitions in care, optimizing access and flow for patients through the CCICM, and developing novel tactics to engage patients and caregivers in this work.
- Measuring performance around quality, safety, utilization, cost, appropriateness of care, and patient and caregiver experience is an essential component of this work.

Using Indocyanine Green to Localize Endocrine Tumors

The Endocrinology & Metabolism Institute endocrine surgery team has pioneered the use of an intraoperative imaging tool to identify endocrine tumors during endocrine surgical procedures. The dye — indocyanine green — has been used for various medical imaging procedures since the 1950s and has recently received attention for use in general surgery. Eren Berber, MD, from the Endocrinology & Metabolism Institute endocrine surgery team, using an IRB-approved protocol, has studied the use of this technology prospectively for many procedures, including thyroidectomy, parathyroidectomy, adrenalectomy, liver tumor ablation, and liver resection. The results have been published in peer-reviewed journals.^{1,2}

Using Autofluorescence to Identify Parathyroid Glands

Autofluorescence is a new tool for identifying parathyroid glands during thyroid and parathyroid operations. The Endocrinology & Metabolism Institute is one of the few centers in the world that has been investigating this technology. Cleveland Clinic endocrine surgeons have found that autofluorescence enables the identification of parathyroid glands in at least 50% of the procedures before they are recognized by the naked eye. This technology can shorten procedures and decrease complications of postoperative hypocalcemia. Evaluation is still underway.

A Clinical Trial for a New Generation of Thermosphere™ in Ablation of Liver Tumors

Liver tumor ablation, including radiofrequency ablation, is standard treatment for management of malignant liver tumors. Its drawbacks, however, include a 20% to 25% recurrence at the treatment site. Thermosphere ablation is a recent technology that relies on controlled use of microwave energy for tumor destruction. Institute endocrine surgeons have been pioneering this form of ablation for the past 2 years, treating nearly 100 closely monitored patients. In this largest clinical liver trial in the US, surgeons have identified a 6% treatment failure rate in short-term follow-up (median 6 months), which is a notable breakthrough in the management of liver metastases. The trial is ongoing.

Carbohydrate Refeeding Instruction After Diet Intervention

Weight loss maintenance following very low-calorie diets is poorly studied. Endocrinology & Metabolism Institute physicians, in collaboration with Case Western Reserve University, completed a 2-year study on weight loss efficacy and predictors of weight loss maintenance after a protein-sparing modified fast (PSMF) in people with obesity. Of the PSMF group, 40% underwent a further 8-week refeeding program in which protein intake was gradually reduced and carbohydrate intake was gradually increased after the ketosis phase.

At end of diet, weight loss from baseline was greater for the PSMF group compared with the conventional low-calorie, nonketogenic diet group but was similar between groups by 12 months postdiet. PSMF subjects who received refeeding instruction saw significant weight loss at end of diet compared with those who did not receive instruction, and maintained greater weight loss through 12 months postdiet ($P = 0.001$).³

References

1. Kahramangil B, Berber E. The use of near-infrared fluorescence imaging in endocrine surgical procedures. *J Surg Oncol*. 2017 Feb 15. doi: 10.1002/jso.24583. [Epub ahead of print]
2. Colvin J, Zaidi N, Berber E. The utility of indocyanine green fluorescence imaging during robotic adrenalectomy. *J Surg Oncol*. 2016 Aug;114(2):153-156.
3. Chang JJ, Bena J, Kannan S, Kim J, Burguera B, Kashyap SR. Limited Carbohydrate Refeeding for Long-Term Weight Maintenance Following a Ketogenic, Very-Low-Calorie Meal Plan. *Endocr. Pract.* 2017 Feb 22. doi: 10.4158/EP161383.OR. [Epub ahead of print]

Contact Information

Endocrinology, Diabetes and Metabolism Appointments/Referrals

216.444.6568 or
800.223.2273, ext. 46568

Endocrine Surgery Appointments/Referrals

216.444.6568 or
800.223.2273, ext. 46568

On the Web at clevelandclinic.org/endo

Staff Listing

For a complete listing of Cleveland Clinic's Endocrinology & Metabolism Institute staff, please visit clevelandclinic.org/staff.

Publications

Endocrinology & Metabolism Institute staff authored **35** publications in 2016 as indexed within Web of Science.

Locations

For a complete listing of Endocrinology & Metabolism Institute locations, please visit clevelandclinic.org/endo.





Additional Contact Information

General Patient Referral

24/7 hospital transfers or physician consults
800.553.5056

General Information

216.444.2200

Hospital Patient Information

216.444.2000

General Patient Appointments

216.444.2273 or 800.223.2273

Referring Physician Center and Hotline

855.REFER.123 (855.733.3712)

Or email refdr@ccf.org or visit
clevelandclinic.org/refer123

Request for Medical Records

216.444.2640 or
800.223.2273, ext. 42640

Same-Day Appointments

216.444.CARE (2273)

Global Patient Services/ International Center

Complimentary assistance for international patients and families
001.216.444.8184 or visit
clevelandclinic.org/gps

Medical Concierge

Complimentary assistance for out-of-state patients and families
800.223.2273, ext. 55580, or
email medicalconcierge@ccf.org

Cleveland Clinic Abu Dhabi

clevelandclinicabudhabi.ae

Cleveland Clinic Canada

888.507.6885

Cleveland Clinic Florida

866.293.7866

Cleveland Clinic Nevada

702.483.6000

**For address corrections or changes,
please call**

800.890.2467

About Cleveland Clinic

Overview

Cleveland Clinic is an academic medical center offering patient care services supported by research and education in a nonprofit group practice setting. More than 3500 Cleveland Clinic staff physicians and scientists in 140 medical specialties and subspecialties care for more than 7.1 million patients across the system annually, performing nearly 208,000 surgeries and conducting more than 652,000 emergency department visits. Patients come to Cleveland Clinic from all 50 states and 185 nations. Cleveland Clinic's CMS case-mix index is the second-highest in the nation.

Cleveland Clinic is an integrated healthcare delivery system with local, national, and international reach. The main campus in midtown Cleveland, Ohio, has a 1400-bed hospital, outpatient clinic, specialty institutes, labs, classrooms, and research facilities in 44 buildings on 167 acres. Cleveland Clinic has more than 150 northern Ohio outpatient locations, including 10 regional hospitals, 18 full-service family health centers, 3 health and wellness centers, an affiliate hospital, and a rehabilitation hospital for children. Cleveland Clinic also includes Cleveland Clinic Florida; Cleveland Clinic Nevada; Cleveland Clinic Canada; Cleveland Clinic Abu Dhabi, UAE; Sheikh Khalifa Medical City (management contract), UAE; and Cleveland Clinic London (opening in 2020). Cleveland Clinic is the largest employer in Ohio, with more than 51,000 employees. It generates \$12.6 billion of economic activity a year.

Cleveland Clinic supports physician education, training, consulting, and patient services around the world through representatives in the Dominican Republic, Guatemala, India, Panama, Peru, Saudi Arabia, and the United Arab Emirates. Dedicated Global Patient Services offices are located at Cleveland Clinic's main campus, Cleveland Clinic Abu Dhabi, Cleveland Clinic Canada, and Cleveland Clinic Florida.

The Cleveland Clinic Model

Cleveland Clinic was founded in 1921 by 4 physicians who had served in World War I and hoped to replicate the organizational efficiency of military medicine. The organization has grown through the years by adhering to the nonprofit, multispecialty group practice they established. All Cleveland Clinic staff physicians receive a straight salary with no bonuses or other financial incentives. The hospital and physicians share a financial interest in controlling costs, and profits are reinvested in research and education.

Cleveland Clinic Florida was established in 1987. Cleveland Clinic began opening family health centers in surrounding communities in the 1990s. Marymount Hospital joined Cleveland Clinic in 1995, followed by regional hospitals including Euclid Hospital, Fairview Hospital, Hillcrest Hospital, Lutheran Hospital, Medina Hospital, South Pointe Hospital, and affiliate Ashtabula County Medical Center. In 2015, the Akron General Health System joined the Cleveland Clinic health system.

Internally, Cleveland Clinic services are organized into patient-centered integrated practice units called institutes, each institute combining medical and surgical care for a specific disease or body system. Cleveland Clinic was among the first academic medical centers to establish an Office of Patient Experience, to promote comfort, courtesy, and empathy across all patient care services.

A Clinically Integrated Network

Cleveland Clinic is committed to providing value-based care, and it has grown the Cleveland Clinic Quality Alliance into the nation's second-largest, and northeast Ohio's largest, clinically integrated network. The network comprises more than 6300 physician members, including both Cleveland Clinic staff and independent physicians from the community. Led by its physician members, the Quality Alliance strives to improve quality and consistency of care; reduce costs and increase efficiency; and provide access to expertise, data, and experience.



Cleveland Clinic Lerner College of Medicine

Lerner College of Medicine is known for its small class sizes, unique curriculum, and full-tuition scholarships for all students. Each new class accepts 32 students who are preparing to be physician investigators. In 2015, Cleveland Clinic broke ground on a 477,000-square-foot multidisciplinary Health Education Campus. The campus, which will open in July 2019, will serve as the new home of the Case Western Reserve University (CWRU) School of Medicine and Cleveland Clinic's Lerner College of Medicine, as well as the CWRU School of Dental Medicine, the Frances Payne Bolton School of Nursing, and physician assistant and allied health training programs.

Graduate Medical Education

In 2016, nearly 2000 residents and fellows trained at Cleveland Clinic and Cleveland Clinic Florida in our continually growing programs.

U.S. News & World Report Ranking

Cleveland Clinic is ranked the No. 2 hospital in America by *U.S. News & World Report* (2016). It has ranked No. 1 in heart care and heart surgery since 1995. In 2016, 3 of its programs were ranked No. 2 in the nation: gastroenterology and GI surgery, nephrology, and urology. Ranked among the nation's top five were gynecology, orthopaedics, rheumatology, pulmonology, and diabetes and endocrinology.

Cleveland Clinic Physician Ratings

Cleveland Clinic believes in transparency and in the positive influence of the physician-patient relationship on healthcare outcomes. To continue to meet the highest standards of patient satisfaction, Cleveland Clinic physician ratings, based on nationally recognized Press Ganey patient satisfaction surveys, are published online at clevelandclinic.org/staff.

Referring Physician Center and Hotline

Call us 24/7 for access to medical services or to schedule patient appointments at 855.REFER.123 (855.733.3712), email refdr@ccf.org, or go to clevelandclinic.org/Refer123. The free Cleveland Clinic Physician Referral App, available for mobile devices, gives you 1-click access. Available in the App Store or Google Play.

Remote Consults

Anybody anywhere can get an online second opinion from a Cleveland Clinic specialist through our MyConsult service. For more information, go to clevelandclinic.org/myconsult, email myconsult@ccf.org, or call 800.223.2273, ext. 43223.

Request Medical Records

216.444.2640 or 800.223.2273, ext. 42640

Track Your Patients' Care Online

Cleveland Clinic offers an array of secure online services that allow referring physicians to monitor their patients' treatment while under Cleveland Clinic care and gives them access to test results, medications, and treatment plans. my.clevelandclinic.org/online-services

DrConnect (online access to patients' treatment progress while under referred care): call 877.224.7367, email drconnect@ccf.org, or visit clevelandclinic.org/drconnect.

MyPractice Community (affordable electronic medical records system for physicians in private practice): 216.448.4617.

eRadiology (teleradiology consultation provided nationwide by board-certified radiologists with specialty training, within 24 hours or stat): call 216.986.2915 or email starimaging@ccf.org.

Medical Records Online

Patients can view portions of their medical record, receive diagnostic images and test results, make appointments, and renew prescriptions through **MyChart**, a secure online portal. All new Cleveland Clinic patients are automatically registered for **MyChart**. clevelandclinic.org/mychart

Access

Cleveland Clinic is committed to convenient access, offering virtual visits, shared medical appointments, and walk-in urgent care for your patients. clevelandclinic.org/access

Critical Care Transport Worldwide

Cleveland Clinic's fleet of ground and air transport vehicles is ready to transfer patients at any level of acuity anywhere on Earth. Specially trained crews provide Cleveland Clinic care protocols from first contact. To arrange a transfer for STEMI (ST-elevation myocardial infarction), acute stroke, ICH (intracerebral hemorrhage), SAH (subarachnoid hemorrhage), or aortic syndrome, call 877.379.CODE (2633). For all other critical care transfers, call 216.444.8302 or 800.553.5056.

CME Opportunities: Live and Online

Cleveland Clinic's Center for Continuing Education operates the largest CME program in the country. Live courses are offered in Cleveland and cities around the nation and the world. The center's website (ccfcme.org) is an educational resource for healthcare providers and the public. It has a calendar of upcoming courses, online programs on topics in 30 areas, and the award-winning virtual textbook of medicine, The Disease Management Project.

Clinical Trials

Cleveland Clinic is running more than 2200 clinical trials at any given time for conditions including breast and liver cancer, coronary artery disease, heart failure, epilepsy, Parkinson disease, chronic obstructive pulmonary disease, asthma, high blood pressure, diabetes, depression, and eating disorders. Cancer Clinical Trials is a mobile app that provides information on the more than 200 active clinical trials available to cancer patients at Cleveland Clinic. clevelandclinic.org/cancertrialapp

Healthcare Executive Education

Cleveland Clinic has programs to share its expertise in operating a successful major medical center. The Executive Visitors' Program is an intensive, 3-day behind-the-scenes view of the Cleveland Clinic organization for the busy executive. The Samson Global Leadership Academy is a 2-week immersion in challenges of leadership, management, and innovation taught by Cleveland Clinic leaders, administrators, and clinicians. Curriculum includes coaching and a personalized 3-year leadership development plan. clevelandclinic.org/executiveeducation

Consult QD Physician Blog

A website from Cleveland Clinic for physicians and healthcare professionals. Discover the latest research insights, innovations, treatment trends, and more for all specialties. consultqd.clevelandclinic.org

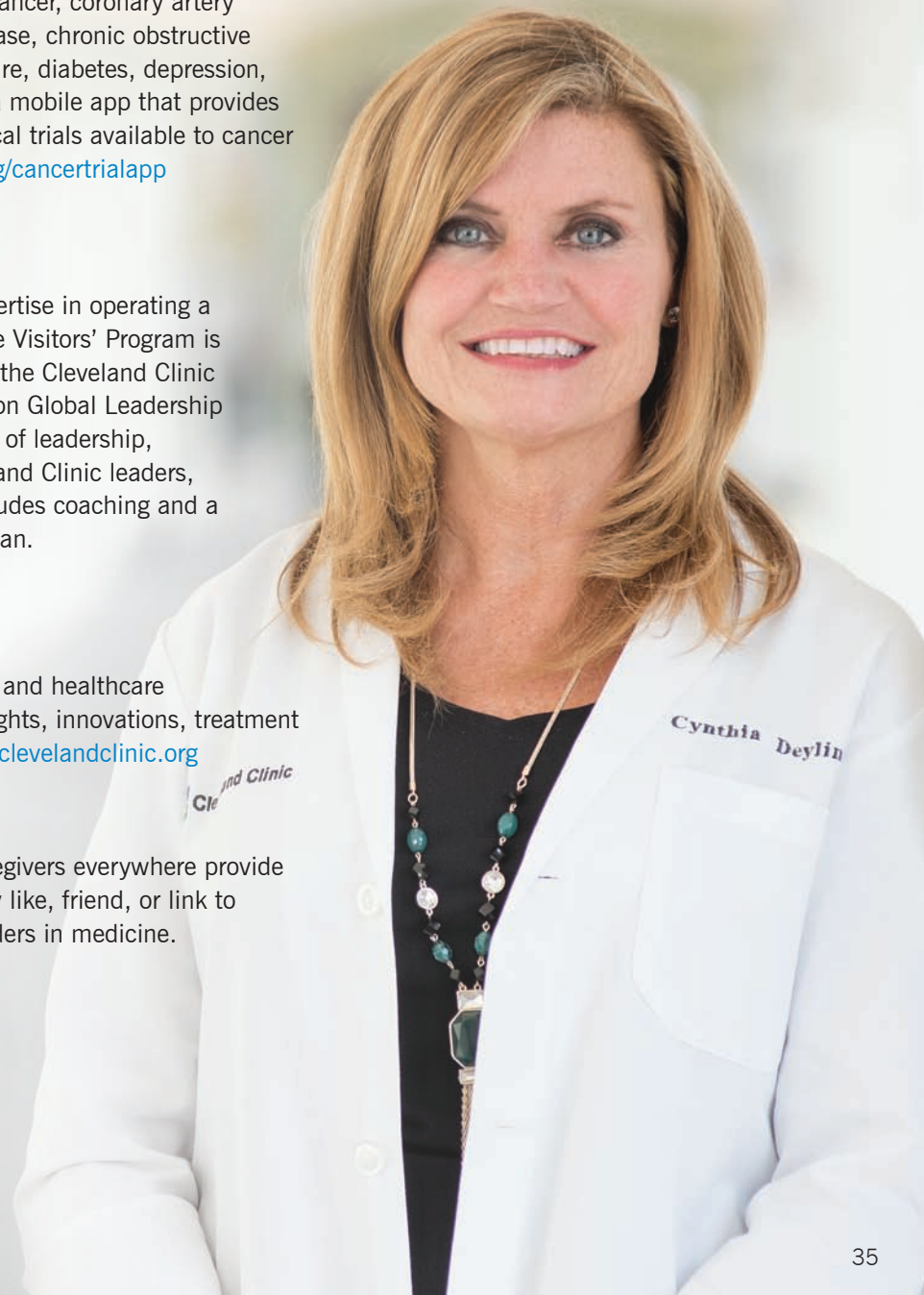
Social Media

Cleveland Clinic uses social media to help caregivers everywhere provide better patient care. Millions of people currently like, friend, or link to Cleveland Clinic social media — including leaders in medicine.

Facebook for Medical Professionals
facebook.com/CMEclevelandclinic

Follow us on Twitter
[@cleclinicMD](https://twitter.com/cleclinicMD)

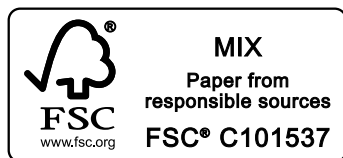
Connect with us on LinkedIn
clevelandclinic.org/MDlinkedin



This image shows a full-page view of a digital note-taking application. At the top, there is a solid blue horizontal bar. Inside this bar, the word "Notes" is written in a white, sans-serif font, positioned towards the left side. Below the blue bar, the rest of the page is white and filled with horizontal grey lines, mimicking the appearance of a standard notebook or ledger. The lines are evenly spaced and extend across the entire width of the page.

This project would not have been possible without the commitment and expertise of a team led by Marwan Hamaty, MD, MBA; Eren Berber, MD; and Ronald R. Gambino, RN, BSN, MPA with help from Andrew Pikus, BS.

Graphic design and photography were provided by Cleveland Clinic's Center for Medical Art and Photography.





Every life deserves world class care.

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