To promote quality improvement, Cleveland Clinic has created a series of Outcomes books similar to this one for many of its institutes. Designed for a physician audience, the Outcomes books contain a summary of our surgical and medical trends and approaches, data on patient volumes and outcomes, and a review of new technologies and innovations.

Although we are unable to report all outcomes for all treatments provided at Cleveland Clinic — omission of outcomes for a particular treatment does not necessarily mean we do not offer that treatment — our goal is to increase outcomes reporting each year. When outcomes for a specific treatment are unavailable, we often report process measures associated with improved outcomes. When process measures are unavailable, we may report volume measures; a volume/outcome relationship has been demonstrated for many treatments, particularly those involving surgical techniques.

In addition to our internal efforts to measure clinical quality, Cleveland Clinic supports transparent public reporting of healthcare quality data and participates in the following public reporting initiatives:

- Joint Commission Performance Measurement Initiative (qualitycheck.org)
- Centers for Medicare & Medicaid Services (CMS) Hospital Compare (hospitalcompare.hhs.gov)
- Ohio Department of Health (ohiohospitalcompare.ohio.gov)
- Cleveland Clinic Quality Performance Report (clevelandclinic.org/QPR)

Our commitment to providing accurate, timely information about patient care also will help patients and referring physicians make informed healthcare decisions.

We hope you find these data valuable, and we invite your feedback. Please send comments and suggestions to us at OutcomesBookFeedback@ccf.org. To view all our Outcomes books, please visit Cleveland Clinic’s Quality and Patient Safety website at clevelandclinic.org/outcomes.
Dear Colleague:

Welcome to Cleveland Clinic’s 2011 Outcomes books. They include data on clinical outcomes, patient volumes, innovations and publications. Cleveland Clinic pioneered the collection and annual publication of outcomes data. This initiative has become part of the national discussion on lowering costs and improving the quality of healthcare.

Cleveland Clinic uses data to manage outcomes across the full continuum of care. Clinical services are delivered through patient-centered institutes, each based around a single disease or organ system. Institutes combine medical and surgical services, along with research and education, under unified leadership. Each institute defines quality benchmarks for its specialty services and reports longitudinal progress.

Cleveland Clinic Outcomes books are available in print and online. Additional data is available through our online Quality Performance Report (clevelandclinic.org/QPR). The site offers data in advance of national and state public reporting sites in key areas, including heart attack, heart failure, stroke and infection prevention.

We hope you will find this information useful.

Sincerely,

Delos M. Cosgrove, MD
CEO and President
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</tbody>
</table>

**Prefer an e-version?**

Visit clevelandclinic.org/OutcomesOnline, and we'll remove you from the hard copy mailing list and email you when next year’s books are online.
I am pleased to present the 2011 Outcomes book for Cleveland Clinic’s Digestive Disease Institute. This is the tenth year that we have shared our clinical outcomes and innovations with referring physicians, alumni, potential patients and other individuals around the nation interested in digestive diseases. New this year, we have added Breast Center outcomes to our reporting, following its return to our Department of General Surgery.

In 2011, which was my first full year as Chair of the Digestive Disease Institute, we experienced continued growth in our clinical programs, research funding and use of innovative technologies.

The past year also was full of many operational changes. We welcomed new Chairs in both our departments of Gastroenterology (John Vargo, MD, MPH) and General Surgery (R. Matthew Walsh, MD). In addition, we implemented a surgical site infection project and relocated our trauma program from our Huron to our Hillcrest facility.

In 2011, there also were many exciting achievements for our institute, including:

- Opening a new 15,000-square-foot advanced endoscopy facility to improve both access and patient experience
- Organizing a national Consortium on Rectal Cancer, which hopes to develop standardized, metric-based protocols for rectal cancer
- Receiving reaccreditation of our Fellowship Training Program in Abdominal Transplantation
- Celebrating the 50th anniversary of our Wound, Ostomy, Continence Nursing School
- Receiving $6.3 million in research funding, participating in 108 IRB-approved research studies and publishing more than 750 publications
- Training 67 residents and 47 fellows

On behalf of my colleagues, I hope that you find this edition of the Digestive Disease Institute Outcomes book useful. As always, our team looks forward to working with you to provide the best in patient care.

Sincerely,

John Fung, MD, PhD
Chair, Digestive Disease Institute
Director, Cleveland Clinic Transplant Center
Medical Director, Allogen Laboratories
Institute Overview

Among the top digestive disease centers in the nation, Cleveland Clinic Digestive Disease Institute unites all specialists within one unique, fully integrated model of care — aimed at optimizing patient experience. Our departments include Gastroenterology and Hepatology, Colorectal Surgery, General Surgery (including hepatopancreato-biliary and transplant surgery) and Human Nutrition.

This exciting model of care helps us offer the most advanced, safest and proven treatments performed in the most effective and patient-friendly way, including shorter waits for appointments and more seamless interaction with all of our specialists. In addition, our institute model enhances opportunities for cutting-edge research and physician education.

Throughout the years, Digestive Disease Institute physicians have pioneered many new technologies and procedures for treating digestive disorders, such as continent ileostomy/stapled pouch procedures; advancement flaps/sleeves for perianal fistulas and Crohn’s disease; innovative advanced endoscopic, laparoscopic and robotic procedures; multiorgan and living donor transplants; multimodality approaches to abdominal malignancies; and the most current medical therapies for a wide variety of gastrointestinal disorders. This rich history of innovation continues today, whether through the development of new surgical techniques or participation in clinical trials and operating outcomes research databases or registries. In 2011, Digestive Disease Institute staff produced more than 360 publications.

U.S. News & World Report’s “America’s Best Hospitals” survey has ranked our digestive diseases services as No. 2 in the nation every year since 2003.

2011 Statistics

Surgical Cases
16,635
Endoscopic Procedures
50,947
Total Admissions
7,499
Patient Days
54,271
E&M Visits
62,438
Digestive Disease Institute Key Specialties

Swallowing and Motility
Cleveland Clinic’s Center for Swallowing & Esophageal Disorders offers a comprehensive program. The center’s multidisciplinary team, which includes gastroenterologists; radiologists; thoracic surgeons; neurologists; lung specialists; swallowing therapists; and ear, nose and throat specialists — sees about 1,500 patients annually.

Endoscopy
Our advanced endoscopy team performs more than 24,000 endoscopic procedures annually to diagnose and treat intestinal disorders in a new, state-of-the-art, 15,000-square-foot endoscopy facility. We offer endoscopic retrograde cholangiopancreatography (ERCP), endoscopic ultrasound (EUS) and percutaneous endoscopic gastrostomy (PEG), with complication rates at or below the national average. A referral service for interpreting images from the pill endoscopy camera, based on the extensive experience of Digestive Disease Institute gastroenterologists, is also expanding.

Nutrition
Our Center for Human Nutrition is the most comprehensive and largest center in the nation and includes specialized teams for nutrition therapy, intestinal rehabilitation and transplant nutrition, and nutrition support. Our nutrition support team, which was established in 1975, set the national standard for inpatient and outpatient intravenous nutrition support. We also are a leader in intestinal rehabilitation and transplant nutrition, having one of the few such programs in the world. This group collaborates with our newly certified intestinal transplant program and the Endocrinology & Metabolism Institute to provide a variety of bariatric procedure options and support programs.

Comprehensive GI
Our Comprehensive GI section provides specialized care for digestive disorders, with a special focus on rare conditions including complex celiac disease and small bowel diseases. Its staff collaborates with the Center for Human Nutrition and other Cleveland Clinic specialists to manage symptoms affecting other organ systems, such as osteoporosis, infertility, skin rashes, low energy and fatigue.
**Pelvic Floor**

Our team, led by a multidisciplinary group of physicians with an emphasis on female pelvic floor disorders, is the most experienced group of such specialists in the region. We treat the entire spectrum of bowel disorders, including fecal incontinence, chronic constipation and other difficulties, anal pain, hemorrhoids, fissures, anal and rectovaginal fistula, and rectal prolapse. Applying state-of-the-art diagnostics and decades of experience, we determine the cause of patients’ problems and then tailor the most appropriate treatment.

**Hernia**

At Cleveland Clinic's Hernia Center, surgeons perform more than 1,700 hernia repairs each year, from the routine to the most complex cases. Our center is designed so that patients receive individualized care, undergoing a comprehensive evaluation to determine the best surgical procedure for their specific type of hernia, which helps avoid recurrent hernias and complications.

**Pancreas**

Our Pancreas Disorder Clinic is one of the few centers in the nation specializing in multidisciplinary treatments and frontline research for every type of pancreatic disease and disorder. Together with Cleveland Clinic's Pain Management Department, we help patients with chronic pancreatitis who struggle with debilitating pain. Auto-islet transplantation is available for select chronic pancreatitis patients who have not responded to medical and alternative surgical management.

**Liver**

Our liver specialists have the experience and expertise to accurately diagnose and treat all forms of liver disease. Our multidisciplinary team works with patients to develop the appropriate treatment plan aimed at preserving liver function and quality of life. Cleveland Clinic is a national leader in caring for patients with cirrhosis and its complications and has one of the most innovative, experienced and largest transplant programs in the country. Patients on our wait list receive transplants nearly twice as fast as the average expected national rate, and our one-year survival rate of 91.2 percent exceeds the national average for expected survival rate.
Inflammatoy Bowel Disease
Cleveland Clinic has an international reputation for excellence in treating inflammatory bowel disease (IBD), which includes ulcerative colitis and Crohn's disease. Over the years, our physicians have pioneered new technologies and procedures for treating IBD. We perform the most operations for Crohn’s disease, especially the bowel-conserving strictureplasty. We also perform the world’s highest volume of J-pouch surgeries and are the nation’s largest referral center for repairing failed pelvic pouches. Our Pouchitis Clinic was the first established to treat pouch-associated disorders.

Intestinal Rehabilitation and Transplant
Our Intestinal Rehabilitation and Transplant Program (IRTP) is one of the few programs in the nation that offers comprehensive services. Our medical and surgical specialists in gastrointestinal diseases, total parenteral nutrition (TPN) experts and transplant surgeons evaluate, support and treat patients all under one roof.

Colorectal Cancer
We are at the forefront of colon polyp and cancer prevention through patient screening, education, detection and treatment. Our team has one of the highest volumes of colorectal surgeries in the nation. Our experience allows us to offer treatment options to save the sphincter and avoid colostomy. We also achieve some of the world’s lowest recurrence rates. We are one of only a few programs in the country offering HIPEC (Hyperthermic Intraoperative Peritoneal Chemotherapy) to treat cancers that have spread to the abdominal cavity’s lining. Our institute is home to the largest institutional registries for inherited colon cancer in the nation and the second-largest in the world — the David G. Jagelman Inherited Colorectal Cancer Registries.

Acute Care Surgery Program
Our Acute Care Surgery Program on main campus ensures that a board-certified General Surgery staff member is on-site 24 hours a day to provide timely consults in the Emergency Department and inpatient units, and to oversee and teach general surgery residents.
Specialty Clinics Streamline Multidisciplinary Care

The Digestive Disease Institute also includes a variety of specialty clinics that help our physicians collaborate to provide dynamic solutions for their patients. These include:

Liver Tumor Clinic

Our Liver Tumor Clinic uses a multidisciplinary approach to treat liver tumors, including surgical resection (open, laparoscopic, robotic). Its team includes medical and radiation oncologists, interventional radiologists, hepatologists and transplant/hepatobiliary surgeons. The clinic streamlines appointments and provides referring physicians with a central contact point.

Pancreas Disorder Clinic

The Pancreas Disorder Clinic unites pancreatic surgeons, gastroenterologists, radiologists, medical oncologists, anesthesiologists and psychologists to deliver optimal treatments and follow-up care. Patients can see a pancreatologist and surgeon in one visit, and services include endoscopic, minimally invasive and radiographic imaging to diagnose and treat patients with acute pancreatic inflammation. It is one of a handful of institutions nationwide offering endoscopic pancreatic function testing to help diagnose early-stage pancreatitis. Chronic pancreatitis patients also have been successfully treated with pancreatic resection and auto-islet transplantation to minimize the risk of developing diabetes mellitus. The clinic is one of the few sites in the nation using robotic surgery for certain pancreatic cancers.

HNPCC Clinic

Our Sanford R. Weiss, MD, Center for Hereditary Colorectal Neoplasia has established a multidisciplinary clinic for patients and families affected by Hereditary Nonpolyposis Colorectal Cancer (HNPCC), or Lynch syndrome. The Weiss Center has brought together experts from various medical specialties, including gastroenterology, colorectal surgery, gynecology, urology and genetic counseling, to coordinate care for patients and their families.

Breast Center

Cleveland Clinic’s Breast Center offers a multidisciplinary team of highly skilled specialists who provide comprehensive care to patients with breast cancer. Our full array of services ranges from initial screening and diagnosis to innovative breast cancer treatment and supportive counseling.
Colon Cancer Screening and Surveillance

Cecal Intubation Rate (N = 20,510)
2011

Our cecal intubation rate and mean withdrawal times for colonoscopy are at or near established benchmarks.

Scope Withdrawal Time (N = 4,331)
2011

Because polyp detection is a priority, we recently performed a pilot study assessing if new documentation features would indirectly improve our polyp detection rates. During our pilot period, we have seen a dramatic rise in our adenoma and sessile serrated polyp detection rates. We are now in the process of deploying this change in practice to our entire group.

**Adenoma Detection Rate (N = 590)**
2008 – 2011

![Graph showing adenoma detection rates](image)


**Sessile Serrated Polyp Detection Rate (N = 590)**
2008 – 2011

![Graph showing sessile serrated polyp detection rates](image)

### Surgical Oncology

#### Colon Cancer Surgical Cases

<table>
<thead>
<tr>
<th>Description</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major small bowel, colon and rectal surgeries*</td>
<td>161</td>
<td>121</td>
</tr>
<tr>
<td>Age, mean ± SD</td>
<td>66 ± 15</td>
<td>64 ± 15</td>
</tr>
<tr>
<td>Gender (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>45%</td>
<td>50%</td>
</tr>
<tr>
<td>Male</td>
<td>55%</td>
<td>50%</td>
</tr>
<tr>
<td>Body Mass Index (BMI), Mean ± SD</td>
<td>29 ± 6</td>
<td>30 ± 8</td>
</tr>
<tr>
<td>Postoperative length of stay in days, median</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Laparoscopic approach</td>
<td>46%</td>
<td>46%</td>
</tr>
<tr>
<td>Readmission</td>
<td>11%</td>
<td>7%</td>
</tr>
<tr>
<td>Mortality</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

### Postoperative Complications

<table>
<thead>
<tr>
<th>Description</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical site infection (SSI, all types)</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td>6%</td>
<td>3%</td>
</tr>
<tr>
<td>Venous thromboembolism (VTE)</td>
<td>5%</td>
<td>3%</td>
</tr>
</tbody>
</table>

*With available outcomes data

For our colon cancer surgical patients, a year-to-year improvement in readmission, surgical site infection, urinary tract infection and venous thromboembolism was achieved in 2011.
Disease-Free 5 Year Colon Cancer Survival by Stage

Disease-Free Survival Percentage

<table>
<thead>
<tr>
<th>Months from Surgery</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.0</td>
<td>0.9</td>
<td>0.8</td>
<td>0.7</td>
</tr>
<tr>
<td>9</td>
<td>0.9</td>
<td>0.8</td>
<td>0.7</td>
<td>0.6</td>
</tr>
<tr>
<td>17</td>
<td>0.8</td>
<td>0.7</td>
<td>0.6</td>
<td>0.5</td>
</tr>
<tr>
<td>25</td>
<td>0.7</td>
<td>0.6</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>35</td>
<td>0.6</td>
<td>0.5</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>49</td>
<td>0.5</td>
<td>0.4</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>64</td>
<td>0.4</td>
<td>0.3</td>
<td>0.2</td>
<td>0.1</td>
</tr>
</tbody>
</table>
**Surgical Oncology**

**Rectal Cancer Surgical Cases**

<table>
<thead>
<tr>
<th>Description</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major rectal surgeries*</td>
<td>244</td>
<td>168</td>
</tr>
<tr>
<td>Age, mean ± SD</td>
<td>66 ± 14</td>
<td>62 ± 12</td>
</tr>
<tr>
<td>Gender (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>44%</td>
<td>40%</td>
</tr>
<tr>
<td>Male</td>
<td>56%</td>
<td>60%</td>
</tr>
<tr>
<td>Body Mass Index (BMI), Mean ± SD</td>
<td>29 ± 7</td>
<td>24 ± 6</td>
</tr>
<tr>
<td>Postoperative length of stay in days, median</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Laparoscopic approach</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>Readmission</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>Mortality</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Postoperative Complications**

<table>
<thead>
<tr>
<th>Description</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical site infection (all types)</td>
<td>7%</td>
<td>11%</td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>Venous thromboembolism (VTE)</td>
<td>0.8%</td>
<td>4%</td>
</tr>
</tbody>
</table>

*With available outcomes data

Of the 168 rectal cancer operations performed in 2011, 134 (80 percent) were sphincter-saving operations. Our dedicated and experienced group of colorectal surgeons achieved this high rate of ostomy avoidance even with many patients who presented with locally advanced disease.
Disease-Free 5 Year Rectal Cancer Survival by Stage

Disease-Free Survival Percentage

<table>
<thead>
<tr>
<th>Months from Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Disease-Free Survival Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
</tr>
</tbody>
</table>

- Blue: Stage 1
- Red: Stage 2
- Orange: Stage 3
- Green: Stage 4
Hereditary Colon Cancer

Familial Adenomatous Polyposis (FAP) and Hereditary Nonpolyposis Colorectal Cancer (HNPCC)
Weiss Center Registry Families (N = 1,735)
2008 – 2011

Cumulative Number of Families

The Sanford R. Weiss, MD Center for Hereditary Colorectal Neoplasia houses the David G. Jagelman Colorectal Cancer Registries, the world’s most comprehensive listing of patients with hereditary colon cancer. The number of enrolled families has steadily increased since the registry began in 1979.

Weiss Center Procedures
2010 – 2011

Number

Inherited colorectal polyps/cancer syndromes often involve organs other than the colon and rectum. Our comprehensive approach to these syndromes includes screening and surveillance of all potentially affected organs. Among the families in the registry, 217 underwent sigmoidoscopy in 2011 and 214 underwent colonoscopy. The nonpolyposis colon cancer high-risk clinic, which began in 2010, saw a total of 52 patients in 2011. This included 21 colonoscopies and 17 EGD’s. In addition, six patients were seen by the Medical Genetics Department.
In addition to the more common HNPCC and FAP syndromes, the Weiss Center cares for patients and families with other hereditary syndromes that are associated with a high risk of colorectal and other cancers. These syndromes include Peutz-Jeghers Syndrome, Juvenile Polyposis Syndrome, MYH-Associated Polyposis and Serrated Polyposis Syndrome.
Medical Management

Crohn’s Disease of the Ileal Pouch (N = 48)
June 2006 – June 2011

Total proctocolectomy with ileal pouch–anal anastomosis (IPAA) has become the surgical treatment of choice for the majority of patients with ulcerative colitis (UC) who require surgery. The surgical procedure maintains intestinal continuity, avoids the need for a permanent stoma and improves patients' health-related quality of life. However, short-term and long-term complications after surgery are common. Crohn’s disease (CD) or CD-like condition of the pouch, along with pouchitis, are among the most common long-term inflammatory complications of IPAA and among the leading causes for pouch failure.

Response to Adalimumab for Crohn’s Disease of the Pouch (N = 48)
June 2006 and June 2011

We have a large pouchitis registry. Short-term and long-term remission rates are seen in the graph above. At the end of the follow-up, 13 (27%) patients achieved mucosal healing. A total of nine (19%) patients eventually developed pouch failure.
Surgical Management

Crohn's Disease Surgical Cases

<table>
<thead>
<tr>
<th>Description</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major small bowel, colon and rectal surgeries*</td>
<td>209</td>
<td>228</td>
</tr>
<tr>
<td>Age, mean ± SD</td>
<td>40 ± 14</td>
<td>43 ± 15</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>55%</td>
<td>54%</td>
</tr>
<tr>
<td>Male</td>
<td>45%</td>
<td>46%</td>
</tr>
<tr>
<td>Body Mass Index (BMI), Mean ± SD</td>
<td>25 ± 5</td>
<td>25 ± 5</td>
</tr>
<tr>
<td>Postoperative length of stay in days, median</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Laparoscopic approach</td>
<td>41%</td>
<td>36%</td>
</tr>
<tr>
<td>Readmission</td>
<td>16%</td>
<td>12%</td>
</tr>
<tr>
<td>Mortality</td>
<td>0%</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

Postoperative Complications

<table>
<thead>
<tr>
<th>Description</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical site infection (all types)</td>
<td>15%</td>
<td>8.8%</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>4%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Venous thromboembolism (VTE)</td>
<td>0.2%</td>
<td>3%</td>
</tr>
</tbody>
</table>

*With available outcomes data

Our Crohn’s disease surgical volume remains the highest in the United States. Ongoing quality efforts have resulted in improvements in both readmissions and surgical site infections in these often complex patients.
Ulcerative Colitis

Surgical Management

Ulcerative Colitis Surgical Cases

<table>
<thead>
<tr>
<th>Description</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major small bowel, colon and rectal surgeries*</td>
<td>185</td>
<td>285</td>
</tr>
<tr>
<td>Age, mean ± SD</td>
<td>43 ± 14</td>
<td>42 ± 14</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>42%</td>
<td>42%</td>
</tr>
<tr>
<td>Male</td>
<td>58%</td>
<td>58%</td>
</tr>
<tr>
<td>Body Mass Index (BMI), Mean ± SD</td>
<td>25 ± 5</td>
<td>27 ± 6</td>
</tr>
<tr>
<td>Postoperative length of stay in days, median</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Laparoscopic approach</td>
<td>60%</td>
<td>37%</td>
</tr>
<tr>
<td>Readmission</td>
<td>19%</td>
<td>15%</td>
</tr>
<tr>
<td>Mortality</td>
<td>1%</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

Postoperative Complications

<table>
<thead>
<tr>
<th>Description</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical site infection (all types)</td>
<td>14%</td>
<td>8%</td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td>6%</td>
<td>3%</td>
</tr>
<tr>
<td>Venous thromboembolism (VTE)</td>
<td>2%</td>
<td>4%</td>
</tr>
</tbody>
</table>

*With available outcomes data

Cleveland Clinic colorectal surgeons perform more surgical treatments for ulcerative colitis than any other group of surgeons in the world. Our surgeons are often able to preserve a problematic J-pouch or revise the J-pouch, when needed, to allow patients with ulcerative colitis to avoid a permanent ostomy. Through continued quality improvement efforts, our surgical site infection, urinary tract infection, and readmission rates have all decreased for this group of patients.
In the past year, we have increased the percentage of diverticulitis surgical cases that were completed via a minimally invasive laparoscopic approach. The benefit of this approach can be seen in the lower incidence of surgical site infection year-to-year. The increased complexity of these cases, many referred from other surgeons, creates challenges that we are eager to face. A decrease in the readmission rate for these patients is one of our goals for the coming year.
Motility Disorders

Barrett’s Esophagus

Due to retirement or movement of several staff members specializing in Barrett’s esophagus, our registry has decreased over the past few years. Recently, we have added three esophageal experts and anticipate our registry will begin to grow again.

Low-Grade Dysplasia
2009 – 2011

High-Grade Dysplasia
2009 – 2011
**Esophageal Adenocarcinoma**
*2009 – 2011*

![Bar chart showing esophageal adenocarcinoma patients and procedures from 2009 to 2011.]

**Motility Studies**
*2009 – 2011*

![Bar chart showing esophageal manometry procedures from 2009 to 2011.]

The Center for Swallowing and Esophageal Disorders has one of the largest esophageal motility laboratories in the country by volume. We perform high resolution manometry, traditional 24 hour pH probe studies, 48 hour Bravo pH capsule monitoring, and esophageal impedance manometry and pH impedance studies.
The Colorectal Center for Functional Bowel Disorders saw 701 new patients from January 2010 through November 2011. The majority of new patients were seen for management of constipation or fecal incontinence.

Cleveland Clinic offers a Multidisciplinary Pelvic Floor clinic staffed by a colorectal surgeon and uro-gynecologist for same-day evaluation by both specialists. In appropriate patients, we offer multidisciplinary surgery to address all pelvic floor issues, eliminating the patient’s need for multiple procedures. The majority of our patients seen in the clinic are managed surgically.
Pelvic Floor Pain Management (N = 105) 2011

Visual Analog Scale, 0 (No Pain) – 10 (Maximum Pain) Scale

Patients surveyed regarding their preoperative and postoperative pain reported a 30 percent decrease in pain level.

Cleveland Global Quality of Life Score (CGQL) (N = 105) 2011

CGQL Score, 0 (Worst) – 1 (Best) Scale

Patients reported a slight improvement in their general quality of life after pelvic floor surgery.
### Pelvic Floor Surgery Complications* (N = 237)
2011

<table>
<thead>
<tr>
<th>Complication</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abscess (Intra-abdominal)</td>
<td>1.7</td>
</tr>
<tr>
<td>Abscess (Pelvic)</td>
<td>3.8</td>
</tr>
<tr>
<td>Acute Renal Failure</td>
<td>1.3</td>
</tr>
<tr>
<td>Anastomotic Leak</td>
<td>2.1</td>
</tr>
<tr>
<td>Anastomotic Stricture</td>
<td>0</td>
</tr>
<tr>
<td>Arrhythmia</td>
<td>1.3</td>
</tr>
<tr>
<td>Clostridium Difficile</td>
<td>1.3</td>
</tr>
<tr>
<td>Colostomy/Stoma Complications</td>
<td>1.3</td>
</tr>
<tr>
<td>Dehydration</td>
<td>0.8</td>
</tr>
<tr>
<td>Ileus</td>
<td>11</td>
</tr>
<tr>
<td>Leak (Rectal Stump)</td>
<td>0.4</td>
</tr>
<tr>
<td>Liver Dysfunction</td>
<td>0</td>
</tr>
<tr>
<td>Major Bleeding</td>
<td>0</td>
</tr>
<tr>
<td>Mortality</td>
<td>0</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>0.8</td>
</tr>
<tr>
<td>Readmission</td>
<td>14.8</td>
</tr>
<tr>
<td>Reoperation</td>
<td>3.4</td>
</tr>
<tr>
<td>Sepsis</td>
<td>0.8</td>
</tr>
<tr>
<td>Small Bowel Obstruction</td>
<td>2.1</td>
</tr>
<tr>
<td>Transfusion</td>
<td>4.2</td>
</tr>
<tr>
<td>Ureter Injury</td>
<td>0.4</td>
</tr>
<tr>
<td>Urinary Retention</td>
<td>2.1</td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td>2.1</td>
</tr>
<tr>
<td>VTE (Deep Venous Thrombosis)</td>
<td>2.1</td>
</tr>
<tr>
<td>VTE (Mesenteric/Portal Venous Thrombosis)</td>
<td>0.4</td>
</tr>
<tr>
<td>VTE (Pulmonary Embolism)</td>
<td>0</td>
</tr>
<tr>
<td>Wound Infection</td>
<td>5.5</td>
</tr>
</tbody>
</table>

*30-day complication rates associated with inpatient procedures
Rectal Prolapse Treatment

In the past decade, ventral rectopexy to treat full-thickness rectal external prolapse, internal rectal prolapse and obstructed defecation has gained popularity in Europe. The procedure involves anterior rectal mobilization and mesh fixation of the rectum to the sacrum. Ventral rectopexy can be performed laparoscopically, robotically or open. Vaginal prolapse procedures and total pelvic floor repair are frequently undertaken. This procedure has been shown to achieve acceptable anatomic results with low recurrence rates, few complications, and improvements of both constipation and fecal incontinence. Few centers in the United States perform ventral rectopexy.

Ventral Rectopexy (N = 57)  
2008 – 2011

<table>
<thead>
<tr>
<th>Description</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure type:</td>
<td></td>
</tr>
<tr>
<td>Robotic</td>
<td>60%</td>
</tr>
<tr>
<td>Laparoscopic</td>
<td>20%</td>
</tr>
<tr>
<td>Open</td>
<td>20%</td>
</tr>
<tr>
<td>Recurrence of prolapse</td>
<td>5%</td>
</tr>
<tr>
<td>Satisfied with surgery results</td>
<td>90%</td>
</tr>
<tr>
<td>Would recommend surgery to others</td>
<td>90%</td>
</tr>
</tbody>
</table>
While some patients with fecal incontinence responded well to conservative measures such as diet changes, fiber supplementation, anti-diarrheal medications and pelvic floor retraining, others required surgical management.

All patients reported satisfaction after surgery.
Age at Time of Sphincteroplasty (N = 197)
1996 – 2007

FISI Score*

| Age at time of Surgery          | N = 146 | Greater than 60 years old | 51 |

Age does not impact long-term incontinence scores in patients undergoing sphincteroplasty.


* Fecal Incontinence Severity Index (FISI): FISI scores range from 0 – 61, with higher scores indicating more severe incontinence.
Anal Encirclement with Sphincter Repair (AESR Procedure) (N = 13)
January 2009 – June 2010

FISI Score*

<table>
<thead>
<tr>
<th></th>
<th>Preoperative</th>
<th>Postoperative</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


* Fecal Incontinence Severity Index (FISI): FISI scores range from 0 – 61, with higher scores indicating more severe incontinence.

Biological material to support an overlapping sphincter repair can be used in patients with damage to the entire circumference of the external sphincter due to radiation or trauma.
**Constipation**

The Colorectal Center for Functional Bowel Disorders includes a dedicated practitioner who works with patients to optimize their diet, activities, and laxatives. Colectomy is an option for patients with refractory slow transit constipation and a poor quality of life as a result of their bowel function. Physical therapy is recommended for patients with outlet dysfunction.

**New Consults (N = 291)**

**2011**

**Number of Consults**

<table>
<thead>
<tr>
<th>Sub-Type</th>
<th>Number of Consults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional</td>
<td>160</td>
</tr>
<tr>
<td>Slow Transit Constipation</td>
<td>40</td>
</tr>
<tr>
<td>Outlet Dysfunction</td>
<td>0</td>
</tr>
</tbody>
</table>

The majority of new consults were patients with functional constipation or constipation where no specific cause was identified.

**Surgical Management (N = 31)**

**2011**

**Number of Procedures**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Number of Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Stoma</td>
<td>8</td>
</tr>
<tr>
<td>Laparoscopic Colectomy</td>
<td>12</td>
</tr>
<tr>
<td>Open Colectomy</td>
<td>4</td>
</tr>
</tbody>
</table>

Surgical management of constipation included permanent stoma and laparoscopic and open colectomy.
**Motility Disorders**

**Functional Outcomes After Total Abdominal Colectomy with Ileorectal Anastomosis (TAC/IRA) for Constipation (N = 144) 1999 – 2010**

Removal of the colon with creation of an ileorectal anastomosis is an option for patients with slow transit constipation who are refractory to medical therapy and who have a poor quality of life.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Prior to TAC/IRA</th>
<th>After TAC/IRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowel Movements</td>
<td>&lt; 2 BM per week</td>
<td>4.4 daily</td>
</tr>
<tr>
<td>Intermittent Fecal Accidents</td>
<td>0</td>
<td>11%</td>
</tr>
<tr>
<td>Laxative Usage</td>
<td>100% daily ineffective</td>
<td>13% intermittent small doses and effective</td>
</tr>
<tr>
<td>Intermittent Antidiarrheal Usage</td>
<td>0</td>
<td>10%</td>
</tr>
<tr>
<td>Abdominal Pain</td>
<td>&gt;20% of the Time 65%</td>
<td>31%</td>
</tr>
<tr>
<td>Postoperative Satisfaction</td>
<td></td>
<td>87%</td>
</tr>
</tbody>
</table>

**TAC/IRA Surgery For Slow Transit Constipation vs. Neoplastic Disorders (N = 333) 1999 – 2010**

Cleveland Clinic series of patients who underwent Total Abdominal Colectomy with Ileorectal Anastomosis (TAC/IRA) for chronic constipation compared to Neoplastic Disorders is shown below.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Slow Transit Constipation</th>
<th>Neoplastic Disorders</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>131</td>
<td>202</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>39 ± 11*</td>
<td>39 ± 19*</td>
<td>0.4</td>
</tr>
<tr>
<td>ASA class</td>
<td>2.2 ± 0.5*</td>
<td>2.4 ± 0.7*</td>
<td>0.3</td>
</tr>
<tr>
<td>Male/Female ratio</td>
<td>1/130 (1/99%)</td>
<td>98/104 (49/51%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Body Mass Index (BMI) ± SD</td>
<td>25 ± 5*</td>
<td>28 ± 8*</td>
<td>0.002</td>
</tr>
<tr>
<td>Laparoscopic/Open ratio</td>
<td>56/75 (43/57%)</td>
<td>107/95 (53/47%)</td>
<td>0.04</td>
</tr>
<tr>
<td>Hand Sewn/Stapled</td>
<td>8/123 (6/94%)</td>
<td>34/168 (17/83%)</td>
<td>0.002</td>
</tr>
</tbody>
</table>

*± Standard Deviation
Enema Therapy and Colon Hydrotherapy for Refractory Constipation

Colon hydrotherapy is gentle flushing of the entire colon using the Aquanet EC 2000® closed colonic irrigation system. Purified-temperature and pressurized, regulated water is introduced into the colon and released through several cycles to flush out fecal waste. Colonic hydrotherapy is offered as a therapeutic option for patients with dysmotility, functional and outlet constipation who are refractory to laxatives and represents an alternative to colectomy and ileostomy. Colonic hydrotherapy can also be used as a method for colonic cleansing prior to colonoscopy for patients who cannot tolerate the standard colonic preparations.

Patient Satisfaction with Results of Hydrotherapy Collected Two Weeks after the Procedure (N = 12)
November – December 2011

Twelve patients underwent hydrotherapy. More than half were satisfied with the treatment.
Balloon Enteroscopy

We have a strong single balloon and double balloon enteroscopy program and perform the procedure for a number of different indications including obscure bleeding, abnormal capsule endoscopy imaging, ruling out possible small bowel lesions and inflammatory bowel disease. Our antegrade and retrograde numbers are shown below.

Antegrade Enteroscopy
2009 – 2011

<table>
<thead>
<tr>
<th>Year</th>
<th>Single Balloon</th>
<th>Double Balloon</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>168</td>
<td>72</td>
</tr>
<tr>
<td>2010</td>
<td>169</td>
<td>80</td>
</tr>
<tr>
<td>2011</td>
<td>184</td>
<td>74</td>
</tr>
</tbody>
</table>
Retrograde Enteroscopy
2009 – 2011

Number of Procedures

<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Above are the three year volumes of both our double balloon and single balloon retrograde enteroscopy.
Small Bowel Disease

**Breath Testing**

**Case Volume**
2009 – 2011

<table>
<thead>
<tr>
<th>Number of Procedures</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucose</td>
<td>400</td>
<td>300</td>
<td>400</td>
</tr>
<tr>
<td>Lactose</td>
<td>200</td>
<td>150</td>
<td>200</td>
</tr>
<tr>
<td>Fructose</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>H. pylori</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

N= 830 679 647

Our volumes for various breath testing is among the highest in the United States. The volume for different tests fluctuates between years depending on patient population and physician preferences. We anticipate an increase in breath testing with increased outside referrals and patient volume.
Intestinal Rehabilitation and Transplant

Cumulative Transplant Volume (N = 20)
2008 – 2011

The Intestinal Rehabilitation and Transplant Program (IRTP) has performed 20 transplants since the program began in June 2008. As a result, the program received Centers for Medicare and Medicaid Services (CMS) certification for adult intestinal multi-visceral transplantation, effective Dec. 15, 2010.

Cumulative Program Growth
2008 – 2011

The IRTP has seen 1,388 new patients and evaluated 288 patients for transplant since the program’s inception. While transplant volume has increased, we are frequently able to use less drastic medical and surgical therapies to alleviate nutritional failure.
Liver Disease

Medical Management

**New Outpatient Visits – Hepatology Service***
2009 – 2011

*Includes new patients and new hepatology consults

![Number of Patients](chart)

Initial Inpatient Visits – Hepatology Service

![Number of Patients](chart)

We have a very active inpatient and outpatient hepatology practice.
Rapid virological response (negative HCV viral load at four weeks of therapy) is one of the best predictors of sustained virological response. In May 2011, the U.S. Food and Drug Administration approved boceprevir and telaprevir (protease inhibitors) as add-on treatments to standard therapy with interferon and ribavirin for adult patients with genotype 1 hepatitis C. Eighty-one percent of our patients treated with protease inhibitors have achieved a rapid virological response.
Liver Disease

Non-Alcoholic Steatohepatitis (NASH) (N = 96) 2011

We developed a combination of non-invasive markers to diagnose fatty liver disease. This has been shown to correlate well with liver biopsy findings.

<table>
<thead>
<tr>
<th>Marker Type</th>
<th>NASH</th>
<th>Non-NASH</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CK18 (cytokeratin-18)</td>
<td>516.7 µ/L</td>
<td>179.3 µ/L</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>sFas (soluble Fas)</td>
<td>11,750 ng/ml</td>
<td>6,428 ng/ml</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>oxNASH (oxidative stress steatohepatitis)</td>
<td>66.1 ± 22.7</td>
<td>34.8 ± 25.1</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>
Liver Transplant

Cleveland Clinic performed its first adult liver transplant on November 8, 1984, and has completed more than 1,600 liver transplants to date, including the first lung-liver transplant in Ohio in 2007.

Liver Transplant Cumulative Volume (N = 1,654)
1988 – 2011

Source: The Organ Procurement and Transplantation Network (OPTN)
Liver Disease

Transplants (on waitlist)
July 2010 – June 2011

Rate per Year

<table>
<thead>
<tr>
<th></th>
<th>Rate per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleveland Clinic Observed</td>
<td>0.7</td>
</tr>
<tr>
<td>United States</td>
<td>0.6</td>
</tr>
</tbody>
</table>

N = 207

Based on Scientific Registry of Transplant Recipients (SRTR) data

Transplant rates are measured as the number of transplants per year compared to the number of patients on the waiting list. A small percent of patients have died or been transplanted before being removed from the waitlist.

The Cleveland Clinic rate of transplantation was statistically significantly higher than the national rate.
Time to Transplant
2005 – 2010

Median Time to Transplant in Months

Based on Scientific Registry of Transplant Recipients (SRTR) data

Cleveland Clinic’s median time to transplant is nearly half of the median time to transplant for the nation.

Mortality on Waitlist Without Transplant at 6, 12, and 18 Months
January 2009 – December 2009

Percent

Based on Scientific Registry of Transplant Recipients (SRTR) data

The mortality rate for candidates awaiting liver transplant at Cleveland Clinic was lower than the national rate at 6, 12, and 18 month intervals by 38, 29, and 32 percent, respectively.
Liver Disease

Survival after Transplant at 1 year and 3 years (N = 292)
July 2008 – December 2010

Cleveland Clinic survival after transplant was as expected based on risk modeling performed by SRTR.

Patients who come to Cleveland Clinic for liver transplantation have an excellent chance of survival three years post-transplant.

Based on risk modeling performed by SRTR
Split Liver Transplant Volume (N = 31)  
2006 – 2011

In an effort to increase the number of available organs for transplant, we have steadily increased the number of split liver transplants and donations after cardiac death since 2004.

Number of Recipients

![Number of Recipients Graph]

The number of split liver transplants performed has increased from 2006 to 2010 and maintained in 2011.

Donation after Cardiac Death (DCD) (N = 57)  
2004 – 2011

Percent of DCD Liver Transplants

![Percent of DCD Liver Transplants Graph]

The percentage of DCD liver transplants has steadily increased since 2004.
Implementation of a new DCD protocol involving injection of Tissue Plasminogen Activator into the donor liver artery prior to transplantation has shown to improve graft survival to the level of standard donor livers.
Length of Stay and MELD Score*
2004 – 2011

Streamlining our clinical care pathways resulted in a reduction in length of stay in 2011 to 11 days. The severity of illness of our liver transplant patients has gradually increased to a MELD score of 25 reflecting increasing medical urgency for transplantation.

*MELD Score: Model for End-Stage Liver Disease
Source: Cleveland Clinic Electronic Data Interface for Transplantation Database.
Liver Disease

**30-Day Post Readmissions**
*2009 – 2011*

<table>
<thead>
<tr>
<th>Percent</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>119</td>
<td>121</td>
<td>113</td>
</tr>
</tbody>
</table>

Liver transplant readmissions decreased from 51 percent in 2010 to 44 percent in 2011.
Graft Versus Host Disease (GVHD)

GVHD is a rare, but often fatal, complication after solid organ transplantation. Prompt and accurate diagnosis is essential for effective treatment. A new protocol was developed to rapidly diagnose GVHD. The protocol consists of use of DNA detection for early diagnosis of GVHD followed by doses of thymoglobulin (r-ATG) to rapidly reverse symptoms of GVHD and consolidation of remission with the use of multiple doses of alefacept to suppress effectively the return of donor allo-activated memory T cells.

GVHD Survival with New Protocol (N = 5)

2007 – 2011

Survival rate in patients treated with the new protocol was 80 percent compared to 20 percent pre-protocol.

Source: Cleveland Clinic Electronic Data Interface for Transplantation Database.
Kidney Dysfunction after Liver Transplant (N = 30)
August 2009 – July 2011

Early post-liver transplant kidney dysfunction has been suggested to predict subsequent long-term renal insufficiency. Exposure to calcineurin inhibitors (CNI) in early post-transplant period may contribute to early kidney dysfunction. Induction therapy with polyclonal anti-lymphocyte antibody (r-ATG) with delayed initiation of CNI may lower this risk.

A three-armed, randomized, controlled trial compared serum Creatinine levels (sCR) and Estimated Glomerular Filtration Rate (eGFR) in patients receiving either: CNI (control group), r-ATG two doses of 3mg/Kg then introducing CNI post-operative day 10, or r-ATG two doses of 4.5mg/Kg then introducing CNI post-operative day 10.

At 3, 6, and 12 months after liver transplantation, there was a statistically significantly better e-GFR in patients who received the induction therapy compared to the control group.
Liver Tumor Clinic

Average Number days from Initial Visit to Intervention or First Treatment Pre-Clinic Opening vs Post-Clinic May 2008 – 2011

Number of Days

<table>
<thead>
<tr>
<th></th>
<th>Pre-Clinic May 2008 – May 2009</th>
<th>Post-Clinic 2010</th>
<th>Post-Clinic 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N =</strong></td>
<td>61</td>
<td>173</td>
<td>156</td>
</tr>
</tbody>
</table>

The Multidisciplinary Liver Tumor Clinic offers state-of-the-art medical care to patients with hepatic tumors. In a single visit, patients may be seen by a hepatologist, oncologist, surgeon and interventional radiologist. The time from initial visit to intervention decreased by 81 percent since the inception of the Liver Tumor Clinic in May, 2009.
One of the major shortcomings of peroral cholangioscopy has been the relatively poor image quality offered by fiberoptic cholangioscopes. Narrow-band imaging (NBI) is an imaging technique that has shown promise for detailed evaluation of mucosal abnormalities. We are currently using a newly developed, high-definition video cholangioscopy system with NBI capability for diagnosis of various biliary disorders in clinical practice.

**Cholangioscopy with Narrow-Band Imaging for Evaluation of Biliary Disorders (N = 21)**
**January 2010 – May 2010**

<table>
<thead>
<tr>
<th>Indication</th>
<th>N</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indeterminant Biliary Stricture</td>
<td>9</td>
<td>67% Cholangiocarcinoma</td>
</tr>
<tr>
<td></td>
<td></td>
<td>22% Primary Sclerosing Cholangitis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11% Extrinsic Compression</td>
</tr>
<tr>
<td>Post-OLT* Anastamotic Irregularity</td>
<td>6</td>
<td>17% Mucosal Sloughing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17% Blood Clot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>33% Hyperplastic Tissue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>33% Fibrotic Tissue</td>
</tr>
<tr>
<td>Abnormal Liver Enzymes</td>
<td>4</td>
<td>75% Missed Retained Stone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25% No Finding</td>
</tr>
<tr>
<td>Abnormal Imaging</td>
<td>1</td>
<td>100% Normal</td>
</tr>
<tr>
<td>Hemobilia</td>
<td>1</td>
<td>100% Source Detected</td>
</tr>
</tbody>
</table>

*Post-Orthotopic Liver Transplant

No adverse events noted on any procedures
Pancreatic Cyst Cytology Assessment (N = 54)
2000 – 2010

Cytological assessment of pancreatic cyst lesions through endoscopic ultrasounds or perioperative aspirates is a useful diagnostic tool. Many times, however, the cytologic finding of cellular atypia is of unclear clinical consequence. 421 cytological assessments were performed on pancreatic cyst aspirates. In 54 (12.8%) cases, the cytology report noted the presence of atypical cells.

<table>
<thead>
<tr>
<th>Description</th>
<th>N = 54</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>35</td>
</tr>
<tr>
<td>Male</td>
<td>19</td>
</tr>
<tr>
<td>Intervention</td>
<td></td>
</tr>
<tr>
<td>Resection</td>
<td>29</td>
</tr>
<tr>
<td>Surgical Exploration</td>
<td>32</td>
</tr>
<tr>
<td>Findings</td>
<td></td>
</tr>
<tr>
<td>Pre-Malignant</td>
<td>18</td>
</tr>
<tr>
<td>Malignant</td>
<td>12</td>
</tr>
<tr>
<td>Benign</td>
<td>2</td>
</tr>
</tbody>
</table>

Pancreatic Cystic Neoplasms (N = 338)
1998 – 2008

We have one of the world’s largest registries regarding pancreatic cystic neoplasms which exceeded 1,500 patients in 2012. Outcomes regarding the last ten years of data are listed below.

<table>
<thead>
<tr>
<th>Cyst size</th>
<th>&lt; 1.5cm (N = 84)</th>
<th>&gt; 1.5cm (N = 254)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>1cm</td>
<td>2.5cm</td>
</tr>
<tr>
<td>Follow-up</td>
<td>1.2cm</td>
<td>2.7cm</td>
</tr>
<tr>
<td>Resection (%)</td>
<td>5 (6%)</td>
<td>63 (25%)</td>
</tr>
</tbody>
</table>
The Department of General Surgery implemented an Acute Care Surgery (ACS) program on the main campus in July 2010. The core ACS team is made up of five experienced, board-certified general surgeons each with additional certification in surgical critical care and a physician assistant.

A Staff Surgeon is on-site 24 hours per day to attend to the urgent needs of the Emergency Department, inpatients, and transfers to the main campus. These physicians also provide supervision and education of our general surgery residents.

In 2011, the ACS team was involved in the care of over 800 patients. The top ten surgical procedures performed by the ACS team include tracheostomy, peritoneal adhesiolysis, small bowel resection, cholecystectomy and appendectomy.

**Top 10 Surgical Procedures (Principal and Secondary) (N = 877)**

*October 2010 – September 2011*

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tracheostomy</td>
<td>80</td>
</tr>
<tr>
<td>Peritoneal Adhesiolysis</td>
<td>60</td>
</tr>
<tr>
<td>Laparoscopic Cholecystectomy</td>
<td>40</td>
</tr>
<tr>
<td>Small Bowel Resection</td>
<td>20</td>
</tr>
<tr>
<td>Open Cholecystectomy</td>
<td>20</td>
</tr>
<tr>
<td>Debridement</td>
<td>10</td>
</tr>
<tr>
<td>Laparoscopic Appendectomy</td>
<td>10</td>
</tr>
<tr>
<td>Incision &amp; Drainage</td>
<td>10</td>
</tr>
<tr>
<td>Soft Tissue Biopsy</td>
<td>10</td>
</tr>
<tr>
<td>Myectomy</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: The information contained in this article was based in part on the Performance Accelerator Suite Program maintained by the University HealthSystem Consortium (UHC).
Well over 50 percent of patients referred to the ACS team suffer from major or extreme physiologic derangement. Despite their severity of illness, our patients’ actual mortality rate is only half of the expected rate based on presenting condition.

**APR-DRG Admit Severity of Illness (SOI)* (N = 877)**
**October 2010 – September 2011**

<table>
<thead>
<tr>
<th>Percent</th>
<th>SOI Minor</th>
<th>SOI Moderate</th>
<th>SOI Major</th>
<th>SOI Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*APR-DRG Admit Severity of Illness: the extent of physiologic decompensation or loss of organ system function

**Observed and Expected Mortality (N = 877)**
**October 2010 – September 2011**

<table>
<thead>
<tr>
<th>Percent</th>
<th>Observed</th>
<th>Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Expected Mortality: based on UHC risk-adjustment methodology.

Source: The information contained in this article was based in part on the Performance Accelerator Suite Program maintained by the University HealthSystem Consortium (UHC).
Most breast biopsies were nonsurgical, consistent with our minimally invasive approach to breast cancer diagnosis.
Surgery for Breast Cancer*
2007 – 2011

*Surgical Site Infections
April – June 2011

A prospective analysis of 291 postoperative patients from April through June 2011 showed an overall infection rate of 3.4 percent. There was equal distribution across surgeons, surgery type, time from biopsy, and type of reconstruction.
Breast Cancer

Patients newly diagnosed with breast cancer are seen in the multidisciplinary Breast Center, a single location comprising surgeons, medical oncologists and radiation oncologists specializing in breast cancer. This arrangement is convenient for patients and allows the closest possible collaboration among the physicians to develop an integrated treatment plan.

Five-Year Relative Survival of Female Patients with All Stages of Breast Cancer (N = 5,389)
1996 – 2007

Percent Survival = 100 98.4 96.3 93.9 91.8

American Joint Committee on Cancer (AJCC) stage I – IV breast cancer.

CC = Cleveland Clinic.

Five-Year Relative Survival of Patients with Breast Cancer by Stage at Diagnosis (N = 5,389) 1996 – 2007

Percent Survival by Stage

<table>
<thead>
<tr>
<th>Years Since Diagnosis</th>
<th>Stage I CC (N = 2,651)</th>
<th>Stage I Ref</th>
<th>Stage II CC (N = 2,027)</th>
<th>Stage II Ref</th>
<th>Stage III CC (N = 514)</th>
<th>Stage III Ref</th>
<th>Stage IV CC (N = 197)</th>
<th>Stage IV Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>99.5</td>
<td>97.4</td>
<td>94.7</td>
<td>91.5</td>
<td>91.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>96.8</td>
<td>88.3</td>
<td>81.1</td>
<td>76.6</td>
<td>71.6</td>
<td>71.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

American Joint Committee on Cancer (AJCC) stage I – IV breast.

CC = Cleveland Clinic.

Overall Survival of Patients with Early Stage Breast Cancer Treated with Radiation (N = 2,003) 1996 – 2011

Percent Survival and (Number at Risk) by Stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>99.3 (270)</td>
<td>97.4 (240)</td>
<td>96.5 (215)</td>
<td>94.6 (196)</td>
<td>94.6 (182)</td>
</tr>
<tr>
<td>I</td>
<td>99.3 (934)</td>
<td>98.5 (877)</td>
<td>97.2 (821)</td>
<td>95.2 (772)</td>
<td>94.4 (732)</td>
</tr>
<tr>
<td>IIA</td>
<td>97.6 (441)</td>
<td>95.3 (406)</td>
<td>91.0 (371)</td>
<td>87.5 (340)</td>
<td>85.9 (327)</td>
</tr>
<tr>
<td>IIB</td>
<td>95.4 (248)</td>
<td>90.0 (225)</td>
<td>86.3 (207)</td>
<td>83.3 (187)</td>
<td>79.6 (171)</td>
</tr>
</tbody>
</table>

Patients who received radiation therapy at Cleveland Clinic main campus.

CC = Cleveland Clinic.

Overall Survival of Patients with Late Stage Breast Cancer Treated with Radiation (N = 445) 1996 – 2011

Percent Survival and (Number at Risk) by Stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIIA</td>
<td>96.7 (141)</td>
<td>89.6 (120)</td>
<td>85.6 (102)</td>
<td>83.0 (91)</td>
<td>79.1 (78)</td>
</tr>
<tr>
<td>IIIB</td>
<td>90.5 (74)</td>
<td>78.2 (63)</td>
<td>78.2 (62)</td>
<td>73.1 (57)</td>
<td>70.5 (55)</td>
</tr>
<tr>
<td>IIIC</td>
<td>89.3 (23)</td>
<td>75.9 (14)</td>
<td>63.7 (9)</td>
<td>55.8 (6)</td>
<td>55.8 (4)</td>
</tr>
<tr>
<td>IV</td>
<td>63.0 (109)</td>
<td>49.7 (86)</td>
<td>39.5 (54)</td>
<td>30.7 (34)</td>
<td>27.1 (29)</td>
</tr>
</tbody>
</table>

Patients who received radiation therapy at Cleveland Clinic main campus.

CC = Cleveland Clinic.

**Quality Measure**

**Consideration or Administration of Tamoxifen or Third-Generation Aromatase Inhibitor Within 365 Days of Diagnosis for Women with Hormone Receptor-Positive Breast Cancer* (N = 292)**

2009

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Number (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.7%</td>
<td>2</td>
</tr>
<tr>
<td>99.3%</td>
<td>290</td>
</tr>
</tbody>
</table>

- **Not Considered, Not Administered**
  - 0.7% (N = 2)
- **Considered**
  - 99.3% (N = 290)

Of those for whom tamoxifen was considered, 280 patients received therapy; 10 patients did not receive therapy.

*Women diagnosed in 2009; ≥ 18 years of age at diagnosis; first or only cancer diagnosis; primary tumor of the breast; invasive solid tumors only; no clinical or pathological evidence of metastatic disease; American Joint Commission on Cancer (AJCC) stage T1C, N0, M0 or stage II or III hormone receptor-positive breast cancer; all or part of first course of treatment performed at Cleveland Clinic.
Tamoxifen or Third-Generation Aromatase Inhibitor Administered or Not Administered to Patients by Stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>No. of Patients</th>
<th>No. of Patients Administered</th>
<th>No. of Patients Not Administered</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1C, N0, M0</td>
<td>84</td>
<td>79</td>
<td>3*, 1†, 1‡</td>
</tr>
<tr>
<td>II</td>
<td>165</td>
<td>158</td>
<td>3*, 1†, 1†, 1‡, 1§</td>
</tr>
<tr>
<td>III</td>
<td>43</td>
<td>43</td>
<td>NA</td>
</tr>
<tr>
<td>Total</td>
<td>292</td>
<td>280</td>
<td>12</td>
</tr>
</tbody>
</table>

NA = Not applicable.

*Patient refused hormonal therapy. †Contraindicated condition. ‡Not offered hormonal therapy (Stage I patient seen by outside oncologist).
†Patient chose alternative therapy. §Observation only.

Cleveland Clinic compliance with this National Cancer Data Base (NCDB) standard of care quality goal was 99.4% for 2009.

The National Cancer Data Base (NCDB) is a nationwide oncology outcomes database and is a joint program of the Commission on Cancer (CoC) and the American Cancer Society (ACS).
The Center for Human Nutrition provides evaluation, education, and treatment to people who have disease-related nutrition problems. With one of the largest multidisciplinary teams in the nation, we offer a variety of services including nutrition support, intestinal rehabilitation and transplant for patients with severe gastrointestinal dysfunction or failure. On-going nutrition research supports these areas making us an internationally recognized leader in the field of specialized nutrition support.

### Percutaneous Endoscopic Gastrostomy Tube Complications (N = 197)
**January 2009 – February 2011**

<table>
<thead>
<tr>
<th>Service</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parenteral nutrition patients</td>
<td>1,324</td>
<td>1,348</td>
<td>1,369</td>
</tr>
<tr>
<td>Tube feeding consults</td>
<td>Data not available</td>
<td>2,899</td>
<td>2,579</td>
</tr>
<tr>
<td>Feeding tubes placed</td>
<td>2,149</td>
<td>2,136</td>
<td>1,754</td>
</tr>
<tr>
<td>New home total parenteral nutrition patients</td>
<td>192</td>
<td>184</td>
<td>197</td>
</tr>
<tr>
<td>Out-patient consults</td>
<td>12,353</td>
<td>14,454</td>
<td>16,662</td>
</tr>
<tr>
<td>Intestinal rehabilitation and transplant clinic patients</td>
<td>442</td>
<td>473</td>
<td>446</td>
</tr>
</tbody>
</table>

We perform a significant number of endoscopically placed gastrostomy tubes. Our early and late leak rates and our rate of local infection are seen in the graph.
We implemented an early enteral feeding protocol in the Intensive Care Units. The number of patients who were provided nutrition after three days of admission decreased from 130 to 84 (19 to 16 percent).

Home parenteral nutrition (HPN) frequently results in hospital readmission. In 2011, a seven percent decrease in the number of HPN patients readmitted due to complications from HPN was seen. Of those readmissions, the most common reason was catheter-related bloodstream infection (CRBSI) which decreased to 15 percent in 2011. Other HPN complications, such as non-infectious catheter complications, electrolyte disturbances and venous thrombosis, also caused HPN-related readmissions.
As the largest colorectal surgery center in Florida, the Department of Colorectal Surgery diagnoses and treats a broad array of diseases of the colon, rectum, and anus. Our staff has pioneered improvements in patient care for rectal cancer, ulcerative colitis, familial adenomatous polyposis, Crohn’s disease, fecal incontinence, and hemorrhoids. In addition, we have developed, or helped to develop, numerous techniques including stimulated graciloplasty, sacral nerve stimulation, artificial bowel sphincter, adhesion barriers, reconstruction with colonic J-pouch following rectal cancer removal, and laparoscopic management of colorectal disorders. We have been repeatedly cited within the top 50 colorectal programs in the country by USNews and World report.

The Department of Colorectal Surgery performed over 1,400 surgical procedures each year, including both inpatient abdominal procedures and outpatient anorectal operations. The majority of abdominal colorectal surgeries are performed in a minimally invasive manner (laparoscopic or robotic-assisted), and the percentage of cases performed by these techniques continues to rise annually.
Surgical Complications
2011

The complication rates following colorectal surgery at Cleveland Clinic Florida are consistently lower than the average rates of complication at similar-sized healthcare centers.

Postoperative Mortality
2011

The mortality rates following colorectal surgery at Cleveland Clinic Florida are consistently lower than the average mortality rates at similar-sized healthcare centers.
In 2011, Cleveland Clinic Bariatric & Metabolic Institute marked its seventh anniversary and continued 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.

Laparoscopic Roux-en-Y gastric bypass continues to be the predominant procedure at Cleveland Clinic. Due to patient preference, laparoscopic adjustable gastric banding has declined over the past two years.
Comorbidities at Baseline for Bariatric Surgery
2009 – 2011

For all comorbidities except smoking, Cleveland Clinic bariatric surgery patients were higher-risk at baseline compared with the American College of Surgeons Bariatric Surgery Database.

*As a Level 1A accredited American College of Surgeons (ACS) Bariatric Center, Cleveland Clinic participates in the ACS Bariatric Surgery Database, a national program that objectively measures and reports risk-adjusted surgical outcomes for 100 percent of bariatric surgery cases at participating facilities. Hospitals with the Level 1A certification are recognized for high-volume practices and management of the most challenging and complex patients.
Cleveland Clinic bariatric patients have higher-risk baseline demographics and comorbidities.
Cleveland Clinic bariatric patients have higher-risk baseline demographics and comorbidities.
Cleveland Clinic bariatric surgery patients were higher risk at baseline compared with patients in the American College of Surgeons Bariatric Surgery Database.

**Bariatric Surgery Complications (30 Days, Non-risk Adjusted)**
Laparoscopic Roux-en-Y (N = 1,186)

**2009 – 2011**

<table>
<thead>
<tr>
<th>Percent</th>
<th>Cleveland Clinic</th>
<th>ACS Bariatric Comparison (N = 29,798)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intestinal Obstruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anastomotic Leak</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wound Infection/Evisceration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulmonary Embolism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deep Vein Thrombosis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*ACS = American College of Surgeons Bariatric Surgery Database*
American College of Surgeons Bariatric Surgery Database comparisons showed that complications of laparoscopic gastric banding were low.
Unplanned ICU Admissions within 30 Days of Bariatric Surgery (Non-risk Adjusted)

2009 – 2011

Percent

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Cleveland Clinic</th>
<th>ACS Bariatric Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laparoscopic Roux-en-Y</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>Laparoscopic Adjustable Gastric Band</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

N = 1,221 ACS* = 31,132

N = 162 ACS* = 20,805

*ACS = American College of Surgeons Bariatric Surgery Database

Despite the relatively high-risk patient population, 5 percent or less of bariatric procedures required postoperative ICU stays.
### 30-Day Bariatric Surgery (Non-risk Adjusted)

**Percent Mortality**

<table>
<thead>
<tr>
<th>2009 – 2011</th>
<th>Cleveland Clinic (# Cases; % All Operations)</th>
<th>ACS Comparison* (# Cases; % All Operations)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Operations</td>
<td>0.3% (1,725; 100%)</td>
<td>0.1% (61,735; 100%)</td>
</tr>
<tr>
<td>Laparoscopic Roux-en-Y</td>
<td>0.4% (1,221; 70.8%)</td>
<td>0.1% (30,033; 48.6%)</td>
</tr>
<tr>
<td>Laparoscopic Gastric Banding</td>
<td>0.6% (162; 9.4%)</td>
<td>0.0% (19,274; 31.2%)</td>
</tr>
<tr>
<td>Laparoscopic Sleeve Gastrectomy</td>
<td>0.0% (124; 7.2%)</td>
<td>0.1% (5,816; 9.4%)</td>
</tr>
<tr>
<td>Other Bariatric Procedures</td>
<td>0.0% (217; 12.6%)</td>
<td>0.2% (6,667; 10.8%)</td>
</tr>
</tbody>
</table>

*American College of Surgeons Bariatric Surgery Database*
Mean Percent Weight Loss Toward Ideal Body Mass Index (Non-risk Adjusted): 3-Year Follow-up

**2008 – 2011**

**Percent**

<table>
<thead>
<tr>
<th></th>
<th>Cleveland Clinic</th>
<th>American College of Surgeons</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Cases</td>
<td>120</td>
<td>2,216</td>
</tr>
<tr>
<td>Lap Roux-en Y</td>
<td>67</td>
<td>995</td>
</tr>
<tr>
<td>Lap Band</td>
<td>27</td>
<td>1,030</td>
</tr>
</tbody>
</table>

Weight Loss Formula: 

\[
\text{Percent} = \left( \frac{\text{baseline BMI} - \text{follow-up BMI}}{\text{baseline BMI} - \text{ideal BMI}(25)} \right) \times 100
\]

*ACS = American College of Surgeons Bariatric Surgery Database

The Bariatric & Metabolic Institute’s Behavioral Health team examined why patients who begin the pre-operative bariatric surgery evaluation fail to complete surgery or drop out of bariatric programs.

**Most Common Reasons for Not Reaching Bariatric Surgery After 15 Months (N = 129)**

**2011**

**Percent**

- Withdrawal for Unknown Cause after Clearing Psychology
- Insurance Denial
- Outstanding Psychological or Medical Requirements
- Surgery Scheduled then Patient Cancelled
- Switched to Non-Surgical Weight Management
- Moved Out of Area
- Death While Waiting for Surgery

Out of 518 patients evaluated, 129 did not receive surgery after 15 months. Patients with outstanding program requirements (either medical or psychological were more likely to be involved in outpatient behavioral health programs, or taking psychotropic medication(s) or to have current or past alcohol abuse/dependence than patients who had not undergone surgery for other reasons.
Concerns have been raised about an increased incidence of substance abuse post-bariatric surgery. Alcohol use after surgery may be particularly problematic due to changes in patients’ pharmacokinetics in relation to alcohol, leading to greater intoxication.

Cleveland Clinic Bariatric & Metabolic Institute has created the Substance Risk Reduction Group, a unique relapse prevention group for at-risk bariatric surgery candidates. The session includes education about the health effects of alcohol and other substances on outcomes, as well as ways to develop alternative coping strategies and identify warning signs of relapse and resources for treatment.

**Effect of a Single-Session Group Intervention on Knowledge Test Scores to Reduce Risk from Alcohol and Substances (N = 37)**

2011

![Graph showing pre-test and post-test knowledge about alcohol and weight loss surgery](image)

After the intervention, patients showed a significant increase in knowledge ($P < .0001$) regarding the negative effects of substance abuse after surgery and reported significantly healthier coping strategies ($P < .0001$). Patients also reported a lower intention of using alcohol post-surgery ($P < .01$).
National Surgical Quality Improvement Program

The American College of Surgeons’ National Surgical Quality Improvement Program (NSQIP) objectively measures and reports risk-adjusted surgical outcomes based on a defined sampling and abstraction methodology. The outcome data below reflect Cleveland Clinic’s surgical cases between July 1, 2010, and June 30, 2011.

General Surgery
July 2010 – June 2011

<table>
<thead>
<tr>
<th>Outcome</th>
<th>N</th>
<th>Observed Rate (%)</th>
<th>Expected Rate (%)</th>
<th>Difference</th>
<th>Statistically Significant Difference?</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-Day Mortality</td>
<td>1058</td>
<td>1.80</td>
<td>2.30</td>
<td>Lower</td>
<td>Yes</td>
</tr>
<tr>
<td>30-Day Morbidity</td>
<td>1058</td>
<td>14.74</td>
<td>12.17</td>
<td>Higher</td>
<td>Yes</td>
</tr>
<tr>
<td>Cardiac Arrest / Myocardial Infarction</td>
<td>1058</td>
<td>0.57</td>
<td>0.88</td>
<td>Lower</td>
<td>No</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>1056</td>
<td>1.42</td>
<td>1.56</td>
<td>Lower</td>
<td>No</td>
</tr>
<tr>
<td>Unplanned Intubation</td>
<td>1052</td>
<td>2.00</td>
<td>1.36</td>
<td>Higher</td>
<td>No</td>
</tr>
<tr>
<td>Ventilator &gt; 48 hours</td>
<td>1042</td>
<td>2.50</td>
<td>1.92</td>
<td>Higher</td>
<td>No</td>
</tr>
<tr>
<td>Deep Vein Thrombosis/Pulmonary Embolism</td>
<td>1058</td>
<td>2.08</td>
<td>1.14</td>
<td>Higher</td>
<td>Yes</td>
</tr>
<tr>
<td>Renal Failure</td>
<td>1057</td>
<td>1.14</td>
<td>0.99</td>
<td>Higher</td>
<td>No</td>
</tr>
<tr>
<td>Surgical Site Infection</td>
<td>1033</td>
<td>7.36</td>
<td>5.43</td>
<td>Higher</td>
<td>Yes</td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td>1058</td>
<td>1.80</td>
<td>1.75</td>
<td>Higher</td>
<td>No</td>
</tr>
</tbody>
</table>

Colorectal Surgery
July 2010 – June 2011

<table>
<thead>
<tr>
<th>Outcome</th>
<th>N</th>
<th>Observed Rate (%)</th>
<th>Expected Rate (%)</th>
<th>Difference</th>
<th>Statistically Significant Difference?</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-Day Mortality</td>
<td>166</td>
<td>2.41</td>
<td>3.60</td>
<td>Lower</td>
<td>No</td>
</tr>
<tr>
<td>30-Day Morbidity</td>
<td>166</td>
<td>27.71</td>
<td>23.29</td>
<td>Higher</td>
<td>No</td>
</tr>
<tr>
<td>Length of Stay</td>
<td>120</td>
<td>26.67</td>
<td>22.83</td>
<td>Higher</td>
<td>No</td>
</tr>
<tr>
<td>Surgical Site Infection</td>
<td>160</td>
<td>17.50</td>
<td>12.12</td>
<td>Higher</td>
<td>No</td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td>166</td>
<td>1.20</td>
<td>2.98</td>
<td>Lower</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Surgical Care Improvement Program (SCIP) — Appropriateness of Care

This composite metric, based on 10 hospital surgical quality process measures developed by the Center for Medicare and Medicaid Services (CMS), shows the percentage of patients who received all of the recommended care for which they were eligible.

Surgical Appropriateness of Care

2010 – 2011

Cleveland Clinic has set a target of UHC’s 90th percentile, and results are trending positively.
Cleveland Clinic is dedicated to delivering excellent clinical outcomes and the best possible experience for our patients and their families. Patient feedback is critical in driving priorities and assessing results. Based on this feedback, Cleveland Clinic’s Office of Patient Experience implements training programs to improve service and communication as well as educational initiatives to help patients understand what to expect when they are in our care.

**Outpatient — Digestive Disease Institute**

**Overall Rating of Outpatient Care and Services During Outpatient Visit**

*2010 – 2011*

![Graph showing overall rating of outpatient care and services during outpatient visit from 2010 to 2011](image)

Source: Press Ganey, a national hospital survey vendor
Rating of Outpatient Care Provider
2010 – 2011

Likelihood of Recommending Outpatient Care Provider
2010 – 2011

Source: Press Ganey, a national hospital survey vendor
Inpatient — Digestive Disease Institute

The Centers for Medicare and Medicaid Services (CMS) requires United States hospitals that treat Medicare patients to participate in the national Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, a standardized tool that measures patients’ perspectives of hospital care. Results collected for public reporting are available at hospitalcompare.hhs.gov.

HCAHPS Overall Assessment
2010 – 2011

Source: Press Ganey, a national hospital survey vendor
HCAHPS Domains of Care
2010 – 2011

Source: Press Ganey, a national hospital survey vendor
Smoking May Accelerate Progression of Nonalcoholic Fatty Liver Disease

A study by Claudia Zein, MD, published in the April issue of the Journal of Hepatology shows for the first time, that smoking may accelerate the progression of nonalcoholic fatty liver disease (NAFLD) in humans. Currently, 30 million Americans suffer from NAFLD, many of whom may benefit from risk factor modification. Dr. Zein and her co-authors, in collaboration with the Nonalcoholic Steatohepatitis Clinical Research Network (NASH CRN), designed and led this study of smoking history and liver biopsy data collected from 1,091 adults enrolled in the NASH CRN between 2004 and 2008.

Pentoxifylline May Prove Effective in Treating NASH

A study by Claudia Zein, MD, linked a significant improvement in NALFD activity score and liver fibrosis in patients suffering from nonalcoholic steatohepatitis (NASH) treated with pentoxifylline (PTX). To date, no medical therapy has been proven to improve fibrosis in NASH in individual clinical trials, making these findings worthy of further study. On the market for decades for improving blood flow, PTX has FDA approval for the treatment of peripheral vascular disease. Dr. Zein’s research compared the liver biopsies of 55 patients taken before and after a one-year regimen of PTX or placebo, between 2006 and April 2010.
Sacral Nerve Stimulation Reduces Fecal Incontinence Symptoms

Cleveland Clinic and Cleveland Clinic Florida investigated a novel technique to treat fecal incontinence — sacral nerve stimulation (SNS). Approved by the FDA in 2011, SNS is like a cardiac pacemaker for the anal sphincter. Surgeons first implant temporary subcutaneous stimulators into the sacral nerve, testing their effectiveness with the patient awake. For those patients who experience more than a 50 percent improvement in the number of fecal incontinence episodes and/or in the Cleveland Clinic fecal incontinence score during a two-week trial, surgeons implant the permanent stimulator in a second procedure. Treatment with SNS, which was piloted at both Cleveland Clinic sites in clinical trials, can significantly reduce the incidence of incontinence in most patients. In many cases, patients become totally continent.

Ventral Rectopexy Reduces Recurrence Rates

Cleveland Clinic is among a handful of centers offering ventral rectopexy to treat full-thickness rectal external and internal prolapse. The procedure involves anterior rectal mobilization and mesh fixation of the rectum to the backbone (sacral promontory) and was first described by an alumnus of the research residency program in the Department of Colorectal Surgery at Cleveland Clinic Florida. Ventral rectopexy can be performed laparoscopically, robotically, or open. Concurrent vaginal prolapse procedures and total pelvic floor repair are frequently undertaken together by gynecologists and urologists during the same operation. This procedure has been shown to achieve acceptable anatomic results with low recurrence rates, few complications, and improvements of both constipation and fecal incontinence.
Genetic Markers for Barrett’s Esophagus, Esophageal Adenocarcinoma Identified

Researchers at Cleveland Clinic’s Genomic Medicine Institute have identified genetic mutations specific to patients with Barrett’s esophagus (BE) and esophageal adenocarcinoma (EAC). Charis Eng, MD, PhD, Chair and Founding Director of the Genomic Medicine Institute, conducted the study, which was published in the July 27, 2011 issue of the Journal of the American Medical Association. BE is believed to be a precursor to EAC, but EAC is typically not diagnosed until advanced stages, when chances of survival are poor. To find genetic markers, Dr. Eng led researchers at 16 U.S. institutions to identify and evaluate 298 participants with BE, EAC, or both, between 2005 and 2010. The study identified MSR1, ASCC1 and CTHRC1 as three genes mutated in 11 percent of the BE/EAC patients studied, indicative of a significant genetic predisposition. Dr. Eng and her team created the Familial Barrett Esophagus Consortium, working with researchers at Johns Hopkins University School of Medicine in Baltimore and Albert Einstein College of Medicine of Yeshiva University in New York City. They are seeking families with at least two relatives with BE and/or EAC to search for susceptibility genes. Ultimately, the ability to identify genetic markers for BE and EAC could help with risk assessment, early detection and improved disease management.
Cleveland Clinic Performs First Human Surgery Using Single-Port Robotic System

A team of Cleveland Clinic general surgeons completed the first human surgeries using the da Vinci® Single-Site™ robotic surgery platform. The study, published in the November 2011 issue of Surgical Endoscopy, resulted in 13 consecutive single-port robotic cholecystectomy operations. No significant complications occurred and the majority of the patients were discharged within 24 hours. The FDA approved the procedure in December 2011.

Knowledge Program® Captures Self-Assessment Electronically

In 2011, the Digestive Disease Institute joined other Cleveland Clinic institutes implementing the Knowledge Program,® a system that allows patients to record a self-assessment directly into their electronic medical record on an electronic tablet. The assessment, which takes five to 10 minutes, is conducted at the beginning of each appointment and can be reviewed immediately by those with access rights. The information collected provides updates in patient status and insight into clinically relevant issues that may be otherwise overlooked. Additionally, the initiative allows staff to consistently measure the severity of each patient’s illness over time and assess the efficacy of treatment protocols while accelerating the collection of electronic data.
Endoscopic Submucosal Dissection - Natural Orifice Transluminal Endoscopic Surgery (NOTES) for Colorectal Lesions

Endoscopic submucosal dissection (ESD) for colorectal lesions is a cutting-edge technique for NOTES. Surgical colon resection is the standard approach even for benign lesions that are not amenable to polypectomy. However, bowel resection is an invasive procedure and can result in complications, especially in patients with co-morbid conditions. Cleveland Clinic staff is using ESD to perform NOTES for large colorectal lesions that are not amenable to polypectomy. With increasing experience, ESD will potentially be more widely used among colorectal surgeons for colonic lesions and will be a bridge to NOTES.

Predictive Modeling Forecasts Transplant Outcomes

Cleveland Clinic's Transplant Center provides continuous oversight of outcomes, integrating information from the electronic medical record system with an internal transplant database to monitor outcomes on a real-time basis. Recently, the center developed a forecasting method that combines a risk adjustment model with patient characteristics to predict outcomes. As a result, staff can proactively develop clinical protocols to improve outcomes. Additionally, this quality assurance system incorporates data from subgroups of the transplant population to identify patient populations where outcomes may be suboptimal and incorporates these findings into patient or donor selection evaluations. The quality assurance system facilitates strict evaluation of outcomes and early identification of opportunities for improvements.

New Protocol Improves Diagnosis, Treatment of Graft vs. Host Disease

Liver transplant staff, in conjunction with Allogen Laboratories, developed a new protocol to rapidly diagnose and treat patients with graft vs. host disease (GVHD). Over the past three years, five patients have been treated with the protocol, resulting in 80 percent survival compared with 20 percent previously. The study will be presented at the International Liver Transplantation Society and the American Transplant Congress in 2012.
Double Balloon Enteroscopy with Confocal Laser Endomicroscopy Improves Examination of Small-Intestine Polyps

Cleveland Clinic staff recently investigated whether confocal laser endomicroscopy could provide accurate histologic assessment of polypoid lesions during ongoing enteroscopy. They found that the technology provides real-time, high-resolution, in vivo histological assessment in differentiating benign conditions from neoplasms in the small bowel during ongoing balloon-assisted enteroscopy and may direct immediate clinical decisions.

Intraoperative Radiotherapy of Breast Offers Viable Alternative to Standard Radiation Therapy

Cleveland Clinic’s Breast Center is the only center in Ohio to offer intraoperative radiotherapy (IORT) of the breast using the INTRABEAM system (Carl Zeiss Meditec Jena, Germany). IORT is a form of breast irradiation that is administered as a single dose treatment during surgery immediately following lumpectomy. IORT is considered a practical and safe alternative to standard breast radiation therapy, which is usually given on a daily basis for approximately six weeks after lumpectomy. As a result, IORT makes breast conservation and breast radiotherapy a far more practical alternative treatment option for women with early-stage breast cancer.
Selected Publications

The Digestive Disease Institute staff authored more than 750 publications in 2011.

For a complete list of publications authored by Digestive Disease Institute staff in 2011, go to clevelandclinic.org/outcomes.

Center for Human Nutrition


Colorectal Surgery


Selected Publications


Gastroenterology


General Surgery


**Hepato-pancreato-biliary and Transplant Surgery**


**Cleveland Clinic Florida**


**Breast Center**


Some physicians may practice in multiple locations.
For a detailed list including staff photos, please visit clevelandclinic.org/staff.
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Michael Valente, DO
Jon Vogel, MD
*Quality Improvement Officer, Colorectal Surgery
Director, Colorectal Surgery Fellowship Program*
Ryan Williams, MD
James Wu, MD
Massarat Zutshi, MD

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*Chairman*
*Vice Chairman, Digestive Disease Institute*
David Barnes, MD
*Vice Chairman*

Edgar Achkar, MD
Jean Paul Achkar, MD
*Director, Education*
Talal Adhami, MD
Sigurbjorn Birgisson, MD
*Section Head, Swallowing*
Aaron Brzezinski, MD
Carol Burke, MD
*Section Head, Colon Cancer*
Mujtaba Butt, MD
William Carey, MD
*Director, CME*
Prabhleen Chahal, MD
Dian Chiang, MD
Srinivasan Dasarathy, MD
Kyrsten Fairbanks, MD
Michelle Inkster, MD
Sunguk Jang, MD
Binu John, MD
Ahmed Kandiel, MD
Parvez Khambatta, MD
Donald Kirby, MD
*Director, Nutrition*
Brian Kirsh, MD
Brett Lashner, MD
Christine Lee, MD
David Lever, MD
Arthur McCullough, MD
K.V. Narayanan Menon, MD
Joseph Moses, MD
James Murphy, MD
Robert O'Shea, MD
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Brian Putka, MD
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Monica Ray, MD
Maged Rizk, MD
*Institute Quality Improvement Officer*
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Abdullah Shatnawei, MD

Steven Shay, MD

Bo Shen, MD  
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Tyler Stevens, MD

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Anthony Tavill, MD

Prashanthi Thota, MD

Chung Tsai, MD  
*Section Head, Comprehensive Gastroenterology*

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Jamile Wakim-Fleming, MD

Yinghong Wang, MD

Luke Weber, MD

Claudia Zein, MD

Nizar Zein, MD  
*Section Head, Hepatology*

Gregory Zuccaro Jr., MD  
*Section Head, Capsule Endoscopy*

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*Quality Improvement Officer*

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Federico Aucejo, MD

David Baringer, MD

Timothy Barnett, MD

Brent Bogard, MD

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Sricharan Chalikonda, MD  
*Director, Robotic Surgery*

John Dorsky, MD  
*Director, Hernia Center*

Bijan Eghtesad, MD

Shukri Elkhairi, MD

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Sharon Grundfest-Broniatowski, MD

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Koji Hashimoto, MD

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*Chairman, Quality & Patient Safety Institute*

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Michelle Loor, MD  
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James Malgieri, MD

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*Section Head, Acute Care Surgery*
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*Quality Improvement Officer, Hepatobiliary & Transplant Surgery*

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Brenda Lewis, DO
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Sekar Bhavani, MD
Tom Bralliar, MD
Jacek Cywinski, MD

Shahpour Esfandiari, MD
Ursula Galway, MD
Robert Helfand, MD
Maria Inton-Santos, MD
Samuel Irefin, MD
Ali Jahan, MD
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John Seif, MD
Claudene Vlah, MD
Sivan Wexler, MD
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Unit Director
Program Director, Critical Care Fellowship
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Demetrios Bourdakos, MD
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Onur Demirci, MD
Shahpour Esfandiari, MD
Samuel Irefin, MD
Ali Jahan, MD
Michele Loor, MD
Piyush Mathur, MD
Matthew Moorman, MD
Douglas Naylor Jr., MD
Nadeem Rahman, MD
Nicholas Russo, MD
Michael Samotowka, MD
Jeff Ustin, MD

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Michael Cowher, MD
Quality Improvement Officer, Breast Center
Joseph Crowe, MD
Jill Dietz, MD
Pedro Escobar, MD
Alicia Fanning, MD
Sharon Grundfest-Broniatowski, MD
Katherine Lee, MD
Mita Patel, MD
Holly Pederson, MD
Debra Pratt, MD
Robyn Stewart, MD
Stephanie Valente, DO
**Breast Imaging**
Alice Rim, MD
*Director*

Melanie Chellman-Jeffers, MD
Paulette Lebda, MD
Susan Miller, MD
Tina Ruchalski, MD
Eric Schreiber, MD
Rajshri Shah, MD
Wendy Shaw, MD
Laura Shepherdson, MD
Leah Sieck, MD

**Breast Pathology**
Christina Booth, MD
Andrea Dawson, MD
Erinn Downs-Kelly, MD
Jonathan Myles, MD
J. Jordi Rowe, MD
Contact Information

General Patient Referral
24/7 hospital transfers or physician consults
800.553.5056

Colorectal Surgery, Gastroenterology and Hepatology, and General Surgery (including Hepato-pancreato-biliary and Transplant Surgery) Appointments/Referrals
800.223.2273, ext. 47000

Breast Center Appointments/Referrals
800.223.2273, ext. 43024

Center for Human Nutrition Appointments/Referrals
800.223.2273, ext. 43046

On the Web at clevelandclinic.org/digestivediseases

Additional Contact Information

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
Cleveland Clinic’s Referring Physician Center has established a 24/7 hotline — 855.REFER.123 (855.733.3712) — to streamline access to our array of medical services. Contact the Referring Physician Hotline for information on our clinical specialties and services, to schedule and confirm patient appointments, for assistance in resolving service-related issues, and to connect with Cleveland Clinic specialists.

Request for Medical Records
216.444.2640 or 800.223.2273, ext. 42640

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

Global Patient Services/International Center
Complimentary assistance for international patients and families
001.216.444.8184 or visit clevelandclinic.org/gps

Cleveland Clinic Florida
Toll-free 866.293.7866
For address corrections or changes, please call 800.890.2467
Institute Locations

Cleveland Clinic Main Campus
9500 Euclid Ave.
Cleveland, OH 44195
Colorectal Surgery and Gastroenterology/A30
General Surgery (including Hepato-pancreato-biliary and Transplant Surgery)/A100
Women's Health and Breast Pavilion/A10
Nutrition Therapy, Nutrition Support, Intestinal Rehabilitation and Transplant/Ab4

Avon Lake Family Health Center
450 Avon Belden Road
Avon Lake, OH 44012
General surgery

Beachwood Family Health and Surgery Center
26900 Cedar Road
Beachwood, OH 44122
Breast Center, colorectal surgery, gastroenterology, general surgery, nutrition therapy

Brunswick Family Health and Surgery Center
3574 Center Road
Brunswick, OH 44212
Colorectal surgery, nutrition therapy

Beachwood Family Health and Surgery Center
26900 Cedar Road
Beachwood, OH 44122
Breast Center, colorectal surgery, gastroenterology, general surgery, nutrition therapy

Cleveland Clinic Florida
2950 Cleveland Clinic Blvd.
Weston, FL 33331
Colorectal surgery, gastroenterology, general surgery

Euclid Medical Building
99 Northline Circle, Suite 202
Euclid, OH 44119
General surgery

Fairview Hospital
20455 Lorain Road, Suite 301
Fairview Park, OH 44126
General surgery, colorectal surgery, breast services

Hillcrest Hospital Atrium
6780 Mayfield Road
Mayfield Heights, OH 44124
Colorectal surgery, general surgery

Independence Family Health Center
Crown Centre II
5001 Rockside Road
Independence, OH 44131
Colorectal surgery, gastroenterology, general surgery, nutrition therapy

Lakewood Family Health Center
16215 Madison Ave.
Lakewood, OH 44107
Colorectal surgery, nutrition therapy

Lakewood Hospital
14519 Detroit Ave.
Lakewood, OH 44107
Colorectal surgery, nutrition therapy
Institute Locations

Marymount Hospital
5555 Transportation Blvd., Suite D
Garfield Heights, OH 44125
General surgery

Medina Hospital
South Medical Office Building, Suite 5A
970 E. Washington St.
Medina, OH 44256
Colorectal surgery

Richard E. Jacobs Health Center
33100 Cleveland Clinic Blvd.
Avon, OH 44011
Colorectal surgery, gastroenterology, general surgery, nutrition therapy

Solon Family Health Center
29800 Bainbridge Road
Solon, OH 44139
Nutrition therapy

Stephanie Tubbs Jones Health Center
13944 Euclid Ave.
East Cleveland, OH 44112
Gastroenterology, general surgery

Strongsville Family Health and Surgery Center
16761 SouthPark Center
Strongsville, OH 44136
Breast services, colorectal surgery, gastroenterology, general surgery, nutrition therapy

Twinsburg Family Health and Surgery Center
8701 Darrow Road
Twinsburg, OH 44087
Breast services, colorectal surgery, gastroenterology, general surgery, nutrition therapy

Willoughby Hills Family Health Center
2570 SOM Center Road
Willoughby Hills, OH 44094
Colorectal surgery, gastroenterology, nutrition therapy

Wooster Milltown Specialty and Surgery Center
721 E. Milltown Road, Suite WR10
Wooster, OH 44691
Colorectal surgery, gastroenterology, general surgery, nutrition therapy

A registered dietitian is available for appointments at the following locations:

Main Campus Nutrition Therapy
9500 Euclid Ave.
Cleveland, OH 44195

Beachwood Family Health and Surgery Center
26900 Cedar Road
Beachwood, OH 44122

Brunswick Family Health Center
3724 Center Road
Brunswick, OH 44212
Elyria Family Health and Surgery Center  
303 Chestnut Commons Drive  
Elyria, OH 44035

Independence Family Health Center  
Crown Centre II  
5001 Rockside Road  
Independence, OH 44131

Lakewood Family Health Center  
16215 Madison Ave.  
Lakewood, OH 44107

Lorain Family Health and Surgery Center  
5700 Cooper Foster Park Road  
Lorain, OH 44053

Solon Family Health Center  
29800 Bainbridge Road  
Solon, OH 44139

Sports Health at Marymount Ambulatory Surgery Center  
5555 Transportation Blvd.  
Garfield Heights, OH 44125

Strongsville Family Health and Surgery Center  
16761 SouthPark Center  
Strongsville, OH 44136

Westlake Family Health Center  
30033 Clemens Road  
Westlake, OH 44145

Willoughby Hills Family Health Center  
2570 SOM Center Road  
Willoughby Hills, OH 44094

Wooster Family Health Center  
1740 Cleveland Road  
Wooster, OH 44691
Overview

Cleveland Clinic uses a scorecard approach to measure quality, safety and patient experience. In addition, real-time dashboard data are leveraged to drive performance improvement. Although not an exact match to publicly reported data, more timely internal data provide transparency for leaders at all levels of the organization to support improved care in their clinical locations. The following are examples of Cleveland Clinic’s 2011 focus areas and main campus results.

Appropriateness of Care

2010 – 2011

Cleveland Clinic's observed/expected (O/E) mortality ratio outperformed the University HealthSystem Consortium (UHC) academic medical center 50th percentile throughout 2011.

Mortality

2010 – 2011

Cleveland Clinic’s observed/expected (O/E) mortality ratio outperformed the University HealthSystem Consortium (UHC) academic medical center 50th percentile throughout 2011.
Cleveland Clinic established a 2011 target ICU surveillance rate of 1.33 central line-associated bloodstream infections (CLABSIs) per 1,000 central line days, with the goal of reducing our rate by an additional 50 percent over the 2010 results. This 2011 target was met by the end of the year.

Cleveland Clinic focused on reducing the incidence of 10 Agency for Healthcare Research and Quality PSIs. Cleveland Clinic achieved a reduction of more than 60 percent in the total number of these PSIs in 2011 through a combination of clinical and documentation improvement activities.
Hospital-acquired pressure ulcers in Cleveland Clinic ICU patients were below the national average in 2010 and 2011.

Falls in Cleveland Clinic stepdown unit patients were below the national average for most of 2010 and 2011. In 2011, Cleveland Clinic supplemented proactive falls-reduction strategies with after-event huddles to evaluate causality and develop prevention strategies.
Critical Response Outcomes

Medical Emergency Team Event Volume*
2009 – 2011

*Excluding events originating in ORs and ICUs

Percent of Medical Emergency Team Events Resulting in ICU Transfer
2009 – 2011

Medical Emergency Teams (METs) bring critical care experience to patients across the hospital and provide early intervention that can prevent unplanned transfers to ICUs. As adult MET activations increased from 2009 through 2011, post-event adult ICU transfers decreased.
Patient Experience — Cleveland Clinic

The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey is the standard national tool for measuring patients’ perspectives of hospital care. Results are available at hospitalcompare.hhs.gov.

HCAHPS Rate and Recommend Hospital
2010 – 2011

Percent (Best Response)

Rate Hospital

% 9 or 10
(0 – 10 scale)

Would Recommend Hospital

% “definitely yes”

HCAHPS Hospital Domain Scores
2010 – 2011

Percent (Best Response)

“Patients First” is the guiding principle of Cleveland Clinic, which was among the first major academic medical centers to make improving the patient experience a strategic goal. The Office of Patient Experience collaborates with physician and nursing leadership to establish best practices and implement standardized protocols that ensure delivery of patient-centered care. Campus-wide HCAHPS survey results are trending favorably in every domain.
Overview

Cleveland Clinic is a nonprofit multispecialty academic medical center that integrates clinical and hospital care with research and education. Across the health system, 2,800 Cleveland Clinic physicians and scientists practice in 120 medical specialties and subspecialties, annually recording more than 4.6 million physician visits and nearly 188,000 surgeries. Patients come for treatment from every state and from more than 125 countries annually.

Cleveland Clinic's main campus, with 50 buildings on 180 acres in Cleveland, Ohio, includes a 1,400-bed hospital, outpatient clinic, specialty institutes, and supporting labs and facilities. The hospital currently has the highest CMS case-mix index in America. Cleveland Clinic also operates 18 family health centers, eight community hospitals, one affiliate hospital, a rehabilitation hospital for children, Cleveland Clinic Florida, Cleveland Clinic Lou Ruvo Center for Brain Health in Las Vegas, Cleveland Clinic Canada, and Sheikh Khalifa Medical City. Cleveland Clinic Abu Dhabi (United Arab Emirates), a multispecialty care hospital and clinic, is scheduled to open in 2013. With 41,000 employees, Cleveland Clinic is the second largest employer in Ohio and is responsible for an estimated $9 billion of economic activity every year.

The Cleveland Clinic Model

Cleveland Clinic was founded in 1921 by four 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 model set forth by the founders. 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.

In 2007, Cleveland Clinic restructured its practice, bundling all clinical specialties into integrated practice units called institutes. An institute combines all the specialties surrounding a specific organ or disease system under a single roof. Each institute has a single leader and focuses the energies of multiple professionals on the patient. Institutes are improving the patient experience at Cleveland Clinic.
Cleveland Clinic Lerner Research Institute

At the Lerner Research Institute, hundreds of principal investigators, project scientists, research associates and postdoctoral fellows are involved in laboratory-based, translational and clinical research. Total research expenditures from external and internal sources exceeded $240 million in 2010. Research programs include cardiovascular, cancer, neuralgic, musculoskeletal, allergic and immunologic, eye, metabolic, and infectious diseases.

Cleveland Clinic Lerner College of Medicine

Celebrating its 10th anniversary in 2012, the Lerner College of Medicine of Case Western Reserve University is known for its small class size, unique curriculum and full-tuition scholarships for all students. The program graduated 31 students as physician investigators in 2011.

Graduate Medical Education

In 2011, nearly 1,800 residents and fellows trained at Cleveland Clinic and Cleveland Clinic Florida, the most ever hosted by Cleveland Clinic and part of a continuing upward trend.

U.S. News & World Report Ranking

Cleveland Clinic is consistently ranked among the top hospitals in America by U.S. News & World Report, and our heart and heart surgery program has been ranked No. 1 since 1995.

For more information about Cleveland Clinic, please visit clevelandclinic.org.
Referring Physician Center and Hotline

Cleveland Clinic’s Referring Physician Center has established a 24/7 hotline – 855.REFER.123 (855.733.3712) – to streamline access to our array of medical services. Contact the Referring Physician Hotline for information on our clinical specialties and services, to schedule and confirm patient appointments, for assistance in resolving service-related issues, and to connect with Cleveland Clinic specialists.

Remote Consults

Online medical second opinions from Cleveland Clinic’s MyConsult are particularly valuable for patients who wish to avoid the time and expense of travel. Cleveland Clinic offers online medical second opinions for more than 1,000 life-threatening and life-altering diagnoses. For more information, visit clevelandclinic.org/myconsult, email eclevelandclinic@ccf.org or call 800.223.2273, ext. 43223.

Request Medical Records

216.444.2640 or 800.223.2273, ext. 42640

Track Your Patient’s Care Online

DrConnect offers referring physicians secure access to their patients’ treatment progress while at Cleveland Clinic. To establish a DrConnect account, visit clevelandclinic.org/drcconnect or email drconnect@ccf.org.

Medical Records Online

Cleveland Clinic continues to expand and improve electronic medical records (EMRs) to provide faster, more efficient and accurate care by sharing patient data through a highly secure network. Patients using MyChart can renew prescriptions and review test results and medications from their personal computers. MyChart provides a link to Microsoft HealthVault, a free online service that helps patients securely gather and store health information. It connects to Cleveland Clinic’s social media and Internet site, currently the most visited hospital website in America. For more information, visit clevelandclinic.org/mychart.

Critical Care Transport Worldwide

Cleveland Clinic’s critical care transport team and fleet of mobile ICU vehicles, helicopters and fixed-wing aircraft serve critically ill and highly complex patients across the globe.

To arrange a transfer for STEMI (ST elevated myocardial infarction), acute stroke, ICH (intracerebral hemorrhage), SAH (subarachnoid hemorrhage) or aortic syndrome, call toll-free 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 one of the largest and most successful CME programs in the country. The Center’s website (ccfcme.com) is an educational resource for healthcare providers and the public. Available 24/7, it houses programs that cover topics in 30 areas – if not from A to Z, at least from Allergy to Wellness – with a worldwide reach. Among other resources, the website contains a virtual textbook of medicine (Disease Management Project) and myCME, a system for physicians to manage their CME portfolios. Live courses, however, remain the backbone of the Center’s CME operation. Most live courses are held in Cleveland, but outreach plans are under way. In 2011, the Center offered 15 simultaneous courses at Arab Health, a major world healthcare forum.
This project would not have been possible without the commitment and expertise of a team led by Charmaine Jones, MBA; Karen Snyder, RN; and Maged Rizk, MD.